

Jon Hellevig

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**The Case Against  
Noam Chomsky**

**A Biological  
Philosophy**

**Vol. I**

**Mental  
Processing**

**A Biological  
Philosophy**

**Vol. II**

Jon Hellevig

PHILOSOPHY - COGNITIVE PSYCHOLOGY - LINGUISTICS

This biological philosophy depicts a unified theory of natural and social sciences showing the continuity between the biological and social phenomena of life, the latter representing reflections of the biological expressions of life. All phenomena of life are functions of an organism interpreting the environmental stimuli that it has become genetically endowed to detect. The stimuli are interpreted in neural processes, which on a higher evolutionary scale may be called mental processes. This mental interpretation yields feelings which represent a mental, cognitive, dimension of the organic homeostatic system. In higher level mental processes feelings become conceptualized cognitive feelings, which on the level of the human organism are expressed by a range of bodily expressions and ultimately by speech, which thus represents interpretation of feelings.

Both biological and social phenomena are reflections of expressions and interpretations. The continuous interactions between human cognitive expressions and interpretations amount to social practices, to all what we understand as human culture, and the material achievements of human culture. Speech corresponds to a concrete biological activity whereas language (words and their perceived parts and combinations) does not correspond to anything physical or biological, and merely represents immaterial perceptual abstractions we form based on our experience of verbal behavior. The non-existing words cannot possibly mean anything and instead *people mean* by the words they pronounce.

In present linguistic theory, the necessity to distinguish between speech (the ability to speak) and language (the social practices of speaking) has not been recognized with great detriment to the science. In the misconceived practices of contemporary linguistics scholars also treat language and words as if they would be some kind of existing entities, the material properties of which the linguist studies. As this fallacious approach to linguistics is most prominently propagated by Chomsky, I have chosen to illustrate my paradigm of expressions and interpretations in contrast to Chomsky's theories. In addition to the aforementioned thingly fallacy, Chomsky also labors under a series of gross misconceptions as to the biology of "language." He should understand that not language is biological but speech, and then he should not any more conceive of the social practices of language being innate features of the human body/brain. - The ability to speak has evolved, whereas language, and all other social phenomena are not subject to evolution.

Through these insights we understand that 'mind' should not be treated as an existing entity and rather be seen as a manifestation of the biological processes of a body interpreting environmental stimuli. By these ideas, I complete the materialist paradigm and propose to conceive of human cognition in terms of a *new dualism*, the dualism between the body and environmental stimuli. Instead of the 'soul' the external influence is represented by the environmental stimuli. These processes yield the perpetual interactions between the material body and the immaterial expressions and interpretations of which all human cognition and culture are manifestations.

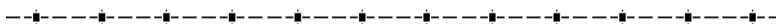
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Jon Hellevig



**A BIOLOGICAL PHILOSOPHY**

**VOLUME I :**

**THE CASE AGAINST NOAM CHOMSKY**

**VOLUME II :**

**MENTAL PROCESSING**



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## ANNOTATION

There is a continuity of expressions and interpretations from primordial biological phenomena to phenomena of social life. Human cognition represents reflections of biological mental processing of environmental stimuli that cumulate in feelings. In speech and by other means of verbal behavior humans express an interpretation of feelings. The exchange of expressions and interpretations in human communication cumulates to social practices, human cultures, of which the social practice of verbal behavior (speaking), or language practices, is the supreme manifestation. The continuum of expressions and interpretations on an evolutionary scale and in the various acts of human life displays a gradually increasing level of cognitive appraisal based on mentally conceptualized experience as a function of increasingly complex and sophisticated mental processes. The ability to mentally process complex cognitive feelings corresponds with the ability to express these feelings in a more sophisticated fashion, speech and the corresponding cognitive abilities representing the evolutionary culmination of these processes. The continuum of expressions and interpretations remains connected by the biological ability to speak and the social practice of speaking (verbal behavior), i.e., language which feeds the body/brain with the external stimuli that it processes.

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## ABSTRACT

This biological philosophy depicts a unified theory of natural and social sciences showing the continuity between the biological and social phenomena of life, the latter representing reflections of the biological expressions of life. I argue that most fundamentally all phenomena of life are functions of the organic activity of an organism relating itself to its environment, which means that an organism is constantly interpreting the stimuli that it has become genetically endowed to detect. The stimuli are interpreted in neural processes, which on a higher evolutionary scale may be called mental processes. This mental interpretation yields feelings which represent a mental, cognitive, dimension of the organic homeostatic system. In higher level mental processes feelings become conceptualized cognitive feelings which on the level of the human organism are expressed by a range of bodily expressions and ultimately by speech, which thus represents interpretation of feelings.

Both biological and social phenomena are reflections of expressions and interpretations. The continuous repetitive and imitative interactions between human cognitive expressions and interpretations amount to social practices, to all what we understand as human culture, and the material achievements of human culture. At the social level expressions stand for immaterial ideas which the human enacts by material bodily expressions, of which speech represents the most sophisticated means. The expressions themselves remain immaterial reflections of the mental processes.

For a proper understanding of all social phenomena, we need to recognize that speech corresponds to a concrete biological activity whereas language represents the social practice of speaking. Language (words, their perceived parts and combinations) does not correspond to anything physical or biological, and merely represents perceptual abstractions we form based on our experience of verbal behavior. Language and words do not demonstrate mass and energy which would be a necessary precondition for the postulation that they are material, that they exist (that they *are*). From this also follows that (the non-existing) words cannot possibly mean anything and that instead *people mean* by the words they pronounce.

In present linguistic theory, the necessity to distinguish between speech (the ability to speak) and language (the social practices of speaking) has not been recognized with great detriment to the science. In the misconceived practices of contemporary linguistics scholars also treat language and words as if they would be some kind of existing entities, the material properties of which the linguist studies. As this fallacious approach to linguistics is most prominently propagated by Chomsky, I have chosen to illustrate my paradigm of expressions and interpretations in contrast to Chomsky's theories. In addition to the aforementioned thingly fallacy, Chomsky also labors under a series of gross misconceptions as to the biology of "language." He should understand that not language is biological but speech, and then he should not any more conceive of the social practices of language being innate features of the human body/brain. – The ability to speak has evolved, whereas language and all other social phenomena are not subject to evolution.

To properly grasp these ideas, we need to drop the present conceptual method of science, and the related misconceived "scientific method," in favor of a descriptive process theory, by which we strive to depict the processes and the phenomena they give rise to instead, as it is

presently done, of trying to match the received academic concepts to the underlying processes. Through this insight we understand, e.g., that ‘mind’ should not be treated as an existing entity and rather be seen as a manifestation of the biological processes of a body interpreting environmental stimuli (most prominently the stimuli in form of verbal symbols). By clearing the science from the conceptual debris, I complete the materialist paradigm and propose to conceive of human cognition in terms of a *new dualism*, the dualism between the body and environmental stimuli. This, whereas earlier materialistic explanations have ignored the necessity to include in the paradigm the external stimuli being mentally processed. Instead of the ‘soul’ the external influence is represented by the environmental stimuli. These mental processes yield the perpetual interactions between the material body and the immaterial expressions and interpretations of which all human cognition and culture are manifestations.



# INTRODUCTION

*All philosophy is a critique of language* (Wittgenstein, *Tractatus* 4.0031).

## Expressions and Interpretations – Interpretation of Feelings

In this book I present a *biological philosophy*. This biological philosophy represents the first true and complete unified theory of natural and social sciences showing the continuity between the biological and social phenomena of life, the latter representing reflections of the biological expressions of life. The bridge which links the social with the natural, biological, is formed by human *feelings*. Feelings are results of neural (mental) processing of environmental stimuli in connection with the organic system of homeostasis. The aspects of *cognitive feelings* which we call *thoughts* come about by merging the learned concepts from social practices (language practices) with biological feelings. Thoughts, embedded in less consciously developed cognitive feelings, are then expressed in form of speech and by other volitional and non-volitional symbolic means of bodily expression. The feelings expressed by one individual are in turn cognitively (organically) interpreted by other people, the corresponding neural processes affecting the body and its behavior both consciously and unconsciously. There is thus a continuous cycle between the feelings expressed by one and all individuals and the expressions pertaining to an interpretation of feelings of others. I express this idea by the paradigm of *expressions and interpretations*. The continuous interaction between human cognitive expressions and interpretations amounts to *social practices*, to all what we may refer to as the social dimension of life. Depending on our points of view, we perceive various fields of social practices which, however, are always merely aspects of the general exchange of expressions and interpretations, aspects of a non-divisible social dimension of life. – Thus it is this interaction between expressions and interpretations of feelings that has created our social practices, all what we understand as human culture, and the material achievements of human culture.

## The Ability to Speak vs. Language

The most important means for expression of feelings is speech, this is why I define speech as *interpretation of feelings*, although I need to point out that all symbolic means of expression (such as bodily expression, writing, forms of art, architecture) are forms of interpretation of feelings. I shall further in this book explain why I very much deliberately say ‘interpretation of feelings’ instead of ‘translation of thoughts.’ In this paradigm it becomes crucial to understand the true essence of *speech* and especially the distinction between *speech* and *language*. The *ability to speak* and speech acts are biological, material, phenomena, whereas language is a social practice, of which we form perceptions in abstraction. Up to this day this has not been understood in linguistics; and this has led to great confusion in the science when both the biological ability (speech) and the perceptual abstractions (language), which are formed based on the results of exercising this biological ability, are discussed as if they were one and the same. Most importantly we need to understand that speech corresponds to real *physical acts of behavior* which are enabled by the *biological ability to speak*. Speech and writing represent forms of *verbal behavior*. *Language*, however, does not correspond to anything physical or biological, and merely represents perceptual abstractions we form based on our experience of verbal behavior. I argue that this distinction has never been properly made, not even by Saussure who as a lonely thinker had an idea of the necessity to do it. (I will discuss Saussure’s conception of the distinction in chapters *Speech and Language* and mainly in *Notes on the Philosophy of Language*). - The confusion and the problem that follows from it are well illustrated by a reference to Roy Harris. In my view Harris’s linguistic philosophy clearly represents the better of the contemporary traditions; therefore I turn to Harris to show how the confusion persists even on the level where these issues are best understood. Harris acknowledges that linguists face a problem with replying to the question: ‘What is language?’ (1998: 15). This problem is, according to Harris, due to the reason that “language involves at least three activities”; these he lists as: (i) “neural activity in the human brain,” (ii) “muscular activity of the body,” and (iii) “social activity.” Harris then tells that these three activities are variously interrelated in different definitions of language. He stresses that whether one defines language as an activity or an ability (faculty) the problem remains. I shall note that, I have not discovered

how Harris himself actually chose to define language, however, in this connection it is clear that Harris did not realize that the way out of the dilemma is to identify, on the one hand, speech as pertaining to the biological ability to speak and, on the other hand, language as the abstract perceptions we make of the social practice of speaking (social practice of verbal behavior; language practices). The activities that he identified as pertaining to the question are mutually contradictory and confusing when they are all taken to refer to ‘language’ – or, correspondingly, when they are all taken to refer to ‘speech’ – but when we settle for referring by the first two, (i) and (ii), to ‘speech’ (the ability to speak and verbal behavior) and by the third, (iii), to ‘language’ (the social practice), then the problem disappears. – With exercising the biological ability to speak we gain skills in the social language practices similarly like when we exercise the ability to run and kick a ball we gain experience in the social practice of football. – In the course of the work on this present book, I have noted that there seems to be in modern science in general a very serious problem of differentiating between what is a biological ability and what is a socially acquired skill which has been enabled by the ability. This particular fallacy amounts to one of the most fundamental fallacies on which Chomsky’s erroneous theories are based. Thus, for example, Neil Smith says in the Foreword to Chomsky’s *New Horizons in the Study of Language and Mind* (2007a: x): “Chomsky has long been famous (or notorious)” for claiming that “a substantial part of our knowledge of language is genetically determined, or innate. That something linguistic is innate is self evident from the fact that babies do – but cats, spiders and rocks do not – acquire language.” – Naturally “something is innate,” but what is innate and genetically determined is not “knowledge of language,” but the ability by which we acquire knowledge, or more properly by which we gain experience and skills of language practices, or: *interpret* the verbal behavior of others and express our interpretations of feelings. (Detailed discussions on this issue to follow further in the book).

## A Study of Expressions and Interpretations

Acts of speech, verbal behavior, can be studied as objects of a natural science as the behavior corresponds to real organic processes. Language, however, cannot be studied as a natural science; language and all the hypothetical elements of language are mere perceptual abstractions and do not correspond to anything material; language and its elements

lack mass and energy and can therefore not be studied as real objects. Language practices can only be described, interpreted in words. - I propose to include linguistics into a broader *study of expressions and interpretations* with a clear differentiation between (i) the biological abilities to express and interpret, and (ii) the social practices which constitute human language. Further this entails that both in relation to the social sphere and the biological we have to study, not language, but expressions, that is, study the biology of how expressions are organically produced and the social practices of expression. By thus calling for a study of *expressions and interpretations* instead of a study of the more narrow fields of *speech and language* another crucial implication follows. This is the necessity to admit into the realm of the study the whole act of bodily expressions and not only the alphabetical symbols by which we in abstraction depict the perceptions we form merely on the sound-patterns in exclusion of all the other aspects of the speech act.

## No Languages, Only Language Practices

I stressed above that we need to recognize that speech corresponds to real *physical acts of behavior* which are rooted in the *biological ability to speak*. *Language*, however, does not correspond to anything physical or biological, and merely represents perceptual abstractions humans form based on their experience of verbal behavior. – Thus there are no languages. There is no language, there are no languages, there are no words, there is no grammar, nor is there any syntax, in the sense that there are physical objects with mass and energy. What are thought of as languages are fundamentally *language practices*, that is, the more or less uniform styles of verbal behavior of people that communicate in close proximity with each other by imitating each other's verbal behavior. By the concept 'language' we should thus refer to various language practices such as, for example, 'English,' French,' 'Finnish,' and 'Russian.' We may speak of language practices of any community that we chose to study, and present the language practices of people in a given village, a given suburb, of a given age in a given place, of a given professions, social standing etc. When we speak about 'language' in the generic sense we refer to all language practices at once, without an effort to differentiate between the various language practices. We shall note that as language practices are only perceptual abstractions, then we can never identify what exactly a language practice consists of and how

we should delimit it. This is, of course, a blow to the people raised under the ideals of the misconceived “scientific method,” who dream of being able to identify specific “languages” and their perceived thingly elements with the precision of mathematics. We just have to live with the fact that language practices are amorphous social phenomena, which we may only describe to the best of our satisfaction. When we attempt to describe a particular language practice, then we may only identify the contours of the grand phenomena and the detailed aspects we perceive to the extent we need to identify and interpret them. But the real scientific insight is that nothing exact will never correspond to the perceptions one or another observer may form on these phenomena. All the descriptions and interpretations we make on language practices must remain subject to our stated assumptions for narrowing the field of reality.

## Meaning

In this book it is stressed that words do not mean anything in themselves, and that instead *people mean* (express meanings) with the words they use. Words, i.e. verbal symbols, and other linguistic particles, e.g. phonemes and morphemes (to which I refer as *verbal symbolic devices*) are, however, in language practices employed to a certain degree in a uniform fashion. In language practices verbal symbols (including verbal symbolic devices) are assigned meanings as they are employed and correspondingly people take them to mean something based on their observations of this use of verbal symbols. As one person uses these symbols in imitation of how other people have used them, then it is as if the verbal symbols would have meanings in themselves. We kind of copy the meanings we have experienced. And in this sense linguists are justified in *tentatively* identifying meanings in words. But this only insofar as the linguist understands that these verbal symbols in reality do not have any absolute or inherent meanings in themselves. The study will thus yield a description of what kind of meanings verbal symbols have been *assigned* in *various contexts*, or what kind of meanings they have been *taken to carry*.

We also have to consider the question of meanings at the level of grammar (or syntax), that is, on the level of combination of the various verbal symbols and symbolic devices. Chomsky and like-minded linguists have made a pseudo-science out of the question whether grammars have meanings or whether they are meaningless. Whereas I under-

stand and respect the idea to try to identify meanings (in the sense that I explained it above) of verbal symbols and symbolic devices, I do, however, propose to reject the whole idea as misconceived in relation to grammar (syntax). This because, as I point out, grammar is (when correctly performed) merely a description of meaningful statements. Grammar as such cannot be said to be meaningful or meaningless, rather the whole question is meaningless. People mean by their statements in the contexts that the statements are produced and with the verbal symbols that the statements consist of. Certainly the arrangements and combinations of the symbols also serve to convey nuances of meanings, but these nuances may be expressed in infinite variances and can therefore not in any way be regarded as functions of the grammar (syntax). To note, that not to any lesser degree than those verbal symbols that can be depicted with the alphabet, meanings are also expressed by a lot of other aspects of speech and verbal behavior such as intonation, strength of voice and a host of other bodily expressions. Therefore if the study of grammar from point of view of meanings would make any sense, then it would have to include all these other aspects of speech and verbal behavior as well. And this would be an impossible task by the methods of precise science, instead these issues may only be alluded to and explained by examples.

In reality meanings are produced in the brain/body as functions of neural processes of interpreting verbal stimuli. This is why each word is always understood uniquely by each person in general, and by each person in any particular moment of life. Thus neural processing of the stimuli that originate in verbal symbols represents always a private, unique and everchanging phenomenon. This naturally means that a word does not, and cannot, represent an objective meaning, as the meaning is created (interpreted) in the body by each unique act of mental processing.

The conclusion that words do not mean anything but people mean by words should of all the ideas presented in this book become the one with the most general and immediate implications. This recognition should fundamentally change our attitude towards so-called facts and knowledge. With the belief in the hypothetical meanings of words should also go the belief in certainty, the idea that by words some inherent and infallible truths could possibly be revealed. This fallacious idea should be replaced by the recognition that words, utterances, phrases

etc. represent merely interpretations of the narrator's feelings – and nothing more certain than that.

## The Biological Paradigm of Expressions and Interpretations

I first realized that all social phenomena correspond to the paradigm of expressions and interpretation, but when I studied the biological conditions for speech it occurred to me that the same holds true for all biological phenomena as well. I noticed that all biological phenomena are also manifestations of organic expressions and interpretations. Thus I came to think of expressions and interpretations on a continuum which ranges from elementary physical movements to cognitive expressions and interpretations performed by a human being. Each organic act corresponds to an act of expression, the organism by its movements (reactions, external and internal) expresses its interpretation of a stimulus (set of stimuli); similarly, and in parallel to expressions, interpretations are also movements in reaction to stimuli. In higher evolutionary forms of life, such as in the human these movements of expression and interpretation cumulate to cognitive expressions and interpretations in the mental processes, which essentially consist of movements in form of neural reaction patterns.

Thus I first subsumed all the human social activities under the paradigm of *expressions and interpretations*, and later I noticed that the same paradigm fits for the biological, organic, world that produces the social. Then I recognized that I had in fact discovered the continuum which joins the biological world and the social world, natural sciences and social sciences, this is the *continuum of expressions and interpretations*. I came to understand that life is a constant process of *expressions and interpretations*. We humans, as all organisms, constantly interpret our environment, both the internal and the external. Homeostasis, the homeostatic system, represents such a complex biological system of interpretation (and naturally in the other, reverse, dimension it is a system of expressions). This is the life sustaining homeostatic system of a living body, i.e. the complex interrelations between the processes in the body that interact to maintain a relatively stable state of equilibrium, or a tendency toward such a state, in the whole body at large by the continuous adaptations of the constituent processes to external and internal stimuli from one organic action to another. On a higher level of cognition the homeostatic system is enhanced by cognitive interpretation that

occurs as mental processes which eventually lead to cognitive feelings and thoughts, and their expression in speech.

## The Organic Process Model

The expressions and interpretations paradigm, in turn, is connected with the *organic process model* which depicts how various phenomena correspond to organic processes, which occur in organic bodies (most fundamentally these bodies in themselves are bundles of processes), where stimuli are being processed, which stimuli result in process outputs (reactions, expressions, reflections). These ideas bring us to the most fundamental idea of life, as I see it; this is the idea that all expressions and interpretations, all cognition and all cognitive operations and behavior, and therefore also speech, represent functions of the processes which occur when an organism posits itself in relation to its environment, that is, interprets its environment in relation to itself. This interpretation is always at the end of the analysis about how environmental stimuli affect the body and its parts through their effects on the organic *homeostasis* of the body. I argue that there is no difference in principle between how cognitive feelings and other type of stimuli affect the homeostasis; cognitive feelings which cumulate into ideas (thoughts, opinions, etc) merely represent an extension of the system of homeostasis, and thus form an integrated part of the homeostasis. When a human organism processes stimuli it is de facto interpreting the environment or its position in the environment. We shall recognize that the starting point of a science of human behavior lies in understanding that all biological processes (of which the social is an extension in form of expressions resulting in social practices) are at the end of the analysis about the well-being of an organism in relation to its environment. An organism has thus developed evolutionary inasmuch it has been able to coordinate and adapt all its movements, organic processes, in relation to the environment. In this evolutionary process the neural system has developed to coordinate the other organic processes and organs in relation to each other, and in relation to the environment (i.e. the internal environment in relation to the external). The neural system has from the very beginning been about coordinating the somatic system (the rest of the body) and naturally it has continued to be so, only in a much more complex fashion. Each received environmental stimulus has an effect on one or another part of the body – this effect is recorded as the somat-

ic marker. This illustrates how the bodily (somatic) processing systems precede and interact with the mental processing system. Even the highest cognitive mental processes are at the end of the analysis about the body in relation to the environment, the difference (between cognitive and more simple neural operations) being only in the higher degree of complexity and multidimensionality of the processes.

## Homeostasis, the Gateway to Cognition, and Mental Processing

These considerations led me to conclude that understanding homeostasis is thus the gateway to understanding all human behavior and the connection between natural sciences and social sciences.

The connecting link between the purely physical organic movements and cognitive feelings that ultimately lead to conscious awareness of one's own thoughts is *mental processing*. The brain readouts that mental processing results in feed into the enhanced homeostatic system of feelings. In the fundamental unity of phenomena 'feelings' are always about the body in relation to the environment, therefore, 'feelings' are both caused by bodily processes and lead to bodily processes as expressions. In my interpretation, I would thus render the idea of somatic markers (Damasio) by telling that cognitive reactions are anchored in the system of correlating environmental conditions (stimuli) with their effect on the body (and its parts) and consequently the whole homeostasis, which develops feelings of higher and higher cognitive value, or complexity, up to conscious recollection of some reflections of them.

Both in an evolutionary sense and in respect to the life of any given organism, all organic and neural processes may be conceived of as processes of movement that are combined in more and more complex processes within the framework of the homeostatic system cumulating in the human higher-order process of cognitive consciousness. I conceive of these processes on a continuum which starts with physical movements, which combine into organic processes and neural processes (some of them characterized as mental processes), which further combine through the homeostasis to feelings, which give rise to cognitive feelings, which may develop to mental images and phenomena that correspond to conceptualization of abstractions, which latter two embedded in the underlying cognitive feelings may develop into thoughts (ideas) when the human in a state of cognitive consciousness applies his experience of language and other social practices to the cognitive feel-

ings. In accordance with this conception, I hold that all phenomena of cognition are results of such neural processes that can be characterized as mental processes yielding cognitive reflections.

The evolutionary value of cognitive consciousness lies in that the organism observes itself similarly as one observes others and in this way the environment is made to include the organism itself, and so more fully integrating the whole environment in the homeostatic system which bears on the well-being of the organism.

Reflecting on these ideas it seems to me that in neuroscience the research paradigm should be amended so as to define the activity as a study of cognition instead of a study of 'consciousness' – whereas 'consciousness' (on the different levels of awareness) represents aspects of cognition. Cognition, cognitive appraisals, happens continuously whereas *cognitive consciousness* (the being aware of being aware) comes and goes. An important, and perhaps decisive, feature of cognition is conceptualization. Thus the biological method of studying cognition and conceptualization should replace the conceptual method of studying 'consciousness.' – I refer to the evolution of these cognitive abilities by the concept 'mental evolution.' By this concept I mean the evolutionary development of the ability to process stimuli in ever increasing complex ways and the potential possibility to react, to express the necessary reactions in response to the processes.

## Mental Processes

Thus we should conceive of a continuum of organic movements, or organic processes, where the movements (processes, or reaction patterns of interpretation and expression) at one end of the continuum (upstream) could be called physical processes, and at the other end (downstream) we would have the complex and sophisticated movement patterns which I call mental processes. In between these ends there are movements, or processes, which we may chose to describe as more or less physical versus more or less mental, or we could say that they display both physical and mental process features. But nowhere on the continuum would we be able to draw a definite line of demarcation between various types of organic movements in an attempt to define what are to be regarded as mental processes versus simple physical movements. I refer to this continuum of mental processes as the *Lamarckian*

*continuum*. Thus ‘mental processes’ are those ever more and more complex and sophisticated, reentrant and high-speed neural processes.

## **Materiality of Processes, Immateriality of Process Reflections**

In many sections of this book, I address the ideas of materiality vs. immateriality; this I have also done in regards to mental processes. I stress that mental processes are material, but the outcomes of the processes, our cognitive ideas, are not material and rather represent reflections of the material processes. Somewhat simplifying I suggest comparing physical and mental with a picture and a film. To grasp this we should remember that a film merely represents a series of pictures projected in rapid succession showing the objects in successive positions slightly changed so as to produce the optical effect of a continuous film in which the objects move. When the film is run quickly through a projector the reflections of it appear to us as something living as opposed to the individual pictures which are still. The film has only one dimension at a time, the fast projection of the series of pictures, but the mental processes are multidimensional and combine at any given time the effects of a variety of simultaneous processes which are in constant relations of feed forward and feedback, reentry, remote signaling, etc. In view of these considerations, I am not introducing the film metaphor as a scientific analog to what ‘mental’ should be taken to be, but rather as an aid to put us on right track on how to conceive of these issues. –I establish cognitive reflections (including thoughts) as immaterial; I also stress the immateriality from another point of view namely, from the point of view of the behavior that cognitive reflections give rise to. All human behavior cumulate in social practices; these social practices, or the very behavior as it is observed, serve as stimuli for our cognition. These stimuli are also immaterial, this whereas the behavior as such is material, but the behavior reflects expressions of cognitive feelings (including ideas) only by way of symbolizing them; therefore we do not observe (and cannot observe) the very ideas but only the symbolic means by which they are expressed. Already from this point of view the verbal behavior we as observers detect is immaterial inasmuch as it stands for the immaterial cognitive reflections. Yet another consideration adds to the reasons why we should consider the social stimuli as immaterial, this is the fact that we do not take in the behavior as such, whereas we merely form perceptual abstractions of some (often superficial) aspects of the behavior. – Hereby I stress that we should not con-

fuse the immateriality of cognitive expressions of ideas with the material traces they may leave behind, such as the arrangements of alphabetic symbols depicted in ink on paper, or buildings and machines and other artifacts, as well as pieces of art.

## Words, Immaterial Perceptual Abstractions

The above considerations remind us that language, words and all the other hypothetical elements of language (morphemes, grammar, syntax, etc) are also nothing but perceptual abstractions – they do not exist; they are no things; they are no material entities. In this book, I point out – for some peculiar reason it seems that nobody has done that before me – that only things can exist, and what are things, they are substances that we must be able to identify in terms of mass and energy. We are taught already in basic physics that matter is to be defined as any kind of mass-energy that moves with velocities less than the velocity of light (whereas radiant energy moves at the velocity of light; Pauling, General Chemistry, 2003: 1-3). This is also expressed by Einstein's famous equation  $E = mc^2$  ( $E$  standing for energy,  $m$  for mass and  $c$  the velocity of light). – It is about time that we recognize the principle of relativity also in social sciences. Language, words, and all the hypothetical linguistic particles do not manifest mass and energy and therefore they do not exist. And as they do not exist, then they cannot possibly display any kind of characteristic features either, nor may they be analyzed in any fashion without reference to contexts where they have been expressed. And therefore we have to stop doing social sciences on the analogy of natural sciences. Written texts and the abstract perceptions we form of speech expressions merely represent traces of interpretation of feelings that occur as momentary reflections in the mental processes of human beings.

In reference to the physical definitions of matter, I want to raise a hypothesis on how the immateriality of cognitive reflections could be explained. I remind that thoughts represent reflections of mental processes – or more correctly thoughts represent merely fleeting reflections of a potentially infinite variance of mental processes. Bearing this in mind, I would like to think that a physicist could in principle explain these cognitive reflections in terms of mass and energy. Most probably the physical explanation would point to such a gradual loss of energy on the border of the mental process - in relation to the particular infinitely

small sub-process presently reflected in consciousness - that the resulting cognitive reflection could be considered immaterial.

## Materialism Reinterpreted – New Dualism

With these ideas, I complete the materialist paradigm (materialism). I have now shown how all ideas are produced by a material, organic, biological body, but I have also demonstrated how the ideas are through quite material processes given immaterial reflections. – In this connection, I want to refer to the ideas of *new dualism*. Briefly, I hereby refer to the fact that while we shall conceive of all processes of cognition as material, we shall anyway bear in mind that they are the results of processing of immaterial stimuli stemming from social practices. Thus there is a dualism between the body and the environmental stimuli which it processes. If we understand that social expressions do not exist even when we may experience them through the media of human behavior and the ability to remember and imitate (sometimes aided by material traces that behavior leads behind), then we may grasp how immaterial social practices affect cognition in form of immaterial stimuli. This is what led me to postulate the paradigm of *new dualism* – the dualism between the body and the external stimuli being processed by it. According to this idea the essence of neural (mental) processes is to process external stimuli that have been detected (received) by the sensory organs (sensory receptors). These processes correspond to organic interpretations. Processes of organic interpretation further lead to bodily expressions which are reactions to these interpretations (among such expression, gestures and speech). At some point the joint outcome of the various processes simultaneously occurring are brought up to a cognitive level, where higher-order mental processes occur both unconsciously and consciously as reflections of the lower level processes. These higher order processes are what correspond to what we may call cognitive behavior or the kind of activity we refer to as pertaining to the intellect or intelligence. – The factors external to the body in mental processes are thus the stimuli that are being processed by the neural system, and they are no metaphysical ‘soul’ or ‘mind.’ This is why I propose to think of the processes of the brain/body interpreting stimuli in terms of the dualism between body and stimuli. To make this idea manifest and to highlight these issues against the misconceived classical dualism, I refer to it as the new dualism and alternately as natural dualism. We therefore may now recognize how at the end of the analysis the

connection between the natural biological world and that of the social is not a mysterious one but that of the relation with body and stimuli.

In fact, even organic life as such (keeping with the paradigm of expressions and interpretations) is a function of a dualism between body and stimuli. It was Lamarck who first identified this as the fundamental condition of life. This helped me to recognize that social life is a function of the capacity of the human animal to cognitively interpret and express his feelings, and – most importantly – to imitate the expressions of others. Language and all other social practices are functions of this imitation. Language is the living memory of all the expressions which people have made. Language, all social practices, all what humans have ever cognitively performed do not exist, only memories of them exist insofar as one human being remembers these practices.

## The Fallacious Conceptual Method

I argue that in order to fundamentally understand the issues at stake in this book we need to recognize the fallacies of the present *conceptual method* of making science and the accompanying misconceived model of the so-called “scientific method.” By the conceptual method, I mean the reigning tendency of scientists to approach their subject matters and research findings with their inherited rigid conceptual frameworks. Scientists take the concepts for real and what ensues is an attempt to match the, in fact, real physical and biological processes to the received concepts; this instead of doing what they should: match the concepts to the biological processes. By a study of nature and life we can never hope to find any biological correlates to concepts, by concepts we merely attempt to express our interpretations of the biological processes. Thus, for example, we cannot try to identify what kind of processes correlate with the concepts ‘memory,’ ‘imitation,’ ‘learning,’ ‘imagination,’ ‘will,’ ‘appraisal,’ ‘belief,’ etc. By these various psychological concepts we may merely describe perceived aspects of our cognitive behavior which are based on unified and interdependent biological processes, which I propose to denominate as ‘feelings.’

Fundamentally, the underlying neural processes and phenomena to which we refer by these concepts are the same; we merely form various perceptions of the observed processes and behavior; and all kinds of considerations affect how these perceptions come about (most importantly the way we have learned through participating in social practices

to perceive various phenomena). These kinds of concepts therefore mainly serve as aids for a psychological analysis of *human* behavior. Naturally they are also needed in neuroscience, but hereby the scientists should take care to ensure that he merely employs them as descriptive aids whereby he tries to illustrate his interpretations; but he shall not make a neuroscientific analysis of the concepts, the way, for example, Eric Kandel has treated the concept ‘memory.’ To remedy the dilemma caused by the *conceptual method* and in order to put neuroscience on right track we should recognize the process-like character of cognition and all that can be subsumed under cognitive behavior (feelings, perceptions, thoughts, volition, intentions, etc). I therefore, in accordance with my conception of the *organic process model*, propose to view all phenomena of life – both natural and social life – as organic processes and reflections of such processes. In chapters *Memory* and *Kandel’s Search for the Neural Correlates of the Concept ‘Memory,’* I will illustrate this fallacy in regards to the concept ‘memory.’ Here I will limit myself to a few remarks in this respect.

## Memory

The ideas that pertain to the concept ‘memory’ serve to illustrate how scientists remain in ignorance of the fundamental unity and interdependency of organic phenomena as well as to illustrate the misconceived conceptual method. This as the scientists in memory theory proceed from the assumption that there must be some biological processes that are particular to this concept. Instead of understanding that ‘memory’ is the perception we form of certain human cognitive activities, they postulate that one could already in primordial forms of life detect those neural processes that are ‘memory.’ I consider that ‘memory’ properly speaking is about a *human being* having the (seeming) feeling of cognitive consciousness about past experiences in a way that can be rendered by abstract expressions (for example in speech by language; or by other forms of human expression). I also consider that other primates and other animals which have the ability to be cognitively conscious of mental images can be said to possess ‘memory’ (i.e. the ability to remember), but their ‘memory’ is limited to the mental images, whereas human ‘memory’ combines both mental images and verbal conceptual manipulation of the images. In order for this to happen one has to be able to conceptualize experience, which will enable the organism to relate new experience to past experience and so to say reawaken those

neural reaction patterns that correlate the new experience with the past experiences. ‘Memories’ are the cognitive results of processing present environmental stimuli in the background of all our life experiences, as encoded in our neural processing patterns. ‘Memories’ are the impressions that mental processes lead to when the processes “recognize” a past experience in the continuous process of interpreting the present. ‘Memories’ are not a collection of snapshots, mental clips or tokens that one has collected and which would exist stored in the recesses of the brain, rather language and other social practices as stimuli in mental processes give rise to what we perceive as ‘memories’ as a result of interpreting the present.

### **Misconceptions about ‘Mind’ and ‘Consciousness’**

The concepts ‘mind’ and ‘consciousness’ represent the special fallacy of taking the results of the mental processes to stand for some entities that themselves produce the cognitive reflections, as I will show below. But I argue that we instead should see ‘mind’ as a merger of the social dimension of life with that of the biological apparatus, as a result of the biological apparatus processing social stimuli; ‘consciousness,’ in turn, should simply be taken to signify the awareness of sensations and feelings, of which self-reflexive awareness of cognitive feelings represents the most developed and sophisticated stage.

I maintain that it is not correct to refer to ‘mind’ as if it would be a physical entity, and instead I point out that the mental operations of interpreting the environment by the physical entity ‘brain’ is what causes the various cognitive reflections to which we refer to as ‘mind.’ Instead of treating the concept ‘mind’ as a physical entity we should then conceive of ‘mind’ as a reference to the phenomena which result from the interaction of environmental stimuli (most importantly stimuli derived from social practices, past and present expressions) with the biological neural apparatus. ‘Mind’ represents the results of neural (mental) processing of environmental stimuli which we detect in form of social practices, that is, reflections of human behavior (the stimuli from social practices being embedded in the stimuli stemming from other parts of the nature and the physical environment). Further ‘mind’ represents the reflections, process outcome, that the mental processing of stimuli results in. I will further on in this book account for the various ways we perceive the abstractions that we form of these underlying phenomena

and stress that whatever abstractions we may perceive in this regards, we should note that at the end of the analysis 'mind' is a social and linguistic construction, in a way a social fiction, and by no means an object for neuroscience.

Often philosophers (or philosophizing scientists) use the concept 'mental' synonymously with 'mind,' but, as I showed above, we should rather by 'mental' refer to the neural processes that lead to cognition. Thus 'mental' is not the same as the 'mind' or anything else in that metaphysical vein, it is simply a word denoting enormously complex physical, neural processes, which occur in infinitely complex, high-speed, reentrant circuits with feedforward and feedback loops.

Similarly as phenomena connected with cognitive reflections have been reified, and even personified, in the concept 'mind,' the same and adjacent phenomena have been reified and personified in the concept 'consciousness.' Through a series of peculiar linguistic processes that have bewitched thinking of philosophers the concept 'consciousness' has become to denote a mystical entity that brings about human cognition; basically 'consciousness' has in the 20<sup>th</sup> century literature served as a more academically hygienic successor concept for the more ancient 'soul' and 'mind.' I have in this book attempted a demystification of the concept 'consciousness,' and to return it to its original meaning of *awareness* (which is the meaning in which, e.g., Descartes employed the concept). In the best sense of the present contemporary use the concept corresponds to what I want to call 'cognitive consciousness,' that is, being self-reflexively aware of cognitive feelings, or yet in other words: being aware of the reflections of mental processing of conceptual abstractions together with the awareness of being aware. But we should note that we may be aware of, that is, conscious of, a variety of sensations. We should think of all the various sensations and organic phenomena of which we may become conscious of on a continuum starting from physical sensations (bodily reactions), such as touch, pain, cold, warmth, light, thirst, hunger; and gradually as we proceed on the continuum we reach that kind of consciousness that corresponds to an awareness of cognitive feelings, concepts, thoughts etc., that is, all those processes that involve the processing of conceptual abstractions (or as some say, 'intellectual activities'). 'Consciousness' thus represents aspects of all these named organic and neural phenomena; 'consciousness' corresponds to the salient features of being aware of the underlying processes. There is no point on the continuum where the corresponding processes and phenomena would be to that degree differ-

ent in nature that they would merit the separate denomination of 'consciousness' as opposed to the other phenomena which we may identify on the continuum. Correspondingly 'feeling' and 'consciousness' are always intertwined, consciousness always being an aspect of 'feeling.' 'Consciousness' is the awareness of 'feelings', while 'feelings' are products of 'mental processes.' It is when 'feelings' concern the higher order mental processes, processing that leads to the evoking and forming of concepts and the emergence of cognition, that we reach a different stage of complex awareness that allows us to consider, to a certain degree, our own feelings and even manipulate them. But only this last stage is what our contemporary scientists admit to be covered by their sacred concept of 'consciousness.' I would rather refer to these kinds of processes of self-reflexive cognitive awareness by the term 'cognitive consciousness'; this concept represents the fleeting peak aspects of cognitive feelings that possibly may rise through the processes of cognitive recollection and ultimately be expressed (at least tentatively) in speech, and by other deliberate symbolic devices such as gestures, other bodily expressions, writing, objects of art, and symbolic expressions in artifacts. 'Cognitive consciousness' is a condition of 'thinking' but not 'thinking' itself, as will be explained below. The important feature of '*cognitive consciousness*' is that it is what enables us to interpret the processes of *cognitive feelings*, which in turn may lead to cognitive perceptions in the present, thinking, remembering etc. At any given time when we are *cognitively conscious* of one or another mental process of feeling, there occur in the body (unconsciously) other mental processes which create cognitive feelings. Any of the processes of feeling may eventually emerge into consciousness.

By accounting for consciousness in this way we recognize that there is no specific mystery of 'consciousness' in comparison with any other mental processes. We therefore realize that the research task now becomes strictly biological: that of trying to identify the complex reentrant mental processing circuits and the biochemistry involved in them, while keeping in mind that these processes are about processing environmental stimuli.

Mired in their admiration of the concept 'consciousness' it did not even occur to the 20<sup>th</sup> century neurophilosophers that there must be another side to the coin, that is, if there is 'consciousness' then there must also be 'unconsciousness.' Tellingly the latter term does not even form part of their vocabulary. This illustrates once more the perverted

role assigned to ‘consciousness,’ not as a juxtaposition to ‘unconsciousness’ but as a synonym to the hypothetical ‘mind.’ This does not amount to any small oversight, rather it played a hugely detrimental role in perverting the scientific understanding of mental processes and the role of ‘consciousness’ in them. When ‘consciousness’ was not juxtaposed with ‘unconsciousness’ – as it should have been – it became an independent stand-alone mystical entity. Thus the 20<sup>th</sup> century neurophilosophers did not conceive of conscious processes as emerging from the unconscious ones (naturally not even fully understanding that the question was precisely of mental processes). They fatally failed to recognize that ‘consciousness’ merely represented the highest stage of mental processes, the phenomena on the tip of the *Lamarckian continuum*, or the *evolutionary hermeneutical spiral*, forming part of a simultaneously occurring myriad of mental processes which run mostly unconsciously. When I return to the more detailed discussion of these issues further into the book, then I will point out that we should, however, not conceive of the processes as rigidly delimited to conscious and unconscious processes, rather we should conceive of them as being blurred in each other on a *web of consciousness*, which from moment to moment brings ever competing sensations and feelings up to the level of consciousness; but this only for fleeting moments and all the time distracted by the other processes that are constantly assailing the threshold of consciousness.

The considerations which I have rendered above in regards to the nature of ‘consciousness’ and ‘unconsciousness’ should alert us to the fact that we cannot validly postulate that mental processes are either conscious or unconscious. ‘Consciousness’ is not a question of a switch between the positions ‘on’ and ‘off,’ rather we experience subtle degrees of consciousness of various processes at the same time. Thus most mental processes go on unconsciously only to pop up as momentary sparks in consciousness. We should simply recognize that there are physico-mental process that we are consciously aware of (to some degrees), and then all the other neural (including mental) processes that we are not consciously aware of.

## Conceptualization

In my view the ideas that pertain to *conceptualization* brings us to a crucial junction in understanding cognition and all cognitive activities and behavior. According to the organic process model, that I present in

this book, all organic activity can be seen as functions of interpretation and expression on an evolutionary continuum ranging from simple physical movements to cognitive processes. Following the organic process model, I have stressed in several parts of this book that all functions of organic life is always about processes where an organism posits itself in relation to its environment. This corresponds to the organism interpreting the environment in relation to itself. The genetic endowment for mental processes in humans has evolved so that the human has gained the ability to encode cognitive experience of abstract phenomena in form of mental processing of abstractions (conceptualize experience). In any given situation the human forms new abstractions, which are related to formerly conceptualized experience in processes which form new conceptualized experience. The new conceptualized experience is then assigned its place in the general system of life experience (a “place” in form of the neural patterns forming our human life experience). For this to happen a state of cognitive consciousness seems to be a necessary condition. I presume that concepts are stamped in consciousness, meaning that it is precisely in the moments when the animal is consciously aware of its feelings that concepts are formed. In the relevant brain systems various cognitive perceptions are simultaneously processed and lead to conceptualization of new experience in the background of old by, as it were, creating ‘concepts’ by comparing new experience to past experience, and then assigning the new experience a proper relation in regards to past experience. I would consider that it is this very ‘assigning of the relative place’ what corresponds to conceptualization. I assume that each abstract conception corresponds to a neural reaction pattern where the synaptic strengths in the involved neural circuits correspond to the “encoding” of the concept in relation to other concepts in systems that can be thought of as brain maps. But this does not imply that a static map would have been created, rather the maps must be in constant flux continuously monitoring the flux of life of the organism in its environment, that is, each new moment of life through the new experience affects all the previous neural patterns. – These considerations are also important in regards to linguistics. The concepts that correspond to words must also develop in the above described fashion. Words are always related to a given life experience embedded in previous life experience. Words are processed neurally like all other stimuli, so that the linguistic abstraction that has been experienced (in speech and text) are neurally interpreted like all other cognitive stimuli;

they are in working memory assigned a place in relation to the overall life experience by way of relating the present verbal stimuli to the present spatial position of the organism in accordance with how past experience has been neurally encoded in reaction patterns. This is why each word is always understood uniquely by each person in general, and by each person in particular in every new moment of life. Thus neural processing of the stimuli that originate in words is always a private, unique and everchanging phenomenon. This naturally means that a word does not, and cannot, carry an objective meaning, as the meaning is created (interpreted) in the body by each unique act of mental processing.

## Thinking

Having dealt with the above phenomena, I would like to add a few considerations in respect to *thinking*. We should recognize that thinking only represents the conscious part of all the cognitive feelings that affect us at any given time. 'Thinking' is always a predominantly conscious process (although some aspects of thinking remain unconscious). 'Thinking' is the result of combining the concepts of language (social practices) to the underlying feelings. When we think we are conscious only of the feelings that have caught our attention, of the feelings we are aware of. And even so, only on a superficial level, for we can be vaguely conscious of a feeling even before we have been able to fully consciously conceptualize it. Thus for me thinking signifies such cognitive mental processes where concepts are applied, consciously and partly unconsciously, to cognitive feelings. To understand this we have to recognize how fleeting the borderline between the conscious and unconscious processes is: the unconscious and conscious processes are constantly blurred within each other. All kinds of consciousness, cognitive as well as non-cognitive, are continuously mixed with other processes of feeling - consciousness shifts by non-perceptible nuances from process to process leading to barely perceptible sparks in the web of consciousness. The first stage of thinking involves the emergence of mental images; these mental images may in themselves already involve conceptual abstractions, but on a higher stage of thinking neural processes that correspond to verbal concepts merge with the images and the other conceptual abstractions. Following this logic, I would then suggest that thinking, as all organic activity, also consists of various process stages. 'Thoughts' may be seen as immaterial reflections of bio-

logical processing of stimuli from social practices (including language), which through the phenomena of remembering are continuously re-enacted in the body and thus brought up to mental processing in thinking. According to this idea the organism reinterprets past experience anew and anew in infinite variances.

Eventually ‘thoughts’ may lead to expressions in speech. This is done by applying the learned concepts from the social practices of language to thoughts.

## **Emotions and Feelings**

I will round up the review of the phenomena pertaining to the major concepts of neurophilosophy with a few remarks in regards to what are considered as ‘emotions’ and the relation between ‘emotions’ and ‘feelings.’ In my conception ‘feelings’ correspond to the primary phenomena, whereas ‘emotions’ should be considered merely as socially influenced perceptions we form of complex behavior, which behavior in turn represents manifestations of the underlying feelings which are in a constant flux; what we call an ‘emotion’ does not represent a higher or lower form of organic processing on the Lamarckian continuum; an ‘emotion’ does not correspond to anything independent from the biological processes of sensation, homeostasis and feeling. An ‘emotion’ is the perception that we form on some conspicuous reaction patterns present in observed behavior while simultaneously ignoring the complexity of the underlying feelings. An ‘emotion’ is thus best to be conceived of as mental processes that give rise to conspicuous bodily reactions (expressions) connected with a socially determined linguistic name to stand for the simplified perceptions we form of the complexity of manifested behavior based on the underlying complex and fluctuating feelings.

## **From the Conceptual Method to a Study of Biological Processes**

The analysis of these conceptual fallacies show why we need a fundamental paradigm shift: we have to understand that instead of analyzing the concepts by which we try to illustrate our ideas we have to give priority to the study of the underlying biological processes, and try to match the concepts to the processes we observe and not the other way

around as it is presently done. And doing so we shall never lose sight of some fundamental scientific principles, which are: (i) the principles of evolution, by which we should understand that all living organisms are genetic successors of lower forms of life; (ii) the evolutionary principle also entails that a complex organism incorporates *both* processes that run the same way and yield the same expressions as they did in the primordial forms of life, *and* processes that are based on the former but due to the increased complexity yield other expressions; (iii) the principle of a unitary (holistic) character of all organic processes, which follows from the previous principle; according to this principle all organic and neural processes are unified so that they all bear on the homeostasis of the organism, and through the homeostasis affect “each other”; (iv) the previous considerations also mean that all the processes are interdependent as I have depicted it with idea of the hermeneutical evolutionary spiral.

These evolutionary principles should never be let out of sight when considering any organic or social phenomenon, because each one in the very finest of its aspects has its ultimate roots in the unity and interdependency of the body and the nervous processing system operating the body in relation to the environment. From this also follows the recognition that all organs and organic abilities (faculties) are somehow in a relation of unity and interdependency to each other. All organic features, the anatomy, and organic capabilities conspire to bring out new behavioral abilities produced by the biological machinery, the parts of which have originally been developed for other organic functions, for what would seem as simpler functions. In regards to human behavior we should then realize that all the various types of behavior we recognize, or the abilities (“faculties”) we perceive, only represent surface level perceptions of an infinite array of similar organic processes that lead to different outcomes – or rather perceived outcomes – in any given situation.

## Evolution of Speech

We need to recognize that speech (the ability to speak) has evolved, but language the social practice, cannot be said to have evolved. A social practice such as language does not evolve in the proper sense of the word; or, if we want to use the word ‘evolution’ also in regards to ‘language’ and other social practices, then we have to realize that we are using the same verbal symbol in two different senses. By evolution of bio-

logical organisms (biological evolution) we refer to changes in the genetic endowment of living organisms corresponding to gene expressions, which in all offspring results in an anatomy, organs and organic process patterns, which in all essential aspects are predetermined by the genetic endowment. Whereas biological evolution signifies a change in the external and internal form of an organism, social evolution signifies merely perceived changes in human behavior.

This evolution of the ability to speak has been a gradual process of converging interdependent and intertwined organic processes to which I refer with the principle of unity and interdependency of organic processes and which I have depicted by the hermeneutical evolutionary spiral. There has been no one point in the history of life or mankind or apehood, where we could proclaim that the ability to speak had emerged and the social practice of language could be said to have been formed. Gradually and imperceptibly over millions of years some apelike animals have evolved and become bipedal by which change the anatomy of their vocal tracts have changed so that they could master the skill of consciously articulating refined sounds. This evolution of the anatomy has proceed in pace with a change in habits so that in a hermeneutical spiral change in anatomy, biology, and the neural system have corresponded with changes in social habits. In these processes the ability to conceptualize experience has evolved with the ability to make and interpret symbolic bodily expressions that correspond to the conceptualized experience. Speech and the ability to speak represent the culmination of these gradual genetic evolutionary processes.

## The Contrast with Chomsky

I have noted that my ideas on speech and language are in marked contrast to all the ideas that Noam Chomsky has through his career professed and raised to the pinnacle of linguistics with wide recognition in other fields of science. I realized that as Chomsky's ideas are so widely known, and still to a large extent accepted, then I could best illustrate my paradigm by pointing out the differences between it and Chomsky's theories. This is why Chomsky has received such a prominent role in this book, even to the extent that I call the first volume of *A Biological Philosophy* *The Case Against Noam Chomsky*. We shall remember that Chomsky himself rose to prominence with an article called *The Case Against B.F. Skinner* where he sketched the outlines of his fallacious

theories. I thought, it would be only natural that the theories should exit with the same measure. – In the critique of Chomsky, I am guided by the correct method of philosophy as determined by Wittgenstein, that is, "to say nothing except what can be said, i.e. propositions of natural science ... and then whenever someone else wanted to say something metaphysical, to demonstrate to him that he had failed to give a meaning to certain signs in his propositions" (*Tractatus* 6.53). – This is why all philosophy is a critique of language (*Tractatus* 4.0031).

## Lost and Found Philosophers

The greatest surprise that I experienced when doing the research for this book was that most of the ideas that I had an intuitive correct perception about (and which I subsequently became convinced of) had already been expressed by many a 19<sup>th</sup> century philosopher. I had been perplexed over the number of absurdities I encountered in our contemporary philosophy and neuroscience, and when I so clearly sensed that they were wrong, the bigger was my amazement that to a sufficient degree many of the correct ideas had already been expressed by philosophers a few hundred years ago. In this book I refer to many of them: Condillac, Bonnet, Lamarck, Romanes, Spencer, the more recent Bartlett, and last but not least, Lewes. Against the paradigm I present it becomes also necessary to take a fresh look at Descartes' ideas from the 17<sup>th</sup> century, to which ideas I hope to give a new lifeline. – It is a tragedy, and I would say a mystery, how the wealth of insight these men possessed and exhibited so totally escaped the 20<sup>th</sup> century scientific mind. The mystery is explained by all we know about the perversions brought about by the "scientific method," "behaviorism," "reductionism," and the "cognitive revolution." – But the tragedy remains. And along with the sense of tragedy, I feel personally sad for those people, many of whom devoted their life in search of the truth, even succeeding in revealing some bright and lasting insight, but only to be ignored, misunderstood, or even ridiculed. The most striking example of this, I experienced when I received by mail order the copy of Lewes's *Problems of Life and Mind*. The book was of original print of 1879 and had formerly been in the possession of Bedford College. It was clear that nobody had ever read this copy of the book for as I received it, more than a century after its printing, it still remained uncut. Naturally some scholars specializing in the history of ideas know about Lewes, but in none of the contemporary books that I researched for the present study was

there any reference to him. And this is a pity, for his *Problems of Life and Mind* must be considered as one of the best books on philosophy ever written. Especially I recommend to everybody the short introductory volume *Problems of Life and Mind. Third Series. Problem the First. The study of Psychology. Its object, scope, and method* (1879a). It is only by great efforts that I have kept myself from extending the volume of this book by any further quotes from Lewes's book, which remains so valid for demonstrating the problems of life and mind that we are still faced with in this 21<sup>st</sup> century.

*"The experiences of many become the guide of each; they do not all perish with the individual; much survives, takes form in opinion, precept, and law, in prejudice and superstition. The feelings of each are blended into a general consciousness, which in turn reacts upon the individual consciousness. And this mighty impersonality is at once the product and the factor of social evolution. It rests on the evolution of Language, as a means of symbolical expression rising out of the animal function of individual expression by the stimulus of collective needs"* (Lewes 1879a: 80).

*"The organism adjusts itself to the external medium; it creates, and is in turn modified by, the social medium, for Society is the product of human feelings, and its existence is pari passu developed with the feelings which in turn it modifies and enlarges at each stage. Obviously, then, our science must seek its data not only in Biology but in Sociology; not only in the animal functions of the organism, but in the faculties developed under social developments"* (Lewes 1879a: 71).

## A Biological Philosophy Volumes I – IV

The present book consists of four volumes of A Biological Philosophy of which volumes I and II are now printed together in one cover. The first volume is named *A Biological Philosophy, Volume I: The Case Against Noam Chomsky*; the second volume is called: *A Biological Philosophy, Volume II: Mental Processing*. It is my aim to write a third volume which would deal more in detail with the general evolutionary theory and juxtapose Lamarck's process theory with Darwin's thingly ideas that to a large extent are rooted in the anthropomorphic fallacy. I consider that my earlier book, *Expressions and Interpretations. Our*

*Perceptions in Competition* (Hellevig 2006) form the fourth volume of this series. These four volumes form a cycle of interrelated ideas, each volume addressing the biological philosophy from a particular point of view. The first volume is about language (language practices), which is the bridge between the biological and social. The second volume shows how the biological body in mental processes interprets environmental stimuli which processes create feelings, an interpretation of which is ultimately expressed in human speech. The third volume will serve to describe the evolutionary processes which have enabled the present form of human life. And the fourth volume discusses the essence of the social practices which essentially are manifestations of biological expressions and interpretations, and which serve as stimuli for the biological processes.



**A Biological Philosophy**

**Volume I:**

**The Case Against Noam Chomsky**



# 1 SPEECH AND LANGUAGE

*The limits of my language are the limits of my world* (Wittgenstein, Tractatus 5.6.1.)

## Main Principles of a Theory of Speech and Language

To begin this exposition of my conception of speech and language, I need to remind of the essential principles of a biological philosophy, which were briefly introduced in the *Introduction*. These principles bear directly and simultaneously on all the aspects of the theory of speech and language to be discussed here and in different chapters of this book.

For the linguist the most central principle is that of the need to distinguish between *speech* and *language*. *Speech* corresponds to the biological *ability to speak*, that is, the ability in imitation of the verbal behavior of other people to express oneself by means of articulating repeatable sound patterns to which the speaker assigns a symbolic meaning. From the point of view of the interlocutor *speech* corresponds to the ability to *interpret* the sound patterns expressed by others (hereby I markedly say ‘interpret’ instead of ‘understand’). By *speech* I also refer to the actual acts of expressing oneself in speech. *Speech*, then, refers to both the ability to speak and the actual exercising of this ability. Whether I refer to the ability or the actual exercising of this ability in this book will be clear from the context. The crucially important distinction which is to be marked at all times is that between *speech* (ability and exercising of ability) versus *language*. Speech occurs as part of more complex acts of expression. To these complex acts of expression I refer by the term verbal behavior. Verbal behavior comprises not only the articulation of sound patterns but all the bodily expressions that surround the effort (this idea is explained more in detail below). I use the concept ‘verbal behavior’ also to cover the practice of writing. (In writing a special problem occurs as the writer is forced to limit the presentable part of his behavior to only those expressions that he can depict by means of the symbols of writing. But we have to remember that even so the act of writing consists of more than the arrangement of the verbal symbols he can possibly depict).

*Language* in turn corresponds to the *social practices* of people creatively imitating the verbal behavior of each other. I refer to these social practices alternately as ‘social practices of verbal behavior,’ ‘social

practices of speaking,’ ‘social practices of language,’ and ‘language practices.’ By these alternative concepts I do not usually imply any special semantic divide, although the reference to ‘verbal behavior’ may serve to emphasize the connection between speech and all other behavior. I sometimes use the concept ‘verbal behavior’ in the sense of ‘expressive behavior,’ i.e., so as to include other bodily expressions in the concept as well.

Language, then, is not an entity (or a thing) of any sort, and rather corresponds to the perceptual abstractions that we form of the relevant social practices.

To illustrate the dichotomy between speech and language, I shall point out that Wittgenstein has said: “Language is a part of our organism and no less complicated than it” (Tractatus 4.022). But, unfortunately, this was not the proper analogy to be made, for it is speech that is “part of” our organism (i.e. stems from the organism) and language is part of our social practices.

From this exposition of the distinction between speech and language follows that language cannot be studied as an object of biology. In the human biology there is nothing that could possibly correspond to language. However, biologically we must study the ability to speak as part of the broader ability (and necessity) to express. Speech (the ability to speak) has evolved, but language cannot be said to have evolved (I have developed this conception in chapter *Evolution of Speech*). Language can be studied only as a social practice. And hereby one should not be confused by the fact that speech expressions (speech acts) always are manifestations of language practices. This like any act of imitation which is always a memory manifestation of previous acts of behavior. By any new speech act a person draws from language practices and contributes to language practices, but at no point does the speaker “possess language” within himself, he only possess the ability to participate in the practice. And by this participation, given the ability, he acquires skills in the language practice (he ‘learns a language’).

The connection between the biological ability to speak and the social practices is to be found in a more fundamental biological ability, namely the ability to imitate. It is by imitating the verbal behavior of other people that a child learns the language practices of its community, and it is by imitation that individuals at any stage of life learn and renew the language patterns by which they express themselves. Thus all the similarities in the way people speak, the expressions they make, and the

language practices they take part in, are to be explained by the simple fact that all these are results of imitations and of remembering.

This simple realization that all what we call 'language' is a function of imitation and memory makes redundant all the peculiar theoretical questions Chomsky has posed as the supposedly fundamental questions that linguists have to deal with. These will all be discussed more in detail in chapter *A Review of Chomsky's Verbal Behavior*, but here I will already bring up one of them, the most prominent of them: "What constitutes knowledge of language?" (Cook, Newson 2007: 11 - 13<sup>1</sup>; see also Chomsky 1986: 6). In the background of the paradigm developed in the present book, we can now answer the question once and for all. In my conception "knowledge of language" signifies the possession of necessary skills and experience to express oneself in a fashion that corresponds with the language practices of a given community so as to be able to sufficiently well illustrate what one means, that is, to adequately express an interpretation of one's feelings coupled with the ability to interpret the verbal behavior of one's interlocutors, which abilities are more fundamentally rooted in the abilities we may call 'remembering' and 'imitation.' Thus 'knowledge of language' is not anything we could possibly try to describe in abstraction of the actual verbal behavior in which the language skills are manifested. Correspondingly 'learning a language' signifies the acquisitions of the necessary skills through experiencing actual verbal behavior. A language – as it is theoretically defined in abstraction - can never be mastered; all one may master is one's own skills in verbal expression.– I noted that the abilities to participate in language practices are motivated by the fact that the skills to participate in language practices are entirely a function of 'remembering' and 'imitation'; this means that all what we can say are derived by the senses, that is, they are derived as neural reactions to environmental stimuli. Hereby 'imitation' is merely a concept by which we call these neural reactions when considering them from this particular point of view; from another point of view the same neural reactions would be called 'memory' or 'remembering' (this also means that I argue that remembering is only one aspect of imitation, and vice versa). The stimuli to which I referred are the speech expressions and other features of verbal behavior (and other aspects of social practices) which we organically detect. - This is, of course, in marked contrast to Chomsky who insists that "knowledge of language" is not derived by the senses but is, as Chomsky says, "fixed in advance as a disposition of the mind" (Botha 1991: 42; in reference to Chomsky in 1965: 51).

The conception ‘imitation’ and its significance to speech has been discussed most in detail in chapter *Evolution of Speech*, where reference is also made to the research of Rizzolatti et al. on the so-called ‘mirror neuron’ system. Remembering/memory is most profoundly discussed in chapter *Memory*.

There are *no languages*, but we may conditionally say that there are *language practices*, but hereby we may, of course, by way of abbreviation speak of ‘languages’ if by that we, indeed, mean ‘language practices.’ For some reason people experience immense difficulties in trying to comprehend the idea of there not being any languages; for most people the existence of a language seems as the most natural *thing* in the world. In fact, this again, is a case of bewitchment of thinking by our language practices: people consider themselves possessing irrefutable evidence of the existence of languages by the mere fact that they have been raised to think of their proper language practices as a thingly entity. The nominal name by which we refer to language practices, e.g. to those covered by the name ‘English,’ in itself creates and solidifies the idea that a language is a thing which we use and share in common. This is a purely linguistic fallacy which should be easy to remedy simply by introducing conceptual clarity by the way of explaining, as I am doing it, that ‘language’ is shorthand for ‘language practices.’ We do not ‘speak English,’ but we take part of the language practices we call ‘English’; we do not ‘use English,’ rather we express ourselves in imitation (to the best of our abilities) of the English language practices: ‘English speakers’ participate in a common social practice called ‘English.’ We may well refer to the participation in this social practice by the colloquial “speaking English,” but scientifically we must realize what is properly understood by it. Consider that, on the one hand, the Queen of England and her peers speak ‘English,’ and on the other hand, so do the Prime Minister of India and his colleagues, but they all speak differently, don’t they? The difference is not caused by them “using different languages,” rather it is explained by the fact that they participate in slightly different language practices. The ability to speak is innate in humans whereas the language practices (the so-called ‘languages’) are in no way innate, neither are none of the speech expressions that cumulate to language practices innate. Speech expressions, all our verbal utterances are exclusively based on the models derived by way of imitating social practices. – And, to note, the very language practices are in constant flux.

We may compare speech and language with the ability to walk and the steps we take. Walking like speech represents a biological ability but how we use this ability to walk is in no way determined by the biological ability, that is, the fact that we can walk does in no way affect the choice of which roads we would walk down. The case with speech is exactly the same: we are endowed with the ability to speak, to take part of the relevant social practices, but it does not in any way determine which of the language practices we engage in and how we engage in them (how we express our feelings).

The above considerations situate speech and language within the broader paradigm of *expressions and interpretations* by which I explain the idea that all phenomena of life are manifestation of organic expressions and interpretations. All expressions and interpretations are best conceived of on a continuum which ranges from elementary physical movements to cognitive expressions and interpretations performed by a human being. Speech and interpretation of verbal behavior are manifestations of the interactions of expressions and interpretations in a community. Most fundamentally speech expressions correspond to *interpretation of feelings*. (I will below discuss my reasons for postulating that speech is *interpretation* of feelings instead of 'translation of thoughts').

The expressions and interpretations paradigm, in turn, is connected with the *organic process model* which depicts how various phenomena correspond to organic processes, which occur in organic bodies (most fundamentally these bodies are processes in themselves), where stimuli is being processed, which stimuli result in process outputs (reactions, expressions, reflections). These ideas brings us to the most fundamental idea of life, as I see it, this is the idea that all expressions and interpretations, all cognition and all cognitive operations and behavior, and therefore also speech, represent functions of the processes which occur when an organism posits itself in relation to its environment. Interpretation of feelings fundamentally corresponds to the human organism performing an interpretation of itself in relation to the environment, which processes result in bodily expressions, among them speech by which we give expression to these interpretations. The social practices of language supply stimuli for these processes of interpretation as well as the models for the very expressions. And hereby language affects the human both beneficially and detrimentally. Beneficially insofar as without such social practices nothing of what we know as society and culture would exist, but detrimentally inasmuch as the stimuli that come in

form of language practices to a very large extent serve to mislead the human organism.

From all this follows that *language, words, and utterances* are *not things* and *do not exist*, but we can remember them as perceptions we have formed of past verbal behavior (our own and other people's behavior), and therefore we can perform similar expressions. I have explained (chapter *Mental Processing*) that the fact that we can as a function of the organic processes of remembering emit anew similar expression gives words (expressions of social practices) a seeming quasi-existence. But even in this case, 'words' in themselves do not exist, it is the *interpretations* and the *expressions* we undertake that correspond to material facts of the biology of the human organism (as these are reflections, or results, of mental processes). These *interpretations* and *expressions* correspond to what I call *speech*; the concept 'speech' thus has to be extended to cover (in the context of the science of linguistics) the *understanding of speech*. (I suggest that we in a scientific context would say 'interpretation of speech' instead of 'understanding speech/language').

The conclusion that *words do not mean anything* but *people mean by words* should of all the ideas presented in this book become the one with the most general and immediate implications. This because the recognition should fundamentally change our attitude towards so-called facts and knowledge. With the belief in the hypothetical meanings of words should also go the belief in *certainty*, the idea that by words some inherent and infallible truths could possibly be revealed. This fallacious idea should be replaced by the recognition that words, utterances, phrases etc. represent merely interpretations of the narrator's feelings – and nothing more certain than that.

When a person writes he expresses himself by using words in various combinations, he uses the words in an attempt to convey his ideas. It is *he* who *means*, and it is *his meaning* that words are called to *illustrate* (symbolize). If one wants to be understood by others, then one needs to use words in the way that one predicts that they would possibly be understood by others. In speech this happens mostly by force of habit while a writer takes pains to choose those combinations of words that best convey his ideas – the more so the better the writer. This inherent need to match the "use of words" to the anticipated reaction of those with whom one communicates is what creates the semblance of words having a meaning.<sup>2</sup> As we very often use words similarly as oth-

ers, the perception that a word as such would have an independent meaning is reinforced – and hereby nobody seems to be paying any attention to the counter-evidence that same words are constantly used for conveying various kinds of ideas.

Above I deliberately referred to *writing* instead of *speech* in order to avoid the discussion of the complex matter of live expression. It has been a grand fallacy of linguistics through history to abstract the perceptions we form on words from the totality of the human expression that unfolds simultaneously with uttering words, that is, the entire speech act. All the other bodily expressions (reactions) have been ignored and rarely has attention been paid to the great variety of other bodily expressions that are simultaneously employed when a word is uttered (this will be discussed more in detail below). But in reality all these ignored features of the act of verbal behavior serve the function of conveying the meaning at least as much as words would do it. And it is also by these features that the meaning is different from instance to instance even if the words, and the seeming context, would be the same. By way of ignoring the complexity of the total range of bodily expressions in connection with verbal behavior linguistic theories have reduced ‘language’ to amount to the standardized symbols by which we depict the most general and common features of expression with the signs of the alphabet.

This realization that words *per se* do not have any meaning should lead to the most serious conclusions in regards to science in general. We should now divest words, concepts, and written texts of the reverence they have traditionally been awarded with. Instead we should understand that the study – in any field of science – is a study of expressions and interpretations, indeed, the perceptions we form on those. I will discuss my conception of meaning more in detail at the end of this chapter.

From point of view of the science of linguistics the question of meanings becomes a little more complicated. The postulate that words (verbal symbols) and other “linguistic elements” (i.e. the perceptual abstractions that we perceive as forming the elements of speech and language, such as phonemes and morphemes; I will refer to these as verbal symbolic devices) lack meanings, of course, holds true for linguistics also, but one of the tasks in linguistics is to establish how people express meanings (note, that the question is of how *people express meanings* by use of words and *not what the words mean*). That is, in linguistics we study how verbal symbols and the various verbal sym-

bolic devices (further I will refer to both ideas by ‘verbal symbols’) are used for conveying meanings. And as one person uses these symbols in imitation of how other people have used them, then it is as if the verbal symbols would have meanings in themselves. We kind of copy the meanings we have experienced. And in this sense linguists are justified in *tentatively* identifying meanings in words. But this only insofar as the linguist understands that these verbal symbols in reality do not have any absolute or inherent meanings in themselves. The study will thus yield a description of what kind of meanings verbal symbols have been *assigned* in *various contexts*, or what kind of meanings they have been *taken to carry*. Here we should further note, that the study is a historic one, because in the future people will express the meanings in different ways and utilize various verbal symbols for new meanings. There is also another dimension to the question of meanings, this is the question of to what extent grammar has a meaning (i.e. the meaning of combinations of verbal symbols). This question will be discussed in section *Grammar, Syntax and Rules*; I will then follow up on both issues in section *Meaning*.

I have already in *Expressions and Interpretations* (2006) and *All is Art* (2007) announced that in my conception *language* is *interpretation of feelings*. But now I need to reformulate this statement by asserting that, in fact, it is *speech* that corresponds to *interpretation of feelings*. By making this distinction I stress the fundamental distinction between *speech* and *language*, which I accounted for above. *Speech* (*speaking*) is the human behavior when *expressions* are uttered by articulating sound-patterns in connection with other bodily expressions. *Language* is the *meta-perception* we form of what has been expressed in speech (spoken) as part of a given speech act or in general, and what possibly can be expressed. All these perception combine to the grand perception of ‘language’ as a name for the *social practice* of imitating each other’s and one’s own verbal behavior by way of attempting to reproduce and recombine expressions that one remembers, i.e., that one has experienced earlier (observed, heard, seen), in order to express one’s own feelings.

There is a biological and material correspondence to *speech* inasmuch as speech corresponds to actual biological processes of an organism and the behavior in which the processes result. We may observe *speech* taking place and we may analyze all kinds of organic and neural processes that occur in connection with *speech* being produced. But we

cannot observe *language*, and there is nothing material that could possibly correspond to *language*, apart from the verbal behavior (expressive behavior) from which we derive the perceptions of language. *Language* corresponds to the perceptions we have formed of all verbal behavior when that is considered in the abstract, detached from a particular instance of verbal behavior. Thus when we refer to *language* we are always in the realm of abstractions, we are then referring to *perceptions* we have formed of complex reality. Hereby I hope that the reader would *not* confusingly *take the material traces of expressions* of speech and its derivative, writing, as *constituting language*. The trace, for example, a written text or a sound tape consists of material entities of mass and energy, but the expressions which served to symbolize the interpretation of the underlying ideas are immaterial. We may also express this by saying that speech is behavior, and behavior is always an act in time, when the act of behavior elapses, then the behavior is gone. All we can then do is to try to imitate that behavior to recreate it. Speech consists of an infinite range of such acts of imitation.

When we refer to such immaterial abstractions a dilemma immediately ensues. This is a dilemma that is rooted in our *thingly language* which predisposes us to express all our ideas on the analogy of things in the nature. Things, with mass and energy, can be said to exist, *to be*, and therefore we can tentatively describe their properties in words. But *abstractions do not exist*, they *are not*, therefore we cannot properly express the nature of an abstraction. All that abstractions correspond to are the perceptions we have formed of some underlying phenomena. Consequently it would already amount to *a contradiction in terms* to say what language *is* and instead we can only tentatively illustrate by means of a host of expressions what we mean the concept 'language' to stand for.

One of the most important points that I want to convey with my discussion of the essence of language is that language represents a perception that a person has formed by way of abstracting from observed phenomena. It is only of secondary importance to determine what this abstract perception refers to. Language is some type of a perception that we form in regards to expressions uttered in speech or more generally verbal behavior. I think that we most suitably may say that language corresponds to the perceptions we form of the social practice of verbal speech behavior, that is, language practice. We may say that when people speak they are engaged in the social practice called language; according to this idea language is the name for this joint activity in ab-

straction. From a somewhat other point of view we may describe language as the result, and potential result, of all that activity, i.e. what has been expressed in speech, and what we presume that could potentially be expressed. From this follows that we may qualify language as the living memory of past verbal behavior, and as the word memory implies it also represents the potentiality to reproduce similar behavior. To note, that from this also follows that language represents nothing any more firmly given than all the other phenomena of memory (in this connection I refer the reader to the chapter *Memory* for an exposition of what I mean by ‘memory’). - From these considerations also follows that it is not language but speech which is an activity. Language is revealed either as the material symbolic records, traces, of this activity or as immaterial memory perceptions of it.

These issues also entail the question of how we should conceive, respectively, of the concepts ‘a language,’ referring to a particular language and ‘language,’ in the generic sense. The former refers to what people in general perceive as the “separate languages” that are used in one or another country, e.g. the ‘English’ of England. I have explained above that in this sense we should understand a language to correspond to the vaguely defined language practices of the community. In the latter generic sense ‘language’ refers in my conception to same language practices but without the attempt to delimit it to signify a particular practice of a community in time and place. According to these ideas it does not make a big difference in science if we speak about language in the generic sense or of languages as depicting perceived practices.

I have said that there is no such *thing* as language, but I consider that we may well reserve the word to denominate the social practices as we have perceived them. Hereby, I propose, that ‘language’ should be used as a generic term depicting the totality of the language practices, while clearly keeping in mind that there are no separate languages but only individual verbal behavior that occurs in infinite variances, whereas the variance is lesser the closer the speakers interact with each other by means of a shared language practice.

Wittgenstein’s conception of language games superbly illustrates the essence of language in itself – all language in itself is a language game. I have written about Wittgenstein’s ideas about language games in *Expressions and Interpretations* (Hellevig 2006) with reference to Wittgenstein’s *Philosophical Investigations* (Wittgenstein 2004; see especially articles 66, 67). Now I will briefly apply that discussion to this

context. In general by the concept of a language game we illustrate how thinking and the perceptions we create of reality are confined to the inherently human mental need of creating self-explanatory and closed systems of knowledge, which then are taken to represent reality. Language is a word by which we denominate the social practices of imitation of other people's verbal behavior in order to express our feelings; similarly a game is a word by which we denominate a social practice in which people engage for the purpose of diversion, amusement and recreation. In *All is Art* (Hellevig 2007) I have illustrated the idea of social practices by reference to ice-hockey and I will here again take that game as an example. I explained in *All is Art* how it would be impossible to delimit what were to be considered as constituting the game; certainly the game is not only the rules, nor the players, nor the equipment, nor the actual movements, but rather all these considerations and a host of others depending on how our interests affect the perceptions we form of what is a game. We can never strictly delimit by definitions what a game would actually consist of, rather a game, as hockey, refers to something that we more or less vaguely perceive under the concept. All we can observe are 'complicated networks of similarities overlapping and criss-crossing; sometimes overall similarities, sometimes similarities of details' (Wittgenstein, *Philosophical Investigations*, art. 66).

Wittgenstein exemplifies the idea of seeing similarities and dissimilarities by the notion 'family resemblances' by which he means the similarities between members of a family in terms of build, color of eyes, gait, temperament, etc. His point is that all these features are similar or dissimilar only in degrees and not in any absolute terms. Wittgenstein says that various 'games' can be conceived of as forming a family of games – some features are shared in common, in other aspects the games are different. 'Family resemblance' describes the common features, but equally it may serve to show that there are many features that are not common, and yet the distinctions do not lead to an exclusion from the family (*Philosophical Investigations*, art. 67). Speech corresponds to creative activity similarly to the participation in all forms of art and game; speech is a game where we make our moves out of memory. A language represents a similar perception like the one we form on games. What is a game? It is all what we can think of being contained in the perception we have of a social activity of playing in a certain way. We survey all the notions we have of the game and tacitly, to a great part unconsciously, conclude "that is what the game is." And this is so with language also, a linguist tries hard to think of all that might

fall within the perception he forms of a particular language or languages in general. He makes annotations on these ideas pertaining to the perceptions thus formed and then he declares having discovered what language is, what constitute the language as he has perceived it. His only remaining problem is the threat of another linguist challenging him with a competing view of language based on a different report on the perceptions drawn from competing recollections of the phenomenon. Whatever the mechanism, the perception of an abstraction is always subjective, and thus language will mean different *things* to different people. This as long, as we refrain from taking the route I propose, to simply declare that there are no *languages*, people only speak in a more or less similar fashion. People share language practices as they share other social practices.

These ideas of Wittgenstein apply the more so to language practices. Linguists postulate that there are separate languages by way of forming perceptions of what language practices are by concentrating on a few of the dominating features which they perceive in the language practices they observe. Thus, through the formation of a series of perceptual abstractions they postulate that there exists this or that language, as if the language were a thing of sorts. This is what leads people in general and linguists in particular to think that a language would exist in its own right separately from the practices of verbal behavior. The perceived similarities or dissimilarities in various phenomena delude them to regard the phenomena as manifestations of various species. Hereby the great paradox is that our language practices in themselves affect how we view these practices and to which similarities or dissimilarities in particular our attention is drawn (see discussion under the conceptions of ‘bewitchment of thinking’ and the Sapir-Whorf hypothesis).

A ‘language’ is wrongly considered as a separate entity when the observed practice matches certain preconceived ideas, whereas when the same ideas are absent from the perception formed on other practices, it is declared that now another ‘language’ is at hand. This is how people have artificially created the ideas of there being various separate ‘languages.’ Even when people without any doubt can convince themselves of how differently two groups of speakers – e.g. the Queen and her peers and Afro-Americans in Harlem, New York – speak they still hold on to the idea that the same language is spoken. This fallacy corresponds to what Wittgenstein told about us misunderstanding the “role of the ideal in our language” (compare Wittgenstein *Philosophical Investi-*

gations, article 100). He said that as we are “dazzled by the ideal” we cannot see the actual essence of a concept. When we broaden our horizons and accept to view language through the prism of a language game, we will be able to see that there are no separate languages but rather language practices in infinite variances.

In my conception language represents a meta-social practice, the supreme social practice which affects all the other social practices and simultaneously represents the result and carrier of those. From another point of view, we have to recognize that there would be no language without other underlying social practices – language is always about something, about real people sharing a common interest in one or another activity or field of life. The idea of language games comes handy here also to explain that these fields of practices themselves are not marked by rigid boundaries. (Strictly speaking there are no various types or fields of social activity; the divisions themselves correspond merely to perceptual abstractions and are formed as received predispositions to regard that certain phenomena are to be treated under one or another conception; for discussion of these issues I refer to *Expressions and Interpretations*, Hellevig 2006). These considerations also bear on the discussion of *meanings*, meanings of words and linguistic constructions. When a person means something he means it in relation to a real life situation related to the practices he has taken part of (compare Harris *Language as Social Interaction* in Harris, Wolf 1998). For this reason words and linguistic patterns cannot meaningfully be studied independently beyond a proper context (as, e.g., Chomsky purports to do it). Our understanding of the underlying practices and our ability to express develops in a hermeneutical tandem so that the better we know the practice the better we can express our knowledge (properly interpretations) of the issue pertaining to the practice, and vice versa,

## Conceptual Problems due to the Failure to Distinguish between Speech and Language

The failure to notice the difference between the biological ability to *speak*, to produce speech expressions, and the abstraction we call *language* amounts to the great historic tragedy of linguistics in all its aspects. Now, I am far from judging which one of the concepts should be properly used for the *biological ability* and which for the *social practice*, I am merely stressing that these two have to be conceptually separated if we are to discuss the topic of linguistics intelligibly. However, I

consider that in the background of past practices we should reserve the concept *speech* for the *biological ability* and *language* for the *social practice*. Only by defining the one and the other, will we be in a position to maintain what are the phenomena that we should assign to ‘speech’ and ‘language,’ respectively. If the difference is not made, and when this difference is not postulated as the central aspect of all linguistic theory, then there cannot be any sensible linguistic theory – and there has, indeed, not been any.

In regards to the distinction between speech and language it is particularly intriguing to note that Ferdinand de Saussure, in fact, had stressed the need to make this distinction. I will discuss his ideas in the chapter *Notes on Philosophy of Language* and here I limit myself to noting that whether he correctly formulated his ideas or not, he was certainly not successful in persuading the linguists after him to adhere to this distinction. My conclusion would be that Saussure had initially grasped the difference and the importance of making the distinction, but being himself entrapped in the prevailing language practices (bewitched by this mode of thinking) and the “scientific method,” he came to dilute the proper insight attempting to formulate a rigid and comprehensive academic theory of language.

For me it seems very extraordinary that this fundamental distinction between *speech and language* has not been recognized. When giving it a thought anybody should certainly admit that it makes all the difference in the world whether we refer to a biological ability or an abstract perception we have formed of collective behavior as a result of exercising the ability. The reader may pick up any leading book on Western linguistics and verify for himself that no linguist has hitherto consequently applied the distinction between these terms. Occasionally – but rarely – one may, of course, spot the concept *speech* as referring to the biological ability but even so this never corresponds to any conceptual rigidity; the same authors would in the next instance again utilize the concept *language* to mark the same phenomenon. *Language* has been the concept of choice when linguists have formulated their theories; this is why they speak of ‘having language,’ ‘language faculty,’ ‘language organ,’ ‘language instinct,’ ‘evolution of language’ etc. And even when the linguists, past and present, do not realize it, they have, in fact, also – like Chomsky does it – used the term *language* in the sense that relates it to social practices. The real problems have started when they armed with such a perception have wanted to detect what in the living body

corresponds to ‘language’ – Chomsky’s entire work being a manifestation of this total confusion.

This conceptual quagmire has led to the underlying fundamentally fallacious idea that ‘language’ is something that issues forth from the brain, which is most notably and damagingly represented by the theories of Noam Chomsky. Following these stupendous ideas the Chomskyan poets of linguistics ascertain that one could, and should, try to detect a corresponding *language organ* in the human brain. According to this idea *language* – the social practices – are thought to stem from some kind of a device that causes the throat and the mouth to issue sound-patterns that are exact copies of the words and utterances inherently residing in the mythological language organ. However, wild as they are, these Chomskyan theories fundamentally mirror the generally accepted idea that words would exist as things and have the property of meaning something independently of what the speaker means with the words. This while I maintain that words and utterances fundamentally only represent expressions, which tentatively correspond to interpretations of the speaker’s cognitive feelings.

## Speech on the Continuum of Expressions

Ever since the theory of biological evolution emerged savants have attempted to establish how *language has evolved*, not understanding that it is *speech* that has evolved, or more precisely, that it is the biological ability to express oneself that has evolved. I argue below in the chapter *Evolution of Speech* that the words ‘evolution’, and ‘evolve’, should exclusively be reserved for references to development of organic life from generation to generation as a result of genetic inheritance, in this connection to the biological ability to speak and not the language practices that this ability has enabled. It is a conceptual abuse to refer to changes in social practices, culture, or the productions of people, by the concept *evolution*. In the sphere of social practices there is nothing that is given similarly to genetic inheritance. Thus I want to stress that *speech - the ability to speak, to utter verbal expressions* – is an evolutionary outgrowth of the more general ability to express reactions to mental processing of stimuli. On a higher evolutionary level these expressions represent reactions to interpretation of cognitive feelings. Hence it is this ability to express that is based on genetic inheritance, but there is nothing genetically determined in regards to the actual speech expressions (utterances) that a human may possibly utter, therefore *language*

is not genetically given, language does not represent a genetic endowment – *language* exclusively represents results of the human ability to speak in imitation of one's community. To stress my point, I should note that we may say that as part of the ability to speak comes an ability to remember past utterances and intelligently imitate those in a repetitive fashion, and this we may call a genetically given capacity to participate in the social practice of language. Consequently there is no language to be potentially found in the human brain, there is only an ability to interpret other people's expressions and to express one's own feelings. Regrettably, this mistake is repeated, so to say, in the other direction as well, this when primatologists claim that apes "have language." For as language corresponds to the social practice of repetitive and imitative articulating of separately identifiable sound-patterns corresponding to words which are expressed as interpretations of complex cognitive feelings, then the practices stemming from making of sounds to the extent apes can do it, even when repetitive and imitative, do not qualify for being regarded as language. And correspondingly the expression of such sounds to the extent apes can express such should not be regarded as speech (which necessary has to be viewed as an ability to participate in social practices of language). These issues will be discussed more in detail in the chapter *Notes on the Philosophy of Language* where the research conducted by Sue Savage-Rumbaugh and other primatologists is discussed, as well as in the chapter *Evolution of Speech*. It will follow that I resolve this dilemma in favor of the primatologists by proposing that we acknowledge that our real subject – instead of *language* – is *the study of expression of feelings in a repetitive, imitative, and creative fashion* (hereby I also mean, vice versa, the corresponding and necessary ability to interpret the expressions of others). In the previous statement I thus anchored speech in the more general framework of expressions, or the ability to express. I mean the ability to express cognitive feelings that are based on conceptualization of cognitive experience, cognitive feelings (see chapter on *Feelings, Emotions and Consciousness*). - In reference to the above I here need to insert a comment which should serve to highlight some aspects of those ideas. Writing this definition I was contemplating whether I should qualify the ideas as 'volitional expression of feelings' or whether I should do, as I did, to introduce the idea of *cognitive feelings* and *conceptualization*. The latter choice reaffirms the idea of asserting that our study is about *expression of concepts as cognitively formed abstractions*. And this is certainly what I aim at,

but I consider that in the given definition the concept 'volitional expression' would also cover this same idea, for all organisms that are capable of volitional expression are to some degree capable of forming conceptual abstractions, of which the very volitional expression is the proof. However, there is another problem with 'volitional.' This that by using this word we risk conveying the idea that all what we utter are results of volitional choices, which they are not. To a large degree even the very fact of speaking is not a product of volitional choices the less so the individual words we utter. In this connection I also refer to my idea that bodily expressions should be seen as inevitable consequences of organic processing of stimuli. This idea I have developed more in detail in the chapter *Expressions*.

In the above definition the part saying '*in a repetitive, imitative, and creative fashion*' is what really marks the difference between just any organic capabilities for expression and, in fact, anchors the study within the realm of the animals that live in society and are endowed with a predisposition for mental processes that produce cognitive feelings. It has been shown beyond any doubt by Sue Savage-Rumbaugh and others (1988; 1994) that at least some species of apes possess a genetic endowment for *expression of cognitive feelings - and interpretation of the feelings of others - in a repetitive, imitative, and creative fashion*. But, in summary I would not maintain as Savage-Rumbaugh does that the expressions of the ape Kanzi, whom she studied, amount to 'language,' or, allowing for a conceptual adjustment, that Kanzi could speak a language, instead I would say that the Kanzi had the ability to express his cognitive feelings, and that this ability in the more evolutionary developed human being has developed to the ability to speak.

The remarkable research by Savage-Rumbaugh and the other primatologists has shown again that the human species is evolutionary derived from common ancestors which the humans share with the apes. Hereby it is, of course, so that it is the human species that has more diverged from the common ancestor, meaning that the ancestors must have been very much like those apes, who were studied. This also goes to prove that there is no language faculty, organ, or instinct, particular to the human being. The human being merely has a more developed capacity for processing conceptual abstractions and expressing them, bearing in mind that the human being has the anatomy required for producing articulate speech as opposed to the apes. (Regarding the required anatomy I refer to the chapter *Evolution of Speech*).

Basically I believe that the human ability for speech is a result of processes that have occurred as depicted by the *hermeneutical evolutionary spiral* where the increasing degrees of bipedalism and corresponding freeing of hands for other activities has caused genetically inherited anatomic changes in what we may call the *speech organs*. The intelligent use of hands, in turn, has developed the cerebral capacity for mental processing of abstractions (*conceptualization*). This has led to the production of *cognitive feelings*, which in turn has led to an organic need and an ability to express cognitively conceptualized ideas by means of gestures and other bodily expressions. All these mental processing patterns and anatomic changes have affected each other in this *hermeneutical evolutionary spiral* so that the ability of the human to speak has emerged as a result of these processes. We can say that with the ability to speak the very human emerged. These and other aspects of evolution of speech will be discussed more in detail below in the chapter *Evolution of Speech* (note, evolution of speech, not evolution of language).

Summarizing the above, I propose to include linguistics into a broader *study of expressions and interpretations* with a clear differentiation between (i) the biological abilities to express and interpret, and (ii) the social practices which constitute human language. Further this entails that both in relation to the social sphere and the biological we have to study, not language, but expressions, that is, study the biology of how expressions are organically produced and the social practices of expression. By thus calling for a study of *expressions and interpretations* instead of a study of *speech and language* another crucial implication has to be recognized. This is the necessity to admit into the realm of the study the whole act of bodily expressions and not only the alphabetical symbols by which we in abstraction depict our perceptions on merely the sound-patterns in exclusion of all the other aspects of the speech act. The symbolic rendition of speech merely represents a part of the totality of the speech act. Even the very speech sounds are not uniform and regular within a population speaking what is claimed to be the same 'language.' And not only is the speech act more than what is depicted by the alphabetical symbols for the sound-patterns, rather speech itself forms part of a wide range of bodily expressions which occur in connection with articulating sounds – it forms part of the totality of the corresponding verbal behavior in reaction to an interpretation of feelings. Each act of verbal behavior always involves a host of individual

and situation-bound bodily expressions, such as the differences in the rhythmic and intonational aspects of speech (prosody), hand and facial gestures, postural alignments, eye gaze, intonation and even ‘paralinguistic’ features such as filled and silent pauses, hesitation, correction of utterances in midsentence, feedback response, laughter, exclamatory injections, changes in tone and intonation to express, for example, a question, surprise or fear (compare Joseph, Love, Taylor in reference to ideas of Goffman in 2009: 157). In support of these considerations I refer to: Philip Lieberman in *Human Language and Our Reptilian Brain* (2002); Jean Molino in *Toward an Evolutionary Theory of Music and Language* (2000); Walter Freeman in *A Neurobiological Role of Music in Social Bonding* (2000); Aniruddh Patel (2008) – for more details see note.<sup>3</sup>

These considerations will be of importance when we consider the idea of meaning of words and utterances.

The foregoing reminds of another important aspect of speech namely, what was above said about volitionality about speech and other expressions. This also represents a paramount consideration in regards to the discussion of *meaning*, for it emerges that not all expressions that we want to assign a meaning to are connected with such kind of volitional acts of cognitive consciousness that would allow us to postulate that the expressions corresponded to a particular act of meaning, i.e., not all the expressions that we make are under our conscious control so that they could be said to convey a “true meaning” as corresponding to our intentions. Some expressions are uttered contrary to our conscious intentions. In this connection I also refer to my idea that bodily expressions should be seen as inevitable consequences of organic processing of stimuli (chapter *Expressions*).

## Speech vs. Writing

Before we may continue it is necessary to bring up the question of speech vs. writing. Too often these fields of behavior are not conceptually separated and, even worse, often the traces of writing are taken to represent speech – or the “language” the authors so confusingly refer to. In fact, I maintain, that the general understanding of the ‘nature of language’ is largely derived from the perceptions people form on writing. According to my conception writing represents an ability to symbolically imitate speech for the purpose of describing one’s own feelings. I believe that each word which is written represents a “piece of thought”

and is first given a silent expression, that is, expressed consciously as thought without an audible oral articulation. Each written word is contemplated as something that could potentially be said. Writing is thus a derivative of speech, and produced very much similarly as speech, although executed by hands and fingers as opposed to throat and mouth (there is thus an interesting correspondence between writing and gestures and other bodily expressions). Therefore the practice of writing always has to stay within certain limits in relation to actual speech. Fundamentally writing also is about expression of an interpretation of the writer's feelings, similarly as speech represents expression of the interpretation of feelings. We should note that when we write we undergo all the same bodily feelings as when we speak (although less conspicuously) we just cannot express them in text being restricted to the symbols of the alphabet (and a few other symbols). The writer feels the urge and the anguish for not being able to properly do it when he formulates a text, and a good writer strives to overcome those restrictions by the effects he includes in his text. But the reader is in any case left with the symbols of the alphabet (or corresponding symbolic system of other cultures). Because writing is to a much greater extent a conscious experience – and as texts are usually not produced in one instance but consciously reviewed and adjusted – writing much more so than speech corresponds to the abstractly formed perceptions of social practices of language. The activities of writing and reviewing of texts signify that a kind of a third person perspective is involved in the activity, which entails a more rigid mirroring of social practices.

I argue that most linguists, *de facto*, take their picture of “language” from writing (and reading). Therefore the highly useful simplifications that the system of alphabetic writing represents has led to the corresponding but regrettable simplified conception of what “language is.”

It should be noted that as I recognize writing as a derivative of the ability to speak, I include the considerations concerning writing within the references to speech if otherwise not mentioned.

## Interpretation of Feelings

Now, with these considerations in mind the moment is ripe to return to the conception of *speech as interpretation of feelings*. I had started off with saying that language is *interpretation of feelings*, but then immediately qualified that statement by saying that it is *speech* that is *inter-*

*pretation of feelings*. My motives for having wanted to stress this issue like this should be clear in view of the above discussion on the difference between *speech* and *language*. For an *interpretation of feelings* is, naturally, an individual act which happens always in the present, therefore in speaking a person is giving an interpretation of his feelings of the moment. Next, I need to clarify what is here meant by *interpretation* and by *feelings*; I have to clarify, for example, why I would say *interpretation* and not *expression*, and why *feelings* and not *thoughts*.

I will discuss further in this book more in detail the ideas that I subsume under the concepts *expressions* and *interpretations* respectively (see especially chapters *Expression* and *Interpretation*). Among other issues, I will point out that I view the processes, phenomena, falling under these concepts on a continuum from purely physical and physiological movements all the way up to intelligent (cognitive and volitional) behavior of a human being. Most importantly, I point out that fundamentally the processes that fall under the one or the other concept are always intertwined, whatever can be perceived as an interpretation already is an expression and vice versa; and this holds true for all the points on the continuum: even basic organic movements always represent both an aspect of interpretation and expression. What from one side is perceived as an expression is from the other side to be deemed as an interpretation. Let's look at this from the point of view of what most traditionally is meant by 'interpretation', for example, interpreting an utterance in a foreign language into an utterance of a familiar language. We hear someone expressing himself in French saying: *je ne sais pas*; our interpreter expresses the correspondence in English by saying: *I do not know*. We see that the expression already was the interpretation, or the interpretation took form of an expression. How could it be otherwise?<sup>4</sup> - Or we can think of a critic interpreting a dance or music performance (which in themselves represent interpretations of feelings). In this case he renders in writing what he considers that was meant by the performance. Or, we may interpret a painting by telling in our words what we take the artist to have meant by his picture, or what they mean for us. We may interpret hieroglyphs by writing the meaning in our alphabet. We may interpret a stretch of history by telling in words what occurred and why. And equally we could consider these ideas from the opposite point of view: we may interpret a discussion in painting; we can interpret alphabetical texts in hieroglyphs, etc. In all these cases we exchange our perceptions (or feelings) of the underlying reality against the expressions of the language or the medium which we

practice. Thus I maintain that each expression is always an interpretation of something else, this whether we are conscious of it or not. It is this by such considerations that I arrived to the conclusion that speech (verbal behavior) always represents interpretation of feelings. Now we can realize that the 'true workings of language' consist of the interpretations of feelings, whereby there are no intrinsic rules, only an endless competition between all these different perceptions to which our feelings lead, and all the infinite possibilities of expressing our interpretations more or less successfully.

Then, why do I claim that this is an interpretation of *feelings* and not *thoughts*? That I have settled for feelings is based on some very fundamental considerations of human cognition and consciousness of which I account more in detail further down in this book. I have established that we shall think of human cognition as resulting from various mental processes. Hereby I have stressed that mental processes shall be thought of as neural processes of a more complex and sophisticated nature (more highly developed neural processes). I have proposed to think of these processes as forming a continuum (the *Lamarckian continuum*) going from simple neural processes to more and more complex and sophisticated, reentrant high-speed processes, where the latter are called 'mental processes' (on this and below ideas see chapter *Mental Processing*). I also stress that we should bear in mind that this continuum does not imply that these processes are to be regarded on the analogy of a train or an elevator, where we move from a lower level processes to the higher level processes leaving behind the lower ones. On the contrary, I stress, that at any given moment, all mental processes are all the time functions of both lower level neural processes and higher level mental processes on all the levels of complexity. This idea I have denoted as the *hermeneutical evolutionary spiral* (chapter *Mental Processing*).

With these ideas in mind, I propose to view all mental processes that involve cognition of abstractions and emerge somewhere at the threshold of cognitive consciousness as cognitive feelings. 'Feelings' is thus the term I have reserved for all the results (reflections) of the mental processes which connect the purely somatic homeostatic systems with a cognitive appraisal of them.

*Thinking*, and *thoughts*, I define through *feelings*. Basically I maintain that thoughts (more properly thinking) always correspond to *processes* which we are conscious of, i.e. feelings of which we are con-

scious of (to some extent), and more properly, they represent those processes of feeling which involve the conscious application of conceptual abstractions into feelings. Simplifying, I suggest viewing thinking as an action, essentially as an action of manipulating images of feelings with *words* (or perhaps we should say 'conceptual patterns reminiscent of words'). In other words, we could describe *thinking* as the process of manipulating feelings by applying concepts to them, or the process of matching words to feelings. As I hold that we in thinking are interpreting and manipulating feelings, then we cannot even postulate thinking as anything independent from feeling. In speech we then express the interpretation of those feelings. We should hereby recognize how feelings are constantly in flux and undergo various changes before they are eventually tentatively expressed in speech.

After that distinction is made, we should next consider the distinction between being *conscious* versus *unconscious*. It has lately (at long last) been to a crucial extent scientifically accepted that we humans are conscious of only a small part of all the mental processes that take place within us. Scientists usually say that we are not conscious of all our *thoughts*, I would say that more fundamentally than that we are not conscious of all our *feelings*, and to the extent we are conscious of our feelings we are not conscious of their (*true*) character, it is only by *the conscious process of thinking* that we try to establish that. From these considerations regarding conscious and unconscious mental processes follows that we cannot conceive of speaking as a fully conscious process. We shall bear in *mind that in thinking* we are all the time helplessly lagging behind the processes of feeling. In this connection we shall consider what we know of the speed of thinking versus what we know about the speed of speech. It has been experimentally proven that the speed of thinking occurs in milliseconds (Koch 2004; Damasio 2000; Edelman 1987). Yet everybody knows that speaking is a much slower process. We are thus faced with processes in three dimensions: *feelings*, the speed of which is not established, but in view of the potentially infinite range of reentrant connections involved it must happen with much greater speed than the subprocesses called thinking; *thinking* or thoughts, that occur in the timescale of milliseconds; and *speech*, where an utterance can be counted in decimal fractions of seconds. So, then of course the speech reports – our utterances – cannot possibly be regarded as rendering of thinking in speech, rather speech only highlights some moments of thinking, in a way summarizing thinking, which in turn summarizes feelings. And this summary is essentially an interpretation,

the process strives to identify the most important aspects of it and render that in speech with whatever means available. And this in turn is done by assigning by means of imitation proper verbal expressions to the ideas from the repertoire of possible verbal expressions, that is, from those verbal expressions one has heard other people utter (or that one has read) and memorized. And as I pointed out this is only partly a conscious process. It must be so that some words, some expressions, unleash others, which then flow in processes that are more or less conscious-to-unconscious, the shift in awareness directed by the feedback of the moment. Many find this hard to believe because when they observe people speaking in various situations the impression retrieved is that people are in conscious control of their actions. But in this the observer forgets the social setting, he most often observes those in his own social environment each practicing the activities that he is experienced in and therefore the observer does not duly consider that those he observe are usually merely quite adequately rehearsed in their social roles. But we should also consider the instances when people have to appear in social situations that are new for them. In such situations the subject loses control over his expressions, the speech becomes a jumble of utterances as the subject tries to express his feelings with odd words and uncompleted sentences with corresponding loss of control of bodily expressions and pose. Examples of this abound if one only wants to make proper conclusions from one's everyday experience. If linguists would allocate due significance to these observations then they would more clearly grasp the idea of how speech represents interpretation of feelings – and comprehend how this act is influenced by social practices. It is only the experience of rehearsed social situations that make our speech sound like a conscious direct rendering of thoughts. Goffman provides a lot of insight into these phenomena in his work (see, e.g. Goffman 1963, *Behavior in Public Places*; 1967, *Interaction Ritual*; 1990, *The Presentation of Self in Everyday Life*). Bartlett's *Remembering* also contains some vivid examples of these phenomena. Bartlett speaks, for example, about the significance of the "social setting, which makes it possible for narrators and hearers to take much for granted that is not expressed" (1995: 86). Similarly Bruce Richman has noticed how people in various situations resort to a "collection of repeatable formulas" telling how "the content of ordinary conversational speech is best described and understood as drawn from a collection of hundreds of thousands of open-slot formulas whose lengths amount to about a

phrase or one or two clauses.” Further he tells that “people know, store, remember, have access to, and produce these formulas as holistic, independent, and highly idiosyncratic entities.” This is what explains why “people are able to carry out the idiomatic fluency of conversational talking they do most of the time, at lightning speed” (2002: 303).

Traditionally utterances (verbal expressions) are analyzed under the Chomskyan assumption that utterances (or Chomsky’s “sentences”) are stand-alone products which are not connected with anything that was expressed before or will be expressed next. But in reality this is, of course, not so, all utterances are connected with a preceding context and are oriented towards the subsequent expression or impending action. Most adult speech consists of one speaker expressing a range of utterances in a row. And often, surprisingly often, the string of utterances form – as Richman was told to have said – a coherent whole (at least superficially). This means that at one moment, maybe within one millisecond the speaker has consciously or unconsciously (better probably to say semi-consciously) decided to enter – by means of a conscious clue – a course of uttering the string of utterances that form the particular narrative. Therefore all the subsequent utterances are, of course, not the products of the same instance of conscious thinking. At one point in the mental processes a whole more or less coherent narrative is released in form of a series of expressions. I suppose that this series has been rehearsed in the unconscious processes of feeling, and therefore there is, as it were, a script line, but then in the conscious process of speaking by engaging the refined feedback resources the process of uttering the narrative is adjusted. As one speaks new thinking (feeling) goes on, and the new instance of thinking combined with the “feedback reports” of what one is saying and how one is experiencing the reactions of the interlocutor, leads to adjustments in the course of the narration, and perhaps to a decision to stop or rephrase the ideas. The above considerations are supported by some of the ideas LeDoux has presented in *The Emotional Brain*. LeDoux tells that we “do not consciously plan the grammatical structure of the sentences we utter.” LeDoux continues “there simply isn’t enough time. We aren’t all great orators, but we usually say things that make sense linguistically. Speaking roughly grammatically is one of the many things that the cognitive unconscious takes care of” (1998: 31). Correspondingly LeDoux reports that “stimulus processing that does not reach awareness in the form of conscious content can nevertheless be stored implicitly or unconsciously and have important influence on thought and behavior at some later time” (1998:

33). McNeill expresses a similar idea as evidenced by this quote from his *Hand and Mind. What Gestures Reveal about Thought*:

“The framework of the model describes thinking/speaking as a self-organizing process. Self-organization means that the formation of utterances does not depend on conscious control of the process itself, nor on a specific source of inputs to trigger successive steps. The utterance structure and conceptualizations built into it emerge without executive control, of their own accord as it were” (1995: 233).

These considerations support my idea to regard the process of speaking as *interpretation of feelings*. It is a process of expressing emergent thoughts which are both based on feelings and continuously merged in them. This occurs by the assignation of the best possible available symbolic utterances to them from what is remembered from social practices. – In support of these ideas I refer to chapter *Evolution of Speech* where I account for Rizzolatti’s and Arbib’s findings of the mirror system mechanism of Broca’s area. There I point out that there must be a correlation between the system of conceptualization and the system of unleashing remembered and imitable strings of verbal symbols that serve to illustrate the ideas, but are already not the ideas themselves.

I have not wanted to use the word *translation* in this paradigm as I have wanted to stress the distinction between translation and interpretation. In my conception *translation* connotes the idea of something precise, or a one-to-one relation, whereas for me interpretation implies something more vague and tentative and which inherently implies a creative process. But in linguistic theory there has traditionally figured the idea that *language* (they would say *speech* if they grasped the distinction) amounts to *translation of thoughts*. This wrongly implies an infallible mechanistic process of converting something from one mode to another as if something inevitably followed under given conditions. Quite contrary to that idea, I want to stress that I regard speech not as a translation of thought into voice as if there were a computational relation between thoughts (feelings) and words, but rather a process of trying to find a symbolic interpretation for the most important features of feelings aligned with all the other bodily processes. Damasio who by inertia refers to the conception ‘translation of thoughts’ (1999: 83) nevertheless thinks in the above lines which is evident from the way he qualifies the alleged process of translation telling that these “verbal

translations...are performed under considerable literary license” where “the creative mind translates mental events in a large variety of ways rather than in a stereotypical manner.” Damasio concludes the idea by saying that the “creative ‘language’ mind is prone to indulge in fiction” (1999: 187). In another connection Damasio also voices an idea which, in fact, illustrates the paradigm of interpretation of feelings, here Damasio says: “Images corresponding to myriad options for action and myriad possible outcomes are activated and keep being brought into focus. The language counterpart of those entities and scenes, the words and sentences that narrate what your mind sees and hears, is there too, vying for the spotlight” (2000: 196).

To conclude and summarize this discussion I want to emphasize that by *interpretation of feelings* I precisely mean – and this is the point – that a person’s constant feelings are the results of a myriad of simultaneous biological processes of which some aspects pop up into consciousness from time to time and for various reasons, and that what we call *thoughts* represent some aspects of these feelings, whereas *speech* represents the matching of these thoughts to a socially acquired repertoire of verbal symbols and communication patterns called *language*. Any illusion of there possibly being a direct translational connection between speech and the underlying feelings is dispelled when we recognize that feelings is a concept standing for the simultaneous myriad of biological mental processes, which are continuous and extremely fast. There is never but a whirlpool of mental processes, resulting in feelings, and sometimes to those aspects of feelings that we call thoughts. We may say that feelings are immensely faster than thoughts, whereas thoughts in turn are immensely faster than speech, therefore words and utterances, verbal symbols, must necessary correspond to a whole stretch of feelings instead of corresponding with a hypothetical piece of thought. Hereby speech in itself consists only of verbal symbols that the speaker has based on his experience learnt to connect with certain ideas in similar contexts.

## The Immateriality of Words and Language

*Language* is the perception we form of the expressions uttered and written, that is, of perceptions of verbal behavior. Hereby the conceptualized perceptions represent in themselves only some superficial aspects of the whole act of the verbal behavior, as it was explained above. These perceptions we form on language and words do not correspond to

anything material; these perceptions are merely the results of mental processes of interpretations that lead to conceptual abstractions (see ‘conceptualization’ in chapters *Mental Processing* and *Feelings, Emotions and Consciousness*). This is why I say that *language is not a thing*, and *words are no things*. Words are perceptual abstractions and abstractions do not exist. I have pointed out in various sections of the present book that ‘things’ are such entities which can be defined through mass and energy, and only such can be said to exist. In my conception we have to think of this on the dichotomy of things physical (with mass and energy) which can exist, and perceptual abstractions (conceptual abstractions) which merely represent reflections of mental processes of interpretations, and therefore cannot be said to exist. (See e.g. discussion on thingly thinking, *Thingly Fallacy* and *Language of Things* in chapter *Processes and Concepts* and *Mental Processing*, and below in the present chapter)

Here, as often, I simplify the discussion by merely referring to language and words, instead of speaking about utterances, phrases, and language patterns etc.

What creates the impression of language and words existing is our ability to remember and reproduce (utter and write) expressions we have earlier experienced (mentally processed) through reactivation of such neural processes that result in similar expressions that give rise to similar perceptions (the second and subsequent performance of a word is taken to signify that it exists). When we utter a word we do that in imitation of past social practices, of past speech acts, that we have observed. In doing so we conduct the speech act in a fashion *similar* to that of the earlier speech act (here ‘similar’ referring to what is ‘closely resembling’). Thus when two people at a distance in time behave similarly by exercising a similar speech act (pronouncing sound-patterns that seem similar), the sound-patterns are perceived to evidence the existence of a word; but in reality only two separate but similar acts of behavior existed for a limited duration of time. Semblance creates the impression of existence. We may say that a particular act of behavior has existed by postulating a starting time and end of what is to constitute that act, but we cannot say that the behavior exists after the act was finished; each time one or another person engages in similar behavior he is in reality engaged in new acts of behavior – the similarity between the earlier and later behavior should not be taken as a token of the behavior as such existing; and the less should it be taken as a manifesta-

tion of any existence of a word (which merely represents perceptual abstractions of observing the underlying behavior).

To really comprehend these ideas we have to understand what is the real essence of the processes and phenomena subsumed under the concept 'memory.' This is the reason why I have combined an extensive discussion on the topic of 'memory' in this book. I will refer here to some of the ideas that are elaborated more in detail in chapter *Memory*. My main point in this connection is that words are only products of the organic ability to remember or, the organic ability for imitative behavior based on past experience. Following the linguistic traditions I could say that words 'exist in memory,' but that would not be quite correct as I have shown in this book. I have, on the contrary argued that there is properly speaking no 'memory' – i.e. 'memory' does not exist – and correspondingly there cannot be anything existing in that non-entity. Instead I have told that 'memory,' or more properly speaking *remembering*, represents an organic predisposition based on previous experience (as encoded in neural reaction patterns) to react in a certain way under certain new conditions. Similarly we could say that 'memory' is about associating the movement patterns caused by new stimuli with earlier movement patterns. In the same vein I have also said that 'memory' is the effect that the processing of new stimuli causes when the stimuli bear semblance to something experienced earlier and thus get processed in a similar fashion as those corresponding to earlier experience. The previous processing always predisposes the processing of new stimuli in line with previous reaction patterns - a certain stimulus (stimuli) unleashes a similar organic reaction pattern (it is another issue that we cannot trace the effects of a certain stimulus as it is always connected with simultaneous processing of other stimuli). We can thus conclude that 'memory,' or *remembering*, corresponds to expressing the ideas corresponding to the organic process of going through all past experience relating to a present situation.

Words are products of 'memory' thus described, and from this follows that words are uttered as reactions (results) to mental processing of stimuli, where similar stimuli lead to the production of similar words. From the above we note that a necessary condition for the mental processing is that we have previous experience from a particular kind of stimulus (or a framework of similar stimuli) in order to process the new stimulus intelligibly. This means that the previous experience of observing a word in a given context has predisposed the mental reaction patterns to process the word-stimulus in a given way (but *not in a fixed*

way due to the influence of all the other neural processes occurring simultaneously).

As it was said, this is a process of *imitation*, a process of humans imitating other humans. That this is a question of imitation means also that a necessary condition “for a word to live on” is that the *memory* of the word lives on, which in turn means that there remain alive people that have experience of a particular word. This means that particular social practices of language live on as long as there are people alive that have taken part of the relevant social practices, as long as the living in their verbal behavior repeat instances of language practices. Basically words and language then represent imitation, and certainly anybody should understand that when one is imitating somebody else then one is doing something new; it is not so that the same thing was repeated in the same or new body, but that a body attempted similar behavior.

In chapter *Feelings, Consciousness and Emotions* I have established that all human actions (expressions, reactions, behavior) are subject to three sorts of influences: (i) the genetic framework and the neural reaction patterns rooted in it; (ii) the past life experience that has modified the genetic processes based on the genetic endowment; (ii) and the cognitive ability to unconsciously and consciously amend the processes to the demands of the present circumstances. In that connection I noted that all emotive reactions (emotions) occur within these limits: the genetic framework sets the general conditions for possible reactions but the past life experience changes constantly the reaction patterns within the framework. And the more developed the system of mental processing (the cognitive ability) in an organism is, the bigger is the range of the variations in the response patterns. By these consideration I arrived to postulate that human ‘emotions,’ contrary to the received ideas, are always unique. I also noticed that there is no principal difference between emotions and words in this sense, and therefore I proposed to regard words as kind of “mini-emotions.” Thus I maintain that the utterance of a word can be compared with how emotions unfold. An utterance of a word amounts to a reaction pattern resulting from similar kind of mental processing as the complex reaction patterns referred to as ‘emotions,’ whereas both types of reaction patterns amount to expressions for interpretation of feelings. A word clearly represents a learned response pattern triggered by the mental processing that yields certain feelings to which the person has become accustomed to affix certain words. Nobody, excepting the Chomskyan revolutionaries,

would maintain that a word represents an innate reaction pattern on the analogy of the present misconception of emotion theory which I thus strived to correct; rather all these reaction patterns that lead to words are highly plastic and dependent on a mental (neural) appraisal of any given situation. – The most conspicuous difference between words and emotions lies in that words are to a much larger extent a product of efforts that remain under conscious control (which does not mean that they remain fully in conscious control). The connection with conscious control of bodily efforts (movements, expressions) highlights also another important aspect of speech and the cognitive abilities that speech reflects. This is the fact that in speech we can master the enactment of complex ideas by expressing very fine-tuned movements by the tongue and the lips with maximum economy of bodily energy on the surface. And although these movement patterns in habitual speech have become automated, that is, such that they happen without conscious control, they have anyway been originally learned through conscious processes (I refer to the chapter *Feelings, Consciousness and Emotions* where I have discussed the processes of how acts of behavior moves to the sphere of the unconscious when a person learns to master the skills they involve). Thus the consciousness that is required for developing cognitive feelings corresponds with the consciousness of expressing them.

The above ideas can be compared with similar ideas that Lewes expressed like this:

“Motor perceptions are condensed in intuitions and generalised in conceptions. The formation of words is a good example of motor perception. Originally the word is an articulate sound, expressing a feeling as the movement of a limb expresses a feeling: the sound and the articulation are the analytically separable passive and active sides of the process. After many repetitions the expression is *registered* in the ideal sphere. It is then ideally recoverable, is mentally heard, without actual production. It has become a symbol or part of our mental possessions, to be employed at will, under infinitely varying combinations” (1879B: 329).

There is yet another aspect to my idea that words do not exist; this is the fact that simultaneously with speech there occur other bodily expressions corresponding to the underlying feelings. I already referred to this idea above, where it was established that the symbolic rendition of speech by means of the alphabet (which is referred to as ‘language’)

merely represents a part of the totality of human expressions of feelings. Under this conception such features of verbal behavior such as tone and intonation, facial expressions, gestures, and other bodily movements are ignored. In reference to Goffman I told that among other behavioral features we may enumerate postural alignments, eye gaze, intonation and even 'paralinguistic' features such as filled and silent pauses, feedback response, laughter, exclamatory injections, etc. - It should be noted that the other bodily expressions rendered in connection with speech also to a great extent correspond to imitative repetitions of other people's behavior.

By thus considering verbal behavior in its entirety we should understand that the symbols that we conceive of as words cannot be taken to correspond with anything existing, for they in themselves only serve to depict a part of a biological act. In accordance with the above considerations we would have to recognize that the question is not merely about utterance of words but rather complex expressions of feelings. This, in turn, would lead us to recognize that we have by recourse to the alphabet failed to symbolize half of the speech act and most of the features of the entire act of verbal behavior. To remedy this we would then have to postulate that all the other bodily movements, for example, the various minute degrees of muscular contraction – or expulsion of sweat, or adjustment of the body pose – must correspond to similar perceptions as the morphemes and syllables of sound waves and then we would need to contrive new symbols to capture these nuances in the entire act of verbal behavior. Thus following the alphabetic logic of linguistics we would have to assign symbols on the analogy of the alphabet also to tone and intonation and muscular contractions and all the other nuances of bodily expression. A muscular contraction in a particular part of the body would be expressed, for example, with the symbol @ and a facial expression with the symbol ☺ and another with ☹ and so on (which you may, by the way, note is actually very widely used already in communicating through the medium of sms, where these symbols serve a very real function). Then we would have to relate all these new symbols with the symbols of the alphabet to get a complex and sufficient symbolic description of the totality of the expressions. Now, in order to avoid any misunderstanding (for in science misunderstandings come easy and are easy to produce – as well as to exploit), I want to stress that I am not seriously proposing that we should invent such an extended system of signs, instead I only wanted to illustrate the unsustain-

nability of the idea that we possibly could by the symbols of the alphabet adequately depict real verbal behavior, or the real speech acts, that words are taken to stand for. My aim is that the reader should recognize the deficiencies of the alphabetic means in order to open the eyes to a realization that words, the way we have learned to consider them, in fact, do not correspond to anything but abstractions of some of the features of the speech act. This revelation should in turn lead to the recognition that words do not exist.

I conclude this section, with references to other sections in this book and also my earlier books “Expressions and Interpretations” and “All is Art” with the affirmation that words and language do not exist, that they merely represent immaterial expressions as we perceive them based on interpretation of feelings. These feelings represent the ever fluctuating balance of all the homeostatic mental processes. At any given moment “one” of the mental processes results in expressions which represent the result of the process as affected by a combination of a multitude of processes that constitute the underlying feelings. These expressions are interpreted by other people and creatively imitated when they in turn produce expressions that correspond to their own *feelings*. This social process of interpreting and producing expressions cumulate to social practices shared by a community of people that live in proximity (or communicate through common media). Language is the most fundamental of all the social practices and serves as the absolute precondition for all the other social practices to develop. And naturally all the other social practices are equally immaterial inasmuch they exist only in the potentiality of memory of living human beings.

## The Thingly Fallacy (Language of Things)

The insight into the immateriality of words, the fact that words are no things, connects with the ideas that I refer to as *The Thingly Fallacy* and *Language of Things*. By the *Thingly Language* I refer to the human propensity to perceive of and express all our ideas on the analogy of things in the nature. Accordingly I characterize the universal human language practices with the concept *Language of Things* in order to point out how the language patterns are in all essential respects modeled on the way we perceive things and their interactions in nature. Our thingly language is so constructed that all words are perceived on a thingly analogy and assigned such roles in the linguistic patterns (utterances, phrases) that correspond to the interactions of things in the nature

even when the word as such do not refer to anything concrete; abstract terms such as *law*, *economy*, *state*, *humanity*, *love*, *hate*, *goodness*, etc. are treated as if they were things, as if they were things that can figure as subjects and objects of action (these fallacies have been illustrated in this book in reference to Bennett and Hacker, and Karl Popper, see chapters *Mental Processing* and *Processes and Concepts*). This kind of a treatment of conceptual abstractions leads to the impression that they would correspond to something existing. Abstract terms are not only reified to be treated as things, but they are even treated as animated things which are assigned human-like capacities to act. In my *All is Art* (2007) I have proposed to juxtapose the language of things with an ideal language which I call Language of Feelings.

The ideas referred to under the concepts Thingly Fallacy, Language of Things and Language of Feelings are further discussed in chapter *Processes and Concepts*.

## The “Structure” of Language

The previous considerations in regards to the immateriality of words and language bear on the talk about *structure of language* and *language systems*. As words and all language patterns are immaterial, non-existent, then they can naturally neither form any systems nor take part in any structures. This is not a semantic question, because these conceptions are widely misused in linguistic theory and serve to reinforce the thingly misconceptions. These fallacious underlying assumptions have given rise to so-called *structuralism* first advocated by Saussure. Through the influence of the so-called Bloomfieldian school these ideas were in turn to lead to the Chomskyan cul-de-sac of conceptual science. I will discuss the misconceived idea of structuralism more in detail in the chapter on *Notes on the Philosophy of Language* and *A Review of Chomsky’s Verbal Behavior*.

The idea that language consists of a structure naturally corresponds with the idea that it would form a system. These fallacies are represented, for example, by how Macaulay tells that human language displays “two levels of organization,” by which he refers to a so-called “duality of pattern of syntactic and phonotactic rules” (2006: 125). How wrongheaded this idea is, becomes clear from considering how Macaulay uses the idea of the duality of pattern as evidence of the fundamental difference between animal language and human communication. He

motivates the separation by pointing out that there “is no evidence that any systems of animal communication have two levels of organization similar two those in human language.” But this is a meaningless argument, for there is no such “duality of pattern” in human language either. This because there is no pattern in language in the first place: a non-material abstraction does not possess the property of forming or participating in a pattern (and neither does this perceptual abstraction possess any other kind of a property). These ideas of properties and patterns belong merely to the realm of misconceived academic science, where the scientists have seen themselves compelled to analyze social practices on the analogy of natural sciences, which deals with things and their physical and chemical properties. What Macaulay in reality is saying is that there is no evidence that other than human animals can speak. But we do not need these “dualities of pattern” to say the obvious; it is enough to note that according to our collective life experience we know that animals cannot speak and that it has been scientifically shown why they lack this biological ability. All these ‘patterns,’ ‘structures,’ and ‘systems’ are merely the results of perverted thinking of scientists laboring under the received paradigm of the “scientific method.” - Speaking does not correspond to a system. In reality only the academic description of a language may be postulated as forming a system, and then it is a system as defined by the author of the system. The author in turn arrives at postulating the system by a series of generalizations and simplifications. In fact, what he wants is to convince us of the need to exchange our perceptions of reality against his view of a hypothetical system.

In speaking and in language all is on the surface. There is nothing more to language than all we say, all we hear and all we see – only academic theory can convert that to structures and systems.

## There are no Languages

Above I have already pointed out that there is no such thing as language and correspondingly no separate languages either. I have said that language only represents a perceptual abstraction that we form of social practices, and the individual “languages” merely correspond to various language practices. I shall here discuss somewhat more in detail the conception of separate languages.

When people share the habit of verbally expressing themselves in a like manner then it is said that those people *speak the same language*. The assumption is that whereas they “use the same words” and express

themselves verbally in a similar fashion, then there must be a common language which is conceived as a thing that they share. But in reality what they share in common is the social practice of language; they share the common experience of imitating each other in verbal expressions based on the language practices stemming from older people and generations before them in the same community. Thus when we say *speaking a language* we should properly mean *speaking in accordance with the language practices of the community*. If we bear this definition in mind, then we may conditionally for convenience of expression say that the people of London ‘speak English.’ But saying so we shall recognize that this is only a manner of speaking, a way to refer to the common practices of verbal behavior. The verbal behavior of any person, like all cognitive behavior of human beings, is influenced by the social practices of which he has taken part. Verbal behavior, speaking and writing, represent imitative forms of behavior like all social behavior, and therefore the closer people are in contact and influenced by a community (sub-community) the closer his verbal behavior converges with that of the other members of the community. No two people, members of a community, speak exactly the same way, but they speak similarly enough to give the impression that they are “using the same language.” In fact linguists allow for a great discrepancy in the actual verbal expression patterns to still qualify the speech as “the same language.” This is so because linguists are too much influenced by their near history and comprehend too little of the more remote history, that is, the differences in present speaking patterns are ignored in favor of postulating that the verbal behavior of people of one political state would form a language, and correspondingly the similarities in ancient speaking patterns between people from different political states are ignored in favor of pronouncing the languages spoken in the two states as different languages. Actually it is so that it is only with the rise of the modern political states, which coincided with the spreading of writing and reading skills and book printing, that language practices within a state became homogenized and conserved (Harris, Taylor 2001: 87ff). This in turn reinforced the impression that a specific language is spoken, or used, by the community.

Not only is verbal behavior different between various individuals but it is also different from instance to instance of behavior of one and the same person. Excepting the simplest reoccurring statements, imperative utterances, short requests etc., no two people express themselves in the

same way (no two people “use the same utterances” in the same way), and no one person expresses himself in a similar manner twice in various situations (except when especially rehearsed to do so, e.g. in theater). Speech is performative and always situation based.

To illustrate the unsustainability of the contemporary conception of language we may compare *language* with *gait*. Scientists have in fact shown that walking, different styles of walking, also represents a socially acquired skill, that is, walking also corresponds to a social practice (see e.g. Rose 2000: 273). The sound waves we expulse are perceived as *language*, but then equally we could postulate that the steps we take amount to *gait*. Following the logic of linguistics all the foot movements that are expressed in walking amounts to a person’s *gait* and walking would amount to “using *gait*.” A Chomskyan linguist – or in this context a Chomskyan *gaitist* – would then say that “by *gait* we can walk down infinitely many roads” and according to this logic all the foot movements “used in walking” or “steps taken” by a particular community would equal to the “system of *gait*” of that community. The Chomskyan *gaitist* would then proceed by analyzing all the possible foot movements, their combinations and durations of the sequences so as to try to grasp the deep rooted essence of this “system of *gait*.” This study would then supposedly reveal which would be all the possible roads that a person can walk down. The *gaitist* would also tell that *gait* is a unique faculty that only humans possess as no other animals have been known to walk like humans. With his logic he could certainly also depict all the foot movements with various symbols such as these: > / @ # & ^ > <> etc. Armed with his symbols the Chomskyan *gaitist* would then proceed with analyzing the symbols in order to detect the “deep structure of *gait*.” Most of us would understand that this would make no sense in regards to walking, but for some reason a surprising number of linguists – perhaps excepting a few – take this to be very plausible in regards to speaking. No one person can ever walk down all the roads that there hypothetically are steps for. We walk a particular distance at a particular time and nobody would claim that the particular act of walking represents an instance of the ‘system of *gait*.’ But when we utter a sentence then nothing seems to deter people from declaring that this represents a particular instance of “*language*.” – In reality speaking, verbal behavior, only corresponds to what we say in a particular situation and not to what we or others have said or would potentially say. – The study of this kind of *gait* could be developed to an entire nonsensical science on the analogy of that of “generative grammar.”

In such a science of gait certain steps of fast-walking could by convention be allowed to qualify as gait, but running would not be accepted – the relation between running and walking would be declared to be that of music and language, and therefore falling outside the field of gait. Under debate would be whether spontaneous actions like jumping, leaping and bouncing would be admissible to the field of gait – orthodox gaitists would say that they correspond to what in linguistics amount to exclamations such as “Ouch!” and would therefore be disqualified. And the ideal walker-gait-user – although rarely observed in actual gate performance – would master such skills as walking a tightrope, walking on thin ice and walking the line.

The gaitists, would then strive to find what is common for all gait, try to find the Universal Gait (“UG”), by reducing all gait of the ideal walker-gait-user to the basic steps that we all take in common. This would be done, of course, by analyzing the symbols which have by convention been accepted by the gaitists to describe the various paths that could possibly be taken by the ideal walker-gait-user. By operations like this the master gaitist would arrive to the conclusion that all gait is about taking a few basic steps amounting to putting the left foot in front of the right foot like this  $>^1/>^2/$ . When it would be objected that some start with the right foot, this would just be explained to be the same, for they are actually, in their mind, first taking the right step, but it is just omitted in a specific gate-community....

Now, there would also be liberal scholars who object to the rigidity of the theory and tell that the actual gait performance would have to be studied and that the theory should explain all parts of gait-performance such as the way walkers-gait-users swing their hips, keep their posture in the correct upright turn, how wide apart the feet are, and especially whether knees form a circular shape or not.

The main conclusion of the theory of generative gait would be that the remarkable aspect of gait is that you can just with a few finite steps undertake indefinitely long trips (that is, the ideal walker-gait-user who lives infinitely long would be able to do so). Children, it would be said, have an innate ability to walk – now they would not mean the simple idea of bipedalism but rather to go to the right places. Children would according to the theory have been observed to go to an infinite array of places, and they would actually go infinitely far in their native environment (and note, children always, at least the ideal child-gait-acquirer, walk in his native area) if the mother-gaiter would not stop the

toddler-gaiter from using any further steps. By the age of 6-7 years a child could walk just anywhere, it would be proven by an artful manipulation of the gait symbols. The deep point of the theory would be that a child could possibly not have learnt all those paths or roads, so he must have an innate, kind of a generative pathfinder, which generates all the roads he can possibly take.

Most importantly, the gaitists would claim, the analysis by the method of transmutation of gait-signs would yield knowledge of the anatomy of the bodily machinery for walking-gait-usage. By this method the gaitist would proclaim that he has gained insight to which are the possible steps that can be taken, and which are the mental constraints for this (such as fear of going to particular places). They admit that there would remain the challenge to find out the biological details for gait-production, but it would not be fair to reject the theory just because there had not been any immediate results on uncovering these infinitely intricate bodily systems that produce gait; after all, they would say, in linguistics, which is a much older and more established science, the brain systems for language had not yet been discovered by the same methods of induction. Further analysis of the transmutation of gait-signs would certainly yield results in this respect also, and most importantly it would allow scientists to predict the future steps of mankind – they would claim.

Only very few linguists have come close to realizing that there are no languages, and even those few have not been able to draw the relevant conclusions. In the following chapter, *Notes on the Philosophy of Language*, I shall discuss the theories of John Rupert Firth and Roy Harris, who have come close to realizing this while anyway failing to draw the final conclusions from their promising insights. Some linguists such as Ronald Macaulay even admit that “it is probably correct” to say “that no two people speak in exactly the same way” (2006: 60) but understanding as much he, too, fails to carry the idea to a logical conclusion to declare that there are in essence no languages. Only so little would be needed to pass from his revelation to the final one.

The fact that the overwhelming majority of linguists have not even come close to understanding that there are no languages, or that at the very least no intelligent conclusions for science have been drawn from it, is the more striking as we know that there is a wealth of literature on the historical study of how languages (language practices) change as well as ethnosociological studies of contemporary language practices (e.g. Goffman). From these studies we have learned how language prac-

tices have changed among communities over time, and how people who share other social practices in common by adhering to various professional and other social groups or subcultures also converge in their language practices. Correspondingly linguists such as Macaulay admit that linguistically “it is impossible to draw a clear line between a *dialect* and a *language*. All languages, except the original ur-language; were dialects at one time. French, Italian, Spanish, Portuguese, and Romanian are the descendants of the language spoken by the Romans and so could be said to be dialects of Latin” (2006: 60). – (Here I need to point out that I disagree with the postulation that there would have existed at the “beginning of language” a so-called “ur-language.” I will return to that a little further down.) – Macaulay also quotes a nineteenth-century French scholar Gaston Paris, who had said:

“Varieties of common speech blend into one another by imperceptible gradations. A villager who might know only the speech of his village would easily understand that of the neighbouring village, with a bit more difficulty that of the village he would come to by walking on in the same direction, and so on, until finally he reached a point where he would understand the local speech only with great difficulty” (2006: 63).

Scholars account for the historical change, for example, by pointing out how “English” has changed from “Old English” via “Middle English” to finally reach “Contemporary English.” They provide examples showing how significant the changes have been from one stage to another in the different processes of what they call “language evolution” (I shall return in the following chapter, *Evolution of Speech*, to a discussion of the fallacy to think that the perceptual abstraction *language* can possibly evolve). They tell how different languages have blended into *one* (which is how they conceive of the changes in social practices), for example, Macaulay tells that the “Celts spoke a language that is the ancestor of contemporary Irish, Gaelic, and Welsh” (2006: 134). Similarly he tells that “Old English was a Germanic language, similar in many ways to modern German. William and his court spoke Norman French, a language descended from Latin. Modern English is the result of the influence of Norman French on Old English”; further we are told how “by the beginning of the thirteenth century the upper classes were becoming bilingual and gradually French lost ground to English. By the end of the

century the country was once again predominantly English-speaking” (2006: 134). – It needs to be stressed that actually there has, of course, not occurred any changes in or mergers between any hypothetical entities called languages, but rather what has happened is that people from various cultures with various social practices have influenced the way other people with whom they have come in close contact with speak. Correspondingly there have never existed such entities, or “variants of English” as ‘Old English,’ ‘Middle English,’ or ‘Contemporary English.’ These are totally arbitrary academic constructions to which linguists have arrived by making generalized conclusions based on the conspicuous differences they have observed in linguistic patterns over time. In reality the underlying language practices have been in a constant flux and been greatly diversified over geographic areas and among social groups at any given time. Think of ‘Contemporary English’ – how *contemporary* will it be in 100 more years?

It is very strange, though, that these great differences that have been identified pertaining to these postulated stages of the development of ‘English’ are taken to represent a linear development of one language whereas, for example, ‘Dutch,’ which is as close to ‘Contemporary English’ as ‘Old English’ was, is taken to be a completely different language from ‘English.’ ‘Ukrainian’ and ‘Russian’ are also considered as different languages whereas ‘Middle English’ and ‘Contemporary English’ are taken to represent different stages of development of one.

These changes of “languages” which in reality represent changes of language practices, serve as clear evidence that there are no languages and that the corresponding phenomena only represent the way people speak in infinite variances as influenced by the social practices of their communities. The reader may consider the evidence for change in language practices, for example, in these books: Ruhlen: “The Origin of Language. Tracing the Evolution of the Mother Tongue” (Ruhlen, 1994); Baugh and Cable “A History of the English Language” (Baugh-Cable, 2002); Stockwell and Minkova: “English Words. History and Structure” (Stockwell -Minkova 2006); Barfield: “History in English Words” (Barfield, 1967). However, the authors of the referenced books have, notwithstanding the wealth of evidence they present, not been able to draw the conclusion I advocate.

It remains a mystery that notwithstanding these historic facts and all we know about the etymology of words, scholars still treat ‘languages’ as if they were thingly entities with their own material existence, indeed, why they consider that languages would *exist* and that there

would be separate species of them. At one point Macaulay even comes so very close to the final understanding that he, in the passing, says: “The ways in which the English language has evolved and continues to change would require several volumes to describe, but it is important to remember that strictly speaking languages do not change; it is people who begin to speak differently from their predecessors” (2006: 143). – Why could not Macaulay and his colleagues take this “strictly speaking” seriously and realize that is precisely what should be the basis for the scientific conception? - Languages do not change, for they do not exist in the first place.

The original inventor of the theory of evolution, Jean-Baptiste Lamarck, famously proclaimed that there exists no species of animals and plants and that only individuals could be said to exist. No doubt this insight played a crucial role in the chain of thought that lead Lamarck to detect and formulate the principles of evolution. In his *Recherches sur l’Organisation des Corp vivans* of 1802 Lamarck wrote:

“I have for a long time thought that *species* were constant in nature, and that they were constituted by the individuals which belong to each of them. / I am now convinced that I was in error in this respect, and that in reality only individuals exist in nature./ The origin of this error, which I have shared with many naturalists who still hold it, arises from the long duration, in relation to us, of the same state of things in each place which each organism inhabits; but this duration of the same state of things for each place has its limit, and with much time it makes changes in each point of the surface of the globe, which produces changes in every kind of circumstances for the organism which inhabits it... We may be assured that this appearance of stability of things in nature will always be taken for reality by the average of mankind, because in general it judges everything only relatively to itself” (Packard 2007: 213).

Lamarck developed these ideas in *Zoological Philosophy* of 1809, where he said that there were in nature no “classes, orders, families, genera or constant species, but only individuals who succeed one another and resemble those from which they sprung” and these “individuals belong to infinitely diversified races, which blend together every variety of form and degree of organisation” (for these and the below references, see Lamarck 1809 in Huth’s 2006: 35ff).

I brought up this idea here in order to point out the striking parallel between understanding evolution as a consequence of understanding that there are no species, and understanding linguistics as a consequence of understanding that there are no languages. All the arguments that Lamarck employed to point out how the actual infinite variances in individuals had been ignored in favor of the perception that a collection of individuals formed various species are equally valid for pointing out how the infinite variances displayed in individual verbal behavior have been ignored in favor of postulating that the hypothetical languages exist. I will quote some more of the arguments Lamarck used and ask the reader to mirror these arguments on how linguists treat individual verbal behavior and language practices as forming a language. Lamarck said that “species [languages] have really only a constancy relative to the duration of the conditions in which are placed the individuals composing it” and that “some of these individuals have varied, and constitute races which shade gradually into some other neighbouring species [compare with dialects and language families and various stages of English]” As this much was not understood by the naturalists of his time, they came “to arbitrary decisions about individuals observed in various countries and diverse conditions, sometimes calling them varieties [dialects] and sometimes species [languages]. The work connected with the determination of species therefore becomes daily more defective, that is to say, more complicated and confused.” How marvellous isn’t here the parallel with linguistics. Linguists postulate on arbitrary grounds that the language practices of various individuals constitute sometimes a language and sometimes a dialect, however unable to determine in reality what were to be the features that are decisive for a particular language or dialect. Lamarck explained that the fallacy of regarding a collection of individuals as forming a species was due to the observations that some individuals “resemble one another in their organisation and in the sum total of their parts” and have “kept in the same condition from generation to generation, ever since they have been known.” These perceived similarities and the perceived stability is what gave rise to the “justification for regarding any collection of like individuals as constituting so many invariable species.” These exactly same errors are those that still today lead linguists to postulate that a variety of languages would exist. Lamarck admitted that for convenience sake we may call a collection of similar individuals a species, but this only as long as we understand that in reality there are no species. Similarly I admit that we may conditionally call a language practice a ‘language,’

as long as we understand its true nature as a perception we have formed based on the similarities of verbal behavior.

Anticipating Einstein, Lamarck concluded the discussion on the hypothetical existence of species by telling that “magnitudes are relative both in space and time,” and added to that: let man take that truth to heart, and he will then be more reserved in his judgments on the stability which he attributes to the state of things that he observes in nature. “

## Ur-Language

Above in reference to Macaulay I mentioned the idea of a so-called “ur-language” that linguists entertain (from German ‘Ur-’ signifying *pri-mordial*). The idea is also known under the concept proto-language. In the less harmful form of this misconception the ur-language is taken to “designate the hypothetical most recent common ancestor of all the world’s spoken languages.” I qualify this idea as less harmful, because of the two modifiers: “hypothetical” and “most recent.” In the more harmful version the ur-language is considered plainly as the “common ancestor of all the world’s spoken languages.” According to that idea there would have been one community at a given time in a given location that spoke one language, which subsequently developed to encompass the different languages of today. (Taking this idea to its ultimate bankruptcy it would mean that at the very fountains of the “birth of language” there would have been one individual who either “invented the language” or was “innately endowed with it.”) This represents, of course, a misconception, for as there are no languages, there cannot possibly have been any one original language either. Instead, I consider that language practices have formed gradually in pace with the evolutionary development of the ability to speak as influenced by other social practices. In this conception there has not been any original language but only gradually emerging language practices which themselves have been diversified from the very beginning. It is very likely that the animals that gradually developed to what we today call the human dispersed into various communities as gradually as the biological evolutionary changes have taken place (allowing anyway for cross-fertilization between the groups). We must also assume that the early language practices have not been extensive and therefore not stable either, and therefore there must have been rapid change in the language practices of any given group. However, there have certainly been vari-

ous influences that have from time to time drawn the language practices of various groups closer to each other. Basically these influences must correspond to the same kinds of political and economical influences that have affected language practices from the times that we may historically study.

According to the less harmful version of this conception a proto-language is said to be the common ancestor of the languages that form a “language family.” For this idea to be intelligible the linguist must hypothesize that at a certain time in a certain geographical location a certain community of people lived in close proximity and shared a language practice that he calls the proto-language. In this theory it is of no concern what was the preceding history which had contributed to that language practice (i.e. the linguist does not have to speculate about the “birth of the proto-language”); that is, the linguist does not try to establish what kind of a language preceded the proto-language, rather in this case he follows the subsequent developments onwards. He tries to establish how in the subsequent history the language practices of the communities that have emerged from the original community have changed (or how “the language” has changed as linguists think). But even so, it would not be quite correct to speak of a proto-language, for any language practices of communities have always been influenced by various language practices that have originated in different groups, and even the language practices of the individuals of a given group have never been identical. This is why we should be quite skeptical about the possibilities to “reconstruct a proto-language.” Correspondingly I do not consider correct the idea that there would have ever been a so-called Proto-Indo-European language. Instead we may only say that if we generalize proceeding from the known facts at one time in history certain communities have engaged in language practices that have contributed to a more or less significant degree to the language practices which we today collectively refer to as the Indo-European languages. From this follows that no one can ever reconstruct such a language, because there has never been one.

## Grammar, Syntax and Rules

We may now consider the question ‘what language consists of.’ Before we think of the reply, we should note that the question itself represents a contradiction in terms, for as it has been said, language is only an immaterial abstraction based on the perceptions we form on social practic-

es, and therefore we cannot properly speak about language *consisting of* anything. It is only by force of the tacit conventions that the thingly language is based on that we are led to postulate that language “consists of something.” In line with these considerations we would therefore instead be tempted to try to identify what are the essential *elements* of language. But for the same reasons we would have to reject the idea of *elements* of language as well, for *elements*, too, refer to material considerations. By these two rejections I have already defined the answer in the negative – or rather rejected the question – language does not consist of anything. Therefore what we have to do is to turn the question around. This operation would yield this new question: ‘What are the regularities in verbal behavior that amount to the social practice of language?’ We thus have to study speech and the underlying biological processes that produce speech expressions, cognition, interpretation and imitation. I have presented my views on these biological issues in this book, but in this section I want to give a few more remarks on some of the misconceptions that are connected with this thingly fallacy of taking the perceptions we form on the social practices of language to have a material existence. This material existence is far too often even conceived of as being of an organic nature. And then these hypothetical organic beings are further considered to be endowed with human-like capacities to act (the *anthropomorphist fallacy*). These delusions are connected with the ideas in accordance with which language is taken to be system, or language is considered to have a structure of sorts. Grammar and syntax in turn are taken to be some kind of inherent material features of these “organic entities.” Scholars then claim that they can somehow represent these material features in terms of the “rules” that grammar and syntax are supposed to demonstrate. Some scholars, like Chomsky, even go so far as to claim that these rules can be more fundamentally depicted by the methods of algebra. The claim is that the rules would inevitably determine the relations between the “elements” of language. – But, in the practice of language there are no rules inherent to the system, the only rules are those imposed by people who have the authority in one or another situation to prescribe how people ought to speak. These people are usually either pedagogues or demagogues.

In reality language is not, as it is currently thought in the academies, this kind of system of rules which would depict how such “elements” interact in a structured and inevitable manner to form a unified whole. Instead language “consists of” learning to recognize and imitate words,

utterances, phrases as linguistic patterns by which a narrating subject tries to lay bare his ideas. These linguistic patterns are made by people and are not - as the linguists that dominate the science metaphysically claim - put together by some inherent syntactic rules (syntax), which they conceive of on the analogy of enzymes. The linguistic patterns occur naturally being fundamentally rooted in the human ability to undertake coordinated movements and memorize experience. The limits of this ability limits the length of the structurally pronounced language patterns and determines what kind of sounds can be pronounced in a sequence. The human can pronounce only such sequences of sounds that correspond to his biological abilities to pronounce and his sense of rhythm, i.e., the same features that enable the production and perception of sound in terms of timing, accent, and grouping. Both in speech and music the same elements of systematic, temporal, accentual, and phrasal patterning are involved (Patel: 2008: 96). In this connection of relevance is also what Tomasello has said about children's pattern-finding skills that he deems as the prerequisite skills necessary for learning to speak (Tomasello 2003: 28; I have discussed these ideas of Tomasello also in the chapter *Expressions*). The framework, the limits, of the pronounceable are set by the genetic endowment of the human and within these broader biological limits the language practices of the community from early childhood determine the actual range (due to the plasticity of the neural system).

In reference to what was above said about structural sequences I quote a very illustrative passage from Bruce Richman *How Music Fixed "Nonsense" into Significant Formulas: On Rhythm, Repetition, and Meaning* (2000: 306):

"At first, in childhood (or historically at the beginnings of language) we remember sequences as wholes tied to particular scenes...But later in our language development and in language evolution [we] are able to generalize from the many thousands of occasions of use of such formulas so that we pick out a varied collection of highly schematic features, any family resemblance collection of which will trigger an instant comparison and tell us that this particular spoken formula is the appropriate one to use now."

Similar ideas are held by Michael Tomasello who has said: "The assumption is justified by the fact that the cognitive and social learning skills that children bring to the acquisition process are much more po-

werful than previously believed, and by the fact that the adult endpoint of language acquisition comprises nothing other than a structured inventory of linguistic constructions” (2003: 6). In this connection it is also interesting to note a further quote from Tomasello where he says: “If adult linguistic competence is based, to a much larger degree than previously supposed, on concrete pieces of language and straightforward generalizations across them – with many constructions remaining idiosyncratic and item-based into adulthood – then it is possible that children’s early language is largely item-based and yet can still construct an adult-like set of grammatical constructions originating with these baby constructions (given several years in which they hear several million adult utterances)” (2003: 6). In her discussion of these abilities Ellen Dissanyake has told that “infants can respond to variations in frequency, intensity, duration, and temporal or spatial pattering of sounds; that is, to emotional aspects of the human voice” (*Antecedents of the Temporal Arts in Early Mother-Infant Interaction*, 2000: 391).

Tomasello is the author of the insightful books *Constructing a Language* (Tomasello, 2003) and *The cultural Origins of Human Cognition* (Tomasello, 2000). He has made an important contribution in advancing the biological conception of speech, however, still laboring under the misguided unified concept ‘language’ (instead of recognizing the need to differentiate between the biological ability to speak and the social practice of language). In essence Tomasello accounts for the ability to speak as a product of the gradual evolutionary build up of the human organic abilities for cognition and expression.

Tomasello reorients the study of ‘language acquisition’ largely in compliance with the principles I set forth in this book. I note, though, that it would be better to refer to this by the concept ‘learning a language,’ as ‘language acquisition’ points to the thingly idea that there would be an entity that can possibly be acquired. Ultimately ‘learning a language’ means acquiring the skills to participate in meaningful verbal communication.

Tomasello postulates that two sets of skills are needed for language acquisition. These are intention-reading skills and skills involved in pattern-finding and categorization. In intention-reading skills he includes: the ability to share attention with other persons to objects and events of mutual interest; the ability to follow the attention and gesturing of other persons to distal objects and events; the ability to actively direct the attention of others to distal objects by pointing, showing, and using of

other non-linguistic gestures; the ability to culturally (imitatively) learn the intentional actions of others, including their communicative acts (2003: 3).

Tomasello considers that these skills, which enable the mental processes that lead to conceptual abstractions being formed, emerge in a human at around 9 – 12 months of age. It is thus through the effects of these skills that children “acquire the appropriate use of any and all linguistic symbols, including complex linguistic expression and constructions” (2003: 3). The crucial point that directly bears on the idea that I present is Tomasello’s assertion that intention-reading skills “are domain general in the sense that they do not just enable linguistic communication, but also enable a variety of other cultural skills, and practices that children routinely acquire (such as tool use, pretend play, rituals)” (2003: 4). This shows how speech only represents one dimension of expression of the total range of expressions that the lower (deeper) processes possibly give rise to.

In pattern-finding and categorization skills Tomasello includes: the ability to form perceptual and conceptual categories of ‘similar’ objects and events; the ability to form sensory-motor schemas from recurrent patterns of perception and action; the ability to create analogies (structure mappings) across two or more complex wholes. These skills, according to Tomasello, “are necessary for children to find patterns in the way adults use linguistic symbols across different utterances, and so to construct the grammatical (abstract) dimensions of human linguistic competence” (2003: 4).

These scientific considerations serve to motivate how observed regularities in language practices, and consequently in individual speech expressions, come about. Hereby I also refer to the above discussion of the findings of Lieberman, Molino, Freeman, and Patel (see under note<sup>3</sup>). The observed regularities correspond to what we think of as ‘grammar’ and ‘syntax.’

Modern linguists prefer to speak of syntax over grammar – it seems that syntax represent for them a more promising concept in which to wrap their ideas on the metaphysics of language (especially I refer to the practice of Chomsky and his revolutionary followers). For them *grammar* sounds too technical and - familiar as it is from elementary school - does not seem to offer the needed material for linguistic alchemy. In line with this Chomsky is engaged in the art of syntax where he has relegated grammar to perform some auxiliary functions, albeit very important such (or rather the Early Chomsky was engaged in this until

his capitulation at Pisa; more on this in chapter *A Review of Chomsky's Verbal Behavior*). We could conceive of this as assigning syntax the role of a god and grammar that of an apostle. According to our real traditions we would, however, be more correct to think of grammar as the more general term and syntax as a special area of grammar. The Merriam-Webster definitions support this conception defining syntax as: "the way in which linguistic elements (as words) are put together to form constituents (as phrases or clauses); the *part of grammar* dealing with this."

A proper conception of grammar will be crucial when we later review the generative art of Noam Chomsky. Chomsky has assigned a very peculiar meaning (or many at once) to 'grammar' that do not in any way correspond to what people traditionally and in general understand with 'grammar.' In this chapter I will present my conception of grammar against a discussion of the generally accepted ideas in regards to it (excluding the Chomskyan metaphysics of grammar). I ask the reader to keep these ideas in mind when we later turn over to the Chomskyan grammar.

Merriam-Webster defines grammar as follows:

"*1a*: the study of the classes of words, their inflections, and their functions and relations in the sentence; *1b*: a study of what is to be preferred and what avoided in inflection and syntax; *2a*: the characteristic system of inflections and syntax of a language *2b*: a system of rules that defines the grammatical structure of a language."

The first point in the definition (*1a*) is quite acceptable and understandable, as long as we keep in mind that what we hereby analyze are not words etc. but observed regularities in social practices; this same comment apply to item *2a*. The idea that grammar would be a "system of rules" (*2b*) is somewhat more disturbing, in this connection I refer to below discussion of rules. Item *1b* is perhaps the most interesting and surprising for it points most directly to what I consider grammar to be: a study of what is to be preferred and what to be avoided in verbal behavior.

Most genuinely *grammar* represents a *description* of how people have been observed to speak, but unfortunately this is not the way the idea of grammar is generally understood. Those who labor under the idea that grammar is a description of *observed uniformities* strive to record and systemize their observations of language practices so as to give a description of the language patterns people observe in speaking

and writing (i.e. in their verbal behavior). But instead of being understood as a *description*, grammar is more often taken to be a *prescription*, an authoritative statement of what correct language use “is”; of how people must speak in order to speak “correctly.” But even characterizing the understanding of the idea of grammar as a *prescription* is an understatement, for, at the end of the day, most people take a correct grammar to be a true and objective statement of how things are, and how they must be and how they cannot be otherwise. These people think that ‘grammar’ represents an inherent property of “language” and is thus subject for discovery (or for *invention*, as Chomsky used to argue, among other things, before hanging up on his rule-system model, see chapter *A Review of Chomsky’s Verbal Behavior*). Usually these people coincide in thinking that they themselves have precisely discovered the true essence of grammar and language and they are therefore fond of censuring the language practices of other people. They are especially ardent in protecting the “purity of language,” which for them is represented by the standards that happened to be fashionable just when they went to school. For the breach of their purity standards we all risk the awful punishment of public shame for being taken to speak or write wrongly.

In the genuine conception of grammar as a description of past language practices, grammar can serve as an aid for developing one’s skills of verbal expression, as long as one truly understands that the rules are descriptions, not prescriptions or barriers. Already the ancient linguist Dionysius Thracian correctly identified grammar in these lines defining it as “the practical study of the usage of poets and prose writers” (Harris, Taylor 1997: 50).

Grammar is a description of how separate concepts have in actual verbal behavior been tied into sequences in such a way that the sequences form pronounceable logical units. And what is logical is based on the cultural heritage, on how people from generations to generations have learned by imitation to express themselves in accordance with observed language practices, to the extent their biological abilities have enabled that. Grammar thus represents nothing else but a description of observed language practices of imitative origin. The limits of the grammar, the possible combinations of sounds and verbal symbols uttered in a language practice are set by the biological premises for cognition and other organic capabilities as it was shown above.

I would also like to propose that we include in a proper conception of grammar Wittgenstein’s idea to refer by grammar to the logical prin-

ciples of how one structures propositions (Hellevig 2006). For Wittgenstein speaking ungrammatically meant the failure to assign a meaning to one's statements (*Philosophical Investigations* p. 195) Wittgenstein talks about "that in nature which is the basis of grammar"; see further details under note.<sup>5</sup>

This ties in with what Wittgenstein had identified as the correct method in philosophy: "to say nothing except what can be said, i.e. propositions of natural science ... and then whenever someone else wanted to say something metaphysical, to demonstrate to him that he had failed to give a meaning to certain signs in his propositions" (Wittgenstein, *Tractatus* 6.53). We should then consider as a grammatical proposition such a proposition that is constructed in accordance with a proper understanding of natural reality. An analysis of such a grammatical proposition would have to show that in accordance with our general life experience the ideas depicted by the proposition correspond with the real nature of animate or non-animate things and their capacities to act and be acted upon; and to the extent we involve our perceptual abstractions (ideas which do not correspond to any thingly entities) in the proposition the analysis should show that we have not abused the words standing for perceptual abstractions by endowing them with properties and capacities pertaining to things. Thus a proposition should be so structured that the roles and actions assigned to the various words depict an underlying reality that possibly accords with all we know of natural reality, the elementary principles of physics and organic life. In this way a grammatical sentence - in complete contradiction to Chomsky's theories - would have to meet the requirement of being meaningful *per se*. To consider a proposition grammatical we would then no longer be content with it corresponding to an artful arrangement of words in correspondence with the generally accepted language practices of the language of things. We may refer to this idea as the requirement of *logical grammaticality*. – "Most of the propositions and questions of philosophers arise from our failure to understand the logic of our language. (They belong to the same class as the question whether the good is more or less identical than the beautiful.)" (*Tractatus* 4.003).

There is absolutely no mystery or underlying hidden secrets to be found in the patterns of grammar any more than in the patterns of embroidering. And the patterns of grammar will not tell anything – contrary to what Noam Chomsky has professed – of the way in which speech (or Chomsky's "language") is produced in the body, anymore

than the patterns of embroidering would tell how the hands and brain function.

From the above definitions of grammar and its kid sister syntax, it follows that *no rules* may be validly posited to exist in “language.” First of all we note that as *language* is merely an abstraction we have formed on past verbal behavior then, of course, there cannot be any rules in language; for the claim that a perceptual abstraction would contain some kind of rules amounts to a physical impossibility. We could then ask whether there are any rules that govern verbal behavior or the organic ability to produce and interpret speech expressions. To deal with the latter part of the question first, I refer to the extensive discussion in various chapters of this book on how organic processes cumulate to speech expressions. We can certainly not postulate that those processes would in any way correspond to anything that could intelligently be called ‘rules.’ The only proper way of speaking of rules is in reference to human social interaction for characterizing the normative imposition of the will of one individual on other individuals, when the former acts by force of authority, directly or indirectly backed by the threat of violence (including moral violence which ultimately has the effect of physical violence). In this sense we may, of course, also speak of ‘rules of grammar,’ that is, when the rules are announced by a person with authority as prescriptions on how to properly conduct one’s verbal behavior when the rule is backed up with a threat of a punishment (such as failing an exam, or being dismissed from a position of a newsreader).

We may also consider a more wholesome conception of a *grammatical rule*, one in accordance with we just would assign the concept ‘rule’ the meaning of a ‘valid generalization of observed practices.’ There is a great practical value in “following the rules” thus defined as observed regularities in that they greatly aid in making ourselves intelligibly understood by others, for we generally have to try to express ourselves in the fashion that we think would largely conform with the prevailing language practices of the community to which our interlocutors belong. Having said that, I also do need to point out that, on the contrary, sometimes there is a big value in “breaking the rules” in order to present an idea in a unique form and thus to press through the intended meaning.

Hereby it should be noted that the capacity for syntactic coordination of these expressions (syntax, grammar) is not something that developed after the ability to express elementary sound and body expressions, but rather the syntax we perceive in speech is a function of more fundamental features of syntactic coordination of all organic processes within the

homeostasis. Syntactic coordination of utterances did not develop separately for speech, rather the anatomical capacity to articulate sounds enabled the already existing abilities for syntactic coordination to be manifest in the coordination of speech utterances. Syntax and grammar in the linguistic sense must then have developed through exercising these abilities by participating in social practices of expressing oneself in sounds. Thus we should recognize that what we understand as linguistic syntax, merely is a manifestation of more fundamental biological processes that enable syntactic coordination. See also discussion under note<sup>3</sup>.

## The Real Limits of Language

Linguists have been persistently claiming that there would be some inherent features of language that sets the limits of what can possibly said in English or another language. This is, of course, a staple claim of Chomskyan linguistics, but even traditional linguists such as Macaulay adheres to the idea. Following his idea of “the duality of pattern” of a language (referred to above) Macaulay tells that “human languages employ two systems” (2006: 125). The other of these systems is said to state “the conditions for meaningful combinations.” From the “system constraints” it then supposedly follows that certain combinations are not possible in English. Macaulay gives these examples of utterances that are not possible in English: ‘*the the boy girl loves*’ or a word such as ‘*npi or ipn.*’ We will return to these examples a little bit further down. (We will meet yet other such supposedly non-English words and sentences in chapter *A Review of Chomsky’s Verbal Behavior*).

Above I have already addressed the fallacy to regard languages as systems of sorts; the idea that there would be some kinds of ‘system constraints’ thus merely represents an extension of the original fallacy. What is to be regarded as a meaningful utterance is not a question of “rules” or “system constraints,” but of biological abilities common to all humans and social practices. In principle any utterance that can be produced can be assigned a meaning if the purported meaning is intelligible for the interlocutor. Hereby the real constraints are those set by the limits of the ability to easily and repetitively articulate the sounds. This ability is limited on the one hand by the genetic endowment and on the other hand by the way the neural system has been adapted to produce sounds in correspondence with the sounds that a young child expe-

periences in his surroundings (thus there is a correspondence to social practices even in how the biological ability is molded). The child initially approaches language learning with a neural system that is fully plastic so that he can produce any of the sounds that humans can possibly produce as part of any language practice. As plasticity diminishes with age the ability to articulate sounds are primarily confined to those sounds that the person became used to articulate in the critical years of childhood (with great efforts some individuals may also in a more mature age learn to imitate the sounds of other social practices almost on par with those native to those practices). The other constraints have to do with the biological abilities, for example, the above mentioned abilities for undertaking coordinated organic movements (sense of rhythm, i.e., the same features that enable the production and perception of sound in terms of timing, accent, and grouping, etc.), and the abilities to memorize experience.

It should be noted that these constraints do not apply with equal force in writing; in writing any symbol can be assigned a meaning (a purported meaning). One of the most famous novels written in English, James Joyce's *Finnegans Wake* serves as a case in point (1975).

Apart from the biological constraints language use is *de facto* limited by the very social practices, that is, people express themselves in speech in accordance with the language patterns they have been accustomed to. Thus it is only due to the received language practices that one would consider that word such as 'npi' or 'ipn' would not be possible combinations in English, but there is nothing that would in theory prevent them from in the future becoming acceptable English words. Let's consider, for example, the possibility that a famous comedian or talk show host, would start exclaiming each time he greets a male guest "npi!" and when he meets a female guest "ipn!" It would then be quite conceivable that people at large would start imitating this practice and so the words 'npi' and 'ipn' could come to signify in the "English language" such kinds of greetings.

To prove these kinds of arguments of what are supposedly nonsentences of a language the linguists argue in circles. They especially contrive sentences that clearly do not tally with observed language practices, and then due to this conspicuous distinction with generally observed language practices they claim to have proven that the nonsense word or sentence does not fit in the system, which supposedly means that *the system* rejected it. This is the more so curious when these linguists are very well aware of the historical change in languages (i.e. in language

practices). They could therefore, for example, look at the original version of Geoffrey Chaucer's *Canterbury Tales* (from late 14<sup>th</sup> century) and compare that with a contemporary translation. Consider, for example, the two extracts below<sup>6</sup> The left column represents the original and the right a modern translation.

Whan that Aprill, with his  
shoures soote  
The droghte of March hath  
perced to the roote  
And bathed every veyne in swich  
licour,  
Of which vertu engendred is the  
flour;

When in April the sweet showers  
fall  
That pierce March's drought to  
the root and all  
And bathed every vein in liquor  
that has power  
To generate therein and sire the  
flower;

How on earth can linguists believe that these differences in the modern version would be caused by a change in an “inherent system of language” that now would reject the constructions that *it* accepted earlier! Why can linguists instead not recognize that all that has changed is the verbal behavior of people in imitation of other people's verbal behavior, which amounts to language practices? Or, why do they not simply realize that “the system” is ‘the people engaged in mutual communication’?

## Meaning

When words do not exist, then they naturally cannot have any *meanings* either. Wouldn't it be quite peculiar that if something that does not exist had a meaning! Thus words, languages and utterances do not mean anything, never, and in no context. They do not mean anything as signs, nor as elements of a system, and in no other ways either. It is *the speaker who means* by the expressions he has chosen, i.e. words do not mean anything but a speaker attempts to convey his ideas with words – he means by uttering words and language patterns. The speaker expresses himself in speech by uttering such words and language patterns as he considers (to the extent he is in conscious control of the process) such that they would help to reveal his ideas (or more correctly feelings), or that is, would help to make him understood. The speaker is thus at-

tempting to convey a meaning by his verbal expressions. Naturally, he in doing so is guided by his experience of how other people have expressed themselves (“used words”) in a given context. A context is therefore of importance both in the sense that previous contexts guide the choice of expressions (words) in a new context, and in that the speaker’s verbal behavior in the present is *judged against (interpreted)* the present context.

My conception according to which ‘words’t lack meanings while a speaker means with words’ can be illustrated with a comparison with the art of painting. I think we all can agree that an artist is trying to convey his feelings with the pictures he paints; he means something with his art. The artist proceeds by spreading paints on a texture. When he has skillfully applied the paints in the intended fashion we may say that the composition represents what the artist meant (although, people would perhaps in keeping with the tacit linguistic conventions tend to claim that the *picture* now means something, while in reality it is still the artist that means – or has meant - something with the picture; see Hellevig 2007). But then what was the meaning, say, of the red paint in the tube before the artist had spread it on the tableau? Can anybody claim that a red paint in a tube has a meaning? The paint is only *instrumental in conveying a meaning*, precisely the same way as words are. And this is, in fact, how we speak, we speak as the artist paints, we try to express those words and linguistic patterns that would illustrate our feelings (opinions, ideas, etc). But we do not only paint our ideas with words we engage in complex acts of verbal behavior with all our body when we speak. We may say that meaning constitutes an activity - a performance. We perform the meaning. Words cannot mean, only humans can. Only a living organism with sufficient cognitive abilities can mean.

If one wants to be understood by others, then one needs to use words in such a way that corresponds to a prediction of how others would understand them. In speech this happens mostly by force of habit while in writing a writer takes pains to choose those combinations of words that best convey his ideas - the more so the better the writer. This need to match the use of words (or more correctly, the verbal behavior at large) to the anticipated reaction of those with whom one communicates is what creates the semblance of words having a meaning. As we very often use words similarly as others, the perception that a word as such would have an independent meaning is reinforced – and hereby nobody seems to be paying any attention to the counter-evidence that words are

constantly used in various fashions for conveying an infinite variance of ideas.

The real and profound meaning to be found behind words is the understanding of the underlying feelings, those of oneself and those of others. From this follows that in any act of communication there are already two meanings – the meaning that the speaker (writer) intends and the meaning that the interlocutor (reader) interprets through his mental processes (the meaning the interlocutor assigns to the utterance).

The erroneous idea of words having meanings is very understandable, though, and is a function of the limited life experience of the individual, for when an individual grows up experiencing that a given word is frequently connected with a given thing or ideas which seem similar, then he gets accustomed to believe that there is a natural relation between the thing and the word, and the idea and the word. (Especially the elementary words that children experience are employed in a highly uniform fashion, which predisposes a person to think that all words have kind of material correlates). The problem is aggravated in tight-knit relatively static communities where the circumstances of life remain relatively stable, for historically in such communities the things and ideas referred to may have changed very insignificantly and imperceptibly from time to time, and even from generation to generation, and therefore people fall even more under the impression that the speech expressions represent another (audible) side to the things and ideas (like Plato thought). This is how words really are taken to be *things-in-themselves*). – These are the same considerations of seeming stability that Lamarck was above quoted as having referred to in explaining the misconception that there existed unchangeable species. - The less there is competition in views and opinions the more people are prone to think that the words we use in referring to them carry a fixed meaning.

In this connection I also need to address the erroneous belief that words would receive a meaning by a social convention of sorts, as if by a process of people mutually agreeing that ‘this and this’ will be the meaning of the word ‘x.’ People never get together in such a fashion to decide upon a meaning, and indeed could not possibly do so. However, we could conditionally speak about a *tacit social convention* in a limited sense. This means that we could conditionally say that through social practices, and social competition, some words are assigned a particular meaning, that is, that they are to be used in such and such contexts for referring to certain things and ideas; while keeping in mind

that this tacit understanding would always be only tentative and in a continuous flux. However, in certain fields of activity the conventions hold and should hold more firmly; especially so in science. If we in science without a valid and duly justified motivation change the generally accepted meanings of key concepts, then the whole enterprise is converted into nonsense; a case in point is Chomsky's linguistic art, which we will study more in detail a little further down.

Let me also point out that if by some miracle all people of a language community would come together to agree upon the meanings of words – and even sign a collective agreement as to that matter – then people would still in actual verbal behavior use same words to signify different ideas. This follows from the very fact that it is the narrating subject that by his performance acts out the meaning and therefore he cannot even theoretically rely on hypothetical linguistic particles with assigned meanings.

To illustrate this discussion, I want to refer to this proposition from Bennett and Hacker: "It is thoroughly confused to suggest that words are labels for underlying concepts that must first exist in non-verbal forms" (2003: 341). These authors are quite correct in this assertion, for if we say that 'words are labels' then it sounds as if we were claiming that there would be such a relation given by nature. But then again if we look at this issue from the point of view of the paradigm of interpretation of feelings, then we could say that 'words are labels *we give (i.e. each one gives)* to our conceptual abstractions in every act of verbal behavior,' i.e. words are just the symbols we try to match to those thoughts, or even vice versa, we may try to match thoughts to symbols. In accordance with my conception of an expression already being an interpretation, we may also say that words are part of the interpretation. In language practices interpretation of feelings is about finding expressions that can be understood by the relevant community. It is about matching one's own interpretations of feelings with what one expects the community to understand.

The way modern dictionaries list the meanings of words serves to illustrate how we are to think about meanings. For what indeed the dictionaries contain are descriptions of what people have in the past meant by uttering words and language patterns. An unprofessional and presumptuous editor might try give out his dictionary as an authoritative statement of what 'words mean' but this is not anymore the case with modern professionally edited dictionaries such as, for example, Merriam-Webster, to which I have referred. This dictionary clearly points

out instances of different use of words in different contexts, and it even from time to time stresses the context by illustrating the ideas with quotes of actual verbal behavior.

Again, I do need to alert the reader to the limits that our language practices impose on us, and to point out that even when I reject the idea that words would have meanings, I am still compelled sometimes to speak about a 'meaning of a word' etc., in view of the fluency of speech. But having explained what I, in fact, consider the case to be, I do not think that any fair reader would be misled in essence by me thus following the established practices in cases where there is no room for miscomprehension.

Following up on the above observations, I will return to the questions of a linguistic study of meanings which was initiated in the introductory section to this chapter, *Main Principles of a Theory of Speech and Language*. I will repeat what was said there and then further develop the ideas. I said that while we have to understand that verbal symbols do not have any kind of meanings in themselves, we still have to admit that from point of view of linguistics we have to consider verbal symbols (including other symbolic devices) as if they had meanings. This because one of the tasks in linguistics is to establish how people express meanings (note, that the question is of how people *express meanings* by use of words, and *not* what the *words mean*); how verbal symbols are used for conveying meanings. As one person uses these symbols in imitation of how other people have used them, then it is as if the verbal symbols would have meanings. We kind of copy the meanings we have experienced others to express with the symbols. And in this sense linguists are justified in *tentatively* identifying meanings in words. But this only insofar as the linguist understands that these verbal symbols in reality do not have any absolute or inherent meanings in themselves. The study will thus yield a description of what kind of meanings verbal symbols have been *assigned in various contexts*, or what kind of meanings they have been *taken to carry*. To stress, we use words in similar fashions in imitation of each other, and therefore people take words to mean similar things (ideas). When we say 'milk,' then we *usually* mean the fluid secreted by the mammary glands of female cows which people drink for nourishment. In this sense 'milk' means that drink. But we have to remember that by 'milk' we also mean the fluid secreted by the mammary glands of any other mammal females for nourishing their young. Further we mean by 'milk' the action

of drawing milk from the udders of a cow. 'Milk' would then seem to mean all these things connected with the liquid and the actions to obtain it. But 'milk' "means" more than that, it also "means" the activities to illicitly coerce profit or coerce it to an extreme degree; somebody can be said to milk his client or, milk a lover etc. Thus we already have several competing meanings of the word 'milk.' It would then *seem* that 'milk' *means* all these different things. This is how linguists usually think, but in reality it is not 'milk' that *means* all these different things, rather *we mean* to express all these different ideas by employing the same verbal symbol.

We see from these examples that precisely what I said holds true, that is, we may establish tentative meanings of words (verbal symbols) in the sense that we account for the various ways by which they have been employed to convey a meaning (express a meaning). We can then say that 'a word means this and that,' but only if we in doing so actually mean that 'people have been observed to mean by such and such a verbal symbol this and that in a given context.' All meanings, then, that a word can be tentatively said to carry are meanings in a given context. – We may compare this with the color symbols of traffic lights: a red color does not mean anything, but people with authority who have set up the system of traffic lights mean by the red color that one should stop and not move further before the color switches to green. The study of meanings of words is a similar study as the study of meanings of the colors of traffic lights; in both cases the study is ultimately a study of human behavior. We may abstractly speak about words meaning something in a hypothetical context, but we may never say that a word means something independently of a given context. We do not always need to define the context as such, because often the context is tacitly understood. – Thus a verbal symbol does not have a meaning, nor acquire an absolute or independent meaning, rather it is employed for conveying various meanings that a speaker may want to express. These meanings we may tentatively describe but we cannot properly give them out as any absolute values.

Traditionally linguists are, however, prone to try to establish some absolute meanings and go to great lengths to prove the validity of the meanings they have arrived to. But we should note that this is a useless endeavor for people are anyway ignorant of these precise meanings. People use verbal symbols as *symbols* in an effort to tentatively match them to their feelings. As I have explained it above, the whole speech act is only to a certain degree conscious whereas part of the utterances

are produced by unconscious or inadvertent process where whole strings of utterances are released merely by a few conscious clues. By this I mean that the utterances contain and combine verbal symbols that from the conscious point of view of the speaker are not meant to carry a special meaning, whereas the whole speech act in itself may be meant as one meaningful statement of the person's feelings. - Then all we can really study is not the hypothetical inherent meanings but the meanings usually assigned to the verbal symbols. In reference to old linguistic theory, we should then precisely understand that verbal symbols are no kinds of "independent elements" or "semantic units," a paradigm under which, for example, Bloomfield labored (Matthews 1996: 56, 14), which he formulated as our "fundamental assumption" implying "that each linguistic form has a constant meaning" (Bloomfield 2005: 145). This also means that we need all the time to keep in mind that verbal symbols are precisely manifestations of human behavior and that they therefore cannot be validly studied without all the time recognizing that correlation between the human behavior and the traces of the behavior that verbal symbols represent. When we keep this in mind, then we will not fall into the thingly trap of thinking that verbal symbols have an existence independent of human expressions and interpretations. This in turn will help us to understand that in linguistics we may only tentatively and in abstraction describe the manifestations of human behavior. By these considerations we also involve in the discussion the question of how meanings are in reality formed as mental processes of interpretation, on the one side, in the body of the speaker, and, on the other side, in the body of the interlocutor (as it has been explained above and further in this book). - I note that all these above ideas are such that Bloomfield had considered and weighed but where he ultimately opted on each point for the wrong conclusion; for example, he had understood that the question was of human behavior but thought that the traces of the behavior (verbal symbols) could be studied independently of the actual behavior (Matthews 1996). I will further develop the discussion as to these paradigm choices of Bloomfield in chapter *Notes on the Philosophy of Language*.

Most importantly we should understand that in linguistics we should not try to adhere to any rigorous scientific methods, for nothing in the underlying human behavior corresponds to such a rigor. The study of language when properly conducted is nothing else than a description of language practices; a description of real observed behavior.

I have above spoken about words as verbal symbols; further above in the introductory remarks I had distinguished between verbal symbols as words and other verbal symbolic devices such as phonemes and morphemes. In principle, the same considerations apply to both these categories. By qualifying some of the symbols as symbolic devices I aim to mark the dependent status of the latter to the degree that the corresponding sound or written particles cannot function as delivering any meanings independently (without being combined with other particles to form words; to note, some morphemes may also stand as independent verbal symbols). A phoneme or a morpheme may modify a word or a combination of words so as to serve to convey another meaning. All the same considerations that were presented above apply in this case also. Various morphemes and phonemes are used to express (nuances) of meanings but by this they do not acquire any absolute or independent meanings as such. We may only describe how various morphemes and phonemes have been used to express meanings.

We also have to consider the question of meanings at the level of grammar (or syntax), that is, on the level of combination of the various verbal symbols and symbolic devices. Chomsky and like-minded linguists have made a pseudo-science out of the question whether grammars have meanings or whether they are meaningless (I refer to the above discussion in section *Grammar, Syntax and Rules* and the chapter *A Review of Chomsky's Verbal Behavior*). Whereas I understand and respect the idea to try to identify meanings (in the sense that I explained it above) of verbal symbols and symbolic device, I do, however, propose to reject the whole idea as misconceived in relation to grammar (syntax). This because, as I above already pointed out, grammar is (when correctly performed) merely a description of meaningful statements. Grammar as such cannot be said to be meaningful or meaningless, rather the whole question is meaningless. People mean by their statements in the context that the statements are produced and with the verbal symbols that the statements consist of. Certainly the arrangements and combinations of the symbols also serve to convey nuances of meanings, but these nuances may be expressed in infinite variances and can therefore not in any way be regarded as functions of the grammar (syntax). To note, that not to any lesser degree than those verbal symbols that can be depicted with the alphabet, meanings are also expressed by a lot of other aspects of speech and verbal behavior such as intonation, strength of voice and a host of other bodily expressions. Therefore if the study of grammar from point of view of meanings would make

any sense, then it would have to include all these other aspects of speech and verbal behavior as well. And this would be an impossible task by the methods of precise science, instead these issues may only be alluded to and explained by examples.

Grammar may only serve as a description of the regularities observed in actual verbal behavior; and a description cannot be said to be meaningful or meaningless; the description can only be characterized as more or less successful in rendering the underlying reality. Hereby to note, contrary to the Chomskyan ideas, there cannot be any other types of grammars than those representing a description of observed language practices; the claim that there would be any other types of grammars amount merely to ideas of linguistic alchemy and academic humbug. Thus a study of grammar can in no way yield any theoretical knowledge or rules about how meanings were to be composed or detected. However, there is an intelligent line of study that can be conducted in regards to grammar; this concerns the ideas that I have expressed above in respect to the idea of *logical grammaticality*. By this I refer to the need to consider whether a proposition is so structured that the roles and actions assigned to the various words depict an underlying reality that possibly accords with all we know of natural reality, the elementary principles of physics and organic life. In this way a grammatical sentence would have to meet the requirement of being meaningful *per se*. To consider a proposition grammatical we would then no longer be content with it corresponding to an artful arrangement of words in correspondence with the accepted language practices of the language of things. – We note that from this perspective we are not studying observed regularities of speech behavior in order to derive some rules by which we were to predict or detect meanings, rather we study observed speech behavior with the aim to detect what are the difficulties people encounter in making meaningful statements. – To note, in grammar all is on the surface, grammar does therefore not reflect any other *linguistic* meanings (such as those that Chomsky purports to detect with his deep structure analyses). But all verbal symbols and their combinations are expressions of interpretations of feelings, and we can always exchange one expression for another to better convey the feeling, but in so doing the relation is always from expression to feeling and not from one expression to a hypothetically hidden expression looming in the “deep structure.”

All ideas that are intelligibly expressed are expressed grammatically, therefore we cannot establish any criteria, apart from that (the intelligi-

bility) for grammaticality. We can therefore merely describe the structure of the sentences by the methods of classical descriptive, pedagogical grammars. - A descriptive grammar establishes by the methods of classical pedagogical grammars what combinations of sound patterns (verbal symbols) are made in speech/language practices. Thus this is not a study of meanings but a description of what people have been observed to mean; this is a description of observed behavior. Statements (utterances) have a meaning in a context and outside a context all statements are equally meaningless.

In the above connection, I refer the reader further to section *Bloomfield* of chapter *Notes on the Philosophy of Language*.

## Meaning as Neural Processes

In the chapter *Feelings, Emotions and Consciousness* I have accounted for my view on how I consider that an organism organically encodes the abstractions of life experience in form of concepts that correspond to neural mapping (*conceptualization*). These considerations also directly import on linguistics. In the above referred connection I have accounted for my conception on how the mental ability to form concepts must have evolved on top of all other organic systems as, so to say, a management tool that enables the mental processes to orient towards the relevant experience by clues that the conceptual abstractions serve us with. The concepts serve kind of like beacons that draw the processes towards relevant previous experience, and once identified unleash the encoded reaction patterns in conjunction with the reaction patterns that process the new experience so as to make best use of previous experience in any new situation. This conceptualization occurs in the brain processes referred to as 'short-term' or 'working memory.' In those brain systems various cognitive perceptions are simultaneously processed and lead to conceptualization of new experience in the background of old by, as it were, creating new 'concepts' by comparing new experience to past experience, and then assigning the new experience to the proper relation in regards to past experience. - I have told that the concepts that correspond to words must also develop in the described fashion. Words, concepts, are similarly always related to a given life experience embedded in previous life experience. Words are processed neurally like all other stimuli, so that the experienced verbal abstraction (a spoken or written word) is neurally interpreted like all other cognitive stimuli. It is in working memory assigned a place in relation to the

overall life experience by way of relating the present verbal stimuli to the present spatial position of the organism in accordance with how past experience has been neurally encoded in reaction patterns. This is why each word is always understood uniquely by each person in general, and by each person in any particular moment of life. Thus neural processing of the stimuli that originate in words represents always a private, unique and everchanging phenomenon. This naturally means that a word does not, and cannot, represent an objective meaning, as the meaning is created (interpreted) in the body by each unique act of mental processing.

I may in this connection refer to an observation I have made in regards to the way I myself learn foreign languages. I have noticed that in order to grasp the meaning of words (that is, what is intended in a particular situation or what I take people in general to mean by a certain word) I have to imagine pictures or scenes which enact the meaning of a word which is new for me.

We could also say that the body kind of invents the meaning of a word. This ties in with another aspect of this discussion which I brought up in connection with discussing the immateriality of the stimuli that affect people in form of social practices (including language; see chapter *Mental Processing*). In that context I said that it becomes important to stress that the immaterial social practices, most importantly language, cause a material effect on the human who has detected the act of human behavior or the carrier (e.g. a building, a piece of art, a traffic sign), this as the detection, or reception of the stimuli through the sense organs, leads to neural processing of the stimuli. The fact that social practices are immaterial but that they have a quite material effect on a human organism certainly will be difficult to grasp for many. But in this connection we are reminded that quite material stimuli, for example, a tree which we see is also apprehended only indirectly through the process of interpretation.

In view of these considerations we must recognize that social practices (language practices) form stimuli that affect the body in quite physical ways; when we become aware of a word the body sets out to process the stimuli that the word represents by quite material organic processes. Thus the effect of a word is caught in the biological system of continuous homeostatic processing which means that the effect of the word is processed against all the previous life experiences (as that has been organically determined). At the end of the process the word (the

effect of the word) is assigned its position in the mental maps that the organism constantly forms in the process of positioning the body and its parts (the various processes) in relation to each other and the environment. – This is how a word receives a quite physical (organic) meaning; the word receives an inner meaning in the human in relation to all the other life experience. This is also why abuse of language is so dangerous, for at the end of the day a word is not “merely a word” but something that the body “takes seriously” and the relevance of which it strives to determine in the relation of the organism to the environment. In this process of interpreting the words the organism is influenced by its life experience, while the life experience we have of words comes from the society we live in. The less experience a person has of diverse dimensions of life and different cultures, the more predisposed are his organic processes to organically interpret the meaning of words in accordance with what is touted out to be by the community he is closest allied with (here the context of the use of the word is especially limited). These biological considerations explain the basis for the effects of propaganda, racism and all kinds of prejudices, which are distributed by ignorance or purposefully for evil ends.

In the chapter *Mental Processing* I have discussed the idea of somatic markers. These ideas bear directly on the theory of speech and language and represent aspects of the issues I brought up immediately here above. The somatic marker hypothesis provides strong arguments for how we should conceive of meaning of words. In my conception the meaning of words, utterances and phrases is ultimately the function of how a verbal stimulus is in a given context processed by the body, and ultimately how it is somatically marked. The meaning should thus be considered as a function of the sensation the stimulus produces against the background of all the biological processing of homeostasis. The meaning is the usefulness, value, that the neural and somatic processes award the stimulus in the overall homeostasis – that is, its contribution to the overall feeling.



## 2 EVOLUTION OF SPEECH (THE ABILITY TO SPEAK)

It is of crucial importance when considering the question of evolution to make the distinction between the biological ability to speak (*speech*, which includes the actual exercise of the ability, that is, speaking) and the social practice of speaking, that is, language (language practices). According to a proper understanding of this distinction we start with separating the phenomena under analysis into two groups: those pertaining to the biological ability to speak, and those pertaining to the social practices of language. It is the biological ability to speak that has evolved, i.e. evolutionary developed from generation to generation. But we cannot validly talk about ‘evolution of language’ or any other social practices (“social evolution”). A social practice such as language does not evolve in the proper sense of the word; or, if we want to use the word ‘evolution’ also in regards to ‘language’ and other social practices, then we have to realize that we are using the same verbal symbol in two different senses. Whatever the semantic choice of words, we shall note that all the biological considerations pertaining to evolution can only apply to speech, the biological ability to speak. By evolution of biological organisms (biological evolution) we refer to changes in the genetic endowment of living organisms corresponding to gene expressions, which in all offspring results in an anatomy, organs and organic process patterns, which in all essential aspects are predetermined by the genetic endowment. In this primary biological meaning ‘evolution’ thus signifies inherent genetic processes of change in living organisms from generations to generations so that the form and structures of offspring are (on an average) in all but some nuances the same as in the parents, whereas in a multitude of generations the changes cumulate to perceptible genetically encoded changes across populations. This is how the ability to speak has evolved from other organic abilities to express.

But language is not a living organism, and it is not an object of nature (as Chomsky erroneously thinks, 2007a: 76); language is not even to be considered as a “social product” (Saussure 2005: 9); for language is not a ‘product’ of any form; language merely represents the abstract perceptions we form on the social practice of speaking (verbal behavior, language practices); that is, language merely corresponds to the perceptual abstractions which we form of the verbal behavior of people in a community. Thus ‘language’ is not a biological entity that could possi-

bly have evolved; it is no entity of any kind – ‘language’ is not a thing that could possibly take a new shape. And nothing in language is predetermined the way it is in biological organisms. – Thus it is not correct to say as Bloomfield did: “Every language is undergoing, at all times a slow but unceasing process of linguistic change” (Harris 2002: 26), for not *languages* are undergoing any changes, rather people’s verbal behavior change; and with that the perceptions we form of it.

We may, of course, continue to speak about an evolution of social, political, and economic phenomena, if we hereby recognize that this only represents a manner of speaking. But in order to avoid confusion, I propose we drop altogether the concept ‘language evolution’ as well as other ideas pertaining to ‘social evolution’ and rather speak of ‘social change,’ or find other suitable terms to express the ideas. - I will below try to account more in detail for the differences between ‘biological evolution’ and ‘social evolution,’ which latter term I reluctantly have to use here for the sake of presentation.

Whereas biological evolution signifies a change in the external and internal form of an organism, social evolution signifies perceived changes in human behavior. Biological evolution implies that a new organism develops further in ever so small steps within the framework set by the genetic endowment under given environmental conditions. Biological evolution happens inevitably and independently from a cognitive will of the subject. The present state of life is the given precondition for future life and nothing in the development depends on the cognitive will of the organism. The organisms are both the subjects and the objects of evolution which will go on from one stage to another within the system of harmony of life as long as there is life on earth. The case with social evolution is quite the contrary. Here nothing is inevitably given and all change is exclusively due to unpredictable effects of human behavior. And note, words and other linguistic elements are merely perceptions we form of certain aspects of human behavior; past behavior does not inevitably lead to similar behavior in the future; and past perceptions do not inevitably lead to similar perceptions. Past behavior creates a framework for future behavior, but the framework does not restrict the behavioral patterns like the genetic framework restricts the organic process patterns. In biological evolution the genetic endowment directs the future evolution by inherent processes, whereas social evolution is dependent on processes external to the perceived object, these external forces being humans as manifested by their behavior. Social

evolution does not proceed or remain intact without beneficial efforts rooted in the cognitive will of human beings.

Naturally human individual behavioral patterns are on an average rooted in the past behavioral patterns and therefore it seems on a superficial observance that the social practices would reflect a gradual “evolutionary change” of these patterns. But in reality, as we know from history, the changes in social practices can be drastic and unpredictable. There is properly speaking not even a given object for social evolution; any social phenomena merely correspond to perceptual abstractions based on how we regard (perceive) some phenomena (social practices are in the eye of the beholder). Social practices are derivatives of human behavior and totally dependent on that. If the behavioral patterns change with changed preferences the social practices change as well. Social practices may greatly advance as well as greatly plummet in the matter of years and might be totally wiped out in the twinkling of an eye.

The perceptions we form on social practices are based on some kind of perceptual averages in regards to collective behavior of individuals. But collectives do not behave, only concrete living people behave.

Social evolution is not, and cannot be, genetically determined. None of our social achievements, including language practices, can be genetically transmitted; instead each newborn human starts social life on a blank slate armed with the genetically transmitted abilities. How the individuals of the new generations will take part of the social practices of the community where they are raised depends entirely on human behavior, the behavior of the mature and the aspiring subjects. All the social achievements, social skills, social practices, are – like language – results of human cognitive memory. Traces of social practices may have an existence of their own but the social practices, the skills, themselves are immaterial; they live and die with human beings. If one type of a social practice, a particular skill, or a particular social piece of knowledge is not transmitted to another person by way of the processes of expression and imitation before the one possessing it dies, then the social practice is lost forever.

By these notes on the differences between biological and social evolution I do not intend to argue that the two phenomena would not be related, on the contrary they are very much so, the very social practices being derivatives of human behavior. Humans are part of nature, and humans influence other organic life to a huge extent; in this way human social practices have a real effect on biological evolution. (I even argue

that the very ability to speak has developed through the influence of rudimentary social practices of expression). Social practices in turn are crucially affected by the conditions set by nature.

With these considerations in mind, I want to take the opportunity here to point out that there are, of course, no “memes,” “units of cultural transmission,” which Richard Dawkins wants us to believe in (Dawkins 2006: 192). According to Dawkins, such ‘memes’ should be understood as cultural analogues to genes, claiming that they are “self-replicative units” that are subject to “natural selection.” Among the possible “memes” Dawkins lists: “tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches.” He tells that “just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation.” Alternatively Dawkins also defines these “memes” as “units of imitation.” – Several fallacies must have coincided to bewitch Dawkins thinking so as to produce this fabulous idea. We note first how Dawkins is influenced by the *thingly fallacy* (see chapter *Processes and Concepts*) which makes him think that all the perceptual abstractions that he has listed as instances of “memes” are entities in themselves. But for sure these words represent no entities, no units. The concepts he lists merely represent perceptual abstractions that we may form by observing human behavior and manifestations of human behavior. Perceptual abstractions cannot evolve, they are unique for each moment that a person perceives them. It is another issue that people who live in close proximity are prone to perceive such phenomena in a relatively uniform fashion; and this very (relative) uniformity of the perceptions is what has bewitched Dawkins thinking to yield these thingly ideas. – Harris and the integrationalists would here have a perfect sample of telementation, genetic telementation where ideas “leap from brain to brain.” But ideas do not “leap from brain to brain,” rather they are formed in acts of mental processing by way of observing other people’s behavior and the traces of their behavior. – Naturally, Dawkins is also misled by his fallacious ideas of genes and genetic inheritance, but that is a topic to which I will return in the third volume of this book. – We can, however, trace one seed of a healthy idea in these extraordinary speculations; this is Dawkins’s reference to imitation. As I have pointed out, language, and with that all social, is a function of remembering and imitation. But there are no ‘units of imitation,’ instead

each act of human expression (we could say that cultures are “conglomerates” of human expressions and interpretations) is an act of (modified) imitation. Living and functioning in society is in each moment a function of these abilities to remember and imitate. The cumulative effects of the expressions enabled by these abilities combined with the eternal competition between human beings create the manifestations of human culture. Thus it is the human who imitates through his behavior and not any “units of imitation” that “leap into his brain.” We should now understand how Dawkins has stood things on their head by postulating that there are these “units” that affect the humans, whereas in reality it is humans who by their behavior affect other humans so that they all form perceptual abstractions of each other’s behavior as well as the traces of the behavior. – Dawkins should note, for example, that a tent has not evolved to become a skyscraper and a horse carriage has not evolved into an automobile (while a lower form of an animal organism has evolved to become the human). What has happened is that humans have by cumulating experience essentially in processes that amount to trial and error, and this cumulated experience has allowed humans to construct tents and build skyscrapers. But this experience does not have any independent being and lives on only as memory traces in those humans who have the corresponding experience. Thus there are precisely not any “self-replicative units” of cultural transmission, instead social and cultural expressions are entirely functions of the actions of external agents, these agents being the human beings.

‘Language’ is a case in point of “social evolution”: the fact that people adhere to certain language practices today does not imply that they will do so tomorrow; the fact that people speak in a certain way today does not imply that they will continue speaking so; the fact that certain words are used today does not mean that they will be used tomorrow. There is nothing inherent in the social practice of language that would predispose words and phrases to roll on in a certain way, as genetic endowment rolls on. Languages do not change, people do. Languages do not change; it is the behavior of people that change in an unpredictable way.

We cannot postulate that language would have evolved any more than we could validly claim that figure skating has evolved. The social practice of figure skating corresponds to behavior that may be undertaken as a result of the configuration of the human anatomy and mental processes that enable the necessary movements on ice. It is the body that has evolved. The case is exactly the same with the social practice of

language – the configuration of the human anatomy and the mental processes have enabled the movements that are necessary for verbal behavior, the results of which are perceived as language.

Thus language has not evolved. What has evolved is the human ability to speak, or more properly, the human ability to speak is the result of the evolution of the human organic abilities to express and interpret. The *human ability* to express and interpret *has attained* (I would like to reject this anthropomorphically sounding phrase) the level by which it has become possible to express ideas in speech, and to interpret, remember, and imitate the expressions of others. The ability to speak is genetically given as a result of evolution, but what kinds of words and language patterns are expressed is totally a question of chance, a chance rooted in language practices.

Because of the failure to separate between speech (the ability to speak) and language, linguists and biologists all the time confuse the issues pertaining to biological evolution and those pertaining to social change, that is, those pertaining to the ability to behave and those pertaining to manifestations of behavior. In line with this fallacy the scholars ask themselves questions like: ‘What is the relevance of any form of animal communication to the evolution of human language?’ and tell that there allegedly is ‘a major problem in imagining and explaining how human language could have evolved from any known system of animal communication’ (compare Macaulay 2006: 125). This illustrates the fallacy of not seeing that it is not the manifestation of human behavior (language) that has evolved from the manifestations of animal behavior (animal communication), but the human ability of expression has evolved from animal ability of expression (which abilities produce ‘human language’ and ‘animal communication,’ respectively). The point to understand is that it is not what is expressed that has evolved, but the ability to express.

This line of misconception is further illustrated by Macaulay saying: “if we believe that human language is the result of an evolutionary process, there must have been a time when purely meaningful signals were split into meaningless parts that could be recombined into new meaningful signals.” This represents the ultimate confusion between what pertains to the biological sphere and what pertains to the social. Humans have not detected the animal signals, captured them, and based on them developed a new system by processing those signals in order to recombine them into a more suitable form. To grasp these issues from

point of view of biological reality we would have to establish what is common between human speech and “animal communication.” And that is *expression*. Both animals and human beings express their feelings by their behavior (volitionally or non-volitionally). Expressions reflect their respective capacities for mental processing. With this statement I have taken the reader to a major cross-road in this book, for in this statement I combine so many considerations from the various chapters that to properly grasp them the reader would have to go through all the issues presented in this book. Foremost we have to understand what is *mental*, what is *mental processing*, and what *feelings* are; we also have to understand what I mean by *expressions*, *interpretations*, *interpretation of feelings*, *conceptualization* and *cognitive consciousness*.

I have proposed to see all biological, and consequently all social, as manifestations of the paradigm of expressions and interpretations. According to this idea expressions are always inevitable – we express our feelings (thoughts; results or reflections of mental processing) in one way or another, volitionally or non-volitionally, and conspicuously or not. Only on a higher level of *cognitive consciousness* there enters (or develops) an element of choice as to how to conduct some aspects of the expression. In connection with stating that ‘expressions are inevitable’ I also need to mention that all past organic experience (social experience forming part of it) through the whole history of the human organism affects the expression; when one piece of new stimulus is mentally processed then the expression it takes is affected by how the reaction patterns have been formed in the past, the new stimulus leading to a new reaction but the reaction being based on the old patterns, while the processing of the new stimulus again slightly changes the reaction patterns. The reaction patterns are always to some degree plastic, and they only more or less remain under conscious control.

I anchor the idea of the inevitability of expressions further down in a more elementary level and in a level that represents an earlier evolutionary development; according to this idea expressions are reactions to interpretation of physical stimuli. All life processes represent constant reactions to the process of an organism organically interpreting its environment. Each detected stimulus (the processing of it) leads to a reaction. This reaction is the expression. There is no choice as to whether the organism will react or not, it inevitably reacts to a stimulus that it has become evolutionary sensible to. As the patterns for processing of the stimuli have become evolutionary more complex so have the reactions. At the level of human mental processing of cognitive feelings the

reactions are also inevitable, that is, reactions are inevitable, but what is the precise form that the reaction will take is not given (in view of the complexity of the processes), and the expression also remains to a certain extent under conscious control (plasticity of processing, and plasticity of reaction patterns).

I have noticed that the German neurophilosopher and psychologist Wilhelm Wundt (1832 - 1920) has expressed a similar idea of the inevitability of expression as evidenced by the following quote from Wells's *The Origin of Language*: "Wundt claims that language originated as a peculiar form of emotional expression. Everything early man heard or saw, would, if it gave rise to any feeling, he thinks, evoke some movement of expression, since every feeling – indeed all psychical processes, he believes – are accompanied by movements of expression" (Wells 1987: 107; further reference is made to Wundt: *Völkerpsychologie*, vol. II Die Sprache).

The above should have established the fact that an animal will always express reactions to its neural processes; on a higher level of mental processing these are reactions to feelings. Speech ultimately represents a mode of expressing feelings by a human being. The main difference (on an evolutionary scale) between human and animal expressions is that the former are made under a higher degree of *cognitive conscious* control. This consideration is combined with that of realizing that the human also has a more developed ability to *conceptualize* experience. The difference between processing concepts and other neural processes is most likely to be found in that abstractions involve so many diverse 'neural maps' of the whole organism in relation to an abstractly conceptualized environment corresponding to given situations that no motor actions could possibly correspond to them. I presume that this is the very reason that has lead to conceptual expressions (expressions of conceptualized experience), and eventually to speech, as an outlet for the corresponding feelings and the organic need to express in words that what could not be expressed by motor acts. - The French philosopher, naturalist, and linguist Étienne Bonnot de Condillac (1715 - 1780) had already noticed that human sound expressions represented an outlet for the underlying feeling (Wells 1987: 23). In this connection I refer the reader to the discussion of conceptualization in chapters *Mental Processing*; *Feelings, Emotions, and Consciousness*; and *Expressions*. In these chapters it is highlighted (among other issues pertaining to this topic) how the ability to speak should most fundamentally be seen as a

product of mental evolution, or the evolution of cognition and conceptualization and the ability to express cognitive feelings that correspond to more and more complex and sophisticated processes.

From the above considerations also follows that we should not think of speech (or language) as having been ‘invented’ by any individual or a group of individuals. Speech developed because the animal that developed into the human was so organically built that the processing of its feelings led to an outlet in sound expressions coupled with other bodily expressions. We may speak of ‘inventions’ only in reference to products that have been deliberately conceived by humans as a result of intellectual efforts. From these considerations also follows that there has, of course, never been any kind of an original “name giver” who would supposedly have invented words of languages, rather the perception of a word corresponding to a thing or a phenomenon has occurred gradually in the course of social interaction, when one individual has found it useful to imitate the sound expressions of another individual in an attempt to convey a meaning on the analogy of what it has experienced.

To stress the idea of the inevitability of expression, I want to metaphorically say that interpretation of feelings is as if the organism was communicating with itself (compare McNeill 1995). The ability to express conceptualized feelings (that in their fundamental origin are inevitable reactions to mental processing of feelings) naturally led to a communicative function as other animals possessing the ability to cognitively conceptualize stimuli learned to interpret the expressions as standing for the underlying feelings of the expressing subject, and thus to be guided by them in their own actions (compare below with the presentation of Rizzolatti’s and Arbib’s theory). There was then first the organic need to express and only as a consequence of that the communicative function emerged. We may also say that there did not *a priori* exist any social needs for communication, but individual expressions through the process of imitation created the processes of social communication. This may be compared with what Maria Ujhelyi has said about “signals of animal communication essentially” expressing “an emotional state that can serve as motivation for the actions of others” (2000: 129). According to Wells, Condillac shared a similar conception saying: “actions not originally intended as signals to others all came in time to be deliberately made as signals because a secondary effect of these actions as first noted and then exploited” (Wells: 9). These abilities have in the evolutionary hermeneutical spiral led to an increased ability to in-

interpret the expressions, conceptualize, and to consciously express the concepts. Similarly Condillac had noted that “the use of signs led to a development of the mental powers and this in turn led to an improvement in the signs,” which led him to conclude that “language and reason grew up together” (Wells: 9).

Condillac had thought that “gesture-language preceded oral speech” (Wells: 29). This is probably correct, although I would not express this so categorically, for I consider that even gesture-expressions have developed in unison with other cognitive powers for expression and interpretation. These ideas have been embraced and developed in McNeill’s remarkable *Hand and Mind. What Gestures Reveal about Thought* (McNeill 1995).

To complete these remarks on the evolution of speech, I want to draw attention to the fact that this evolution has been a gradual process of converging interdependent and intertwined organic processes to which I refer with the principle of unity and *interdependency of organic processes* and which I have depicted by the *hermeneutical evolutionary spiral* (see chapter *Mental Processing*). There has been no one point in the history of life or mankind or apehood, where we could proclaim that the ability to speak had emerged and the social practice of language could be said to have been formed. Gradually and imperceptibly over millions of years some apelike animals have evolved and become bipedal by which change the anatomy of their vocal tracts have changed so that they could master the skill of consciously articulating refined sound. This evolution of the anatomy has proceed in pace with a change in habits (as Lamarck already predicted) so that in a hermeneutical spiral change in anatomy, biology, and neurology have corresponded with changes in social habits. In these processes the capacity to make symbolic gestures has evolved with the capacity to understand symbolic gestures and the biology of making them more efficiently. These considerations are supported by Jean Molino who said that if “music is not a unified and homogenous reality, there is no reason to imagine that it emerged one day wholly made by evolution. The only legitimate approach... is to recognize that there is no music ‘in and of itself,’ no musical essence, but some distinct capacities that one day converged toward what we today call music” (2000: 166). – Further in his interesting article *Toward an Evolutionary Theory of Music and Language* Molino explains the common evolutionary root of ‘music’ and ‘language’ in the rhythmic modules of the brain like this:

“Music and language are cultural artifacts that do not correspond to natural objects. If we reduce them to their constituent parameters...and take into account such activities as poetry, song, dance and play, we notice that all these cultural products are based on a common set of modules: melody, rhythm, and affective semantics. The fundamental hypothesis is that all these activities have a common genesis, which leads me to make conjectures regarding the central importance of one or more rhythmic modules in the brain, and the essential role of imitation in these activities” (Wallin, 2000: 166).

I think that Molino’s ideas will become even clearer if we remember that ‘speech’ is the organic ability while ‘language’ is the “social artifact.” Then it emerges that it is speech and the ability to musical expression that have evolved. When we accept this dichotomy between organic abilities and social practices, we notice even clearer how small is the real difference between the ability to speak (express oneself in speech) and the ability to express oneself in music – and then we should also note clearer than ever how much they are rooted in the common fundamental organic functions of which Molino writes.

These considerations serve to dismiss as utterly naïve the so-called Rousseau’s paradox, which Rousseau formulated in his misconceived criticism of Condillac. Rousseau had claimed that Condillac’s theory of the origin of words was not consistent as for Rousseau that would have implied that ‘words were necessary in order to establish the use of words’ (Wells 1987: 11). Instead of this comic interpretation we have to understand that not words, but other expressions had been necessary to establish words and their use. We shall conceive of the process as of a gradual stabilization of the ability to imitatively repeat sound expressions coupled with other bodily expressions; whereby in the process expressions have been taken to mean something both by the expressing subject and the interpreting observer. The animals that gave rise to the human line expressed their feelings with various behavioral acts which included the expulsion of pants and grunts. Somewhere down the road these animals have taken a sound expression to mean something and have proceeded with repeating the same expressions in a similar context, thus a collective of these animals have proceeded to imitate in a repetitive fashion the sounds heard while assigning similar meanings to them. Further, with a developed anatomy and biology the capacity to manipulate sound patterns and understand expressions has correspon-

dingly developed within a given population. With genetic development the ability to express pants and grunts and other types of sounds has developed into the ability to produce more sophisticated sound expressions and an enhanced interpretation of such (note, I am not saying that a particular pant or grunt would have developed into a word, but that from the ability to express pants and grunts, among other abilities to express, has developed the ability to make more refined expressions).

Hereby it should be noted that the capacity for syntactic coordination of these expressions (syntax, grammar) is not something that developed after the ability to express elementary sound and body expressions, but rather the syntax we perceive in speech is a function of more fundamental features of syntactic coordination of all organic processes within the homeostasis as it was explained in chapter *Speech and Language*.

## Evidence from Primate Research

I consider that all these ideas find support in the pioneering research that Savage-Rumbaugh has conducted on Kanzi and other apes and the corresponding work of other primatologists (Savage-Rumbaugh, Shanker, Taylor 1988; Savage-Rumbaugh, Lewin 1994; Fouts 2003; King 1999). These scholars have from their side established and provided us with fresh evidence of how humanity is rooted in the evolutionary chain of being. The studies of “ape language” provide fascinating evidence on how the human ability to speak has developed from the same expressive and cognitive abilities as our evolutionary siblings possess. These studies have proven that apes master a symbolic system of communication and therefore the crucial point to grasp is not that apes would have acquired a “language” but that they rather possess *a capacity for volitional expression of abstractions that properly fit a context*, and a capacity to properly interpret the expressions of others (including interpreting human speech to a certain extent).

Of paramount significance in this connection is to understand how the development of the anatomy of the vocal tract and other parts of the human have enabled the ability to speak (and vice versa), which considerations also throw immense light on the Lamarckian evolutionary principles. I will below render my interpretation of how Sue Savage-Rumbaugh explains these ideas (Savage-Rumbaugh, Shanker, Taylor 1988: 12). Primatologist have established that the configuration of the

ape's vocal tract is such that it does not enable human speech. Savage-Rumbaugh accounts for the principal differences between the human and ape vocal tracts like this: "The human vocal tract curves downward at a 90-degree right angle, just at the point where the oral cavity merges with the pharyngeal cavity. In contrast, the ape vocal tract slopes gently downward. The right angle of the human vocal tract is a necessary extrapolation of our upright posture and the consequent vertical positioning of the head over the spinal column. If our head were tilted forward, as is that of a chimpanzee, we would not be able to maintain our balance easily while walking upon two limbs." – It is with increased bipedalism that "the hominid head became vertically balanced on the spin." With these processes "the tongue and the attachments of the larynx at the base of the tongue moved lower into the neck." It was this new anatomical position of the vocal-laryngeal tract that caused the critical change between the human and ape abilities to produce sound expressions. "The lowering of the larynx resulted in the ability to produce lower-pitched, more discriminable vowel sounds. The sharp angularity of the vocal tract and the decrease in the size of the mouth resulted in the ability to completely close off the nasal cavity from the oral cavity (velar closure)." Savage-Rumbaugh points out that it was the ability to effect velar closure that enabled the possibilities to produce the different range of discriminable sounds. These anatomical changes has also led to humans, in contrast to all other mammals, not being able to breathe and swallow at the same time. The ensuing need to respiratory control is, in turn, used for "highly controlled phonation or sound production," which, in turn, enables humans to produce controlled consonants, in contrasts to apes, who only can produce some sort unspecified vowel-like sounds. - Most importantly we should understand from the above, as Sue Savage-Rumbaugh says: "just because apes lack the requisite anatomical equipment to speak, it does not necessarily follow that they also lack the intelligence to use language" (1988:13).

According to Savage-Rumbaugh's data the evolutionary separation between humans and bonobos (and common chimpanzees) occurred some three million years ago, whereas the evolutionary distance to the gorillas and orangutans is some six to eight million years. And although there is no evidence that humans would be more closely evolutionary related to bonobos than to chimpanzees observation of bonobo behavior has established that bonobos share with humans the capacity for understanding the feelings of a conspecific (and also those of other animals; 1988: 6).

Against these well documented facts of biology Chomsky maintains that the “faculty of language is a very recent evolutionary development” (2007: 2). This statement in itself symbolizes the cardinal error in which Chomsky’s theories are mired: the fallacy of not grasping the distinction between speech and language, which has lead him to postulate that ‘language’ - the social practice - would somehow exist ready-made within the human as part of a device he calls the “language faculty” that “generates language.” I shall discuss all these misconceptions more in detail in the chapter *A Review of Chomsky’s Verbal Behavior*.

At some point, as a result of Chomsky’s theories becoming known beyond the narrow sphere of linguistics, Chomsky was challenged to explain how his theories match elementary evolutionary principles. Naturally this posed a great dilemma for him, for how could anybody possibly explain how a fantasy product such as the “language faculty” would be a product of organic evolution. But Chomsky gave it a try. And ignoring all the elementary facts about genetics and the evolution of the vocal tract Chomsky proceeded by proclaiming that “at some point in hominid evolution a genetic mutation of catastrophic proportions occurred, giving humans, and only humans, language.” Chomsky speculates that at one time there must have existed “an ancient primate with the whole human mental architecture in place, but no language faculty.” He then speculates further telling that “eventually a mutation took place in the genetic instructions for the brain, which was then reorganized in accord with the laws of physics and chemistry to install a faculty of language” (Joseph, Love, Taylor 2009: 226, in reference to Chomsky’s *Language and Mind: current thoughts on ancient problems*, 1998). – I hope that the reader should already recognize that such a “catastrophic mutation” would have meant that from one generation to the next the animal would have become bipedal; the posture would have become upright and the head would have been posited vertically over the spinal column; the vocal tract would have dramatically curved downwards to reach a 90-degree right angle; the tongue and the attachments of the larynx at the base of the tongue would have moved lower into the neck; etc. And on top of those fantastic anatomic changes in the newborn he would also have been endowed with cognitive abilities that were cardinally different from those of his parents. The probability for this to happen is the same as that of an ape giving birth to a human being (that is, there is zero probability for this to happen). The reader should note that it would not be sufficient that such kind of changes in

essential features would come about as a result of a mutation in one single gene and instead would require a simultaneous mutation in a multitude of genes. The possibility of occurrence of such complex mutations is excluded according to all we know about genes and the genome (see e.g. Hartwell, Hood et al., 2008: *Genetics: From Genes to Genomes*). Further it is to be noted, that these kind of mutations would, of course, have had to happen in more than one of the newborn for otherwise they would possibly not have been passed on to the following generations.

If we would for the sake of argument leave aside this fantastic claim, and grant that an individual would have been born with all these heavily mutated features, then we would still have to ask from where the mutated individual would have taken the words for his “language faculty.” We would have to ask that question, but this is of no concern for Chomsky; this because for Chomsky language is an innate capacity: for him all the words and all the languages ever spoken came packaged as features of the “language faculty” together with the lucky mutation. – To note, this means that the lucky mutation would have, for example, have predicted the change from ‘Old English’ to ‘Middle English’ and further to ‘Contemporary English’ as well as have programmed future generations to switch on to these new languages just in time.

Chomsky was once challenged by the Swiss psychologist and philosopher Piaget on his evolutionary theories. Piaget pointed out that the genetic mutations by which Chomsky justifies his speculation “would be biologically inexplicable” (Botha 1991: 28). To this Chomsky retorted: “Although it is quite true that we have no idea how or why random mutations have endowed humans with the specific capacity to learn a human language, it is also true that we have no better idea how or why random mutations have led to the development of the particular structures of mammalian eye or the cerebral cortex” (quoted by Botha in reference to Chomsky’s *On Cognitive structures and their development: A reply to Piaget*, originally published in 1975). – I shall note here that this is, of course, not true: certainly real biological scientists have a much better idea on how the mammalian eye, etc. have evolved (and their ideas have been sufficiently popularized so that even a linguistics professor could take part of them). – In another context Chomsky is said to have elaborated the response like this: “Piaget offers no argument at all that the postulated mechanism are any more ‘inexplicable’ than mechanisms postulated to account for physical development; indeed, even the most radical ‘innatists’ have suggested mechan-

isms that would add only a small increment to what any rational biologist would assume must be genetically determined” (quoted in Botha 1991 in reference to Chomsky’s *Rules and Representations*). – I have not had access to the evidence that Piaget has presented Chomsky with, but what is sure is that the considerations that I presented above and the reference to the evidence presented by Savage-Rumbaugh form a solid argument for showing that the mechanism that Chomsky postulates belongs to the sphere of science fiction. Savage-Rumbaugh’s account of these issues clearly show that the mechanism that Chomsky has presented in no way corresponds to any “small increments,” and instead represent fantastic claims of catastrophic proportions and have no connection with real science.

Admitting that he is speculating, how else, Chomsky once told that “we may consider the possibility that the brain has evolved to the point where, given an input of observed Chinese sentences, it produces (by an induction of apparently fantastic complexity and suddenness) the rules of Chinese grammar, and given an input observed English sentences, it produces (by, perhaps, exactly the same process of induction) the rules of English grammar” (Chomsky 1967). Keeping with his peculiar logic Chomsky then stresses, that he is again merely speculating, but once it is recognized that this is only speculation, then, that recognition should, according to Chomsky’s logic, convert the speculation to reasonable ideas and quite plausible facts: “If clearly recognized as such, this speculation is neither unreasonable nor fantastic; nor, for that matter, is it beyond the bounds of possible study.”

## Evidence from Mirror Neurons

I have in chapter *Interpretation* discussed the research findings of Rizzolatti and others in regards to the so-called “mirror neurons,” which activate both when a subject undertakes a specific motor action and observes another subject doing the same. In my view the research serves as an illustration of the way neural interpretation happens in accordance with the paradigm I advocate in this book. I will here briefly discuss the relevance of those findings to the subject of evolution of speech. Specifically this is done in reference to Rizzolatti’s joint paper with Arbib *Language within our grasp* (1998). – I will render my interpretation of the ideas presented by Rizzolatti and Arbib, doing so I need to express some of the original ideas of the authors in a fashion and terminology

that better matches my paradigm. This may at some points lead to a slight re-interpretation of the original ideas, but I hope that I will manage to convey the main story in accordance with the original.

The authors assume that the monkey ventral premotor cortex (area F5) where the mirror neurons have been identified is the homolog to Broca's area in the human brain. The monkey area F5 thus contains the systems that links action recognition and action production and is most commonly thought of as an area for hand movements. Linking these facts of the area F5 with the fact that the human Broca's area is thought of as a specialized speech area (along with Wernicke's area) the authors propose a theory whereby human ability to speak would have developed most immediately from an earlier primate stage of intentional communication by means of gestures by arms and hands. The idea is that the intentional gesticulation from generation to generation developed area F5 so that there eventually developed the human Broca's area, which then must have first been responsible for executing intentional communication by hands, but as speech emerged as the decisive form of intentional communication then the area further developed in the human for the purposes of speech execution (the authors refer to evidence that show that Broca area still is linked in the human also to hand and arm movements).

With these ideas in place Rizzolatti and Arbib proceed with proposing a theory on the sequence of evolutionary events by which the Broca's area became the center responsible for speech execution. Thus the authors want to show how the system of "mirror neuron system" of action recognition and action production eventually developed through the interactions with various mechanisms of intentional communication to encompass speech.

The authors first explain the evolutionary step from non-intentional signaling to intentional communication. They start with postulating that as a consequence of the activities of the "mirror neurons" a subject who observes the actions of others will neurally mimic a similar action, and this (it seems the authors are indicating) would inevitably lead to the observer expressing a corresponding act of behavior if it were not for "a series of mechanisms" which prevents the expressions. But in cases of strong interest ("when the observed action is of particular interest") the observer will emit a signal which the other individual (the 'actor,' whose behavior was originally observed) will recognize as an intention from the side of the observer in relation to itself, and the observer will in turn notice this counter-reaction as signifying that its expression had

been noticed by the actor. With this schema we would then have the primordial involuntary communication pattern. The next evolutionary stage would then correspond to the development of the capacity of the individuals to exercise control over their “mirror systems,” thus gaining the ability to volitional emission of signals.

Rizzolatti and Arbib explain that the “the mimetic capacity inherent to F5 and Broca’s area had the potential to produce various types of” systems of signaling “related to the different types of motor fields present in the area (hand, mouth and larynx).” The various ‘systems’ (or perhaps we should say ‘organic mechanisms’) were thus: (i) the system of gesticulation with arms and hands (brachio-manual system); (ii) the system of signaling by mouth and facial expressions (oro-facial system); and (iii) the system of emitting sounds. – It must be stressed that it seems that the authors allow that these ‘systems’ have been rudimentarily in place simultaneously, and that they therefore have from beginning of evolution developed gradually on a par (a position which I, naturally, share). But they postulate that the system of signaling by mouth and facial expressions must have first (of all three systems) developed for direct intentional (volitional) communication from individual to individual; here the authors alert to the difference between individual communication and group communication, that is, emitting signals that are not intended for the attention of a specific individual but the whole group (“whom it may concern”). Next the authors hypothesize that the oro-facial system was complemented by a brachio-manual system of gestural communication at the stage when the human evolution started to bifurcate from its primate predecessors. This the authors motivated with two observations: *firstly*, that to extend the range of interlocutors this was needed, as communication through mouth and facial expressions requires face to face interactions and concentrated attention of two individuals; *secondly*, the inclusion of the gestural system increases the scope of ideas communicated, with this means the actor may indicate to the interlocutor, for example, the position of a third individual or an object. This also means, the authors point out, that the “combinatorial properties” of expression are thus increased developing the system of expression to a truly open system of expression. – I may add that we here, then, have the emergence of the syntax in systems of expression, which the Chomskyans, however, claim to be an exclusive property of human speech that has, according to them emerged, wholly unconnected to any evolutionary antecedent systems of expression.

From these premises then, Rizzolatti and Arbib continue, with a developed gestural system and the anatomical possibilities that emerged with it, there developed a system for expressing more complex ideas also by the means of sound emission; and this system eventually developed to speech. In the original oro-facial system the addition of sound had only added an “emotional valence that simply reinforced the meaning conveyed by the facial expression” but in the sound system that followed from the developed gestural system there also developed the abilities for skillful control of sound articulation. Now sounds were intended to have an independent descriptive value and the individuals therefore needed abilities to express similar sounds for similar ideas in similar situations. Rizzolatti and Arbib postulate that it was this need for skillful control of the sound emissions that led to the emergence of “human Broca’s area from an F5-like precursor that already had mirror properties, a control of oro-laryngeal movements and, in addition, a tight link with the adjacent primary motor cortex.” (The reader may note that this all corresponds to a description of a Lamarckian evolutionary use and disuse mechanism).

I note that this evolutionary hypothesis supports to a very large extent all the ideas that I have put forward and positively referred to in this chapter (as well as my paradigm in general). - Close attention to the ideas expressed (I also refer to the discussion of the “mirror system” in chapter *Interpretation*, especially in regards to conceptualization) support what I have said about the relation between speech expressions and conscious thoughts in chapter *Speech and Language* (see especially discussion under section *Interpretation of Feelings* in said chapter). There I pointed out that speech does not correspond to an activity of conscious translation of ideas, and rather I proposed that we should see speech as interpretation of feelings. I said that we are not conscious of all our *feelings*, and to the extent we are conscious of our feelings we are not conscious of their (*true*) character, it is only by *the conscious process of thinking* that we try to establish that. Therefore we cannot conceive of speaking as a fully conscious process, further, therefore the speech reports – our utterances - cannot possibly be regarded as rendering of thinking in speech, rather speech only highlights some moments of thinking, in a way summarizing thinking, which in turn summarizes feelings. I told that this summary is essentially an interpretation, the process strives to identify the most important aspects of it and render that in speech with whatever means available. And this, in turn, is done by assigning by means of imitation proper verbal expressions to the

ideas from the repertoire of possible verbal expressions, that is, from those verbal expressions one has heard other people utter (or that one has read) and memorized. *The imitative system has thus enabled the enactment of concepts.* I said that it must be so that some words, some expressions, unleash others, which then flow in processes that are more or less conscious-to-unconscious, the shift in awareness directed by the feedback of the moment. This means that at one moment, maybe within one millisecond the speaker has consciously or unconsciously (better probably to say semi-consciously) decided to enter – by means of a conscious clue – a course of uttering the string of sentences that form the particular narrative, but the subsequent utterances are, of course, not the product of any conscious thinking. At one point in the mental processes a whole more or less coherent narrative is released in form of a series of expressions. I thus stress that contrary to the misconception which I am correcting, speech represents only a feeble attempt to render thoughts in verbal symbols based on the conventions of language practices. – Having reminded about this background, I want to point out that there is thus a correlation between the systems of conceptualization and the system of unleashing remembered and imitable strings of verbal symbols that serve to illustrate the ideas, but which already are not the ideas themselves. This would help to explain why somebody in a state of delirium expresses a series of incongruent ideas or why a patient by external interference into the brain might all of sudden express emotional feelings that are not connected with any idea that the patient can possibly be consciously aware of. The Broca's area must then encode imitable neural reaction patterns that normally are unleashed by the conscious clues served by conceptualized ideas. This also explains the mismatch between one's ideas and the actual expressions they take; it seems to be a question of "hitting the rights strings" of verbal reaction patterns. And obviously this means that there must be strong feedback relations to the conscious control of speech utterances (this already on the level of thinking of the utterances), so that the conscious mechanisms continuously redirect the unfolding of the *verbal strings*. The feedback relation also works in the other direction (both in an evolutionary sense and in respect to individual life): the imitative system allows assigning a verbal name to the concepts, which in turn gives humans (has evolutionary endowed with) the ability to verbally manipulate images.

Thus we also see that speech definitely is based on a learned system of imitation.<sup>1</sup> Speech is most fundamentally connected with the capacity to imitate in conjunction with the capacity to conceptualize. Each word or language pattern that we have learned to master becomes part of our arsenal of automated behavioral patterns.

I propose to compare this with what Damasio has said about the relation between concepts and speech: “Words and sentences denote entities, actions, events and relationships. Words and sentences translate [this word I would exchange for ‘interpret’] concepts, and concepts consist of the nonlanguage ideas of what things, actions, events, and relationships are. Of necessity, concepts, precede words and sentences in both evolution of the species and the daily experience of each and every one of us” (1999: 185).

## Lamarck’s Vision on the Evolution of Speech

In an extraordinary passage of *Zoological Philosophy* Lamarck already in 1809 detailed his insight to these issues in form of an account that he was compelled to formulate as a hypothetical one of how the evolution of speech could have taken place. This account contains striking resemblance with the ideas expressed by Savage-Rumbaugh as quoted above. I will quote Lamarck in full (Lamarck 1809 – Huth’s 2006: 169):

### *“Some Observations with regard to Man*

If man was only distinguished from the animals by his organisation, it could easily be shown that his special characters are all due to long-standing changes in his activities and in the habits which he has adopted and which have become peculiar to the individuals of his species.

As a matter of fact, if some race of quadrumanous animals, especially one of the most perfect of them, were to lose, by force of circumstances or some other cause, the habit of climbing trees and grasping the branches with its feet in the same way as with its hands, in order to hold on to them; and if the individuals of this race were forced for a series of generations to use their feet only for walking, and to give up using their hands like feet; there is no doubt, according to the observations detailed in the preceding chapter, that these quadrumanous animals would at length be transformed into bimanous, and that the thumbs on their feet would cease to be separated from the other digits, when they only used their feet for walking.

Furthermore, if the individuals of which I speak were impelled by the desire to command a large and distant view, and hence endeavoured to stand upright, and continually adopted that habit from generation to generation, there is again no doubt that their feet would gradually acquire a shape suitable for supporting them in an erect attitude; that their legs would acquire calves, and that these animals would then not be able to walk on their hands and feet together, except with difficulty.

Lastly, if these same individuals were to give up using their jaws as weapons for biting, tearing or grasping, or as nippers for cutting grass and feeding on it, and if they were to use them only for mastication; there is again no doubt that their facial angle would become larger, that their snout would shorten more and more, and that finally it would be entirely effaced so that their incisor teeth became vertical.

Let us now suppose that a quadrumanous race, say the most perfect, acquired through constant habit among all its individuals the conformation just described, and the faculty of standing and walking upright, and that ultimately it gained the supremacy over the other races of animals, we can then easily conceive:

1. That this race having obtained the mastery over others through the higher perfection of its faculties will take possession of all parts of the earth's surface, that are suitable to it;
2. That it will drive out the other higher races, which might dispute with it the fruits of the earth, and that it would compel them to take refuge in localities which it does not occupy itself;
3. That it will have a bad effect on the multiplication of allied races, and will keep them exiled in woods or other deserted localities, that it will thus arrest the progress of their faculties towards perfection; whereas being able itself to spread everywhere, to multiply without obstacle from other races and to live in large troops, it will create successively new wants, which will stimulate its skill and gradually perfect its powers and faculties;
4. Finally, that this predominant race, having acquired an absolute supremacy over all the rest, will ultimately establish a difference between itself and the most perfect animals, and indeed will leave them far behind.

The most perfect of the quadrumanous races might thus have become dominant; have changed its habits as a result of the absolute sway exercised over the others, and of its new wants; have progressively acquired modifications in its organisation, and many new faculties; have kept

back the most perfect of the other races to the condition that they had reached; and have wrought very striking distinctions between these last and themselves.

The orang of Angola (*Simia troglodytes*, Lin.) is the most perfect of animals: it is much more perfect than the orang of the Indies (*Simla satyrus*, Lin.), called the orang-outang; yet they are both very inferior to man in bodily faculties and intelligence. [Footnote: See in my *Recherches sur les corps vivants*, p. 136, some observations on the orang of Angola]. These animals often stand upright; but as that attitude is not a confirmed habit, their organisation has not been sufficiently modified by it, so that the standing position is very uncomfortable for them.

We know from the stories of travellers, especially as regards the orang of the Indies, that when it has to fly from some pressing danger it immediately falls on to its four feet. Thus, it is said, the true origin of this animal is disclosed, since it is obliged to abandon a deceptive attitude that is alien to it.

No doubt this attitude is alien to it, since it adopts it less when moving about, and its organisation is hence less adapted to it; but does it follow that, because the erect position is easy to man, it is therefore natural to him?

Although a long series of generations has confirmed the habit of moving about in an upright position, yet this attitude is none the less a tiring condition in which man can only remain for a limited period, by means of the contraction of some of his muscles.

If the vertebral column were the axis of the human body, and kept the head and other parts in equilibrium, man would be in a position of rest when standing upright. Now we all know that this is not the case; that the head is out of relation with the centre of gravity; that the weight of the chest and belly, with their contained viscera, falls almost entirely in front of the vertebral column; that the latter has a slanting base, etc. Hence it is necessary as M. Richerand observes, to keep a constant watch when standing, in order to avoid the falls to which the body is rendered liable by the weight and arrangement of its parts.

After discussing the questions with regard to the erect position of man, this observer expresses himself as follows: "The relative weight of the head, and of the thoracic and abdominal viscera, gives a forward inclination to the axial line of the body, as regards the plane on which it rests; a line which should be exactly perpendicular to this plane, if standing is to be perfect. The following fact may be cited in support of this assertion: I have observed that children, among whom the head is

bulky, the belly protruding and the viscera burdened with fat, find it difficult to get accustomed to standing upright; it is only at the end of their second year that they venture to trust their own strength; they continue liable to frequent falls and have a natural tendency to adopt the position of a quadruped" (*Physiologie*, vol. ii., p. 268).

This arrangement of parts, as a result of which the erect position is a tiring one for man, instead of being a state of rest, would disclose further in him an origin analogous to that of the other mammals, if his organisation alone were taken into consideration.

In order to follow out the hypothesis suggested at the beginning of these observations, some further considerations must now be added. The individuals of the dominant race in question, having seized all the places of habitation which were suitable to them and having largely increased their needs according as the societies which they formed became larger, had to multiply their ideas to an equivalent extent, and thus felt the need for communicating them to their fellows. We may imagine that this will have compelled them to increase and vary in the same degree the signs which they used for communicating these ideas; hence it is clear that the individuals of this race must have made constant efforts, and turned all their resources towards the creation, multiplication and adequate variation of the signs made necessary by their ideas and numerous wants.

This is not the case with other animals; for although the most perfect of them such as the *Quadruman*a mostly live in troops, they have made no further progress in the perfection of their faculties subsequent to the high supremacy of the race named; for they have been chased away and banished to wild and desert places where they had little room, and lived a wretched, anxious life, incessantly compelled to take refuge in flight and concealment. In this situation these animals contract no new needs and acquire no new ideas; their ideas are but few and unvaried; and among them there are very few which they need to communicate to others of their species. Very few different signs therefore are sufficient to make themselves understood by their fellows; all they require are a few movements of the body or parts of it, a few hissings and cries, varied by simple vocal inflections.

Individuals of the dominant race already mentioned, on the other hand, stood in need of making many signs, in order rapidly to communicate their ideas, which were always becoming more numerous and could no longer be satisfied either with pantomimic signs or with the

various possible vocal inflections. For supplying the large quantity of signs which had become necessary, they will by various efforts have achieved the formation of articulate sounds. At first they will only have used a small number, in conjunction with inflexions of the voice; gradually they will have increased, varied and perfected them, in correspondence with the growth in their needs and their gain of practice. In fact, habitual exercise of their throat, tongue and lips in the articulation of sounds will have highly developed that faculty in them.

Hence would arise for this special race the marvellous faculty of speaking; and seeing that the remote localities to which the individuals of the race would have become distributed, would favour the corruption of the signs agreed upon for the transmission of each idea, languages would arise and everywhere become diversified.

In this respect, therefore, all will have been achieved by needs alone: they will have given rise to efforts, and the organs adapted to the articulation of sounds will have become developed by habitual use.

Such are the reflections which might be aroused, if man were distinguished from animals only by his organisation, and if his origin were not different from theirs.” [End of Lamarck quote.]

In view of these ideas I would also want to float the idea that the freeing of the front limbs (hands) for other purposes than moving the body together with the back limbs must have played a crucial role in the evolution of speech. This, as it enabled the use of hands for expressing one’s feelings by means of gesturing. Probably the crucial step in this direction has been taken when the mothers of the ape-like primates from which humans stem have begun to carry their infants. This is also something that could explain the extraordinary development of the bonobo that Savage-Rumbaugh studied. Without accounting for the fact in these evolutionary terms, Savage-Rumbaugh tells how she and the other staff members at the research center “walked bipedally and supported Kanzi’s weight with our arms.” Savage-Rumbaugh continues:

“This left him free to use his hands for whatever he desired rather than clinging, as he had to do when Matata [the bonobo mother] carried him. Not only did Kanzi experience his unusual early opportunity to learn to use his hands for something other than clinging (early, that is, for a bonobos infant), but also any gesture which he did make was responded to by human companions who wanted to encourage the development of his communicative skills” (1988: 28).



### 3 NOTES ON THE PHILOSOPHY OF LANGUAGE

My theory of speech and language breaks markedly with contemporary linguistics, yet if we look at my theory detail by detail we can notice that for most of the ideas we can identify historical analogies. By this I mean that in the work of many past philosophers of language one can find hints to some aspects of my ideas, but these correct insights are scattered within theories that by and large remain misconceived. The author that has gained an interesting insight in one of the aspects of the theory has not been able to quit his misconceptions in other aspects and to identify the pearls in other authors' theories so as to compile a comprehensive theory of speech and language. It seems to me that traditionally linguistics and social sciences in general are to a far too great extent dependent on the preferences in regards to personalities; this in the sense that instead of criticizing one or another aspect of the competing theories the various authors deal wholesale with the personalities of the authors. When an author is condemned then the theories of that author are condemned in their entirety. This attitude leads to the wholly unscientific approach of liking or disliking an author when one should instead analyze the various ideas that have been presented. This, of course, as long as the theories discussed in general, on an average, contain some wit, and are not entirely mired in error and deception, as is the case with one of our contemporary authors whose work is under scrutiny in this book.

Perhaps with the sole exception of John Locke no one has been able to consistently and correctly give a true and standing lesson on human understanding and misunderstanding in this respect. Locke's theories remain largely valid in all the aspects of linguistic theory he wrote of. But we have to note that Locke did not try to cover the field in a comprehensive way and was quite narrowly focused on the topics of certainty and meaning; this whereas Locke explicitly announced that he did not venture into any examination of the biological conditions of cognition and the questions pertaining to dualism between "mind" and body (1694 Vol. I: 11). He arrived to the eternally valid conclusion that words do not have any meaning at all and that it is the person who speaks that *means* with his words, *means* with the expressions he make, *means* with his verbal behavior. In respect to Locke the novelty of my theory would be that I enlarge it to encompass the paradigms of expres-

sions and interpretations and its derivative speech and language; I thus penetrate further beyond the surface notions ‘thoughts’ and ‘idea’ to the questions of feelings and cognition. This means that I venture into the biological aspects of these ideas and most importantly – compared with Locke – I stress with the ideas of *interpretation of feelings* that speech, and verbal behavior, in general is to a great extent governed by mental processes that remain beyond our conscious control. Although we have to note that Locke did not either want to restrict ‘idea’ to the meaning of a ‘formulated thought or opinion’ and rather defined an idea as ‘whatever is the object of the understanding when a man thinks,’ this included sensory images (see e.g. Howard Robinson in *Introduction to Berkeley* 2009: xii).

In this book I have not attempted a historical review of the philosophy of language, rather my aim has been to point to those aspects of the historical debate that bear directly on the topics discussed in this book and which are of importance for the paradigm I present. For a historical review, I refer the reader to *Landmarks in Linguistic Thought I and II* (1997; 2001). In order to orient the reader in my preferences I shall point out that in addition to Locke I consider that the works of the linguists Humboldt, Condillac, Roy Harris, and Saussure are useful readings. Of American linguists my preferences rest with Sapir and Goffman, whereas I denounce all the generative schools and the traditions based on them.

The most profound of all the fallacies of linguistics is the historical failure to distinguish between speech and language the way I do it in this book. I shall shortly below discuss this issue in relation to the theories of Saussure. It is in the background of that fallacy that we should understand all the other strange things that have been said about language. We should note that the question of speech vs. language was not even formulated until Saussure tentatively and unconvincingly did it.

Of the linguistic ideas that have been historically voiced, I consider that the most misconceived one is Plato’s idea in accordance with which words should be taken to reflect the physical properties of the things spoken of. Plato confused the question of what language is, with what is the nature of the objects and phenomena that we depict by language. It is therefore that he gets into the confused discussions as to whether the nature of things can be learned through names or through an investigation of the things themselves. Plato thus seemed to have entertained an idea that words (names) are verbal images of the things

spoken of (see e.g. Harris and Taylor 1997:1-19). The continuation of this misconception, then, is the idea that all that we speak of are things-in-themselves (Kant). These ideas are what I would call the real *language myths* (contrary to the ideas that Roy Harris has labeled “the language myth”). In fact, Plato’s fallacy merely mirrors the common nonsense that stem from the linguistic patterns in which all language practices of the world are based on; I broadly refer to this problem under the notions *Language of Things* and the *Thingly Fallacy* (see chapter *Processes and Concepts*).

## Saussure

Saussure is an especially interesting case. He is perhaps the first one that understood that one has to distinguish between *language* and *speech*. But although he had an initial understanding of it and expressed some very valuable ideas in this regards, he was not able to develop a clear and correct philosophical conception around the ideas. It seems that Saussure was unfortunately not satisfied with his own idea that language merely reflected expressions of the social habits of speaking (or as he said that language was a ‘social product,’ Saussure 2005: 9) and instead he compulsively wanted to cure the dilemma. This he did by creating his artificial ideas of language comprising a structured system.

Curiously enough posterity chose to ignore his correct insight into the separate nature of language and speech and instead all attention was fixed on his misconceived ideas of linguistic structure. It is not as if the linguists would have not paid any attention to Saussure’s distinction between *speech* and *language* on the contrary many somehow smelled something interesting, perhaps mysterious, in it, but all the same something they could not grasp. This is evident by the way most scholars keep referring in the original French to Saussure’s dichotomy of *langue* and *parole*. These are simply the French words by which Saussure expressed the ideas standing for *language* and *speech*. The retention of the French denominations speaks volumes of the extent of the failure to understand this distinction, for if the authors had understood the essence of this distinction, then they would have simply used the corresponding English words. Thus, for example, Williams in *French Discourse Analysis* talks about *langue* and *parole* (Williams 2005: 34, 40); so also Lieberman in referring to Saussure’s theory (Lieberman 2002: 13). Many authors, like Williams, stress the distinction Saussure introduced that by separating *langue* (language) from *parole* (speaking) he “was simulta-

neously separating what is social from what is individual, and what is essential from what is accessory and more or less accidental” (Williams 2005: 40; to note that the essentially separation was between ‘what is biological’ and ‘what is social’). Further we find Harris and Taylor saying: “For speech (*parole*), according to Saussure, is not to be confused with *langue*. *Parole* although a reflection of *langue*, is only its external manifestation’ (1997: 211; we should note that sounds are ‘external manifestations of speech’ and ‘language represents perceptual abstractions of speech practices’). Matthews also refers to Saussure’s “*langue* and *parole*” (Matthews 1996: 7).- And naturally Chomsky also speaks in terms of ‘*langue-parole*’ (Chomsky 1965:4).

Randy Allen Harris’s account of these issues in *Linguistics Wars* provides interesting insight into the fallacious reception of Saussure’s idea (1995: 17ff). According to Harris’s interpretation Saussure’s ‘*parole*’ correspond to “language in use,” whereas he calls ‘*langue*’ in this connection “the system behind language use.” This is as inside-out as it gets inasmuch as Harris here describes the concrete in terms of the abstract, when we should precisely conceive of it the other way around: ‘*langue* represents the abstract reflections of speech. The perceptual abstraction, *langue*, is postulated to form a system, and then speaking is defined in terms of *using* the system. In reality speech (speaking) is the concrete act of making verbal expressions and *langue* is the perception formed of considering in abstraction all expressions that people make. But even more interestingly Harris actually concludes that the *parole-langue* distinction is “roughly the one between ordinary parlance terms, *speech* and *language*.” ‘Roughly,’ but not fully, Harris thinks, feeling a need to mark the, for him, unscientific nature of the statement by adding that this only in terms of “ordinary parlance.” Harris considers the English words *speech* and *language* are “pretty loose in their own right,” and that these words merely represent “the two best English translations for Saussure’s terms.” Here Saussure served all these ideas on a silver plate and Harris rejects them merely for the reason that the traditions of English *linguistics* have assigned the one word, *language*, to stand for both *speech* and *langue*, which is the very fallacy that Saussure was trying to combat (although unsuccessfully). – Above I said that this is a problem of English linguistics (i.e. linguistics done in English). I need to stress this, because it is in no way a problem of the English language practices at large. Normal people (i.e. non-linguists) have no problem in distinguishing between these terms; by ‘speaking’

people mean the activity of ‘orally expressing thoughts, opinions, or feelings’ (which corresponds to a surprisingly good definition given by Merriam-Webster). And by ‘language’ people in general understand something like ‘the words, their pronunciation, and the methods of combining them used and understood by a community’ (which is another interesting definition from Merriam-Webster; unfortunately, though, the other competing definitions it lists spoil the picture). In any case, people at large, by ‘language’ understand something that is external to the act of speaking, but which is, so to say, “used in speaking.” We even say ‘to speak a language.’ That a linguist refers to the two words of this dichotomy as being “pretty loose in their own right” is in itself very telling about the sorry state of linguistics. – Interestingly enough, Harris, in further contemplating the terms, arrive to the idea of saying ‘*Parole* is verbal activity: speaking, writing, listening, reading. *Langue* is the background system that makes linguistic behavior possible.” Unfortunately, though, Harris does not believe his own words, and renders that only as his interpretation of Saussure’s “curious” ideas. This is confirmed by considering that he immediately following on that proposition states that according to the “scientific approach to language” language should be taken to be a “natural object” and “something which exists in nature” (according to Harris these ideas lie “in back of Saussure’s thinking”). – But clearly, language does not ‘exist in nature,’ rather language is the perception we form of the very imitative verbal behavior (which Harris had in his paraphrasing of Saussure referred to as “linguistic behavior”). Harris, nevertheless, stresses that “there is nothing concrete about” language (in refutation of Saussure’s idea that language is a “concrete object”), but this does not prevent him from devoting the rest of the book to an admiration of Chomsky’s theories, which precisely are based on the postulate that language is ‘an object of nature’ (see e.g. 2007a: 76). – Harris concurs with Saussure, according to whom, “parole” is “outside the scope and capabilities of linguistics,” that is, what is for real is outside the scope of linguistics, and what *is* not, is what linguists love to speculate about all the way into the brain. That Saussure held this perverted logic is also confirmed by Lieberman who tells that Saussure “started the study of language down a slippery slope, when he declared that the true objective of linguistic research was to understand phenomena that reflected *la langue*, knowledge of language. Other linguistic data supposedly reflected extraneous events, *parole*, that could safely be ignored” (Lieberman 2002: 13). I have to note that it is truly bewildering that linguists starting with Saussure and

culminating with Chomsky made this total logical reversal between what is real and what is fiction: the real, material acts of speech were ignored in favor of the perceptual abstractions which took on a life of their own. – Maybe it is the nominal form that led to this bewitchment of thinking; if Saussure instead of *parole* had said *parler* (to speak) and given the distinction as *parler* vs. *langue*, then it had been more clear that the former denotes a biological activity and the latter a nominal abstraction.

Having correctly identified the difference between speech and language, and even having understood that language is an abstraction, Saussure still could not free himself from the urge to identify something determinate in language. Saussure had reached the marvelous insight that the “structure of a language is a social product of our language faculty. At the same time it is also a body of necessary social conventions” (Saussure 2005: 9). It was a marvelous insight but not quite correct in all aspects. It seems that he could not free himself from the thingly fallacy and that he therefore indeed considered language as a “product”, as something that in fact would *exist* in its own right. He did not realize that this “social product” was a product of his imagination (likewise other people’s imagination); a perception he had formed on what language is (largely based on the perceptions other people have had of it before him). Further it seems that Saussure was wavering between the correct conception of speech versus language and the structuralist fallacy that he became known for. At one point he correctly talks about language in terms of “speech and trace” (Saussure 2005:11) but next he says: “By distinguishing between the language itself and speech, we distinguish at the same time: (1) what is social from what is individual, and (2) what is essential from what is ancillary and more or less accidental” (Saussure 2005:13,14). The idea to let the distinction between language and speech stand for ‘what is social’ vs. ‘what is individual’ would be correct, if by that was meant the same distinction that I am proposing, namely that ‘what is individual’ is the biological ability to speak, the ability to voice ideas through verbal behavior and the actual verbal behavior, and ‘what is social’ are the language practices that we perceive in abstraction. But the idea is incorrect in the sense Saussure seems to have in mind (as well as the authors who refer to him). Judging from Saussure’s *Course in General Linguistics* (2005) and from the way his critics have understood it, Saussure labored under the underlying assumption that it is anyway “language” of which the

“social” and the “individual” form part, that is, in his conception there are collective (social) features of language of which the individual language is a genus. According to that conception an individual also possess a language in its entirety, but these individual languages are some kind of reflections of a one underlying collective language. That this is the correct interpretation of Saussure’s ideas is directly supported by the second part of the above quoted passage, that is, the idea that this would represent a distinction between “what is essential from what is ancillary and more or less accidental.” Clearly he means that the *collective language* is the essential, while the individual language is “ancillary and accidental.” This is also supported by Saussure’s statement that “language is never complete in any single individual, but exists perfectly only in the collectivity” (2005: 13). – We shall note that ‘language’ cannot be ‘complete in any one individual’ because by language we may properly only refer to the abstractions we form of collective verbal behavior, that is, language practices. An individual does not have a language, or use a language – an individual speaks, expresses his feelings by means of his verbal behavior in imitation of other peoples verbal behavior.

Unfortunately all we have to go about in judging Saussure’s theories are the posthumously compiled lecture notes and recollection of his students and colleagues (see Harris in Translator’s Introduction to Saussure 2005). Perhaps he would have reached additional clarity in these issues if he had proceeded with writing a proper book on the theories. But as the theories were left behind by him they remain blurred and contradictory. Saussure even manages to combine two quite opposite ideas in one statement as when starting with the correct assertion that *language* “is a fund accumulated by the members of the community through the practice of speech” but then immediately, divided by a mere comma, continues with the contradictory proposition that this *fund accumulated by the social practice of speaking* is “a grammatical system existing potentially in every brain, or more exactly in the brains of a group of individuals” (Saussure 2005:13). – Here he, unfortunately, also seems to be anticipating Chomsky’s “generative grammar,” the device in the brain.

We again see from above how the thingly language bewitches thinking. The age-old language practices led Saussure to conceive of the social practice of language as a thingly entity with its proper existence – even though he had, in effect, identified language as a social practice. When we recognize the contrary, that abstractions do not exist, then we

have to seek other explanations for the perception we form, among these the perceptions we form on language. This rejection of taking perceptions to correspond to thingly entities is what helped me to recognize the ideas behind the paradigms of *expression and interpretation* and *speech and language* and the underlying *organic process model*. – It is in fact quite an extraordinary misconception to claim as Saussure did that language would not only exist, but “perfectly exist...in a collectivity,” for here he postulates that one abstraction, *language*, is located in another abstraction, *collectivity*. He did not realize that the collectivity merely shared common language practices by imitating each other’s verbal behavior. He was prone to fall for this fallacy for he was predisposed to such ideas by the thingly language and the ideal of the “scientific method” which he was following. According to the “scientific method” a social scientist had to formulate ideas in social sciences on the analogy of the natural sciences. This obviously led to the urge to postulate that the object of the study represented a thingly entity, the characteristics that were to be identified. In so doing, as a further misconceived consequence of the “scientific method,” the scholar had to make generalizations for which he needed to search for similarities and ignore the real infinite variances of phenomena. Linguistics serves as an arch example of this misconception to stress the dissimilarities on the expense of the similarities, for whereas everybody can without a lot of effort realize that every person speaks differently (and that even each person speaks differently from time to time) the idea to identify the similarities prevailed in linguistics. Saussure went as far as to postulate that these perceptions on social practices, or his “social product,” were “stored in the brain” in form of the “language itself” (Saussure 2005: 24). Here again we notice the seeds of Chomskyism.

These misconceptions lead Saussure to the ideas, which later were referred to as ‘structuralism,’ that is, “the concept that *langue* is a structure, and that its essential - indeed sole - properties are structural properties,” as Harris and Taylor put it (1997: 211). Saussure himself called it a “science of linguistic structure” (Saussure 2005: 18). According to this idea “meaning no longer resides in individual words or sentences, but in the relations that constitute language” (Williams 2005: 47). Driven by the “scientific method” Saussure wanted to show how “language” represented a stabile and structured system. The change in language corresponded in his conception to an evolution of the *thing*, language, which he conceived on the analogy on organic life, even when

he from the other hand knew that it was an abstraction. He said that language “at any given time involves an established system and an evolution” and “at any given time, it is an institution in the present and a product of the past” (Saussure 2005: 9). In reality language represents perceptions on everchanging social practices, which do not have any existence at all beyond the momentarily observable human behavioral actions and interactions.

## Bloomfield

Saussure’s lasting legacy was that he gave rise to the misconceptions of the Bloomfieldian school which was eventually to lead to the Chomskyan nonsense. This chain of events can directly be traced to Saussure’s command that the “linguist must take the study of linguistic structure as his primary concern, and relate all other manifestations of language to it.” This eventually led Bloomfield and the American structuralists to exclude meaning from the linguistic analysis (Harris 2002: 57). But as we shall see below, the exclusion of meaning did not, in fact, mean that meanings as such were of no concern, rather what this really meant was that the considerations to real meanings as expressed by speakers in specific contexts was disregarded, while linguists, among them most notably Chomsky, instead wanted to prove that abstract verbal symbols and abstract (context-free) linguistic constructions (utterances/sentences) manifested some kind of surface structures of hidden speculative meanings.

Three sorts of intertwined fallacious traditions can be identified as having bewitched Bloomfield’s thinking. These were: (i) Saussure’s structuralism, (ii) the positivist philosophy (which also was directly behind Saussure’s thinking), and (iii) behaviorism (which may in itself be seen as an outgrowth of the positivist ideas). Bloomfield was a behaviorist (see e.g. Joseph, Love, Taylor 2009: 106 – 109), but influenced by his ideas of positivism he adopted a very peculiar conception of behaviorism. (Matthews confirms that Bloomfield can be seen as an idiosyncratic behaviorist and points out the connection between Bloomfield’s behaviorism and the positivistic ideas by which he was influenced; see Matthews 1996, e.g. pp. 15, 64, 65). Traditional behaviorists had wanted to draw scientific conclusions from observing behavior of humans and other animals by an application of very rigid methods of observation. Bloomfield, however, came to ignore the actual behavior and its observance, and instead for him only the traces of the behavior

were to be of any relevance. In linguistics the traces of behavior are words (verbal symbols), their “constituent elements” (what I have referred to as verbal symbolic devices) and their combinations. Now, these are what Bloomfield wanted to study in abstraction of the real behavior. (I note that I point out in chapter *A Review of Chomsky’s Verbal Behavior* that Chomsky has developed a yet more peculiar sort of behaviorism where he studies verbal symbols not as traces of behavior but as entities that behave in themselves; i.e. he labors under the illusion that the perceptual abstractions that he has formed could possibly behave like independent organic entities). These traces Bloomfield considered being “positivistic facts” of behavior. – How Bloomfield sacrificed the real behavior for the traces of the behavior becomes evident from Matthews account on Bloomfield’s mature theory (1996: 64). Bloomfield motivated the paradigm choice by pointing out that linguistics is distinct from psychology (which was the subject for classical behaviorism) inasmuch as it “remains on the plane of abstraction.” And because of the abstract nature of linguistics we therefore, Bloomfield thinks (in Matthews’s words), ‘do not trace linguistic usage act by act’ and instead we assume ‘that, once individuals have acquired the habit of using a certain linguistic form they will continue to utter it in similar circumstances’ (Matthews 1996: 64).

Thus we may notice in the traditions that go from Saussure to Bloomfield a most curious chain of bewitchment of thinking. What had started as Saussure’s quite intelligent observations in regards to the difference of speech and language gave way to the idea that language, which Saussure knew to be an abstraction, had to be studied as a concrete system; and this system Bloomfield wanted to study by the methods of behaviorism, but by ignoring the actual behavior. This led to the extraordinary idea of a speaker free linguistics (Joseph, Love, Taylor 2009: 126; or, context-free linguistics). Therefore, meaning as such should be of no concern, which in turn led to the whole enterprise of linguistics eventually with Chomsky becoming meaningless. – We can see from this how a series of rigid methodological requirements led to utter nonsense as the methodologies became self-serving means in themselves. In the activities of the Bloomfieldians we also have a good example of wannabe scientists (by which I refer not as much to Bloomfield himself but rather his followers, and especially those that Matthews refers to as the Post-Bloomfieldians, 1996). These scholars were not satisfied with making linguistic studies by the only means possible

for making linguistics (through empirical observations and investigations and descriptive reports based on them), and instead they looked with envy and admiration on natural scientists dreaming of achieving some similar kind of rigor in their field of inquiry. At the end they thus came to sacrifice the entire science in exchange for their methodological illusions. (This, in a gradually worsening trend from Bloomfield to his earlier followers, the Bloomfieldians, and further to the Post-Bloomfieldians; for Chomsky methodology was no longer of any concern, rather he has always referred to a plethora of methods to suit every one of his abundant and contradictory ideas of the day).

Another line of Saussure's thinking also ultimately cumulated in the Chomskyan theories; this was Saussure's idea to stress "the intrinsic inseparability of the phonetic and conceptual facets of language" (Harris and Taylor 1997: 210). This is connected with his famous dichotomy of "significant" and "signified" based on the idea that "the linguistic sign unites not a thing and a name, but a concept and sound-image." The 'signified' was to be understood as the sound-image or the "the mental representation of the meaning" and the 'signifier' was to be understood as "the psychological imprint of the sound" (Williams 2005: 5). Bloomfield seems to have picked up this idea in his quest to seek for meanings in individual speech-sounds. He said that the "study of speech-sounds without regard to meanings is an abstraction" (Bloomfield 2005: 139); and: "Our fundamental assumption implies that each linguistic form has a constant meaning" (Bloomfield 2005: 145); or, as Matthews renders it: the "fundamental assumption of linguistics": namely, that in every speech-community some utterances are alike in form and meaning, which implies that Bloomfield considers that each form 'has a constant and specific meaning' (1996: 17).

This idea was connected with Bloomfield's initial correct understanding that the meaning of speech (verbal behavior) is connected with a given situation of communication (Matthews tells that Bloomfield talks of the "*meaning* of a linguistic form as the situation in which the speaker utters it and the response which it calls in the hearer," Matthews 1996: 16). But Bloomfield did not think of this in terms of *meaning of speech* or the meaning of the whole act of *verbal behavior*, instead he thought of it in terms of *meaning of language* (through the series of logical simplifications he made). The difference I am stressing is that when we speak of the *meaning of speech/verbal behavior*, then we emphasize that the meaning is in the performance, what the speaker wants to communicate; but when linguists speak of *meaning of lan-*

guage, then they fall into the abstraction trap and think that any features of the performance would receive a meaning in the abstraction, which is, of course, a totally wrong idea. Meaning never becomes independent from the concrete performance (see discussion of meaning in chapter *Speech and Language*). We can indirectly, by the descriptive method, study meanings of words in the sense that we say that in these and these circumstances people have been observed to use such and such words and phrases with such and such meanings. This activity yields a good descriptive dictionary. But even this descriptive method cannot be extended to an analysis of the speech-sounds as such, for the speech-sounds do not serve any other than an arbitrary role as the means for carrying the verbal symbol in the historical process of imitation in language practices from generation to generation. An analysis of speech-sounds would not yield any more insight into meanings than that of the ink in which words are written on a paper or, an analysis of the chemical properties of the paper itself. Bloomfield's idea that "linguistic form" (which must mean the same as my 'verbal symbols,' and by which he ultimately refers to the speech sounds) has "a constant meaning" stems from the ideals of positivism according to which meanings correspond to static states resulting from bodily processing of environmental stimuli. Matthews reports that Bloomfield in a paper from 1936 wrote that the philosophers from the Vienna School had "found" that "all scientifically meaningful statements are translatable into physical terms – that is, into statements about movements which can be observed and described in coordinates of space and time" (1996: 15, 16). Following this idea Bloomfield defined the meaning of utterances "in terms of relevant stimuli and reactions" (ditto). - Bloomfield was here on the right track (as far as he had understood, in Matthews words, that "a theory of meaning is grounded in a model of reactions to stimuli," 1996: 13), but he made a cardinal error (in line with the positivist paradigm and the behaviorism it led to) to conceive of this stimuli-reaction relation as a static one, that is, one of exact correspondence in each situation for each person (compare what was said above about "constant meanings"). In reality, as I argue in this book, meanings are, indeed, created in the body/brain as a result of mental processing of the stimuli both by the expressing subject and the interpreting interlocutor, respectively, but this is always a unique and situation based reaction, embedded in the context and life experience of each person. And naturally, it is nothing that could possibly be described in "physical terms" for the

mental processes that yield these meanings are infinitely complex and in a constant flux. Bloomfield motivated the paradigm choice by pointing out that linguistics is distinct from psychology (which was the subject for classical behaviorism) inasmuch as it “remains upon the plane of abstraction” (Matthews 1996: 64). And because of the abstract nature of linguistics Bloomfield thought that we therefore, in Matthews’s words, ‘do not trace linguistic usage act by act’ and instead we assume that, once individuals have ‘acquired the habit of using a certain linguistic form they will continue to utter it in similar circumstances’ (ditto). – This shows he believed in the behaviorist paradigm but also thought that he, based on the simplified assumptions, did not have to actually study the behavior. But this very assumption was wrong, mainly because it ignored the infinite variances in which the mental processes that lead to cognition occur. – Thus Bloomfield thought that the meanings emerge from such a constant use of verbal symbols in the same way in the same situations. But humans are no automata, they may utter strings of words that are partially automatic but always behind that are conceptualized thoughts in infinite variances; and each instance of processing of verbal stimuli is unique. To note, that the relation between verbal stimuli and the meanings that emerge through their mental processing are always mediated via mental processes involving cognitively conceptualized ideas; these processes are thus in no way such direct processes of stimuli to reaction as the behaviorists had imagined. In speech, the speaker seeks to pair his cognitive ideas with symbolic means to express them; in doing so he reverts to any symbols available for him. But hereby the symbols have no independent meanings in themselves. In chapter *Speech and Language*, I depicted this with the analogy to an artist who expresses his feelings with the pictures he paints. I said that words do not have any more independent meanings than the painting colors which the artist employs in depicting his ideas. Words and, the more, sounds are in abstraction as meaningless as red paint in a tube. But I also said that we may to some extent study meanings of verbal symbols in the sense that we aim to establish which meanings speakers *usually* assign to the various symbols. Verbal symbols in form of sound-streams and in form of text are carriers of expressions but none of them have an independent meaning beyond an expression, which itself remains immaterial (and merely represents the feelings of the speaker).

Bloomfield is generally regarded to have advocated a position that meaning could not be studied scientifically. Matthews correctly argues

that this opinion represents a simplification of Bloomfield's actual views on the science of linguistics (Matthews 1996). However, the question of the relation between meanings and other aspects of linguistics was central to his linguistic ideas. In essence Bloomfield can be said to have held the idea that a study of formal relations can and should be separated from that of meaning (Matthews 1996: 3). It is this idea that ultimately led to the dominant *meaningless idea* of American linguistics (from where it spread to Europe and other parts of the world). It is indeed the relation between form and meaning that Bloomfield and his successors up to Chomsky were fumbling to determine. Hereby Bloomfield was still intelligently contemplating the issue albeit drawing the wrong conclusions for himself and setting his successors off on the wrong track. While Bloomfield was still contemplating the relation, the Post-Bloomfieldians fully separated the study of syntax from the study of meaning (Matthews 1996), and this in turn served as the platform for Chomsky's *meaningless paradigm*. The misguided study of the independent meanings of sounds is what ultimately led to the Chomskyan theories of abstract studies of grammar and syntax (about the connection between Bloomfield and Chomsky see also e.g. R.A. Harris *Linguistic Wars*, 1995).

I argue in chapter *A Review of Chomsky's Verbal Behavior* that Chomsky precisely advocated this meaningless position. Matthews agrees that Chomsky "in the beginning" believed that "the study of meaning was separate from that of grammar" (1996: 184), but considers that Chomsky would later have amended this position so as to integrate the study of grammar and meanings. This conclusion of Matthews's is, however, ill-founded and based on the acceptance that Chomsky's alchemical speculations as to how grammatical rules determine the "intrinsic meanings of sentences" (ditto) would amount to a study of grammar and meanings. Obviously that is not a real study of meanings, for meanings can only be studied in relation to people's language practices, that is, in relation to how people have been observed to speak. Chomsky has not been studying that, instead Chomsky has based on a series of artful manipulation of verbal (and algebraic) symbols claimed that he poses insight into meanings (to note, abstract meanings or, rather the formulae for retrieving abstract meanings). – Matthews notes that at "still later stages, that belief was" again "gradually reversed" (ditto). By this stage Matthews must refer to what I call *Chomsky's capitulation*, that is, his abandonment of the rule-system model (for a discussion of this, see

chapter *A Review of Chomsky's Verbal Behavior*). To note, Matthews is one of those admirers of Chomsky who forgive him his every ambiguity, metaphysical speculation and frequent reversals of his positions. He himself admits this and notes the inconsistencies and major contradictions in Chomsky's theories, at times even within the same book, but confesses that he finds all this "fascinating." For him it represents "the testimony of a mind that is always fruitful and always on the move, and that often moves too fast for considered and orderly publication" (1996: 187). This is a very interesting confession for it shows that Matthews is here in the role of an art critic that really is reviewing a form of art, the generative art of Mr. Chomsky, and not concerned with science. Science requires a vivid and creative mind at the stage when scientific hypotheses are formulated, but the activity does not yet amount to science before the scientist is able to consistently advocate for a given idea. This idea may, of course, gradually change as his work proceeds, but if so, then the scientist, if he indeed were a scientist, would have to precisely demonstrate the instances of paradigm shifts and their motivations. Science cannot be done in the form of the generative prose that Matthews finds so entertaining.

Chomsky's position has to be juxtaposed with Bloomfield's who did not advocate the idea that meanings should be ignored and rather wanted to *emphasize* a study of form *over* a study of meanings; for him it became a central principle that distinctions of meaning were established by an analysis of form (Matthews 1996: 8, 68). "Linguistic study," according to Bloomfield, "must always start from the phonetic form and not the meaning" (Matthews 1996: 8, in reference to Bloomfield's *Language*). That is, he emphasized form but still considered that verbal symbols such as morphemes have meanings (for Bloomfield a morpheme on a whole was meaningful while phonemes on their own were not to be considered meaningful, Matthews 1996: 69). According to Bloomfield, even grammatical constructions have meanings like morphemes (Matthews 1996: 69).

We see from above that Bloomfield oscillated between the idea of verbal symbols (including verbal symbolic devices) and their combinations (grammar) having independent meanings and the position that form was to be regarded as *decisive*. But this brings us to the crucial point in this discussion: *decisive* for what? What did Bloomfield mean by a juxtaposition between form and meaning? Why would it make sense to make this juxtaposition? I argue that Bloomfield and his successors precisely failed to consider or consciously formulate these ideas, that is,

they failed to consider what they meant by juxtaposing form and meaning, what they were aiming at it. They did not fundamentally consider for what idea they referred to by ‘meaning.’ – Let’s consider these ideas separately. Linguistic form must refer to a description of the various sounds (or written symbols); grammatical form then is a description of the roles of various verbal symbols in combinations. We may describe the sound [a] and the letter ‘a,’ and naturally we by this do not involve any considerations as to what the sound or the letter might *mean*. We may also describe a stream of sounds [man] and the combination of letters ‘man,’ and hereby not involve any considerations as to purported meanings. And why should we involve here any meanings as we are only describing the sounds and symbols? A descriptive study of speech sounds is a concrete study by the methods of natural sciences that does not tell anything of meanings (which is a subject of social sciences); this descriptive study can reveal how speech sounds are produced and help to identify the various sounds people make (which can be useful in a range of applications). But the activity to describe sounds and symbols represent only a part of the linguistic enterprise, there are other phenomena to consider as well. And the other phenomena inevitably involve considerations of meanings. At some point even the very activity of describing cannot be performed without recourse to meanings. Thus when we want to study the grammatical form, we inevitably have to involve meanings in the analysis. By studying grammar we aim for a description of how meaningful statements (utterances, sentences) are structured. We aim for a description, but the description itself cannot be done without reference to meaning; this because we may intelligibly speak about grammatical categories only in reference to what kind of meanings they indicate, for example, verbs indicating an action. We therefore have to involve both form and meaning in a grammatical study, while understanding that hereby we aim at a description. We thus proceed in a hermeneutical circle from forms to meanings and vice versa. We may also study meanings from point of view of establishing what has historically in different contexts been meant with various verbal symbols. I would say that this also corresponds to a hermeneutical circle going from what people mean by various symbols to what the symbols may be considered to mean in force of the meanings assigned to them in language practices.

I need to stress that there is a misunderstanding in regards to Chomsky’s grammatical studies in this regards. Chomsky has said that

grammar is independent of meaning (in ignorance of the hermeneutical correlation), but this form of expression does not correspond to his fundamental ideas as to this matter. Instead Chomsky's ideas amount to the claim that grammar as *we* experience it is meaningless, but that there in grammar, on the contrary, are hidden meanings that *he* and the linguists trained in his methods can supposedly detect. Therefore he has studied the "deep structures" that he supposedly detected by his alchemic transmutations. This corresponds to what was said above in respect to how we should properly understand Chomsky's studies of the "intrinsic meanings."

In conclusion on these dwellings on Bloomfield and his influence on Chomskyan linguistics, I need to state that, although I have been somewhat critical towards Bloomfield, I nevertheless consider that his writings and theories are of lasting scientific value. Bloomfield did not draw adequate conclusions from all the material he discussed, but his approach was comprehensive and scientific. It seems to me that we could characterize Bloomfield's work as remaining "95% valid and correct," although he drew the wrong conclusions on some of the decisive issues which ultimately led to the fully misguided ideas of his successors. Of two alternatives that he brought up he seemed to have always settled for the worse. Thus Bloomfield understood that language is a "set of habits" (i.e. a social practice) and that language is "not an object or independent organism of some kind" (Matthews 1996: 128). He knew that language was an abstraction, but settled for studying it as a natural object. He knew that meanings cannot be exactly defined or discovered, but nonetheless said that we must assume that meanings exist (Matthews 1996: 68). He knew that meanings are ultimately results of bodily processing of environmental stimuli, but nevertheless decided that language, i.e. "people's habits of language," has to be studied "without bothering about the mental processes that we may conceive to underlie or accompany these habits" (1996: 7). Thus Bloomfield sufficiently well understood the distinction between speech and language but settled for abandoning what he knew about the biological reality in favor of speculating on the abstraction. It follows from Matthews that both Sapir and Bloomfield found it more profitable to study language as an "entity" (1996: 7). But they should not have taken this as a question of choice between speech and language and instead they should have determined what issues belonged to the one and the other field of inquiry, respectively. It seems that Bloomfield settled for the theoretical speculation on language pressured by his ideals of the "scientific method," for, as Mat-

thews says, Bloomfield experienced a “difficulty in implementing the description of meaning that he saw as his ideal” (1996: 14; i.e. the biological considerations referring to bodily reactions to stimuli) and then for him the way out of the difficulties was to ignore them altogether. This was also connected with his aim to “distance linguistics from psychology,” that is, to “free it from dependence on changing psychological theories” (1996: 29). He spoke of a “desperate attempt” in earlier linguistics “to give a psychological interpretation to the facts of language” (1996: 63). He thus made his peculiar methodological choices because he thought that the real psychological study would be too difficult (1996: 64, 65). Unfortunately Bloomfield did not understand that we would not need to attempt the fruitless efforts to establish hypothetical positivistic facts about meanings defined “in physical terms,” and instead we should just understand that meanings are ultimately a question of cognitive interpretations of words as stimuli in mental processes.

- The fact that these issues were too complex for scientific descriptions should not have motivated an exchange of the correct paradigm against an incorrect one merely for the reason that the latter suited better the ideals of the “scientific method.”

## John Firth

It seems to me that John Firth had gained some interesting insight into the true nature of speech and language. Firth is one of the few that have criticized the propensity to think of language or “linguistic structures” as if they existed as things (Joseph, Love and Taylor 2009: 59). He also seems to have had an initial understanding of the correct separation between speech and language, although he is referred to have retained the fallacy to refer to these as *parole* and *langue* (2009: 60), which indicates that he did not entirely grasp the true nature of the dichotomy. He also had a tentative grasp about how to deal with the fallacy to think that words would in somehow contain a meaning. He is, for example, quoted saying: “Words do not in any sense ‘hold’, ‘contain’ or ‘express’ the ‘meanings’ shown against their written form in a dictionary” (2009: 60). According to Joseph, Love and Taylor, Firth considered that “any sentence, as such, is an abstraction, and abstractions do not in themselves have meaning” and that meaning “is to be sought in actual speech events embedded in particular contexts of situation” (2009: 61). This is a largely correct conception, but it fails to go all the way in un-

derstanding the essence of ‘meaning’ as being a subjective performance of the speaker, and actual only represents his *attempt* to convey a meaning. According to this latter idea, words do not have any meaning individually (as Firth had correctly noticed), but neither do they gain a meaning in a context, nor in any other way. Thus it is wrong to claim, as Firth seems to have done, that “meaning is a function of linguistic form in a context” (2009: 62). But it is definitely correct to say, like Firth did, that “speakers make the fullest use of the perceived situation and of the assumed background of common context of experience” (2009: 65).

## Roy Harris and Integrational Linguistics

When I first came across the theories of Roy Harris and the school of his followers called the *integrational linguists*, I thought the ideas very promising. For example, in *Integrational Linguistics* (1998) Harris poses some very compelling questions like these: “whether language is plausibly seen as a form of human behavior that can be analyzed at a level of abstraction”; “whether or not we can give an adequate answer to the question ‘What is language?’” Unfortunately the authors of the subsequent articles did not discuss these issues in any logical sequence and did not arrive at any precisely formulated conclusions. Correspondingly the essay on Harris in *Landmarks in Linguistic Thought II* (2009) by Joseph, Love and Taylor started out quite promising telling that Harris proposes to “dispense with at least the following theoretical assumptions: ... that words have meanings; that grammar has rules; and that there are languages” (2001: 203). This article did, however, not reveal how Harris in effect had dispensed of these. - I note that these efforts must have been hampered by the very formulation of the question which again reflected the fallacy of failing to differentiate between speech and language. The authors had asked ‘whether *language* could be seen as a form of human behavior’ – clearly it cannot, it is speech that corresponds to human behavior, and language represents the perceived traces of this behavior (in abstraction). Harris has also postulated that language “involves at least three activities”, namely, “neural activity in the human brain”, “muscular activity of the body” and “social activity” (1998: 15). But we know by now, that only the latter point corresponds to a social activity, i.e. language, whereas the two former ones correspond to speech. (I refer to the Introduction of the present book where these ideas of Harris’s were discussed).

Unfortunately I must conclude that a closer study of the “integrational approach” proved somewhat disappointing. I was left with the impression that there is a lot of criticism of most everybody and everything but no real positive alternatives are offered. But this school definitely offers some interesting reading.

The integrational approach is supposed to mean according to Harris and Wolf in *Integrational Linguistics* (1998) that linguistic analysis must focus in the first instance on understanding the communicational situations within which episodes of linguistic behavior occur. This is by Harris and Wolf tantamount to the affirmation that “language cannot be decontextualized.” This approach of theirs, they emphasize, is in marked contrast to traditional linguistics or the “segregational approach,” which concept should cover all the ideas except their own. The authors maintain that according to the “segregational approach” “language can be separated out as an independent object of description” as “distinguishable from the communicational circumstances” (1998: 3). – In saying this, the integrationalists are both right and wrong. What they are really criticizing is the thingly fallacy to think of language as a material entity, but they are not quite free from that fallacy themselves either. Especially this criticism seems to be directed against Saussure structuralism and the ensuing ideas of Bloomfield, Zellig Harris and the likes (the ideas which subsequently were put on autopilot by Chomsky). They are right in wanting to integrate the study of language with that of communication, but where they go wrong is in ignoring the necessity to study what language corresponds to biologically and therefore failing to distinguish between speech and language. Only that kind of a study would reveal – as I have shown in this book – that verbal behavior is the means of communication; that words do not mean but a speaker means; and that language is an abstraction and cannot be analyzed as a material thingly entity.

Harris is, however, on right track in his urge to connect a study of language with other forms of social interaction (Harris 1998: 6). This corresponds to my idea that the abstraction, language, represents the ultimate form of social practices and that language therefore functions as a “carrier” of social practices and is meaningful only inasmuch the participants in the communicational act both have experience of the relevant social practices. But hereby, I need to remind, it is not words (or phrases) that become meaningful in the act, but the speaker’s verbal behavior is understandable against the shared social practices inasmuch as

he expresses himself in a similar way in broadly similar contexts. According to this conception words and phrases can be understood only by those who have taken part of the relevant social practices. It is not, however, quite correct to affirm that language “would be meaningless unless the language users also engaged in other forms of social interaction.” This is in itself a meaningless statement, for without the social interaction there would simply be no communication, speech, and no perceived language would be formed. Harris is correct in maintaining that language “as social interaction involves not just vocal behavior but many kinds of behavior” (1998: 13). This represents a central message of the paradigm I have presented in this book.

In the article about Harris in *Landmarks II* (referred to above) the authors compare Harris’s theories with those of Firth saying that for Firth “analyzing the meaning of speech events is the ultimate task of linguistics” and “the meaning of a speech event is a function of its context.” This postulation, according to the authors, put Firth in a dilemma whereas he proposed to “describe languages” which, however, could, according to the logic of the authors, not possibly be done considering that languages are abstractions. Here it is not clear whether the authors themselves accept the idea that ‘languages’ represent abstractions or whether they are only paraphrasing Firth. I shall note, that I do not see why abstractions could supposedly not be described, on the contrary the abstractions corresponding to language need to be described keeping in mind that they ultimately are derived from real verbal behavior (speech) and serve as guidelines in the latter activity. It then seems that the authors are saying that Harris supposedly overcame this dilemma by dispensing “with the *assumption* that there are languages” arguing that “if there are no languages, it can hardly be the business of linguistics to describe them” (2001: 203, 204). Unfortunately the meaning of the quoted passage cannot be deciphered from the ensuing discussion and it remains unclear whether or not Harris, in fact, supports the view that there are no languages. Harris is said to have involved considerations such as “if English, French and Swahili are languages, then languages are not fixed codes” and vice versa “if languages are fixed codes, then English, French and Swahili are not languages” (2001: 205). He has arrived to these considerations by identifying (as paraphrased by the authors) that “they have no precise boundaries and are subject to complex patterns of variations in time, in place, and from individual to individual.” Further the authors point out that in this conception it would be impossible “to identify a consistent or determinate set of form-meaning

pairings that might constitute the *language* concerned.” - Here I remind the reader that according to my conception there indeed are no languages, but there are language practices, the similarities and dissimilarities of which lead to the perceptions that the verbal behavior of a community would correspond to a language. We do not need any erudite arguments in regards to the existence or not of any ‘fixed codes,’ we just have to understand that the idea of language is caused by the perceptions we form of observing these practices. When we understand that language merely corresponds to immaterial abstractions, then we understand that all talk about “fixed codes” is nonsense. - And surely we can and shall describe the various language practices.

But we shall continue on the above thread: what in fact was Harris’s conception? Very tellingly of the confusion that reigns in integrational linguistics the question of ‘whether there are languages or not’ is all of a sudden defined in terms of a “choice between a linguistics of languages and a linguistics without languages” (2001: 207), which shows that the generators of those ideas have ventured deep into academic sciences. Then it seems that Harris supposedly rejected the “linguistics of languages” route (for one or another academic reason) and instead proposed “a quite different foundation for linguistic theory” (2001: 208). But this is where the discussion breaks, for the discussion of the “quite different linguistic theory” - instead of answering our question ‘whether there are languages’ - goes even further down the route of academic science to yield “the three principles” on which “integrational linguistics may be defined” (2001: 208). These principles are told to be: (i) the integrational character of linguistic sign, (ii) the indeterminacy of linguistic form, and (iii) the indeterminacy of linguistic meaning.” The above discussion shows how Harris anyway stands with one foot in the metaphysics of linguistics. The authors even tell that Harris proposed “that we take seriously Saussure’s idea that linguistics should be a part of semiology” (2001: 209). The discussion that then ensues is supposed to show that Harris had in broad terms agreed with Firth’s ideas of “linguistic contextualization,” but this with the caveat that for Harris “context involves a great deal more” than purely meaning and that ‘contextualization was necessary for a sign’ (2001: 209). These considerations, in turn, lead the authors at one point to express that, in fact, “Harris denies that ‘language’ is to be equated or deemed as co-terminous with verbal behavior” (2001: 211). By this proposition Harris has, as it were, taken us full circle around the bush he is beating about. I noted

above at the onset of the discussion of Harris's ideas that he did not seem to have fully realized the distinction between speech and language, and having followed his thinking through the various stages of argumentation we realize that, indeed, this is what kept him from reaching a true insight on these issues. For, naturally, language is not verbal behavior, speech is! As long as the distinction is not made, confusion will reign. These considerations are supported by a further theme in the article, where Harris is, as it were, trying to explain the other part of the puzzle namely, the social practices. This theme is introduced by the authors stating that "Firth remarks that the *reflexive character of linguistics, in which language is turned back on itself, is one of our major problems*" (2001: 212). The authors add that "Firth never attempted to solve the problem, or even state precisely what he took it to be." Next they say: "In Harris's bolder and more positive formulation, that it necessarily relies on the reflexivity of language *makes linguistics fundamentally different from all other forms of inquiry into human affairs.*" It does not become quite clear what they take Harris to have formulated more boldly and positively, but anyway we see from here that Harris speaks of the "reflexivity of language." This idea of *reflexivity* points to a nascent understanding of social practices, for in form of social practices language indeed carries a return effect on the speaker. But Harris could apparently not think these ideas to their logical conclusion. On the contrary these ideas led to a misconceived discussion à la Russell's paradox (Hellevig 2006) according to which by "turning the medium of inquiry back on itself it becomes an object of inquiry" (2001: 212). Only an author who continues to be beset by the thingly fallacy of seeing language as a material entity can adhere to such a fallacious idea. We have to remember that naturally it was not "language" that turned back on "itself" but it is people who having observed other people speak who become affected by the observed speech patterns (which we refer to as language). At no point is "language" an object of itself, rather at every point is it a human, all too human, activity. Although Harris was thus shown to have been beating about the bush and failing to clearly formulate his view on language, I was still intrigued about what Harris, in fact, wanted to say, and therefore I decided to search further. Especially I was interested in finding out what Harris meant with his reference to the "language myth" in *The Language Myth in Western Culture* (2002, edited by Harris). Frankly, I was finally expecting the myth to be revealed as the fallacious idea that languages would possibly *exist*, followed by a plea to reject the myth, but instead the alleged myth boils

down to two ideas concerning language that Harris wrongly claims to be widely adhered to. These are supposed to be: (i) the doctrine of tele-mentation and (ii) the doctrine of fixed code (2002: 6). – Harris tells that there is a longer formulation of this “myth” which he renders like this:

“Individuals are able to exchange their thoughts by means of words because – and insofar as – they have come to understand and to adhere to a fixed public plan for doing so. The plan is based on recurrent instantiation of invariant items belonging to a set known to all members of the community. These items are ‘the sentences’ of the community’s language. They are invariant items in two respects: form and meaning. Knowing the forms of sentences enables those who know the language to express appropriately the thoughts they intend to convey. Knowing the meanings of sentences enables those who know the language to identify the thoughts thus expressed. Being variant, sentences are context-free, and so proof against the vagaries of changing speakers, hearers and circumstances, rather as coin of the realm is valid irrespective of the honesty of dishonesty of individual transactions” (2002: 2).

I do not believe that these ideas in fact would represent any widely held beliefs in the nature of language, rather we could see this rendition of the “myth” as a criticism of the highly scholarly speculations of Chomsky and his followers. But unfortunately Harris has acquired a fixed code to think of all linguistic traditions in terms of this self-invented myth, which certainly has played a major role in the integrationists’ misunderstanding of John Locke’s ideas, as we shall see a little further down.

The same hesitance in regards to finally pronouncing on whether there are languages or not is displayed by the way Harris discusses the relation between languages and dialects. Whereas we again here meet the promising idea that “there are no such things as languages” (1998: 24), the idea evaporates in the air with the ensuing discussion in the chapter titled *The Dialect Myth* (Harris in *Integrational Linguistics* 1998: 83). Harris tells that the traditional idea of the “dialect myth” represents one facet of the more general “language myth.” In accordance with that what a dialect is, is defined in relation to what a language is (1998: 86). This conception implies that “to be a dialect is to be a dialect of a language.” Harris tells that one author had explained the idea by saying that “languages normally consists of dialects” (1998:

87), that is to say, that dialects form the building material for languages. Harris then tells that there is a “modern view of the matter” which “approaches the idea from the opposite direction.” Harris explains that this would mean that “instead of starting with a language and breaking it down into dialects, you start off with individuals, and aggregate their linguistic behavior into dialects” and presumably (in keeping with the above) the dialects further into languages. In this context we are introduced to the concept ‘idiolect,’ which Bernard Bloch was told to define as “the totality of the possible utterances of one speaker at one time in using language to interact with one other speaker” (1998: 87). I cannot agree with this being a successful definition either from the point of view of those that take the term for serious or those that reject it (like I do). I think that those that refer to the ideas, in fact, consider an ‘idiolect’ to signify ‘one’s private language,’ that is, the idea that each person possess his own version of the language of the community (which would imply that there is no correct language as such). It is not clear whether Harris agrees with this conception or not; he points out that the essential feature of Bloch’s conception of idiolects was that he conceived of a dialect as “an aggregate of idiolects, united by some common feature or a set of features.”

The point with the idea of idiolects was that it served as an element in the chain of logical analysis of what could possibly be identified as a language. The scholars had somehow grasped that all people spoke (“used language”) differently, wherefore they had to doubt the correctness of speaking of there existing a one language such as English. Therefore they wanted to push the question deeper down and went on to consider whether the separate dialects were not anyway to be considered as the entities they searched for. To the dismay of the scholars they soon discovered that a dialect did not either correspond to any uniform “language use.” Then finally they wanted to explore the possibility that the “language existed” on the level of the individual, which finally brought them to the idea of idiolects. According to Harris, Saussure had come to the conclusion that the “true language unit” (concept mine) was to be located on the level of dialects and he did not want to “carry the subdivisions of language down as far as the level of idiolects” (1998: 92). This because for Saussure, says Harris, “the concept of a linguistic system peculiar to just one person was as incoherent as the concept of a private language was to Wittgenstein.” But contrary to Saussure his American successor Bloomfield had anyway “abandoned the attempt to locate homogenous linguistic systems at the dialect level”

and, indeed, "sought instead to locate them at the individual level" (1998: 93). Harris notes that this attempt contained the irony "attached to the subsequent realization that, in moving from dialect to idiolect, the theorist had not moved far enough. In other words, the speech of one individual is no more homogenous than the speech of a collection of individuals. For the simple fact is that individuals change their style of speech depending on who they are talking to and under what circumstances." Harris then says that to be consequent the scholars would have to further consider the different styles in which individual's express themselves in various situations. As a summary he then concludes: "Here we see how the dialect myth in the end gives place to the style myth. All of them – language myth, dialect myth and style myth – belong to the great chain of attempts to identify somewhere in the manifold complexity of human speech something that might pass for a determinate system of verbal signs" – which again is a very healthy conception. Indeed, there is only the manifold complexity of human speech, or more correctly, verbal behavior, the complexity which we perceive in abstraction as language.

I would have expected that following this chain of analysis Harris would have concluded that there are no languages, no dialects, and no idiolects, and that there only all the multitude of individuals who are engaged in verbal behavior (speech) in infinite variances. But instead Harris concludes that he agrees with the view taken by "pragmatically minded dialectologists." This essentially means that Harris considers that there are a little bit languages after all and they are located somewhere at the level of dialects. This represents an abuse of the term 'pragmatic,' a case when the pragmatic approach is employed to cover up for not reaching a clear understanding of phenomena. – One of the integrationalist authors, Nigel Love, has correctly said: "A language, as an individual's system of repeatable abstractions underlying language-use, is something that he creates for himself in the light of the constantly shifting situations in which he interprets and produces utterances. At no point, for him, does the system become fixed. (This is tantamount to saying that there is no system.)" (Harris, Wolf 1998).

## **Volitional Expressive Behavior in Apes**

Studies of non-human primates, or apes, have provided some fascinating evidence on how the human ability to speak can be situated on an

evolutionary continuum of which the apes represent an earlier stage. In particular I refer here to the research conducted by Sue Savage-Rumbaugh as evidenced in *Apes, Language and the Human Mind* (1988) and *Kanzi. The Ape at the Brink of the Human Mind* (1994). In this connection I would also refer, for example, to Roger Fouts's (Next of Kin 2003) and *The Origins of Language* edited by Barbara King (1999). Due to the fallacies caused by the present generally accepted linguistic paradigm, which fails to distinguish between speech and language, the conclusions from the studies are, however, somewhat misleading. This as the primatologists and supportive linguists maintain that they have shown that apes have "language skills" or speak of "ape-language," a position most linguists deny (Joseph, Love and Taylor 2009: 219). The confusion is caused by the very same fallacy of failing to recognize the distinction between speech and language. Apes don't 'have language,' rather they are capable of expressing cognitive feelings, that is, they have the abilities that form the rudiments of the ability to speak. I shall show that the point is not that Kanzi, the bonobo ape studied by Sue Savage-Rumbaugh, or the other apes would have possessed language (which they did not) but that they have *an ability for volitional expression of abstractions that properly fit a context*, and a capacity to interpret, to a certain extent, the expressions of others (including human speech). Thus, what is proven by the studies, is that apes can, to a certain degree, master a symbolic system of communication.

The primatologists who have studied how apes communicate tend to affirm that *language* is not an exclusive domain of humans and that apes can also learn *language*. In keeping with the ideas presented in this book we should, of course, right off note that it would be wrong to say that apes would participate in such social practices that would amount to what we fairly should call 'language.' From the other point of view, that is, from point of view of 'speech' it would also be wrong to say that apes are able to speak, because with "speech" we must mean the ability to take part in the social practices of 'language' by pronouncing sounds that correspond to words (or writing by means of the corresponding symbolic systems). From point of view of language practices we must also consider that to characterize a social practice of verbal behavior as a language practice it is required that the social practice of verbal behavior must have developed to such a level that an individual may at least potentially express a range of ideas by sounds alone in imitation of the language practices of the community, this while keeping other bodily

expressions at a minimum. (I want to stress that this is not in contradiction to how I define speech as a part of verbal behavior, rather I am merely stating that the part of articulating meaningful sounds must have developed to such a level, which however does not make speech into the exclusive domain of verbal behavior, of which speech is always a part, but not the sole expression).

With the above considerations I am in no way aiming at discrediting the work of the primatologists, on the contrary I greatly value their work. And I must state that there is no doubt about the superiority of the arguments of the primatologists over those of the reigning linguists Chomsky, the Chomskyans, and the quasi-Chomskyan Pinkerists. (Joseph, Love and Taylor: article *Kanzi on Human Language* provides interesting reading in respect to this controversy; in 2009: 219). It is the misconceived ideas of linguists that have led the primatologists to think of volitional expressive behavior of apes in terms of 'language.' Both camps should now realize that what the primatologists have, in fact, proven is the paradigm of expressions and interpretations, which I present in this book. What has been proven is that apes possess the ability for volitional expression. Even more, what has been proven is that the complex behavior of an ape serves to express an interpretation of his feelings (ideas) just as the case is with humans. And by this we really prove, what I take that the primatologists actually wanted to prove, that human speech represents a further evolutionary development of this ability for volitional expression. It is this development of expression that has in an evolutionary spiral led to the verbal behavior (of which speech expressions form a part) of individuals that amounts to the social practice of language, which in turn has affected the ability to speak and the underlying cognition. In my conception, it is precisely at the diffuse border of these developments that we may postulate that humans have evolutionary emerged. – The primatologist have thus empirically shown Chomsky to be wrong in claiming that the proposition that the "human faculty of language" would be "a true species property" that varies "little among humans and without significant analogues elsewhere" Chomsky (2007: 3).

Apes can express sounds as part of the behavior by which they volitionally express their feelings. But they cannot speak in the sense that they would be able to articulate a range of repeatable sound patterns that would correspond to words and speech patterns. The vocal tract of apes is such that it simply does not allow for the production of the

minute sequences of vowels and consonants that are needed for the finetuned repeatable sounds that are necessary for speech. (For this issue and the other above mentioned considerations, I refer the reader to a corresponding discussion in chapter *Evolution of Speech*).

This lack of the necessary anatomy of the vocal tract amounts to the foremost reason why we cannot validly claim that apes would be able to speak or that apes would “have language.” “To have language” would mean that one has the ability to take part of the social practices of language both by understanding speech (writing) and generating speech (writing). But the evolutionary continuance between apes and humans is shown by the fact that apes actually are able to understand human speech and writing to an impressive level and that apes have the rudimentary ability for volitional expressions by sounds (as it is shown in the primatologist literature I referred to above). But strictly speaking neither humans nor apes “acquire language” (nor “have language”), rather both are able to express their cognitive feelings by a range of expressive reactions, sounds, gestures, bodily movements, facial expressions, performances etc. We may validly claim that Kanzi was able to write by reference to his ability to use the special communication device consisting of a keyboard with so-called lexigram symbols. Hereby a remarkable detail sometimes goes without sufficient notice: the fact that by using the lexigram the ape in fact also showed he had learned to read, read the symbols (1988: 26).

Language represents the social practices, the abstraction, which nobody *has*, but rather in which social practices the members of the community *participate*. The practice of shared verbal behavior among humans amounts to language. While ape behavior in groups also to some degree corresponds to phenomena which we may refer to as social practices, I would anyway refrain from denoting their collective verbal behavior as language practices; the behavior does not demonstrate such consistency and scope in the symbolic means of communication that it merits to be called a social practice of verbal behavior (the less a language practice). Therefore when we consider, for example, Kanzi, we should not say that Kanzi ‘could speak’ or that Kanzi ‘had language’, rather we should say that he was engaged in a similar activity as a human being in volitionally giving expression to his feelings through his expressive behavior, which behavior we could also qualify as symbolic communication. Humans and other animals express their feelings *both* automatically without intention as an inherent need for an outlet for feelings *and* volitionally (deliberately) in an effort to communicate

one's feelings to the exterior (hereby to note that each volitional act of expression is merged in reactions that remain beyond conscious control) to an identified interlocutor, or perhaps to anybody who may potentially take part of the expression directly or indirectly. When we, however, speak about *communication* then the presumption is that what we express is intended for and can potentially be understood by an interlocutor. Apes do not seem to differ in this regards as evidenced by the studies of Savage-Rumbaugh, who tells that "there can be no doubt that Kanzi attributes intentions and feelings to others and that he recognizes the need to communicate things about his own mental states to others" (1988: 56). Savage-Rumbaugh continues: "From his early gestural communications, like asking me to make his own mother permit him to nurse, to his present ability to tell where his ball is hidden or that he has a sore throat, Kanzi's communications are inevitably characterized by a desire on his part to get an intentional message across. If one method does not work, he recognizes this failure and attempts to alter what is said in order to clarify his intent."

The critiques of the study of volitional expression in apes attack the results with the buzzword of Chomskyan linguistics: syntax. Allegedly ape behavior does not demonstrate mastery of syntax, and if there is no syntax then there is no language, the Chomskyans argue (see Joseph, Love, Taylor 2000: 219ff). These are not valid arguments, which becomes evident when we deconstruct the linguists' concept 'syntax' and point out what are the real organic processes that cause what is considered as linguistic syntax. For a discussion of these issues I refer to the chapter *Speech and Language*. In summary, we may say that speech syntax is a function of overall bodily sequencing of reaction patterns. All activities of an organism follow from the organic system of harmony of syntactic coordination, and speech is a manifestation of this, too. Understanding this, it does not come as a surprise that apes, like Kanzi, in fact, demonstrated in the studied observations a developed sense of expressing ideas by coordinating his various expressions syntactically. Savage-Rumbaugh writes that Kanzi employed complex syntactic rules in the sequencing of his gestures and that the gestures conveyed complex ideas equivalent to use of syntax in utterances. Most interestingly Kanzi was able to combine various means of expression (lexigrams, gestures, bodily expression, gaze, etc) in an orderly pattern of syntax demonstrating apparent logical rules which he devised himself (1988: 49 - 67).

Finally, I find it appropriate to stress how well the ape research supports the idea that words do not mean anything, but the speaker/communicator means by words. In this case the communicator Kanzi uses and combines a range of symbolic expressions, not because he thinks them to have a meaning, but because by using them (expressing them) he can communicate his feelings, that is, what he means.

## John Locke

As I briefly already mentioned Locke, while not using the same terminology as I do, held a largely correct view of what language is. He did not expressly discuss the separation between speech and language, but his discussion clearly points to a realization that language should be seen as a social phenomenon which provides the references for imitative symbolic communication (i.e. verbal behavior in form of speech and writing). I consider that my *interpretation of feelings* paradigm is very similar to Locke's assertion that words serve to convey the thoughts of the speaker. But as I have said, the main difference here is that my paradigm involves also an examination of the biological conditions of cognition and the feelings that are ultimately expressed in speech. I also stress that as speech represents an interpretation of feelings, then all kinds of processes that remain beyond conscious control also affect speech expressions and interpretation of speech; in addition I extend the paradigm so as to stress that meaning comes about by complex acts of verbal behavior, which also signifies that the context for the verbal behavior is crucially important for meaning and understanding.

The similarity with the interpretation of feelings paradigm is most conveniently illustrated by this passage from Locke's *An Essay Concerning Human Understanding*: Concerning words it is to be considered that they "being immediately the signs of men's ideas, and by that means the instruments whereby men communicate their conceptions, and express to one another those thoughts and imaginations they have within their own breasts" (1694 Vol. II: 6). – In Locke's discussion of these ideas we, however, get the impression that he conceives of the connection between words and "ideas" more in terms of a translation of ideas to the medium of words (language).

Locke is also close to the idea of interpretation of feelings and the related paradigm of *expressions and interpretations* in realizing that words are used both for "for the recording of our own thoughts" and for "for the communicating of our thoughts to others" (Vol. II: 52), the lat-

ter equals his proposition that words serve to convey our thoughts. The idea that *words serve to record our own thoughts* combines the social aspect with that of the individual and in all essential it corresponds to what was two centuries later labeled as the Sapir-Whorf theory; this theory saying that thought is affected by the way we speak, by the words we hear and by the ideas we connect them with. (Sapir 1921; Whorf 1956). This theory is so natural and it goes so much without saying, that one can only wonder why there ever has been a need to separately state it, not to mention the controversy around it, as evidenced e.g. when the authors of *Landmarks II*, Joseph, Love and Taylor retort (2009: 10) that if language shapes thinking “then how is it that speakers of the same language do not all think exactly alike? How is individuality possible?” As if the fact that language shapes thinking would necessarily mean that all humans undergo the same life experience and are shaped the exactly same way.

Locke stressed over and over again that words do not have any fixed meaning as people are prone to think. He realized that this consideration inevitably leads to words being used (uttered) ambiguously depending on what the speaker wants to say and how capable and honest he is in conveying his ideas, in Locke’s words: “it is easy to perceive what imperfection there is in language, and how the very nature of words makes it almost unavoidable for many of them to be doubtful and uncertain in their significations” (Vol. II: 52). From Locke’s discussion it is evident that he sees speech as a struggle to convey the ideas which represents one medium the ‘*mind*’ (as it was conceived in the scientific practices he was part of) in a completely different medium, *language*. He clearly understood that there was no inherent connection between ideas and words, and that the latter may merely serve as symbols by which one attempts to convey one’s own ideas to another, for example, Locke said:

“Thus we may conceive how words ... came to be made use of by men as the signs of their ideas; not by any natural connexion that there is between particular articulate sounds and certain ideas, for then there would be but one language amongst all men; but by a voluntary imposition, whereby such a word is made arbitrarily the mark of such an idea. The use, then, of words, is to be sensible marks of ideas; and the ideas they stand for are their proper and immediate signification” (Vol. II: 4) Hereby the more evident the connection between the word, as it is used by the speakers in the same language community, and the idea the better the prospects for being understood. He discusses this largely by sim-

ilar considerations that I have raised for understanding the difference between natural sciences and social sciences. These ideas are illustrated by this passage: "I may at least say, that we should have a great many fewer disputes in the world, if words were taken for what they are, the signs of our ideas only; and not for things themselves. For, when we argue about matter, or any the like term, we truly argue only about the idea we express by that sound, whether that precise idea agree to anything really existing in nature or no. And if men would tell what ideas they make their words stand for, there could not be half that obscurity or wrangling in the search or support of truth that there is" (Vol. II: 68).

- In natural sciences there is a material object, a thing, that scientist may study and physically experience; when they claim anything in regards to it their claims can be verified by other scientists by repeating the experiments that the other scientists referred to. But in social sciences there is no thing that could possibly serve for objective verification of claims. This lack of possibility for objective verification entails that social sciences are nothing more than a competition of arguments, and this competition is decided by one sole criterion: who happens for whatever reason to enjoy academic brand authority is considered by the majority to be right, notwithstanding how lunatic the assertions may be. This is how, for example, Chomsky's theories came to be raised to the pinnacle of science. – The further apart the subject of our discussion is from a material thing the more difficult it becomes to settle a dispute in arguments, and the more difficult it becomes to settle for a common understanding of the meaning. If I claim that a certain product is made of this and that component and my interlocutor does not believe me, then we may in principle settle our dispute by examining said object or call a relevant expert to account for the material components. But if I tell that democracy is to mean this and that (in *All is Art*, Book 2, on *Democratic Competition*, I have actually done it), then we cannot settle the dispute by a technical analysis of the object, because there is no object to be examined in the first place. Democracy is an abstraction and we may here only argue for or against what one should take *it* to mean – even more we should precisely understand that there is no '*it*' that democracy possibly corresponds to - and instead we may only argue which in our opinion should be the conditions in society in order for us to judge the behavior of the people in that society as democratic. – We face the same difficulties in trying to prove that language is an abstraction of a memory of past verbal behavior. But with the claim that speech is to be considered as *interpretation of feelings* the situation is somewhat different,

for in principle this could be proven in neuroscience by showing how cognitive feelings are reflections of the homeostatic process of the human organism positioning itself in relation to the environment. In fact, I consider that to have been biologically proven in this book, but nevertheless we are here in the realm of indirect proof of a specific idea by reference to a vast array of biological facts, thus further from the possibilities of objective verification as would be the case with lower level biological phenomena.

Considering all the above circumstances, we should think of certainty on a continuum where at one end we have material entities, things that can be verified by a superficial observation of the matter, and at the other end complex ideas about human feelings and the phenomena they give rise to, which we may only treat as abstractions and cannot prove by any direct reference to things. In between we have ideas that to some degree can be referred to material processes and to another degree to phenomena of feelings. I consider that Locke had these same kinds of considerations in mind when he spoke about names for things, simple ideas, mixed modes, compound idea, complex ideas, moral ideas etc. These ideas are evident, for example, from this passage:

“To make Words serviceable to the end of Communication, it is necessary, (as has been said) that they excite, in the Hearer, exactly the same Idea, they stand for in the Mind of the Speaker. Without this, Men fill one another’s Heads with noise and sounds; but convey not thereby their Thoughts, and lay not before one another their Ideas, which is the end of Discourse and Language. But when a word stands for a very complex Idea, that is compounded and decompounded, it is not easy for Men to form and retain that Ideas so exactly, as to make the Name in common use, stand for the same precise Idea, without at any the least variation. Hence it comes to pass, that Men’s Names, of very compound Ideas, such as for the most part are moral Words, have seldom, in two different Men, the same precise signification; since one Man’s complex *Idea* seldom agree with another’s, and often differs from his own, from that which he had yesterday, or will have tomorrow” (Vol. II: 54).

As these ideas represent such a crucial aspect of Locke’s thinking and, indeed, as the fallacy Locke pointed out still remains uncured, I will quote in full another passage where these ideas are further dealt with; this is where Locke speaks about the “natural causes” of the imperfec-

tion of words (“especially in those that stand for Mixed Modes, and for our ideas of Substances.”):

“Words having naturally no signification, the idea which each stands for must be learned and retained, by those who would exchange thoughts, and hold intelligible discourse with others, in any language. But this is the hardest to be done where,

First, The ideas they stand for are very complex, and made up of a great number of ideas put together.

Secondly, Where the ideas they stand for have no certain connexion in nature; and so no settled standard anywhere in nature existing, to rectify and adjust them by.

Thirdly, When the signification of the word is referred to a standard, which standard is not easy to be known.

Fourthly, Where the signification of the word and the real essence of the thing are not exactly the same.

These are difficulties that attend the signification of several words that are intelligible. Those which are not intelligible at all, such as names standing for any simple ideas which another has not organs or faculties to attain; as the names of colours to a blind man, or sounds to a deaf man, need not here be mentioned.

In all these cases we shall find an imperfection in words; which I shall more at large explain, in their particular application to our several sorts of ideas: for if we examine them, we shall find that the *names of mixed modes are most liable to doubtfulness and imperfection, for the two first of these reasons; and the names of substances chiefly for the two latter*” (Vol. II: 53).

The above considerations are connected with what I have recognized as the most fundamental problem in social sciences and in human understanding in general: the fallacious tendency to treat and analyze words as things - especially those words that are considered as concepts of some sort. These are the issues I have discussed in reference to the notions *Language of Things* and the *Thingly Fallacy* in chapter *Processes and Concepts*. - Locke also directly identified the thingly fallacy saying: “another great abuse of words is, the *taking them for things*” (Vol. II: 66). Locke told how this thingly fallacy is especially hazardous when it concerns a received system of thinking (such as, ideologies, scientific theories, religious belief). He explained the social origins of the thingly fallacy by telling that “men have learned from their very entrance upon

knowledge, and have found their masters and systems lay great stress upon them: and therefore they cannot quit the opinion, that they are conformable to nature, and are the representations of something that really exists” (Vol. II: 67). Therefore, Locke argued that the most prone to fall in to the trap of thingly thinking were “those men...who most confine their thoughts to any one system, and give themselves up into a firm belief of the perfection of any received hypothesis: whereby they come to be persuaded that the terms of that sect are so suited to the nature of things, that they perfectly correspond with their real existence” (Vol. II: 67). – We can verify the accuracy of these ideas merely by considering the history of generative linguistics and the reception of these alchemical ideas by the academic community. - The fallacy to take words as things makes, as Locke said, error lasting, but

“whatever inconvenience follows from this mistake of words, this I am sure, that, by constant and familiar use, they charm men into notions far remote from the truth of things. It would be a hard matter to persuade any one that the words which his father, or schoolmaster, the parson of the parish, or such a reverend doctor used, signified nothing that really existed in nature: which perhaps is none of the least causes that men are so hardly drawn to quit their mistakes, even in opinions purely philosophical, and where they have no other interest but truth. For the words they have a long time been used to, remaining firm in their minds, it is no wonder that the wrong notions annexed to them should not be removed” (Vol. II: 68).

What has perhaps prevented later scholars from correctly understanding these ideas of Locke (as evidenced, e.g., by Joseph, Love and Taylor 2009: 126) is that the ideas are presented in a fashion that sounds mechanistic and schematic. But instead of rejecting these ideas on these grounds we should understand the presentation style in the background of the then prevailing scientific practices and the difficulty to symbolize the corresponding thoughts (the very difficulty that Locke had identified). I think that we should see Locke’s presentation as an attempt to explain the connection between the physical reality and ideas and words on the same kind of a continuum as I proposed above.

Locke’s discussion about language is fundamentally a discussion about meaning and certainty, therefore the arguments that apply to the discussion of Locke’s view on language are inherently bound with

Locke's conception of meaning and certainty, or perhaps it would be more correct to say: Locke's conception of understanding. This as Locke, in fact, by the discussion of the nature of words and imperfection of language intends to illustrate the problems that one encounters when trying to become properly understood. The following passage where Locke speaks about the doubtfulness or ambiguity of the signification of words serves as a good illustration of this:

"The chief end of language in communication being to be understood, words serve not well for that end, neither in civil nor philosophical discourse, when any word does not excite in the hearer the same idea which it stands for in the mind of the speaker. Now, since sounds have no natural connexion with our ideas, but have all their signification from the arbitrary imposition of men, the doubtfulness and uncertainty of their signification, which is the imperfection we here are speaking of, has its cause more in the ideas they stand for than in any incapacity there is in one sound more than in another to signify any idea: for in that regard they are all equally perfect" (Vol. II: 53).

Locke concludes the above passage by saying: "That then which makes doubtfulness and uncertainty in the signification of some more than other words, is the difference of ideas they stand for." This is why Locke stresses time after time that "words, in their primary or immediate signification, stand for nothing but the ideas in the mind of him that uses them." Locke tells that words do not mean anything, but a speaker means (conveys ideas) with words that he thinks matches his ideas and would be similarly understood by the interlocutor." When a man speaks to another, it is that he may be understood: and the end of speech is, that those sounds, as marks, may make known his ideas to the hearer" (Vol. II: 4). – This signifies that the *meaning* is the meaning that the speaker strives to give to words, or more correctly, that the speaker tries to convey by means of words. – Expanding on these ideas I would add that the question is of the meaning that the speaker conveys by his entire verbal behavior. Locke stresses: "That then which words are the marks of are the ideas of the speaker: nor can any one apply them as marks, immediately, to anything else but the ideas that he himself hath: for this would be to make them signs of his own conceptions, and yet apply them to other ideas; which would be to make them signs and not signs of his ideas at the same time; and so in effect to have no signification at all."

The signification of words is limited to the ideas of the speaker “and they can be signs of nothing else” (Vol. II: 7).

Locke recognized that people entertain the fallacious idea that words in themselves would mean something. He explains that this fallacy is rooted in what amounts to inertia, the fact, that people grow up in a linguistic community where words are used in what seems a definite way, which leads a person to think that there is something definite about the words themselves and their connection to reality, or as Locke himself said: “Words, by long and familiar use, as has been said, come to excite in men certain ideas so constantly and readily, that they are apt to suppose a natural connexion between them” (Vol. II: 6). Locke stresses that, behind this seeming connection with reality and the sense of stability that the long and familiar uses induces to be perceived, there is only an arbitrary connection between words and ideas, and words and things. This is evident, Locke says, from observing how words “often fail to excite in others (even that use the same language) the same ideas we take them to be signs of: and every man has so inviolable a liberty to make words stand for what ideas he pleases, that no one hath the power to make others have the same ideas in their minds that he has, when they use the same words that he does” (Vol. II: 6).

## Urban Legends about Locke

Roy Harris and Talbot Taylor in *Landmarks in Linguistic Thought I* (2001: 126-138) condemn Locke for his insights to the imperfections of language, that is, Locke’s assertion that ‘language’ remains inadequate for conveying the ideas of a speaker to the interlocutor and instead often serves to sow misunderstanding. The authors disagree with Locke’s conception according to which the imperfections inherent in it language can be an obstacle to understanding and “to the acquisition and spread of knowledge.” Harris and Taylor, on the contrary, maintain that language is a perfectly adequate vehicle which “succeeds in fulfilling the needs of ordinary discourse.” Harris and Taylor consider that “language” is a perfect means for expressing all human feelings and that there is no problem in getting another person to understand what one wants to say in one or another situation. This is, of course, true as long as the feelings one wants to convey are restricted to requests such as “Please, pass the salt.” But most people have more complex feelings, needs and ideas that they want to express than these kinds of elementary

requests. In *Landmarks II*, Taylor with his fellow authors Joseph and Love continue the criticism against the notion that language would somehow be an imperfect vehicle for communication when addressing Erving Goffman's work (2009: 155-170). These authors again affirm that "language succeeds in fulfilling the needs of ordinary discourse" (2009: 134). The authors should notice that there is much more to communication than *speech* (or *language* as they think). Verbal communication is only a part of the social situation and most social situations are repetitive, people have learnt a pattern of behavior specific to each type of situation; they know what to expect from their counterparties in a given situation. In many of the situations speech expression often merely fulfill the function of showing politeness and does not as such add to the meaning which is already conveyed by the other features of the complex verbal behavior in which the speech act is surrounded. The authors could just consider how well, for example, bonobo apes get along with each other even without speaking at all (see Savage-Rumbaugh 1988 and 1994). In fact, Goffman's work is very illustrative of how the social setting affects meaning and understanding (see, e.g., Goffman: *Behavior in Public Places*; *Interaction Ritual*; *The Presentation of Self in Everyday Life*). This is not the place to analyze this topic in detail and to come with a range of examples to prove the point, rather it should be sufficient to just urge the reader to think about his own experience of conveying one or another idea at the workplace, at home, to neighbors, to lovers (especially if there are more than one at the time) – the reader should note that words have a very limited role in the corresponding acts of behavior; and that it is by no means an easy task to express one's feelings in words.

But most interestingly Harris's and Taylor's discussion of Locke's ideas precisely serve to prove Locke's point. Harris and Taylor have shown that even professional linguists experience serious difficulties in understanding the ideas of another person, even when the ideas are put forward clearly, repeatedly and unambiguously like Locke did. Out of thin air Harris and Taylor accuse Locke of entertaining the idea that verbal communication consists in something they call "telementation." This 'telementation' is the pet concept of Harris and his followers (the integrationalists). In their vocabulary 'telementation' means the fallacy to think that 'language is the vehicle for the conveyance of ideas from the mind of one individual to another' or, that "words *transfer* thoughts from one person's mind to another person's mind" (2001: 33). They seem to argue that under this sort of a misconception language is

thought to issue forth from one brain sort of like broadcasting radio waves and subsequently be absorbed by another brain where the signals get decoded leading to perfect understanding. Harris claims that this idea of telementation is one of the widespread misconceptions that linguists entertain about the nature of language, and forms an essential part of what he calls the “language myth” (Harris 2002; see also *A Few Words on Telementation* by Michael Toolan in Harris and Wolf 1998: 68+). The authors also accuse Francis Bacon and Thomas Hobbes for having advocated telementation (2001: 131)

And, indeed, it would be a fallacy to think that this is how ‘language works,’ as I have repeatedly argued in this book, but then again these ideas have nothing to do with John Locke, which should become evident from my above presentation of Locke’s ideas; rather this seems to be a fixed idea of Harris himself.

In developing their legend Harris and Taylor claim that “Locke takes words to be signs of ideas” and “ideas to be signs of things” (2001: 131) and that he therefore claimed that ‘words stand for ideas’ (2001: 210). We see from my above references to Locke that these claims do not correspond to what Locke has actually affirmed. But, presenting it like this the authors convey the impression that Locke would argue that there is an inherent connection between signs and ideas and things, which is diametrically contrary to what Locke de facto maintained. Instead, as I have shown, Locke tells that the speaker struggles to express himself by choosing words from the pool of language practices of words in circulation so as to try to represent his own ideas to another person; and hereby he repeatedly stresses that the connection is arbitrary and even so valid only for the speaker and his ideas. Locke explicitly rejects the idea that the thoughts would be transferred to “the mind” of the interlocutor.

The authors want to stress their point by referring to a passage they quote from Locke (2001: 126 – 131). In reference to this quote they say: “It is a mistake, as Locke argues in the second paragraph of our first extract, to conceive words as standing for things.” The passage they refer to is this:

“The use Men have of these Marks, being either to record their own Thoughts for the Assistance of their own Memory; or as it were, to bring out their Ideas, and lay them before the view of others; Words in their primary or immediate Signification, stand for nothing, but the

Ideas in the Mind of him that uses them, how imperfectly soever, or carelessly those Ideas are collected from the Things which they are supposed to represent. When a Man speaks to another, it is, that he may be understood; and the end of Speech is, that those Sounds, as Marks, may make known his Ideas to the *Hearer*. That then which words are the Marks of, are the *Ideas* of the Speaker. Nor can any one apply them, as Marks, immediately to anything else, but the Ideas, he himself hath” (Vol. II: 4).

I would think it evident for anyone that can read and understand English texts that there is nothing in the quoted passage that would support Harris’s and Taylor’s accusation of Locke allegedly having claimed that ‘words stand for things,’ on the contrary here we see that Locke is adamant in asserting the opposite: that words stand for the ideas *of the speaker*, i.e. that words are meant to give an outwardly expression to his own feelings, his own ideas, that is, his *attempt* to give by words an expression for his feelings, and to *try* to get the interlocutor to understand what he means. Locke says that words are uttered in order to “make known his Ideas to the *Hearer*.” – The quoted passage is so much in conflict with Harris’ and Taylor’s claim that I had to reread it many times, and started to suspect that maybe they by the reference to ‘the second paragraph of the first extract’ meant something else. Perhaps they meant a section of the first paragraph they quoted? The first paragraph of the quoted section contains this passage (which I already referred to above in another connection):

“Thus we may conceive how words ...came to be made use of by men as the signs of their ideas; not by any natural connexion that there is between particular articulate sounds and certain ideas, for then there would be but one language amongst all men; but by a voluntary imposition, whereby such a word is made arbitrarily the mark of such an idea. The use, then, of words, is to be sensible marks of ideas; and the ideas they stand for are their proper and immediate signification”

But neither is there anything in this passage that would possibly support Harris’s and Taylor’s legend of telementation, on the contrary this is one more of the sections where Locke explains his correct insight of words *serving the speaker* as symbols for an *attempt* to convey *his* ideas; hereby the speaker takes recourse to words that he by experience knows to have been used by others in similar contexts, and by which he

has understood that the others have meant this and that, which in turn has enabled him to establish the precedent for understanding.

Further, contrary to the idea of telementation, Locke stresses the division between ideas and words: Words are used by the speaker to mark his ideas, the same way as we may mark a path in the woods, in which case the marks mean (signify) our idea of the correct route. Perhaps even more tellingly, let us consider traffic signs. Leaving the technical aspects of the issue aside we may agree that there is no fundamental difference between traffic signs and words, yet few people would be to that degree awe-struck over the connection between our ideas and traffic signs as the linguists are about the mysterious – for them – connection between words and ideas. People with authority put up traffic signs to mark their authoritative ideas of how we have to behave in traffic, similarly people utter words to mark their ideas about how to behave in traffic and whatever else they might feel an urge to communicate rules about. Very few of us (especially those without training in linguistics) would think that the traffic signs would issue forth from the brain to represent a telementational idea of where to stop and where to turn. A traffic sign just happens by convention to serve as somebody's mark for his ideas in regards to traffic behavior. But if you have learnt the traffic signs of North America and you would all of a sudden be placed in a country like, for example, Iraq. If you, then, coming from North America would start by force of some extraordinary authority that you all a sudden had received to place up traffic signs as marks of your ideas people would not understand them. But whether you are understood or not, they would still be marks for your ideas. But your proper ideas and marks for them would not take you far, you would have to learn the local conventions, or teach the locals yours, before your marks would receive a meaning. This is what Locke was trying to say (quite clearly so).

Thus Locke did not say that words stand for ideas or for things, but he said that they serve to illustrate ideas. And when you illustrate you use a symbol (or a series of symbols) that you presume that the listener would understand in a given way so that you would be in a position to convey the ideas you entertain. You speak about your ideas (ideas known to you but unknown to the listeners) by uttering a series of verbal symbols that you predict the listener to be familiar with. You paint your ideas with words. You express the interpretation of your ideas by the verbal symbols. In other words, Locke explicitly tells that language

(i.e. speech) consists of one person trying to find suitable expressions for his ideas (thoughts) in an attempt to try to get the listener (reader) to understand what he means. Locke stresses that there is already a gulf between the ideas of the person and the expressions he chooses for trying to become understood, and that there is an even greater gulf between what the speaker means by his expressions compared with how the listener (reader) understands them. This is the same dilemma that I have identified under the paradigm of expressions and interpretations: we interpret our feelings (ideas) with expressions of the language (the social practice) of our community and hope that our counterparty would understand the expressions similarly as we understand them. Nothing is further from “telementation” than this! - Locke merely said that “there comes, by constant use, to be such a connexion between certain sounds and the ideas they stand for, that the names heard, almost as readily excite certain ideas as if the objects themselves, which are apt to produce them, did actually affect the senses” (Vol. II: 6). It is therefore that Locke criticized the idea - that he ironical enough is now accused for - that “men are so forward to suppose, that the abstract ideas they have in their minds are such as agree to the things existing without them, to which they are referred; and are the same also to which the names they give them do by the use and propriety of that language belong” (Vol. I: 228).

Ending this discussion on Locke and his critics, I will give one more quote from Locke’s *Essay on Human Understanding* that serve as a summary of his perpetually valid insight to speech and language:

“But though words, as they are used by men, can properly and immediately signify nothing but the ideas that are in the mind of the speaker; yet they in their thoughts give them a secret reference to two other things.

First, they suppose *their words to be marks of the ideas in the minds also of other men, with whom the communicate*; for else they should talk in vain, and could not be understood, if the sounds they applied to one idea were such as by the hearer were applied to another, which is to speak two languages. But in this men stand not usually to examine, whether the idea they, and those they discourse with have in their minds be the same: but think it enough that they use the word, as they imagine, in the common acceptation of that language; in which they suppose that the idea they make it a sign of is precisely the same to which the understanding men of that country apply that name.

Secondly, because men would not be thought to talk barely of their own imagination, but of things as really they are; therefore they often *suppose the words to stand also for the reality of things*. But this relating more particularly to substances and their names, as perhaps the former does to simple ideas and modes, we shall speak of these two different ways of applying words more at large, when we come to treat of the names of mixed modes and substances in particular: though give me leave here to say, that it is a perverting the use of words, and brings unavoidable obscurity and confusion into their signification, whenever we make them stand for anything but those ideas we have in our own minds” (Vol. I: 5).

## 4 A REVIEW OF CHOMSKY'S VERBAL BEHAVIOR

### The Foundations of Chomsky's Speculation

Locke: *"I cannot but observe how little the preservation and improvement of truth and knowledge is the care and concern of mankind; since the arts of fallacy are endowed and preferred. It is evident how much men love to deceive and be deceived"* (1694 Vol. II: 74).

It is a very challenging task to criticize Noam Chomsky's theories, not for the reason that there would not be a lot to criticize but for the quite opposite reason that the theories are wrong through and through. The very absurdness of the theories serves to defend them from outside criticism, for it is an impossible task to try to account for what is basically nonsense by means of meaningful propositions. In his theories one nonsensical claim is backed up by another, while a concept that was assigned one broad meaning in one context is all of a sudden given a new meaning in the next. It seems to me that the internal contradictions and terminological confusions do not merely represent unintentional departures from truth and accuracy but are rather essential design features of the theory (compare Botha 1991). This would be wholly in keeping with Chomsky's own maxim according to which "the main task of linguistic theory must be to develop an account of linguistic universals" that "will not be falsified by the actual diversity of languages" (1965: 28). Similarly Chomsky affirms that we must "seek to construct *bodies of doctrine* in whatever terms we can, unshackled by common sense intuitions about how the world must be" (2002: 73). Considering the conceptual quagmire and the theoretical constraints by which Chomsky has hedged his theories we cannot falsify any of his propositions as long as we remain within the system of his theories. We cannot make a sensible analysis of what is basically nonsense; instead we have to reject the nonsense in toto. - Like Wittgenstein said: "Most of the propositions and questions to be found in philosophical works are not false but nonsensical. Consequently we cannot give any answer to questions of this kind, but can only point out that they are nonsensical (Tractatus 4.003)."

While we cannot let ourselves be dragged into Chomsky's conceptual game we still have to show what is fundamentally wrong with it. In order to credibly do so we have to back up the rejection by offering alternative conceptions to the underlying phenomena. This is precisely what I have done in this book. I have pointed out which are the absurd metaphysical premises on which Chomsky's theories are founded and I have offered the alternative paradigm of speech and language which is fundamentally rooted in the modern facts of neuroscience.

But even, though, it would be quite impossible to account for what Chomsky really means (if anything), I have anyway wanted to illustrate with reference to Chomsky's work some of his main fallacies and peculiar pronouncements by the quite lengthy discussion which follows. I am well aware that each idea that I have detected as Chomsky's opinion on one or another matter can by Chomsky or his followers be shown to have meant something else by reference to an additional conceptual twist. But, let it be known, that I am not participating in that conceptual game. It is at the end of the analysis of no concern how Chomsky with one trick of linguistic alchemy explains another trick, rather the examples I give serve to show the baselessness and baseness of his conceptual rhetoric, which has so superbly been documented by Rudolph Botha in his *Challenging Chomsky: The Generative Garden Game* (1991). Botha's book provides ample evidence of the fallacy to try to address Chomsky's work by way of an immanent criticism. This would grant priority to Chomsky's propositions transferring the burden of proof to the healthy mind, instead of mirroring Chomsky's arguments against the paradigm that is based on natural reality.

## Chomsky's Questions to the Linguist

The best way of illustrating the difference between my theory of speech and language and Chomsky's linguistics is by actually replying to the questions that Chomsky has identified as summing up the aims of linguistics. Cook and Newson have in their *Chomsky's Universal Grammar* identified these questions as follows: (i) "What constitutes knowledge of language?"; (ii) "How is such knowledge acquired?"; (iii) "How is such knowledge put to use?"; and (iv) "What are the physical mechanisms that serve as the material basis for this system of knowledge and for the use of this knowledge?" (Cook, Newson 2007: 11 - 13<sup>1</sup>). I will deal with these questions one by one below, and ask the

reader to note that all the issues involved in my replies are discussed in detail in this chapter or other parts of the book.

**Chomsky's first riddle: "What constitutes knowledge of language?"**

I have dealt with this question already in chapter *Speech and Language* and will here repeat that discussion and also expand it a bit. There I said that "knowledge of language" signifies the possession of necessary skills and experience to express oneself in a fashion that corresponds to the language practices of a given community; this implies the possession of skills to sufficiently well illustrate what one means, that is, to adequately express an interpretation of one's feelings coupled with the skill to interpret the verbal behavior of the interlocutors. These skills are more fundamentally rooted in the abilities we may call 'remembering' and 'imitation.'

Correspondingly 'learning a language' signifies the acquisitions of the necessary skills through experience gained by participating in the social practices of speaking (language practices).

I replied to the question what is "knowledge of language" as that was the question which had been posed, but more fundamentally we have to note that the whole concept 'knowledge of language' is misleading to begin with. This because there is no such *thing*; a language is not a thing; and we do not 'have knowledge' instead we 'make interpretations.' All the perceptual abstractions that would fall under the grand perceptual abstraction of language are not anything we could possibly try to grasp (know) in abstraction of the actual verbal behavior in which the language skills are manifested. A language – a theoretical abstraction - can never be mastered; all one may master is one's own skills in verbal expression. We do not 'know a language' but rather we master a language practice (we are skilled in a language practice). Following these considerations we can only know if a person "knows a language" by observing him speak or write. Like any skills this skill may also deteriorate or be lost for some reason, such as injury and sickness. The judgment of whether one 'knows a language' or not is then exclusively to be based on evaluating observed verbal behavior; all theoretical considerations are redundant.

I noted that skills to participate in language practices are fundamentally rooted in the abilities which we may call 'remembering' and 'imitation'; the skills are functions of 'remembering' and 'imitation.' This, in turn, means that all that we can say (which is reflected in the perceptions we call language) are ultimately derived by the senses, that is, they

are derived through neural reactions to environmental stimuli. Hereby 'imitation' is merely a concept by which we call these neural reactions when considering them from the point of view of manifest behavior; from another point of view, that of observing and interpreting behavior, the same neural reactions would be called 'memory' or 'remembering' (thus I argue that remembering is only one aspect of imitation, and vice versa). The stimuli in these processes are the speech expressions and other features of verbal behavior (and other aspects of social practices) which we detect in observing verbal behavior. - This is, of course, in marked contrast to Chomsky who insists that "knowledge of language" is not derived by the senses but is, as Chomsky says, "fixed in advance as a disposition of the mind" (Botha 1991: 42; in reference to Chomsky in 1965: 51).

In regards to 'knowing a language' Chomsky himself has, among other things, said: "To know a language...is to be in a certain mental state, which persists as a relatively steady components of transitory mental states...I assume further that to be in such a state is to have a certain mental structure consisting of a system of rules and principles that generate mental representations of various types" (2005: 48). - When we know something, then we are in a state of consciousness, and what we then "know" are those ideas that we at any moment have the capacity to process in our *working memory* (this conception is discussed in chapters *Memory* and *Kandel's Search for the Neural Correlates of the Concept 'Memory'*). All language (all the abstractions that pertain to the concept) never fits in our working memory all at once, therefore we cannot in any given moment "know" all the language, but only very few aspects of it. - The reader should note that the continuation of Chomsky's above definition is totally in contrast to the first part: "to have a certain mental structure" with these and those properties cannot by any account be put down as "knowing." This mental structure merely enables the abilities, which abilities enable the acquisition of the skills.

The view Chomsky offers above contrasts with an alternative view which he rejects. According to the rejected alternative "one might attempt to characterize knowledge of language," Chomsky says, "as a capacity or ability to do something" (ditto). In this case, Chomsky continues, "one might be led...to conclude that behavior provides a criterion for the possession of knowledge." - We see that here Chomsky is discussing something that is closer to my conception of these issues, but

not quite, this because he has not been able to make the distinction between the ability and what we do with the ability, in this case the skills we acquire given the ability. I am sure that the reader will appreciate the distinction and notice how it explains the phenomena (as it was shown above). Would Chomsky appreciate the distinction?

Chomsky has said, among other things, that “knowledge of language involves the implicit ability to understand indefinitely many sentences” (1965: 15). But he has never recognized that there is another side to the coin: people also have the ability to fail to understand and misunderstand indefinitely many sentences! – When we join the positive and the negative considerations in one, then we should understand that we do not have ‘knowledge of language,’ but an ability to interpret verbal behavior as a function of remembering and other cognitive abilities, and the corresponding ability to express our feelings.

**Chomsky’s second riddle: “How is such knowledge acquired?”** The answer to this Chomskyan conundrum follows naturally from the reply to our first question. “Knowledge of language” is acquired through participation in meaningful social interaction of verbal behavior (in a way we may consider that all social interaction constitutes manifestations of verbal behavior). When I say ‘participation’ I imply by this both the activity of interpretation (conscious and unconscious) and the activity of expression (volitional and non-volitional). This participation and the corresponding activity of “acquisition of knowledge” start from birth and continue all through life as long as the cognitive neural processes remain intact. As Tomasello has told, a child learns a language as an integrated part of the development of the child’s other cognitive and social-cognitive skills (2003: 3). According to some research findings this cognitive activity and participation in social interaction (at least as an observer/interpreter) starts already before birth. (According to a recent study published in the journal *Current Biology*, babies, because they listen in the womb, cry in distinctive ways that reflect the language spoken by their parents, Karen Hopkin, *Babies Already Have an Accent*, Scientific American, November 6, 2009).

**Chomsky’s third riddle: “How is such knowledge put to use?”** For Chomsky and the generative grammarians this question represents a scientific riddle, but by means of a biological philosophy we just state, following the above considerations given in reply to the two first riddles, that “knowledge of language” is put to use by expressions and in-

terpretations, that is, by participating in the *social practice of speaking* (or more broadly, to include all the bodily expressions and also writing, we say *social practice of verbal behavior*; I note that I define, in the context of linguistics, speaking as also including listening, i.e. the act of interpreting speech and verbal behavior at large).

**Chomsky's fourth riddle: "What are the physical mechanisms that serve as the material basis for this system of knowledge and for the use of this knowledge?"** This is the riddle to which Chomsky purports to answer by his pseudo-biological speculation about the "language organ/faculty." But an interpretation of this conundrum in terms of a real biological philosophy simply yields that the question presupposes that we account for what is known of the human anatomy and its connections to what in neuroscience has been revealed about human cognitive mental processes that produce cognitive feelings and conceptualization of experience which eventually may lead to thoughts when a person is in the state of cognitive consciousness. I have accounted for these issues to the best of my knowledge in this book (especially in the second volume in chapter *Mental Processing*). Hereby I consider that the decisive point in regards to the present riddle is not whether the reader agrees with all aspects of my account of these phenomena or not, but rather I maintain that it becomes evident from the topics I discuss that the issues falling under this fourth riddle are by no means objects for a linguistic study. A linguistic study, which is in essence a study of social practices (even in the perverted form in which Chomsky pursues it, and even when he does not admit it), can in no way reveal anything about the "physical mechanisms" which produce speech and other verbal behavior (which is reflected in language). – Another issue that we would need to reorient linguistics also to include a study of actual speech expressions. (To a certain degree this is, of course, done, but even so under the assumption that what is studied is "language").

## A Summary of Chomsky's Main Fallacies

Before going into the detailed discussions of Chomsky's theories, I will here briefly list the main fallacies of Chomsky's linguistics:

1. **The Thingly Fallacy.** Perhaps the most fundamental erroneous assumption under which Chomsky labors is the fallacy to treat

language and linguistic notions such as words and sentences as if they were some kind of thingly, material, entities. This instead of understanding that they are only perceptual abstractions we have formed from observing social practices that do not have any kind of material existence. Chomsky does not understand that what exists must demonstrate mass and energy. – All these perceptual abstractions correspond merely to the results of mental processing of cognitive feelings at any given moment of time. The perceptual abstractions cease to exist the moment a person shifts his attention to other issues, to other ideas. Due to the effects of social practices people may sometimes form similar perceptual abstractions, but fundamentally these perceptual abstractions are private to the person whose mental processes produce them.

2. **Chomsky's pseudo-biology.** This fallacy obviously follows from the above one, but is indicative of more serious misconceptions, for in this version the words which were perceived as thingly entities are postulated as properties of living organs.
3. **Failure to distinguish what is biological and what is social.** The pseudo-biological speculations also come as consequences from the failure to distinguish what are biological and what are social phenomena, respectively. Laboring under this fallacy, Chomsky postulates that what are really reflections (perceptions) of social practices (language) are already innate features of the brain.
4. **Failure to distinguish between speech and language.** This is the most conspicuous manifestation of the above fallacy number 3.
5. **Failure to distinguish between abilities and skills.** This fallacy forms a subcategory of fallacy number 3 of failing to distinguish what is biological and what is social. This distinction may also be rendered in terms of abilities vs. what we do with the abilities. We have the ability to speak, and with that ability we participate in language practices (the social practice of verbal behavior), and doing so we acquire language skills.

6. **Failure to identify the difference between the objects of natural sciences and social sciences.** The fallacy number 1, the thingly fallacy, bears directly on this one. Chomsky does not understand that what is the central and in all aspects decisive difference between the natural sciences and social sciences is that in the former the object of study are things, thingly entities which demonstrate mass and energy, whereas in the latter the object of studies are personal opinions. In natural sciences scientists make claims as to the properties and movements of the thing under investigation, therefore they have to ultimately anchor their arguments in relation to the object which is studied, and this, then, enables that other scientists by direct observation and experiments verify the various claims. But in social sciences the arguments are not made in regards to properties of an object that could possibly be observed and can therefore never be objectively verified. (In this connection, I need to stress that Chomsky purports to be investigating by the means of natural sciences an imaginary organ that he through various strategies of artful manipulation of language claims to be real as the liver; these linguistic manipulations are adequately documented below). Instead in social sciences we assess the quality of argumentation. But ultimately all social phenomena are reflections of the natural biological world, and therefore what we claim in regards to the social has to possibly correspond to what we know about natural reality. This has been especially difficult for Chomsky to cope with.
7. **Speculation in abstraction.** Chomsky ignores the need to anchor his propositions in the known facts of biology and maintains that a scientist should be free to “abstractly” study “abstract objects” on the analogy to real natural objects.
8. **Conceptual laxity.** Chomsky’s art amounts mainly to a conceptual game, but he fails to assign the concepts any determinate meanings and employ them frequently inconsistently and in a contradictory manner. The most obvious illustration of this is the way he employs the concept grammar and the various other concepts that are often (but not always) assigned a meaning

synonymous to grammar (see below section *Grammar and Syntax*).

9. **The mathematical fallacy.** Chomsky has originally been side-tracked from a natural philosophy by falling under the influence of the mathematical model of thinking, which has truly bewitched his mind.
10. **Stimulus-free argument.** Under the influence of the mathematical fallacy, Chomsky has come to think that 'language is emitted' from the brain without a connection to environmental stimuli. To fit the ideas of the Chomskyan paradigm, I here said "language is emitted," but in essence we have to understand that what comes out of the body are speech expressions which correspond to reactions of mental processing of environmental stimuli
11. **Context-free argument.** Similarly as Chomsky thinks that language is stimulus-free, he also conceives of it as context-free.
12. **Meaningless-argument.** This list of Chomsky fallacies cumulates in the meaningless argument in line with which Chomsky argues that language and grammar are independent of meaning. This is a fallacy that has ultimately caused a great part of linguistics as it is today practiced to become in itself meaningless (where it is still practiced, taken into considerations that many of these institutions infected by the Chomskyan paradigm are to an increasing degree being shut down).

## The Surprising Ability to Learn

Chomsky has said that it "would not be at all surprising to find that normal language learning requires use of language in real-life situations" (1965: 33) and that it would be "a surprising empirical discovery" if it turned out that "languages are learnable" (2007a: 124). For one who is not familiar with Chomsky's brand of speculation, these statements must seem very perplexing, for certainly languages are learnable. Why does Chomsky affirm to the contrary? Is this an instance of black humor, or what? In fact, this issue brings us to the very core of his speculation. More precisely this brings us to the core of the pseudo-

biological paradigm of the Late Chomsky. – I will discuss the notions Early Chomsky and Late Chomsky further down more in detail. – Briefly, we need to think of Chomsky's theories as divided into two different paradigms: *firstly*, his rule-system model,' that is, the early speculation about syntax, grammars and rules (how they generate language and each other, how they transmute between the deep and surface structures etc.); and *secondly* the pseudo-biological speculations on which he put all the emphasis after gradually rejecting the rule-system model in the 1980's, although, the seeds of the pseudo-biology were present already in the early theories, as we will see below. I will discuss this transition more in detail in reference to what I call *Chomsky's capitulation*. I refer to these two paradigm ideas as those of the Early Chomsky and Late Chomsky, respectively. These issues will be explained with proper references below, whereas I will here follow up on the strange pronouncements as to the surprise that Chomsky would experience if it turned out that languages are learnable.

Fundamentally this 'learning' issue is about determining what pertains to *learning* and what pertains to *abilities*, that is, what pertains to *the social* and what pertains to *the biological*. The biological body stands for abilities, and by exercising the abilities we may gain skills, which latter reflects learning. We may also say that this is the fallacy of not distinguishing between abilities and *behavior* (cognitive behavior reflects skills), that is, the use to which the human organism puts the abilities. Chomsky's confusion as to this respect represents another aspect of the fallacy of not being able to distinguish between the ability to speak and language, that is, the social practices of speaking (verbal behavior; language practices). This fallacy is, of course, not one which Chomsky alone suffers, he has merely, as so often is the case with Chomsky, carried it to the extremes.

In addition to the fatality of failing to distinguish between speech and language, and learning (skills) and abilities, I deal in this book with many other similar fallacies. Fundamentally this is always about the failure to distinguish what pertains to the biological sphere and what to the social, and what pertains to their interactions. The misconceptions in memory theory are examples of this fallacy, another being the very idea of how to conceive of 'mind.' The *organic process model*, which I have presented in this book, aims at clarifying the relation between abilities and what we do with those abilities. We have an ability to speak, and with this ability we participate in language practices (the social practice

of verbal behavior) and ultimately 'learning a language' means acquiring the social skills to participate in meaningful verbal communication. A language – the abstraction which is assigned a thingly existence – can never be known; instead we may given our abilities gain necessary skills to master our verbal behavior. Learning to speak is gaining skills of verbal behavior through experience, similarly like learning to paint is gaining experience in painting through experience. We could then say that we do not know a language but we know how to speak a language, that is, participate in a language practice. We learn to master speaking skills similarly as we may learn to master skills in the art of painting; or skills to play football; or skills to cook food.

*Learning a language*, then, is a function of *the ability to participate* in language practices by remembering (interpretation) and imitating (expression) the remembered when we ourselves make speech expressions. Hereby to note that the more correct way to think of this, as I have been stressing above, would be in terms of 'participation in' language practices, whereas the concepts 'to learn' and 'learning,' in fact, involve judgments of the level of our participation, how successfully we participate in the social practices. – But this is not how Chomsky conceives of these phenomena; he mixes up the ability with what is done with the ability, which leads him to think that the social practice of speaking, which we have learnt by exercising the ability, is the ability itself. This, in turn, leads him to postulate that the social practice by way of genetic inheritance is already present in the brain in form of properties of the "language faculty." Obviously, Chomsky himself does not consciously understand that this is what he is doing (or if he does, then he is hiding that from his audiences); he does not explicitly speak about the 'social practices being in the brain' but, nevertheless, this is what his preposterous claims in essence amount to. As Chomsky does not think of these issues in terms of 'abilities' he naturally does not use the concept either, rather Chomsky speaks in terms of growth/maturation of the language faculty vs. learning of language. (These issues will be treated more in detail below in which connections proper references to Chomsky's texts will be furnished; in this connection I note that Botha has identified this issue at least in reference to Chomsky's *Rules and Representations*, my reference 2005, originally of 1980, and the article *Rules and Representations* in the journal *The Behavioral and Brain Sciences*; Botha's reference 1991: 35).

Before I continue the analysis of this issue of 'abilities vs. learning,' I need to digress for a moment to discuss how Chomsky refers to analo-

gies in nature in support of his speculations. Pointing to analogies in nature to defend his imaginary conceptual constructions is especially a favorite ploy of Chomsky's when he is challenged for having said something metaphysical. In these connections Chomsky's claims always boil down to the assertion that any criticism directed against his speculations would imply a similar criticism of the natural sciences, or would expose similar weaknesses in the natural sciences (e.g. Chomsky has affirmed that the criticism directed towards his ideas would mean that "the same might be said about concurring ideas concerning development of physical organs of the body"; Botha 1991: 29).

That he has got away with that only shows how weak his opponents have been. They have not realized that they should merely point out that in natural sciences we deal with things which demonstrate mass and energy, which enables all the different assertions made in regards to one or another material thing to be objectively verified in relation to the ideas in question; whereas in Chomsky's theories, as in all social sciences, there is no *thing* that could ultimately serve as the object for objective verification. Therefore there is no connection between Chomsky's speculations (which basically merely represent his aesthetic perceptions on the phenomena he opines on), and natural sciences, which represent a study of things and their movements. This assertion of mine requires yet another digression into a discussion of the relation between natural and social sciences.

Above I identified Chomsky's theories as pertaining to social sciences. This is, of course, a very contentious issue, one that Chomsky and his thinning group of followers would not admit to. For Chomsky, in his own words, is practicing a "psychological science" or doing "cognitive psychology" which, for him, has the aspiration to become a "natural science among other natural sciences" (see Botha 1991: 199 – 201). But we do not need to be overly concerned with trying to firmly establish whether psychology thus defined is to be considered as a natural science or a social science, for at the end of the analysis, what Chomsky is doing is not science, but linguistic alchemy. What comes to real psychology, we can only see that as a study which combines considerations from the natural neuroscience and social sciences, which precisely corresponds with how we should see the 'mind' as a merger of the social dimension of life with that of the biological apparatus, as a result of the biological apparatus processing social stimuli (see chapter *Mind*).

But Chomsky tells that his “generative grammar” should be considered as a field of inquiry on a par with chemistry. In his words, “generative grammar” is “not a theory any more than chemistry is a theory.” Instead “generative grammar” is said to be “a topic.” From Chomsky’s very confused discussion on this *topic*, it seems that what he wants to insist is that “generative grammar” is a topic similarly as chemistry is supposedly a topic. He tells that the existence of chemistry is ultimately a question of whether one chooses to study it or not, his point being that the case is the same for “generative grammar.” He stresses that “one may argue” with equal right that both of these “topics” do not exist (Botha 1991: 9, Botha refers to Chomsky 1986: 4 -5). But, naturally, it is false to draw such a parallel, for if somebody argues that chemistry (i.e. chemical materials and reactions) does not exist then that is a case for psychiatry, whereas if one argues that “generative grammar” does not exist then that is a case of therapy. – Chomsky has also compared his alchemic speculation to the investigation of the thermonuclear reactions that take place inside the sun (2005: 189-191; Botha 1991: 157). Further Chomsky motivates his peculiar metaphysical conceptions in regards to the “mind,” which he defines as “mental aspects of the world” (see below for more details), on the analogy to natural sciences, saying that he understands “mental” on a par with “chemical,” “optical,” and “electrical” (Chomsky had furnished each of these concepts with quotation marks as if to emphasize that they were as hypothetical as the “mind,” 2007a: 106).

Chomsky does not seem to realize that the phenomena that correspond to ‘chemical,’ ‘optical,’ and ‘electrical’ ultimately correspond to movements of such natural entities which demonstrate mass and energy and therefore enable objective justification of the ideas presented in the relevant fields of inquiry. Instead Chomsky pretentiously claims that in natural sciences certain phenomena are merely “informally called” “chemical” etc., but this, Chomsky adds, does not imply that any “metaphysical divide is suggested by that usage,” anymore than a metaphysical divided would follow from Chomsky’s linguistic speculations. The issues that chemists discuss, he claims, “are just various aspects of the world that we select as a focus of attention for the purpose of inquiry and exposition” (2007a: 106). This all amounts to the science fiction version of the argument that black is white. This is, of course, wrong again, for chemists do not, loosely and inadequately, speak of just any aspects of the world, but on the contrary they speak of aspects of very concretely defined physical particles! Further Chomsky arro-

gantly and falsely claims that we “do not seek to determine the true criterion of the chemical, or the mark of the electrical, or the boundaries of the optical” (2007a: 106). We all know that this is totally contrary to the actual facts of natural sciences. Precisely what real scientists have done is to determine the true criteria and boundaries of these natural phenomena. Chemistry is the science of substances, that is, the different kinds of matter that exhibit mass and energy. Hereby the objective is precisely to find as precise criteria as possible given the complexity of the issues in order to interpret the substances and their movements in terms of their structure, their properties, and the reactions that change them into other substances (Pauling 2003: 1, 8). It is a completely other issue, as I show in the chapter *Processes and Concepts*, that when the scientific knowledge advances to certain limits, then the boundaries get blurred; but you can get to the boundaries only by way of conceptualizing knowledge based on objectively observable facts of nature.

The remarkable success in chemistry since the end of the 17<sup>th</sup> century is entirely due to the conceptual clarity reached when scientists started to anchor their statements to the objectively observable facts of nature. Robert Boyle’s work is considered to constitute an important milestone in this progress by way of him having brought new rigor to writing about natural philosophy with his criticism of the then prevailing style of giving only “loose and inadequate definitions” (as I, in paraphrasing the proper Chomsky, characterize Chomsky’s work) which did not enable proper duplication of experiments (Richard Morris in *The Last Sorcerers. The Path from Alchemy to the Periodic Table* 2003: 52; – in view of the present object of our study the book would better be called *The Last Sorcerers of Natural Sciences*, for as we see sorcery is still very much alive and kicking in the social sciences). With his *The Sceptical Chymist* Boyle fostered skepticism about the Aristotelian and Paracelsian chemical philosophies (2003: 57), much the same way that it is my aim to alert against the fallacies of the Chomskyan paradigms, and the thingly analogy of linguistics in general. I even thought that this present book might aptly be called *The Skeptical Linguist*.

In my view we can draw a clear parallel between Chomsky’s theory of the “generative grammar” (and the accompanying pseudo-biology) and Aristotle’s theories of the “four elements.” Aristotle had *loosely and inadequately* speculated (building on the preceding traditions) that everything was made of the four elements of water, air, earth and fire (2003: 3). Most remarkably these theories of the four elements are what

gave rise to the alchemic ideas of the possibility of transforming one element into another, much the same way that Chomsky speculated that linguistic elements can be transmuted between the “deep structure” and the “surface structure” (detailed discussion to ensue below). The comparison is, however, not entirely fair towards Aristotle, for at least he was dealing with matter that manifested mass and energy whereas Chomsky deals with imaginary entities the existence of which he has become convinced of by way of the false perceptions he has formed from the verbal behavior he has observed.

By situating Chomsky's linguistic alchemy in the field of social sciences, I do not mean that I would situate all the issues that today pertain to what is called linguistics in social sciences, for it seems to me that the dichotomy between speech and language should guide us here, too. The issues pertaining to the biological ability to speak and the making of speech expressions are obviously more connected with the natural neuroscience, whereas a study of language as a social practice, in the present moment and in a historic context, obviously falls into the field of social sciences. In relation to the present this social study should aim at producing adequate descriptive grammars and dictionaries for the aid of pedagogy and the computer industry. Study of speech is of general import in the field of cognitive sciences and would have a special function in the fields of medicine and health, and, of course, also for the computer industry for developing machines that can be programmed to emit human-like sounds; ultimately there is a connection with medicine and computer software and technology, which fields could develop to produce mechanical devices to aid the impaired to speak. In the middle, combining these two fields, we have a study of verbal behavior, which really could be, in a true sense of the concept, characterized as a ‘cognitive psychology,’ which would combine data from a neuroscientific study with those retrieved from a study of social practices. And naturally data from the different fields of inquiry are always relevant for each other. – I consider, that with my ideas of the *new dualism* (the realization that all cognitive phenomena of life are the results of a human processing stimuli pertaining to social practices, together with other environmental stimuli; see chapter *Mental Processing*) which also lie at the root of the present ideas, the very rigid dichotomy between (human) biology as a natural science and human behavior as a social science should disappear.

Equipped with these considerations we may now return to the issue of where to situate Chomsky's theories. This issue, as most of the ideas

that Chomsky offers us, involves a lot competing aspects. We shall remember that what Chomsky, in fact, is doing is speculating about the origins of social practices, him having arrived at the peculiar idea that they (social practices) must already be present in the genetically determined “language faculty,” from where they from time to time spurt forth. In this sense he is doing a social science. But the picture is reversed when we consider that, in reality, all considerations pertaining to a study of what kind of organs, “faculties,” abilities, and processes there are in the body are biological matters. From this point of view one could think that Chomsky is engaged in a study of natural sciences, but this only as long as the observer forgets that Chomsky is, in fact, not studying the brain or any other parts of the body, nor is he referring to biological studies conducted by any real scientists. Therefore we instead need to realize that what Chomsky does is to offer his personal opinions on what there possibly could be in the brain and the body, in ignorance of the fact that the brain and the body are in reality being studied by a myriad of biological scientists who have supplied us with a wealth of real biological data, which data clearly disprove Chomsky’s speculations. Chomsky offers us the choice of either trusting his words or the real neurobiological data. I chose the latter! – As Chomsky is not engaged in a study or discussion of real biological data, and merely advances pseudo-biological speculation, then we can only refer his theories to the field of social speculation, something that I have called *social science fiction* (Hellevig 2006), his special genre being that of linguistic alchemy. – Botha has characterized Chomsky’s biological speculation as “an abstract biology” (1991: 201).

After this digression to the relation between natural and social sciences in a Chomskyan context, we return to Chomsky’s favorite ploy of referring to the analogy of natural sciences in support for his conceptual speculations, which I slightly already touched above. As I said Chomsky’s claims in this regards always boil down to the assertion that any criticism directed against his speculations would imply a similar criticism of the natural sciences, the analogy on which he motivates his speculations. Armed with this pseudo-biological conceptual framework Chomsky, in the eyes of his followers, and his weak opponents, strips the latter of any recourse to arguments from natural science. For example, according to Botha, the neuropsychologist Luria once challenged Chomsky’s assumption that the principles of “universal grammar” are genetically determined as features of the “language faculty” saying that

this “makes a postulate out of a problem,” which essentially would signify that “all further study in the area can lead us nowhere.” To this Chomsky retorted that Luria’s charges “represent an *a priori* argument which, if valid, would have to hold equally for the development of a physical organ” (Botha 1991: 18 in reference to Chomsky 2005: 210). But of course, one cannot motivate the existence and development of Chomsky’s peculiar ideas with an analogy to real organic things in the nature. A physical (biological) organ grows according to the genetic endowment as influenced by the environment, but Chomsky’s “universal grammar” and other fantasy ideas “grow” according to what Chomsky happens to think of them from moment to moment. - Chomsky continues his attack by stressing that if Luria’s argument would be valid then that would mean “that the hypothesis that the growth of arms rather than wings is genetically determined” equally “makes a postulate out of a problem and guarantees that further inquiry will lead us nowhere.” Chomsky then wrongly supposes that “Luria would obviously not accept this conclusion” and draws the conclusion that we are, then, “left with only one way of interpreting his argument: cognitive development must, on a priori grounds, be fundamentally different from physical development in that it has no genetic component.” Chomsky says this in sarcasm, and does not understand that this is how it really is: cognitive development is fundamentally different from physical development. Naturally, we cannot talk about any “genetic component” of actual acts of cognition, whereas there certainly is a genetic component that has enabled the biological organs that cause acts of cognition as reflections of the neural processes in those organs. If we speak about ‘cognitive development’ then we again need to define what we mean by that. The term may refer both to (i) the genetically determined development of the biological organs which create the cognitive abilities, and (ii) the ideas we accumulate (by way of participating in social life) as reflections of the activities of the biological organs. While we may in speech refer to both ideas, (i) and (ii), as ‘cognitive development’, we anyway have to understand that we are here speaking of quite different phenomena. The genetically steered organic development influences (or creates) the cognitive *abilities*, but does not determine what is done with that ability (what the mental processes are that occur given the ability). Chomsky does not realize that or, does not want to admit it. We must assume that Chomsky by “physical development” means the genetically steered material processes, whereas the juxtaposition with “cognitive development” must signify a reference to

the ideas that we form by interpreting the environment and especially social practices, and the way we express these ideas. These are not in any way genetically determined, but occur as processes in the genetically determined material organs.

The method of referring to the supposed analogy with natural sciences forms part of Chomsky's broader speculative method, which essentially means that all empirical facts of science and life can be ignored at will. Chomsky's key principle of this speculative method has been to declare that he is dealing merely with idealized situations without no concern to empirical reality (see, e.g. below discussion regarding the "ideal speaker-hearer"). To give the reader an idea of how Chomsky motivates this load of speculation, I will refer to a few very illustrative passages: In *The Sound Patterns of English* (of 1968) Chomsky and Halle declare: "To us it appears that this more realistic study is much too complex to be undertaken in any meaningful way today and that it will be far more fruitful to investigate in detail, as a first approximation, the idealized model outlined earlier, leaving refinements to a time when this idealization is better understood" (quoted in Botha 1991: 14). – This actual study of social practices and biology, or what Chomsky and Halle correctly call the "realistic study," refer to Chomsky's conception merely to "intermediate states in determining what constitutes linguistic experience" (Botha 1991: 23) and therefore need not be studied at all, as data from such a study could anyway possibly not alter the course of Chomsky's speculations. Chomsky thinks it is perfectly well and enough to rely on "indirect evidence," i.e. whatever course his random ideas happen to pursue (Botha 1991: 181 in reference to *Rules and Representations*). In *Rules and Representations* Chomsky gives an especially passionate defense of his speculation that appears under this concept "idealization"; there he says that the "idealization," that is, the active ignorance of all scientific data and notions of common sense, is precisely what has for him opened "the way to the study of fundamental property of mind," namely "language acquisition" (2005: 24- 26). Here he waived a warning finger at his opponents who refuse to accept the speculative method indignantly exclaiming: "one who rejects the idealization and the results obtained by pursuing it" is impeding his "study of other aspects of language" as well.

Chomsky has developed a special euphemism to signify his speculation; this is the idea to "keep to the level of abstract characterization" (Chomsky quote in Botha 1991: 105). He says, for example, that we

“may think of the study of mental faculties as actually being a study of the body – specifically the brain – conducted at a certain level of abstraction.” See also discussion under note.<sup>2</sup>

Most interestingly the speculation is further motivated by the fact that he, anyway, is dealing with phenomena which he claims to be “as yet almost entirely unknown,” the idea being that ‘why then bother with the facts when they are anyway unknown’ (Botha 1991: 105). Similarly Chomsky maintains that since little is known about the physical structure of the brain, linguists “can only speak of the conditions that the physical structure *must meet* [italics supplied to stress this condition is based on Chomsky’s own judgment]” (Botha 1991: 107). - But, of course, these phenomena and organic structures are by no means as unknown as Chomsky falsely claims.

How this all reminds of what Locke’s words:

*“this artificial ignorance, and learned gibberish, prevailed mightily in these last ages, by the interest and artifice of those who found no easier way to that pitch of authority and dominion they have attained, than by amusing the men of business, and ignorant, with hard words, or employing the ingenious and idle in intricate disputes about unintelligible terms, and holding them perpetually entangled in that endless labyrinth. Besides, there is no such way to gain admittance, or give defence to strange and absurd doctrines, as to guard them round about with legions of obscure, doubtful, and undefined words. Which yet make these retreats more like the dens of robbers, or holes of foxes, than the fortresses of fair warriors; which, if it be hard to get them out of, it is not for the strength that is in them, but the briars and thorns, and the obscurity of the thickets they are beset with. For untruth being unacceptable to the mind of man, there is no other defence left for absurdity but obscurity”* (1694 Vol. II: 65).

## The “Language Faculty”

The original sin of Chomsky’s pseudo-biology is the postulation that there is a “language organ” or “language faculty” as Chomsky alternatively refers to this imaginary construction (e.g. 2002; 2007a), but he seems to prefer the more *loosely* defined “language faculty” which clearly provides more “rich and varied possibilities for” speculation as he in this case does not have to be so precise about the biological definitions (we will see below how he tells that the benefit of the “language

faculty” is that it, of course, “is not an organ in the sense that we can delimit it physically,” Botha 1991: 106). Chomsky has said, for example, that there “is reason to believe that humans have a specialized ‘organ’ dedicated to the use and interpretation of language,” which he wants to call the ‘the faculty of language’ (2007a: 168). In the 1995 model of his theories, *the minimalist program*, the “language faculty” is defined as “a component of the human mind/brain dedicated to language” (1995: 2).

It is after his conceptual capitulation and the abandonment of the rule-system model that Chomsky put all his stakes on the “language faculty,” he needed somehow to use this concept as a cover up of all the earlier rule-based grammatical speculations. Now he wanted to repack-age the earlier discussion in terms of a how the “theory of a language” or “its grammar” characterizes “the state attained by the language faculty” (1995: 3). Earlier he had applied the “theory of language” and the “grammar” to show how “language is generated” based on intricate rules (see below discussion in section *Grammar and Syntax*).

Now, instead the “language faculty” is said to “grow” or “mature” based on genetically determined processes by passing “a series of states in early childhood” so as to reach “a relatively stable steady state that undergoes little subsequent change, apart from lexicon” (1995: 14). In this new incarnation of the “theory” and the “grammar,” the “theory of the initial state” is called the “Universal Grammar (UG)” and the “theory of the state attained” is called “its grammar.” Chomsky purports to mean that a child is born with this “universal grammar” which then gets fine-tuned into various states and that the end state for each person corresponds to the grammar of a particular language. The “initial state” of this “faculty” is then supposed to incorporate the genetically encoded linguistic principles, which represent the child’s innate linguistic endowment (Botha 1991: 25).

In this connection Chomsky said that he assumes that the “initial state appears to be uniform for the species” (1995: 14). This is naturally true in the sense that all human beings that are born without a particular defect are equally predisposed to learn language through engaging in verbal behavior with the surrounding community. But this has nothing to do with a hypothetical “language faculty” and is rather a product of all human cognitive and expressive abilities. It would not be acceptable to purport that by the “language faculty” one precisely means this complexity of human abilities. At some point Chomsky

seems to be doing just that, this for example, when he asserts that the various “states of the language faculty” correspond to “some array of cognitive traits and capacities,” but even so he adds that they amount to “a particular component of the human mind/brain” (1995: 14). - Thus, Chomsky wants to have it both ways: his “faculty” is both “an array of traits” and “a particular component of the mind/brain,” but in any case its operations are described as those of a device (see below more on Chomsky’s ‘device’).

Chomsky fancies that the “language faculty” would have “at least two components”, the one being “a cognitive system that stores information” and the other a ‘performance system that accesses that information and use it in various ways” (1995: 2). Although this “language faculty/organ” is variously a “theory” and a “grammar” it anyway functions, in Chomsky’s conception, mostly as a mechanical instrument, like a small robot in the brain. I refer the reader to compare this with what is said in the section *How Children Learn Language*; there the “language faculty” is assigned the role of a “language-acquisition device.” On an analogy of tuning the radio to a given wave-length, Chomsky tells, among other things, that this device “must search through the set of possible hypotheses... and must select grammars that are compatible with the primary linguistic data...” (1965: 32). More precisely he tells that this “device must search through the set of possible hypotheses G1, nG2..., which are available to it by virtue of condition (iii), and must select grammars with are compatible with primary linguistic data represented in terms of (i) and (ii) that are available it by virtue...” (1965: 32 – all these intriguing conditions (i), (ii) etc, can be found in 1965: 31). – And then, at the grande finale, “one of the grammars” thus identified is said to be “selected” by the device! This Selected grammar, in turn, and in a due show of gratitude, “provides the device with a method for interpreting an arbitrary sentence by virtue of (i) and (ii).” This means, according to Chomsky, that “the device has now constructed a theory of language of which the primary linguistic data are a sample.” This “selected theory” then assumes its proper seat in the brain (becomes “internally represented”) and from then on will specify “its tacit competence, its knowledge of the language” (1965: 32). Chomsky concludes these ideas by affirming that a “child who acquires a language in this way of course knows a great deal more that he has *learned*.”

The following example shows how Chomsky in practice conceives of the operations of this “language faculty.” This example should also

illustrate the consequences of the fallacy to fail to make a distinction between the human ability to *speak* (and the exercising of this ability in speech) and the resulting abstraction *language*. Chomsky tells that when “Jones has the language L” it means that “Jones’s language faculty is in the state L” and when Jones speaks (or as Chomsky expresses it when “Jones’s language generates an SD [structural description]”) it is Jones’s ‘language’ that “assigns a particular status to such expressions...” (1995: 15. – The reader should note that Chomsky here again is efficiently claiming that ‘language produces language’). Chomsky, thus, postulates that when Jones speaks it is not Jones speaking, but a “language faculty” within Jones that construes expressions by assigning their relevant positions within the faculty.

In discussing the “initial state” of the “language faculty” Chomsky delivers what must be considered as his most hilarious idea. This one has to go with no comments: “We can think of the initial state of the faculty of language as a fixed network connected to a switch box; the network is constituted of the principles of language, while the switches are the options to be determined by experience. When the switches are one way, we have Swahili; when they are set another way, we have Japanese. Each possible human language is identified as a particular setting of the switches – a setting of parameters, in technical terms...Notice that small changes in switch settings can lead to great apparent variety in output, as the effects proliferate through the system” (2007a: 8).

Basically what this idea is about is that Chomsky has packaged into the concept “language faculty” all the perceptions he has formed on language practices (however, not consciously admitting he is doing so). These are to some degree mixed with elementary notions of biology (such as the observation that the lips and the tongue move when people speak, and that speech is somehow connected with the brain, more so than the liver). He has then arrived to the idea that this “language faculty” corresponds to a “mental organ” which he terms “the language organ,” while telling that he has arrived to this postulation through the analogy with “the heart or the visual system or the system of motor coordination and planning” (Botha 1991: 106 in reference to Chomsky’s *On Cognitive Structures and their Development: A Reply to Piaget* of 1975). This idea he further motivates by the consideration that there “appears to be no clear demarcation line between physical organs, perceptual and motor systems, and cognitive faculties in the respects in

question” (ditto). We may here agree with Chomsky on one point, the observation that there is no clear demarcation line between the organs, systems and faculties he lists; they all conspire in bringing about the abilities for human speech, however, there certainly is a very clear demarcation line between these biological systems and the abilities they enable versus the social practices in which a human being can participate given the abilities, that is, a demarcation between the biological abilities and the social practice of speaking, which we call ‘language.’

Chomsky affirms that the “faculty of language can reasonably be regarded as a ‘language organ’ in the sense in which scientists speak of the visual system, or immune system, or circulatory system, as organs of the body” (2007a: 4). But we should note that those real scientists do not claim that the visual scenes that people have experienced by the operations of the visual system would actually reside in the brain as innate clips that are played out each time when we view our surroundings with open eyes – which is the direct analogy to how Chomsky perceives speaking (his “language”) to occur. The visual system is not an innate YouTube which contains records of all the possible scenes we will experience in life. - Chomsky actually compares his generative grammar to the system of visual perception: “Thus a generative grammar attempts to specify what the speaker actually knows, not what he may report about his knowledge. Similarly, a theory of visual perception would attempt *to account for what a person actually sees* [italics supplied] and the mechanisms that determine this *rather than his statements about what he sees and why*” (1965: 8). – But certainly the theory of vision does not attempt to account for what a person actually sees; it only aims at accounting for how vision comes about, i.e. only the second part of what Chomsky said (“the mechanisms that determine this”). There is no way a scientific theory could account for what people may actually see. It is truly a mystery, even in consideration of the Chomskyan standards, that anybody could even raise the possibility! We see that even making this analogy Chomsky confuses the ability and how that ability is put to use. – The reader may also note how interestingly Chomsky confuses the linguistic aspect with the visual saying that a theory of vision does not deal with “statements about what [the subject] sees”; well, of course not, for that would involve a theory of speech (not to mention the nonsensical statement that a theory of vision would not involve the question ‘why he sees’ – but, isn’t this precisely a question for Chomskyan linguistics?).

Here I must insert a quote from Locke to remind the reader that all this is déjà vu: “*But though unlearned men well enough understood the words white and black; &c., and had constant notions of the ideas signified by those words; yet there were philosophers found who had learning and subtlety enough to prove that snow was black; i.e. to prove that white was black. Whereby they had the advantage to destroy the instruments and means of discourse, conversation, instruction, and society; whilst, with great art and subtlety, they did no more but perplex and confound the signification of words, and thereby render language less useful than the real defects of it had made it; a gift which the illiterate had not attained to*” (Locke 1694 Vol II: 65).

Chomsky anyway postulates a slight difference between “mental organs” and real biological organs (e.g. Botha 1991: 110), and while he sees the “language faculty” as a “mental organ” he alerts: “of course it is not an organ in the sense that we can delimit it physically” (Botha 1991: 106). Chomsky motivates the assignation of the status of “organ” to the “language faculty” by pointing out that “the growth of this [language] capacity has the general characteristics of the growth of [physical] organs” (ditto).

We have seen that Chomsky *a little bit* admits that the “language faculty/organ” is not a real organ, but having admitted as much he anyway affirms that it is *real enough*. His strategy is to admit just the most obvious, and then to shuffle away the, for him, small differences such as the difference between the existence of the liver and the existence of his “language faculty” – never mind that the liver is a real organ which we know from a study of the human biology and which we even may see and touch, and that the “language faculty” exists only in the imagination of Chomsky and his followers (“The generative system is something real, real as the liver,” Chomsky 2002: 110). We thus see that Chomsky admits that the “language faculty” and other “mental organs” are merely products of his fantasy, but once postulated by him they have equal claim to scientific existence as any a real biological organ. Having admitted the “small difference” he then returns to the claim that other than that there is no difference hoping that his interlocutors would not pay any further attention to the “trifle” difference. And we must say that he has been surprisingly successful in that, indeed, all the success he has had is entirely due to these rhetorical skills (Botha 1991).

The language faculty is not the only “mental organ,” there are many more according to Chomsky, he tells: “We may usefully think of the

language faculty, the number faculty, and others, as 'mental organs', analogous to the heart or the visual system or the system of motor coordination and planning" (Botha 1991: 105, Chomsky *Rules and Representations*). Following the "number faculty" we could also postulate that there is a "cooking faculty" and a "figure skating faculty," a "faculty" for each social practice.

The idea of language organs and various other organs specializing in some sort of behavior is not new, already in the 19<sup>th</sup> century Henry Lewes felt compelled to denounce these "organs" in *The Study of Psychology* where he said:

"But we have also learned that Feeling is not the process in these organs, which are only channels for particular modes of stimulation. Besides these special feelings, Sensation, Thought, Volition are generally understood to be functions which also have their organs. If so, the organs are absolutely unknown. *Where* the functions take place, and *how*, are mysteries which some men explain by mythologies, and others by guesses. The mythological entities of sensitive and rational Souls, spirits inhabiting the organism, are now discredited. The hypothetical organs described by physiologists are in high favour, and may be regarded as "first approximations," even by those who recognise their inadequacy. The imperfection of our real knowledge forces us to supply by imaginary sequences the gaps of ascertained sequences" (1879B: 369).

## The Growth of the "Language Faculty"

Now we will take a closer look on Chomsky's conception on 'learning' vs. 'growth/maturation,' I remind that Chomsky claims that people do not learn languages, instead their "language faculties" grow, or mature, so as to ultimately generate adult language. Chomsky's conception of 'growth' can be rendered in the words of Botha like this: "He observes that when the heart, visual system or other organs of the body develop to their mature form, we speak of growth rather than learning. Growth, then, is a process in which an organ develops (or, alternatively, by which the final structure of an organ is attained) along a course largely predetermined by our genetic programme" (Botha: 35). This in contrast to Chomsky's conception of 'learning,' which Botha describes this way: "The developmental process of learning however, takes place by means of association, induction, conditioning, hypothesis-formation, confirmation, abstraction, generalization and so on. These processes, Chomsky

believes, play no significant role in the acquisition of language.” – What surprises is that these particular ideas of Chomsky as to the real essence of learning are quite adequate, although we should certainly define ‘learning’ in less mechanistic terms as processes of interacting with other people’s behavior and the social practices they amount to. But after these largely correct ideas, there occurs a Chomskyan somersault feet over head, for he next claims that all the phenomena (in regards to language) that pertains to learning would anyway be genetically determined features (properties) of organs, in this particular case, the imaginary “language organ/faculty.” For Chomsky, therefore, “language acquisition” represents growth rather than learning – the “language faculty” just ‘grows/matures’ so as to emit “language.” Chomsky even compares this growth process to that of puberty speculating that the process of language growth “perhaps” occurs “in the way in which sexual maturation takes place at a certain age for reasons that are probably rooted in genetics” (quoted in Botha 1991: 36 in reference to Chomsky’s *On Cognitive Structures and their Development: A Reply to Piaget* of 1975). – But this is not a correct analogy to ‘language’ and the analogy is correctly made in reference to the ‘ability to speak,’ which matures at a certain stage in early childhood. To extend the analogy to ‘language’ would mean that the sexual fantasies and specific acts and styles of sexual behavior would also be genetically determined (which of course are results of the biological body interacting with society).

McCawley has in retort to Chomsky explained the difference between learning and growth by saying if “one is given an appropriate exposure to French, Flemish, and German, one develops command of all three languages but does not develop three larynxes or three pairs of ears” (in Botha 1991: 36, in reference to McCawley’s *Tabula si, rasa no!* in *The Brain and Behavioral Sciences* 1980). – This occasion Chomsky uses merely to once again redefine the words he uses and replies that McCawley has missed the point of needing to distinguish learning from growth “in terms of properties of the state attained.” In this version of the explanation Chomsky seems to mean that in his conception that what *we* understand (but not Chomsky) as reinforcement of neural reaction patterns (potentiation) signifies growth (see discussion of memory in chapters *Memory* and *Kandel’s Search for the Neural Correlates of the Concept ‘Memory’*). Contrary to Chomsky, scientists and people in general mean by *growth* the process of a body or different organs successively attaining the form and organic properties that are

common to the species, and which in principle enable the functioning of an adult body and adult organs of the body. But before Chomsky, nobody has yet postulated that the specific neural reaction patterns that correspond to experience of the actions that the body or an organ has undergone should also be called growth. This only signifies that for Chomsky also the word 'growth' has lost the meaning that people in general assign to it. – And let me add, that at any rate the neural reaction patterns and their potentiation reflects learning in the real sense of the word, as they are neural reactions to processing of environmental stimuli.

This conceptual fallacy is connected with Chomsky's failure to understand that the human brain processes proceed in infinite variances; brain processes are not static so that we could say that the brain consists of "attained states." Neural reaction patterns are not like so many roads or paths in the brain, but represent an infinite network of connections. There are then, no brain states, but only processes in infinite variations, of infinitely varied configurations (see *Mental Processing* for a discussion of mental and brain states). The whole idea to speak of "states attained" is wrong. We could compare these ideas to the ideas we form of traffic and road infrastructure. It is as if Chomsky were taking the road infrastructure as his model for brain processes, rather than the traffic that runs on the roads. This talk about "states attained" corresponds to what he in the *Aspects of the Theory of Syntax* (1965) discussed in terms of knowledge being 'fixed in advance as a disposition of the mind' (Chomsky 1965: 48; Botha 1991: 42).

McCawley was above said to have brought up the issue that many people learn more than one language. We should note that Chomsky has, at least in none of his major books, made any significant statements in this respect. Obviously not, because the fact that we can learn a second, third, etc., language, given sufficient exposure or commitment, in itself devastates every aspect of Chomsky's theories.

The above discussion of learning vs. growth showed that this particular fallacy represents one manifestation of the more fundamental fallacy of failing to distinguish between speech and language. This discussion also showed how Chomsky takes the abstract perception of language to represent the natural reality while he more or less ignores the considerations pertaining to biological speech. Hereby it is important that the reader recognizes the most curious twist that occurs in Chomsky's presentation: while he ignores the biological considerations and only considers the perceptual abstractions we form of social prac-

tices, he nevertheless presents these social considerations in terms of biology and as if they would be biological properties of biological entities.

Chomsky inadvertently reveals how perversely he thinks of these issues when he in the *Minimalist Program* discusses his “language faculty” in an attempt to turn the tables on the biologists by accusing them for their failure to explain how “language” is produced. Chomsky asks how the biological sciences aim to deal with the problem which, according to Chomsky “is already far from trivial.” He asks: “how can a system such as human language arise in the mind/brain, or for that matter, in the organic world, in which one seems not to find anything like the basic properties of human language?” (1995: 1). – From this we see how seriously Chomsky is on wrong track when he insists that “language,” the social practices, should be located in the brain, or alternatively in the mythological “mind/brain.” It is speech that arises in the “organic world” of the human body in response to the human interpreting its environment and in particular by mentally processing the stimuli provided by other people’s verbal behavior, i.e. language practices. As I have shown in this book, neuroscientists, biologists, and real cognitive psychologists have shown that human cognition is a result of an intricate web of feedback between all bodily and neural processes, and indeed it is the evolutionary product of expressions and interpretations. – But Chomsky affirms that in contrast to “the failure of biology” this dilemma does, however, not pose any problem for the “cognitive sciences,” that is, his own branch of speculation. Chomsky is particularly indignant, or perhaps he is just being sarcastic, over the fact that the “biological sciences” have not been able to provide support for his pseudo-biological speculations, which he characterizes as his “fairly well established conclusions about language” (1995: 2). – Well, what can we say; everything does not turn out in life as one would wish. *The Minimalist Program* is a book of a desperate man.

I may note that in the biological sciences many of the features which affect speech have been fairly well described. I think that what has been missing is the right philosophical paradigm that would tie all the relevant data into a holistic description. It is my aim to remedy this with the ideas that I present in this book. Most importantly I refer to the paradigm of *expressions and interpretations* and the *organic process model*, from which follows my conception that *speech* corresponds to *interpretation of feelings*, and that *language* corresponds to the perceptions we

form of *social practices of verbal behavior*. These issues will remain blurred and confused as long as the distinction - and correspondingly the interactions - between speech and language, the biological and the social, is not properly made and described.

In Chomsky's theories the biological and social trade places! - He employs the vocabulary of biology in his attempt to motivate how the social practices are already inherent in the metaphysical "language organ/faculty" of the brain. This naturally results from the perversion to take abstractions pertaining to social practices as real, for once they are considered real, then one is prone to think that they must reside somewhere, and because they cannot possibly reside in a real location, then they must reside in a metaphysical location. Chomsky thus notwithstanding his explicit denial of the fact that languages are social practices (see discussion below in this chapter) anyway effectively portrays the social practices of language as located in the brain from where they allegedly spurt forth as reactions to environmental signals (which signals are, nevertheless, denied the nature of serving as stimuli in the processes; these peculiar maneuvers will be dealt with more in detail below together with necessary references).

## Empirical Studies in Pseudo-Biology

All the evidence that Chomsky puts forward to support these pseudo-biological conceptions of "language" and the alleged biological mechanisms that produce "it" consists of imaginary sentences that he concocts himself while refusing to study actual language practices and speech acts. In the paradigm of the Early Chomsky the main claim was that the so-called "syntax" would follow special *language rules*, which correspond to underlying *cognitive rules*. Thus, according to this peculiar logic, by analyzing "syntax" we could possibly gain an insight into how "language" is produced in the brain (or in Chomsky's "brain/mind"). The method of Chomsky was, in fact, very similar to that of the behaviorists, the only difference was that Chomsky chose to study - instead of the behavior of humans and animals - the fantasy behavior of words and sentences. But we may also say that he, in fact, was studying human behavior, only restricting himself to studying a very narrow sample of behavior namely the behavior of one single person, the behavior of a man called Noam Chomsky. - Chomsky maintains that an analysis of such fantasy sentences would reveal the underlying biology of what produces "language." Chomsky has, among other things,

said that he in his linguistic studies is “primarily intrigued by the possibility of learning something, from the study of language, that will bring to light inherent properties of the human mind” (Botha 1991: 3 in reference to Chomsky’s *Language and Mind* originally in the 1972 version; more details and references to follow below). Similarly Chomsky told in *Aspects of the Theory of Syntax* that in this sense “linguistic theory is mentalistic, since it is concerned with discovering actual mental reality underlying behavior” (1965: 4). This is the approach of a fortune-teller who refers to the lines on the palm of the hand for telling the destiny of a person. By this same logic somebody could claim that by studying the traces that a figure skater leaves on the ice we would gain insight on the intricate organic bodily and mental processes that produce the corresponding movements. - Joseph, Love and Taylor confirm that this was Chomsky’s method, telling that he labored under the assumption that “close attention to the details of how words are put together to form sentences – and especially, to how words are *not* put together to form sentences – can shed light on the organization of the human mental capacity for language” (2009: 123).

In this connection the beloved computer metaphor of the cognitive revolution comes handy, admittedly to serve a purpose opposite to that of the revolutionaries. A computer is a machine which (built and programmed by humans) produce texts given relevant input: a printed sheet of paper represents traces of this activity. Now if we were to follow the principles of Chomskyan linguistics, then we would analyze the printed sheets, perhaps compare with other papers and then declare that we have discovered how a computer functions. We would then without bothering even with opening a computer or asking for the relevant facts from the computer engineers and programmers proceed with postulating our fanciful ideas on what there might be in the computer that produces these results. But this “knowledge” would be useless if we in practice would have to fix a computer, precisely as useless as the Chomskyan linguistics has proven to be for any application, whatsoever.

After Chomsky rejected the rule-system model (in connection with his capitulation as referred above) he seems to have dropped these ideas from his repertoire, instead in the paradigm of the pseudo-biology of the Late Chomsky language, the “natural object” (2007a: 76) is now studied “much like that of other organs” (2007a: 17)<sup>3</sup>. – But, we shall note that Chomsky has in reality not shown any interest to undertake such a biological study, he never even refers to any real neuroscientific data

except by way of superficial and false analogies. Having given up on studying the traces of social practices and not having embraced a real biological study, we are left with characterizing Chomsky's new method as that of a crystal ball fortune teller, which definitely cannot be regarded as an improvement on his previous method of reading the lines on the palm. – Chomsky does not motivate his pseudo-biological speculation with any facts of biology and merely speaks by the weight of his brand authority, rather the way it was done by Pythia, the priestess of the oracle of Delphi.

These pseudo-biological arguments played a central role in the paradigm shifts when Chomsky ushered in the so-called “cognitive revolution.” This epithet stands for the idea that Chomsky had supposedly realigned the study of human cognition with a biological study. But nothing could be further from the truth, for Chomsky similarly as the behaviorists, whom the cognitive revolutionaries replaced, ignored the real biological facts of cognition, instead he merely asserted that language is in some way connected with the human genetic endowment. And who wouldn't agree with that? – Chomsky has shown no understanding and not even any interest in studying the biological facts, instead he merely abused the vocabulary of biology to give a scientific aura to his speculations. What Chomsky did was to affirm – contrary to the behaviorists whom he dethroned – that the biology of cognition (or “consciousness” by which the behaviorists referred to this nemesis of theirs) had to be studied, but he did not engage in any such study himself and has never even referred to any real neurobiological data. However, the idea of connecting “language” with the biology of the human was considered as such a revolutionizing argument in the background of the then leading paradigm of behaviorism, that nobody bothered any further with the arguments as such. As it had somehow started to dawn on people by the late 1950s that the biological and cerebral apparatus did matter it sounded very intelligent when Chomsky said just that. Immensely relieved to hear that, these same people did not bother any further with the biological details and essentially gave Chomsky a carte blanche for public speculation.

I have also referred to some aspects of Chomsky's pseudo-biology in the chapter on *Evolution of Speech*. (In this chapter the reader was introduced to Chomsky's stupendous fable on how “the faculty of language” evolved as a result of a “mutation of catastrophic proportions”). I argue there that it is precisely speech (or the ability to speak) that is what has evolved, whereas I insist that employing the concept ‘evolu-

tion' in reference, to non-biological phenomena, such as the social practices of verbal behavior, i.e. language, does not represent a valid use of the concept. We thus have to note that Chomsky is wrong in saying that the "faculty of language is a very recent evolutionary development" (2007a: 2), for what is an "evolutionary product" is the ability to speak. His theories could be put on right track if he only understood that it is this ability that has evolved. This is, again, not a mere semantic point, for Chomsky definitely maintains that "the faculty of language" represents a unique evolutionary development which is not connected with previous animal life. This by itself means that he refutes the whole idea of evolution, for all that has evolved has evolved from previous forms of organic life; the human and all human organic features and abilities have evolved from previous forms of animal life. - I argue in this book that the ability of speak shall be seen on an evolutionary continuum preceded by other abilities to express.

## The "Mind/Brain"

Now we shall take a look at another pearl of this pseudo-biology, the hypothetical entity that Chomsky refers to as the "mind/brain." I remind that following his capitulation and the disavowal of his own rule-system model, Chomsky put all his bets on the pseudo-biological speculations. This is when the metaphysical "mind", the "mental" and the "brain/mind" really started to totally occupy his interests. By now it should certainly not come as a surprise to anybody to learn that Chomsky entertains some very peculiar ideas in regards to these concepts as well. To put this discussion in the right context I shall briefly refer to my discussion of the mind fallacy in other parts of this book, mainly in chapter *Mind*. The mind fallacy is by no means something that is unique to Chomsky, on the contrary he shares many aspects of it with many scientists. The main problem is that our contemporary scholars following age-old misconceptions take the 'mind' to be a physical organ, few, however, as radically as Chomsky conceives of the "language faculty" as a "mental organ" but much in the same lines. - Contrary to these ideas, I stress that the 'mind' is not a physical entity, and instead we would best conceive of 'mind' as a reference to the phenomena which result from the interaction of social practices (past and present expressions) with the biological neural apparatus. 'Mind' represents the results of neural (mental) processing of environmental

stimuli which we detect in form of social practices, that is, human behavior (embedded in the stimuli stemming from other parts of the nature and the physical environment). 'Mind' represents the reflections, process outcome, that the mental processing of stimuli results in. We could also say that 'mind' on the subjective side is a perception we form on the experience of having observed our own and other people's cognitive behavior. 'Mind' can be considered to represent both particular instances of cognitive behavior and the general perceptions we form of all such behavior. On the objective side 'mind' could be seen as corresponding to those mental process results that lead to cognitive consciousness. Whatever we settle for we should note that at the end of the analysis 'mind' is a social and linguistic construction, in a way a social fiction, and by no means an object for neuroscience. By these considerations we also arrive to the recognition that what is called the 'science of mind' (see discussion in chapter *Mind*) is in fact only a synthesis of biology (neurobiology) and a study of social practices (most importantly language). This should also alert us to the fact that there is a need for a scientific discipline of psychology, for by neuroscience we should describe the apparatus and the mental processes, and by psychology the behavior which results from the interactions of the stimuli emitted (by means of behavior) as a result of mental processing taking place in one brain, *and* the stimuli received by another body where the stimuli undergoes corresponding mental processes.

Thus the 'mind' that Chomsky takes to be a physical entity is only a result of the processes where language (i.e. language practices) serves as the stimuli which are mentally processed. Not understanding this, and prone to firing metaphysical ideas from the hip, Chomsky even equates 'mind' with the 'brain' and then speaks about the 'mind/brain' as if they were both some kind of entities, and even the same entity (see e.g. 2007a: 1; the problem also referred to in Bennett, Hacker 2003: 104).

When attempting to find out how Chomsky accounts for this peculiar usage, we get an immediate reply explaining that he needs to connect the metaphysical 'mind' with the natural organ 'brain' with the motivation that 'mind' in fact is "the brain viewed from a particular perspective." We need to quote Chomsky in full on this: "Since the brain, or elements of it, are critically involved in linguistic and other mental phenomena, we may use the term 'mind' – *loosely but adequately* [italics supplied to emphasize the nonsense] – in speaking of the brain viewed from a particular perspective developed in the course of inquiry into

certain aspects of human nature and its manifestations” (2007a: 76). - So, what we have here is the assertion that ‘mind’ is *the particular perspective* from which the brain is to be viewed. But this is not just any particular perspective, but the particular perspective offered by the alchemical theory of generative linguistics. In a typical for Chomsky move he has postulated that the brain, which is the entity we all know, should, in fact, be equated with the *peculiar perspective* from which *he* views it. He finishes the above quoted section by affirming that based on the *empirical* (sic) assumptions of the cognitive revolutionaries “the brain, not the foot, is the relevant bodily organ” that produces language. We are supposed to be impressed by this ingenious finding about the anatomy of the human organism and take that as proof for the validity of the ‘brain/mind’ dictum. But even when Chomsky claims that the “mind” represents this “peculiar perspective” he anyway affirms that a distinction is to be made between “physical structures of the brain vs. abstract structures of the mind” (Botha 2003: 107; Botha indicates in regards to this conception frequent references in the works of Chomsky). As there cannot possibly be any “abstract structures,” and the less so in regards to a non-entity such as the “mind,” then we must draw the conclusion that this idea of the “abstract structures” is nothing more nothing less than an euphemism for Chomsky’s speculation. - As Locke said: “*He that hath names without ideas, wants meaning in his words, and speaks only empty sounds. He that hath complex ideas without names for them, wants liberty and dispatch in his expressions, and is necessitated to use periphrases. He that uses his words loosely and unsteadily will either be not minded or not understood. He that applies his names to ideas different from their common use, wants propriety in his language, and speaks gibberish. And he that hath the ideas of substances disagreeing with the real existence of things, so far wants the materials of true knowledge in his understanding, and hath instead thereof chimeras*” (1694 Vol. II :73)

But Chomsky is not content with this, he goes on to enlarge this “perspective” of mind and next affirms that by ‘mind’ he means “the mental aspects of the world” (2007a: 106). This means that for him this extraordinary concept ‘mind’ serves at once as a prism through which he views the brain inside the body and a prism through which he projects the vision outwards to include the whole world external to the body. - It seems to me that this is very telling of the confusion of not distinguish-

ing between what is biological and what is social. We must ask what these “aspects of the world” may possibly signify. It seems to me that Chomsky by the “aspects” refers – although unconsciously – to all his experience of observed reality. But he then projects these “aspects” back into the brain (his own serving as the model). For him they are, as it were, features of the brain. Therefore they (these aspects), in this line of logic, are to be considered innate. I think that until now none of the nativists have offered, like Chomsky does, such illuminating insights into the peculiar unconscious logic from which all kinds of ideas of innate knowledge stem. - But this is quite consistent with his theories in general –for Chomsky everything is something viewed from a very peculiar perspective.

In *New Horizons in the Study of Language and Mind*, Chomsky repeatedly voices this same conception and adamantly maintains that he has “no more interest in sharpening the boundaries” or finding other criteria for what is to be considered ‘mind,’ it is enough, he maintains that he has defined it as the “mental aspects of the world” (2007a: 106): “By ‘mind,’ I mean the mental aspects of the world, with no concern for defining the notion more closely (2007a: 75). - (*“Doubtful expressions, that have scarce any signification, go for clear reasons to those who, being prepossessed, take not the pains to examine even what they themselves say”*; Locke 1694 Vol. I: 16) – We then see that even when this speculation in terms of “brain/mind” has after his capitulation become the focal point for all the rest, he does not find any need to define more precisely what he means by ‘mind.’ But, in fact, it is not a question of what he wants or not, rather he cannot find any other explanation for the fundament of his theory. Any innate theory will in the end have to be anchored in a broad category of speculation. We have to be grateful for Chomsky actually making this manifest, for none of his nativists predecessors have bothered to follow the logic to its ultimate bankruptcy the way Chomsky has done it. In jurisprudence there was one Hans Kelsen who has done something similar when he rounded up his speculation on the philosophy of law in the hypothetical “basic norm.” He argued that the law was a system based on positivist (enacted) norms (we see the correlation with Saussure’s structuralism), but when he traced one enactment of a norm to another he ultimately came to the dilemma that at some point he had to explain what the first enactment was based on, and for this he invented this “basic norm” which only served to stand for that what cannot be explained (Hellevig 2006: 229).

The reader should note that to arrive to the ideas I present in this book, I have precisely proceeded from the completely opposite assumptions than those of Chomsky. While Chomsky explicitly proclaims that he has no concern for defining the notions ‘mental’ and ‘mind’ any further than the loose and inadequate definitions presented above, I, on the contrary, regard that a proper description of these concepts is of paramount importance. As speech reflects cognition, then in order to understand the essence of speech we naturally first need to *adequately* (and by no means loosely) account for what produces and affects cognition, which makes it necessary to gain a proper understanding of ‘mental’ and ‘mind.’ Therefore I have in the present book very much in detail accounted for my conception of these phenomena. In doing so I have established the physical, organic and neural basis for the mental processes which lead to cognition. This is also why I have deemed necessary to present my views on speech and language as a part of a biological philosophy. This whole endeavor is what led me to understand the difference between the biological speech and social language. - Loose and inadequate nativist speculation can never lead to any real revelations about the nature of human cognition.

## Failure to Distinguish between Speech and Language

Directly relating to linguistics, the first and most conspicuous of Chomsky’s errors has been that of ignoring the necessity of distinguishing between *speech* and *language*, between the *biological ability to speak* and the *social practices of speaking and writing* (language practices; language). These ideas I have developed in detail in chapter *Speech and Language*. The inability to make this distinction is a manifestation of the general fallacy of not being able to distinguish between what refers to biological phenomena versus what refers to social phenomena. Above I discussed another manifestation of this fallacy, that of confusing between the ability to learn and the very learning that the ability enables.

All the considerations pertaining to speech and language, respectively, Chomsky lumps under his conception ‘language.’ ‘Language’ is thus for Chomsky a universal concept by which he refers to both the biological and social phenomena pertaining to linguistics. For Chomsky “language” represents a biological, a “natural object” (e.g. 2002: 1), alternatively language is, for example, “a natural property of the human mind”

(1966: 14); although, Chomsky has also said that “language is an extra-human object” (2002: 62); by this idea he situates “language” beyond anything we know about biology and society, thus making language a truly Kantian transcendental object. We shall below meet a multitude of similar and contradicting arguments.

Chomsky's failure to make the distinction between speech and language is the more striking when we consider that he has actually been introduced to the conception of ‘language’ as a social practice. But even having been acquainted with this position Chomsky rejects it. For example, in *New Horizons in the Study of Language and Mind* (2007a) Chomsky criticizes and rejects the concept of language as a social practice in reference to Michael Dummett and other authors. Chomsky invited the reader to consider as ridiculous Dummett's argument that “the fundamental sense in which we must understand the concept of language is the sense in which Dutch and German are different languages” inasmuch each of them is a “particular social practice *in which people engage*, a practice that *is learned from others and is constituted by rules which it is part of social custom to follow*“ (2007a: 48ff, italics supplied). - However, we should note that even when Dummett was clearly shown to have a better grasp of the underlying reality, both he and Chomsky were wrong inasmuch as they both failed to make the distinction between speech and language (Dummett doing it the other way around). As long as the distinction is not made, the postulation that ‘language is a social practice’ also implies the absurd proposition that the ability to speak would be a social practice. Chomsky on the other hand performs a more complicated logical somersault here insofar as he effectively postulates that the social practice is the innate biological ability. In this connection of criticizing Dummett we also meet again Chomsky's stupendous refutation of the fact that languages can be learned, this when he dismissingly says: if “language is construed as a social practice in the manner of these discussions, then it is tempting to understand knowledge of language as the learned ability to engage in such practices.” Chomsky also confronts the idea of language as social practices with a – for him – compelling argument that this “view contrasts with the conception of a language as a generative procedure” that is, Chomsky dismisses the idea in view of it contrasting with his own branch of speculation. - Intrigued by the reference to Dummett I wanted to follow up on his ideas, but I was not successful in locating the work Chomsky referred to<sup>4</sup> and in the books by Dummett which I managed to come across I failed to find any traces of a discussion on language as

social practices notwithstanding the promising titles (*The Seas of Language* 2003; *Thought and Reality* 2008).

As Chomsky does not recognize any differences between speech and language then he quite understandably is not in a position to understand that there exists no languages either, that is, he cannot grasp that the various languages such as ‘English,’ ‘French’ and ‘Russian’ which he perceives as thingly entities in reality only correspond to the perceptions we form of various social practices of verbal behavior, or *language practices*. He is unable to conceive of the various languages we speak of as representing the language practices of communities of people who participate in the same social practices of speaking (share a language practice), that is, who speak in a similar fashion due to proximity with each other.

### Briefly about the other Fallacies

One of his fallacies is the persistent and categorical insistence that “language” is unaffected by any influence of (external) stimuli, although, as I pointed out above, he considers that a “language faculty” or “language device” produces “language” in response to some unexplained *signals* (he speaks about “signals” that the “language faculty” reacts to, but denies that the signals are stimuli). According to his conception the metaphysical “language faculty” functions in a physical vacuum and emits “sentences” independently of any external prompting. Contrary to this claim, I argue in this book that the most fundamental principle of life and all phenomena of life is that they are functions of the organic activity of an organism relating itself to its environment, which means that an organism is constantly interpreting the stimuli that it has become genetically endowed to detect. I do not know whether biological scientists would conclude with me in promoting this as *the most* important principle among some other considerations they might want to give priority to, but I am quite confident that they concur with me in awarding great importance to these observations. Certainly speech - or “language” as Chomsky conceives of it – represents a reaction (expression) to the mental processes of interpretation of stimuli. I will discuss this fallacy to which I refer as the ‘stimulus-free argument’ as well as its sibling the ‘context-free argument’ below in which context references to appropriate sections in Chomsky’s work will be provided.

The 'stimulus-free argument' and 'context-free argument' provide the setting for Chomsky's '*meaningless-argument*' according to which words, utterances and sentences are in no way connected with any purported meanings. Therefore it is not the task of the linguist to try to establish what meaningful statements are; and instead speech and writing are only said to represent irrelevant "surface structures" that the linguist should more or less ignore in favor of the real task to find the hidden and abstract "deep structures." This is why Chomsky declares that the "ultimate outcome of" linguistic investigations "should be a theory of linguistic structure in which the descriptive devices utilized in particular grammars are *presented and studied abstractly*, with no specific reference to particular languages" (1957: 11). This 'meaningless argument' will below be discussed more in detail with due references.

The idea that language is "independent of such trivial considerations as meaning" is, of course, based on the more fundamental thingly fallacy of taking the perceptual abstractions formed of language practices to correspond to some sort of material entities existing in their own right. This is why Chomsky considers that words and phrases *exist* and may participate in various transmutations. The fallacy to conceive of them as existing particles leads him to imagine that words and the syntax that their arrangement amounts to form a structured material system. In this fantasy structure he has perceived two layers that correspond to his *surface structure* and *deep structure* (Chomsky has never been particular about what there is in the middle of these "structures," but I cannot understand how you can talk about a surface and deep structure without postulating that something would be there in between). It is within these structures that the elements of this "system" that he has perceived on the analogy to nature undergo various *transmutations*. The way he treats the subject shows that he does not limit himself to thinking that words and their particles are material entities but rather goes as far as to treat them as organic beings and even to suggest human characteristics for words and language patterns, the *behavior* of which he purports to explore. This means that, paradoxically enough, Chomsky himself is a behaviorist – but a behaviorist who limits himself to study a very narrow sample: the behavior of the simplistic sentences he has concocted and the behavior of Noam Chomsky as this individual perceives these extraordinary phenomena. The manifestations of this thingly fallacy and Chomsky's linguistic transmutations will be discussed below.

Chomsky's peculiar conceptions of language are aggravated by the bewitchment of his thinking by the *mathematical ideals* which figured so prominently in the so-called "scientific method" that the scientists he was raised among adhered to; especially we can trace the negative influence of mathematics to his early mentor Zellig Harris, who had applied the mathematical model on the ideas derived from Saussure's structuralism (discussed more in detail below). Chomsky took from Harris the idea that the essential characteristics of language could somehow be converted into mathematical models and that language could be presented as a product of mathematical analysis of language data. By expanding on these ideas Chomsky arrived to formulate his own brand of generative grammar, that is, his own hallmark linguistic algebradabra. Following these ideas Chomsky defines language (in one of the many definitions) as "a set of sentences. This mathematical style of presentation combined with the idea that language is generated from some kind of rules earned Chomsky the attention of the emerging computer industry in the 1950's and 60's. In the search for artificial intelligence Chomsky was seen as a great promise on how to design computers and software that could "generate language" and translate into and from all languages of the world. These ideas are demonstrated in many of the sections below and especially developed in the section *Chomsky and the New Brave Computer World*.

Against this fallacious paradigm he furthermore employs the concept grammar in a multitude of confusing and contradictory ways. In the correct sense of speaking about a grammar we must by it mean a *description* of the observed regularities in expression among people adhering to a common language practice, that is, a shorthand for observed uniformities that are recorded and systemized so as to give a description of the language patterns people adhere to in speaking and writing (i.e., in their verbal behavior). But this is not what Chomsky has in mind when he speaks of a grammar (or rather 'grammars' in the plural). Instead grammar for him means many things at once, none of which corresponds to a description of observed language patterns. Chomsky explicitly rejects the idea that descriptive grammars (or "pedagogical grammars," as he sometimes calls them) would have any true scientific value. – These ideas to treat grammar in this peculiar way is an offshoot from the metaphysical traditions initiated by Bloomfield. In their attempt to look more like real scientists his followers, the Bloomfieldians, and especially the later Post-Bloomfieldians, wanted to identify in lan-

guage some inherent properties and characteristics (they were looking for material features of an abstraction!) instead of merely being content with describing language practices and identifying the various sounds people make. Chomsky was to exploit the opportunities offered by the Post-Bloomfieldian speculation to launch his own brand of syntactic speculation (see discussion below in section *The Triumph over Behaviorism*).

I will here give a summary of all the contradictory ways in which Chomsky employs the concept 'grammar' and all the various concepts that he, one entangled in the other, assigns similar meaning. These issues will with proper references be further elaborated in detail in section *Grammar and Syntax*.

At one point in his theory a grammar is 'a *device* that generates language'; he tells that the task of the linguist is to 'construct a grammar that can be viewed as a device of some sort for producing the sentences of a language under analysis' (1957: 11). In another connection he speaks about 'selecting grammars' that best generate language (e.g. 1957: 47). The idea of selecting implies that there either would exist competing grammars in the nature or that the selection is made from among all the grammars that have been constructed (to note that no such grammar has ever been constructed and nobody has even claimed to have done so).

Next Chomsky equates 'grammar' with 'a theory of language,' further the 'theory of language' is "the criteria for selecting the correct grammar." We see how these ideas also represent one of Chomsky's many circular definitions: the 'theory of language' is first said to be the same as 'grammar,' but then anyway 'the theory' selects the 'grammar,' that is, it selects itself (in this carousel of concepts a 'theory' at one point is even claimed to be the same as a 'topic'). In another striking example of such nonsense Chomsky says that 'language generates the expressions of language.' Further the reader should note that in this same vein the above mentioned 'selection of grammars' is not a task carried out by the linguist or any other human agent but by no one less than the grammar itself (Chomsky does not say that the selection is done by *grandma* but *grammar*). At times 'grammar' is even said to be the same as the very concept 'language.' In brief, for Chomsky grammar is some sort of an animated thing that produces language or "will be able to do the job of producing" language (1957: 13)<sup>5</sup>.

We shall below see how Chomsky from the early 1980's started gradually to publicly refute his own theories of the rules of generative

grammar (below discussion of *Chomsky's capitulation*). Doing so he put all his remaining bets on the speculation in regards to the inherent features and functioning of the “language faculty/organ.” In this connection he dropped all the ideas referring to language-particular rules (what I have referred to as the *rule-system model*) and instead remodeled his “universal grammar” to represent some hypothetical pseudo-biological traits of the “language faculty.”

From the perspective of his pseudo-biology the grammar, the theory, the device and other such ideas all contribute to the functioning of the “language-faculty.” In this sense a grammar, in Chomsky’s conception, represents some kind of inherent features of this mythological entity the way we might think of biochemical reactions, although he keeps to more mechanical analogies in describing its workings. In this dimension the “theory of language” is said to be a “hypothesis about the innate *language-forming capacity* of humans” (1965: 30).

Considering the multitude of confusing considerations about the nature of grammar that Chomsky has advanced, I would conclude that the reader is best to think of his ‘grammar’ as an aesthetic conception with no meaning beyond the context of the peculiar form of art that generative *linguistics* represents. –*“It is not enough that men have ideas, determined ideas, for which they make these signs stand; but they must also take care to apply their words as near as may be to such ideas as common use has annexed them to. For words, especially of languages already framed, being no man's private possession, but the common measure of commerce and communication, it is not for any one at pleasure to change the stamp they are current in, nor alter the ideas they are affixed to; or at least, when there is a necessity to do so, he is bound to give notice of it. Men's intentions in speaking are, or at least should be, to be understood; which cannot be without frequent explanations, demands, and other the like incommodious interruptions, where men do not follow common use”* (Locke 1694: Vol. II: 79).

Indeed, Chomsky’s grammar, if not his entire art, is a case in point for showing what Locke meant by saying: *“Words fail and lay not open one man's ideas to another's view: 1. When men have names in their mouths without any determinate ideas in their minds whereof they are the signs: or, 2. When they apply the common received names of any language to ideas, to which the common use of that language does not apply them: or 3. When they apply them very unsteadily, making them*

*stand now for one, and by and by for another idea*" (Locke 1694 Vol. II: 71).

Chomsky's refusal to accept *grammar* as a description of observed language patterns in favor of attempting to find an inherent grammar of sorts, and the fallacious, contradictory and confusing theories, and the ultimate nonsense that this endeavor has yielded comes as a direct consequence of Chomsky's speculating in breach of the most fundamental principle of science (the real scientific method), the idea that: "We must do away with all explanation, and description alone must take its place" as Wittgenstein said in his *Philosophical Investigations* (art. 109). In this connection the reader may compare Chomsky's theoretical foundations with the ideas Wittgenstein expressed as if to alert against the very ideas of Chomsky and his likes:

"When we believe that we must find that order, must find the ideal, in our actual language, we become dissatisfied with what are ordinary called 'propositions', 'words', 'signs'. / The proposition and the word that logic deals with are supposed to be something pure and clear-cut. And we rack our brains over the nature of the *real* sign. – It is perhaps the *idea* of the sign? Or the idea at the present moment? (*Philosophical Investigations*, art. 105).

"Here it is difficult as it were to keep our heads up, - to see that we must stick to the subjects of our every-day thinking, and not go astray and imagine that we have to describe extreme subtleties, which in turn we are after all quite unable to describe with the means at our disposal. We feel as if we had to repair a torn spider's web with our fingers." (*Philosophical Investigations*, art. 106)

## Chomsky's Capitulation

The Chomskyan apologist Neil Smith said in the foreword to *New Horizons in the Study of Language and Mind*: "The measure of success for linguistics, as for any empirical discipline, should be the explanatory insight and power of its theories" (2007a: vii). Smith meant this as a laudatory statement in regards to the work of Chomsky. But most linguists know that there has been no success. These theories have not offered a bit of explanatory insight to anything else than mass psychology, that is, they have illustrated how seemingly balanced and highly educated people can be converted to embrace the most fantastic ideas.

Among the generative linguists Chomsky is the first one to admit that the rule-system model failed, and, in fact, he has publicly announced so telling that he no longer believes in the theory of generative linguistics, as shall explained below.

In an attempt to comprehend Chomsky's work we have to keep in mind, as I already pointed out above, that there are, as it were, two Chomskys: the Early Chomsky and the Late Chomsky<sup>6</sup>.

Most people know Chomsky as the Early Chomsky who developed and propagated the rule-system model, the theory of generative grammar and its "universal grammar." With these theories Chomsky purported to show how language consisted of inherent rules that were to one degree language specific and to another degree universal for all languages. In accordance with these theories grammars were, as it was noted above, among other *things*, "devices" that generate language-specific rules which would produce a perfect language. But few have recognized that there is this Late Chomsky as well; and that the work of the Late Chomsky - most curiously - amounts to a total refutation of the main theories of the Early Chomsky.

It is a total refutation but connected with a cover up of the old; it is an attempt to present the refutation as an adjustment of a few "minor considerations," which adjustments are portrayed as something that merely bring the theory to new heights of sublimation. Notwithstanding the attempted cover-up there has occurred a complete break with the old. Chomsky himself admits that his "Principles and Parameters approach" rejected the rule-system model, in Chomsky's words: "rejected the concept of rule and grammatical construction *entirely*" (2007a: 8; italics supplied to stress the total rejection). We have to remember that the theories that brought Chomsky to fame as presented in the *Syntactic Structures* (1957) and *Aspects of the Theory of Syntax* (1965) were entirely about the now rejected rule-system model.<sup>7</sup> In those early days, the now rescued and rebranded pseudo-biological speculation of the Late Chomsky played only a minor role.

The so-called "Principles and Parameters approach" refers to the ideas about how Chomsky first formulated the rejection of his early theories in favor of the pseudo-biological speculation. The brake between the Early Chomsky and Late Chomsky can be traced to the late 1970's and early 1980's. In 1979 he gave a series of lectures in Pisa which he subsequently published in form of his *Lectures in Government and Binding. The Pisa Lectures* (Chomsky 1993, originally of 1981);

this after reworking the material, including, in the course of his lectures at MIT in 1979 – 80 (1993: Preface). This book can be seen as his last attempt at the rule-system model. – But by the time of the publication he had already grown increasingly dissatisfied with the rule-system model. This is evidenced by the fact that already before finally publishing that material from the Pisa lectures he had published the first main work outlining his future program of pseudo-biological speculation, *Rules and Representations* (2005), which was originally published in 1980. His mental anguish of the time and how difficult it was for Chomsky to cut the umbilical cord with the rule-system model is illustrated by the fact that the pseudo-biology of *Rules and Representations* in turn was based on a lecture series that preceded those of the Pisa lectures, the Woodbridge Lectures of 1978. Once he finally published the Pisa lectures in book form, he added, to mark his change of mind, in the Preface that they were highly “theory internal” and offered “scant attention to alternative points of view” (Chomsky 1993). There he also pointed out that *Rules and Representations* already contained “many criticisms of the general point of view” adopted in those Pisa lectures.

As he reformulated the ideas he gradually rebranded the theories during the first part of the 1980's. The next major pseudo-biological milestone was his *Knowledge of Language: Its nature, origin and use* (1986). In *The Minimalist Program* of 1995 the Late Chomsky cuts all the remaining ties with the Early Chomsky and concedes that there are “no language-particular rules and no grammatical constructions of the traditional sort within or across languages” (1995: 6). The book effectively amounts to an admission that the theories he had professed since the beginning of his career were all but wrong. But as I said, Chomsky gives it one more try. While being aware of the groundlessness of all his previous ideas he tries to repackage them with a new twist in what he calls the “minimalist program,” which is supposed to show a continuance between the old and the new ideas (Chomsky tells that “The Minimalist Program shares several underlying factual assumptions with its predecessors back to the early 1950s, though these have taken somewhat different forms as inquiry has proceeded”; from the introduction to *Minimalist Program*, p. 2).

We should, however, not take the division into Early and Late Chomsky to represent a rigid and steady process of maturation (on the analogy of how Chomsky conceives that language matures within us). Frequent revisions of the theory in one or another direction have to be seen as hallmark features of Chomsky's work. It is merely because of

the overwhelming evidence against the rule-system model that Chomsky was forced to abandon it (regarding the failure to discover any such rules see e.g. Lieberman 2002: 12). Botha notes that “Chomsky can be said to have been continuously revising these assumptions, thus making his linguistics a relatively volatile body of ideas” wherefore “Chomsky’s linguistics, represents the set of assumptions about linguistic structure held by himself at any particular moment” (1991: 6). Therefore this change of mind cannot be seen as a sudden awakening from the early alchemical dreams (in exchange for the new speculation), rather it must be seen as a gradual process of diluting the early metaphysics in pace with how empirical reality caught up with the generative linguists (in an attempt to build the new metaphysics which he thought would better suit the times). The burden of proof had by the *cognitive coup d’etat* been placed on the empiricists, but little by little the proof cumulated – not least as a result of the advances in real neuroscience and real computer hardware and software technologies - and finally the positions of the cognitive revolutionaries became insupportable leading to a chain of small retreats here and there at the frontlines, until they finally had to abandon the campaign of conquering linguistics with their foolish arguments. To salvage what could be salvaged they retreated to the minimalist bastion where they still under the conditions of poverty of stimulus try to keep up a brave face.

Having given up on the theories that brought him to prominence he still wanted to retain the achieved. Now therefore the rules were to receive a new incarnation in form of his pseudo-biological speculations of the operations of the imaginary “language faculty.” This was how ultimately the “universal grammar” in the “minimalist program” was left with the role as a compromise between reality and nothing and was assigned to stand for “the theory of the initial state of the language faculty” (1995: 14). The essence of the new theory was thus the pretense that all what he had earlier said about rules and generative grammar should now instead be seen as biological operations of this “language faculty.” In this version he embraces the idea of separating grammar and the “language faculty” and wants to rescue his conception of the “language faculty” by cutting all bridges to his various grammars and instead argues that all the considerations “of the traditional sort” that he had put forward in support of the grammars now applied in their new incarnation to this “language faculty.” In essence this whole “minimalist pro-

gram” means that Chomsky had abandoned even what seemed to be a linguistic study in favor of his pseudo-biological speculations.

The issue about learning vs. growth has very much to do with the transition from Early to Late Chomsky. This, because it is natural to think about *learning rules*, whereas the business of parameter fixing tallies better with the idea of growth/maturation of a “language organ.” Corresponding to the learning-growth dichotomy, Chomsky therefore introduced the distinction between *rule acquisition* vs. *parameter fixing*, which is why this version of the speculation was called the ‘principles and parameters approach’ (Botha 1991: 40, Botha refers to Chomsky 1986: 151). Chomsky declared that “language acquisition” is a about “parameter fixing”: “What we learn are the values of the parameters and the elements of the periphery (along with the lexicon, to which similar considerations apply)” (Botha refers to Chomsky 1986: 150-1). According to the earlier position “language acquisition” was a “problem of acquiring rules” (Botha 1991: 40). The attentive reader will already note that this ‘parameter fixing’ is nothing but an euphemism for ‘learning,’ the same idea clad in Chomskyan pseudo-biological vocabulary. These ideas are, of course, connected with Chomsky’s general belief in the innateness of ideas and can be traced back already to his *Aspects of the Theory of Syntax*, where Chomsky speaks about “innate ideas and principles” that determine “the form of acquired knowledge” (1965: 48), which “is fixed in advance as a disposition of the mind” (1965: 51). To note, Chomsky has said in the same book that “knowledge of language involves the implicit ability to understand indefinitely many sentences” (1965: 15), but, then, if this ‘knowledge’ is already ‘fixed in advance in the mind,’ then why do not all English speakers understand all the sentences by which he has presented his theories in his books! Most English speakers do not understand any of them. Chomsky’s ideas on innateness will be discussed further below in this chapter and chapter *Processes and Concepts*.

I predict that future historians researching the intellectual landscape of the 20<sup>th</sup> century will group the theories of Chomsky together with the phrenological theories of Gall, which among other ideas included dubious inferences to be made between bumps in people's skulls and their personalities. - We can think of Chomsky’s theories as an *abstract* version of Gall’s phrenology. Chomsky does not study the actual bumps in the skull, but the bumps that his understanding has got by running his head against the limits of language, as Wittgenstein put it. - In view of the ridiculousness of these pseudo-biological theories, I doubt that anybody

would ever have paid much attention to this new brand of speculation had not Chomsky prior to their active propagation received the status of a brand authority of linguistics. The way Chomsky has been able to withdraw from and reformulate his early ideas shows what force there is in brand recognition.

## Grammar and Syntax

*“If men will not be at the pains to declare the meaning of their words, and definitions of their terms are not to be had, yet this is the least that can be expected, that, in all discourses wherein one man pretends to instruct or convince another, he should use the same word constantly in the same sense. If this were done, (which nobody can refuse without great disingenuity,) many of the books extant might be spared; many of the controversies in dispute would be at an end; several of those great volumes, swollen with ambiguous words, now used in one sense, and by and by in another, would shrink into a very narrow compass; and many of the philosophers (to mention no other) as well as poets works, might be contained in a nutshell”* (Locke 1694 Vol. II: 84)

We have already seen that the peculiar way in which Chomsky employs the concept ‘grammar’ amounts to one of the most striking features of this genre of linguistic art. I have in chapter *Speech and Language* outlined my views on what *grammar* should correctly be taken to mean. I will here repeat a passage which summarizes the discussion: Most genuinely *grammar* represents a *description* of how people have been observed to speak, but unfortunately this is not the way the idea of grammar is generally understood. Those who labor under the idea that grammar is a description of *observed uniformities* strive to record and systemize their observations of language practices so as to give a description of the language patterns people observe in speaking and writing (i.e. in their verbal behavior). But instead of being understood as a *description*, grammar is more often taken to be a *prescription*, an authoritative statement of what correct language use “is”; of how people must speak in order to speak “correctly.” But even characterizing the understanding of the idea of grammar as a *prescription* is an understatement, for, at the end of the day, most people take a correct grammar to be a true and objective statement of how things are, and how they must be and how they cannot be otherwise. These people think that

'grammar' represents an inherent property of "language" and is thus subject for discovery (or *invention*, as Chomsky sometimes argues). Usually these people coincide in thinking that they themselves have precisely discovered the true essence of grammar and language and they are therefore fond of censuring the language practices of other people. They are especially ardent in protecting the "purity of language," which for them is represented by the standards that happened to be fashionable just when they went to school. For the breach of their purity standards we all risk the awful punishment of public shame for being taken to speak or write wrongly.

Apart from the disputes between the descriptive and prescriptive camps, there had been no major disagreements in regards to the conception of grammar until Chomsky invented his peculiar art of grammar and syntax. We, however, have to note that Chomsky's art naturally represents a continuation of the fallacy to regard grammar as a prescription. This because the idea that a grammar would represent a prescription of the proper usage is connected with the underlying (mostly unconscious) thingly fallacy according to which the perceptions humans form of social phenomena are conceived of as if they were material entities existing in their own right (the thingly fallacy). This leads to the ideas that the "principles" and "rules" are some kind of inherent features of these imaginary things; the "rules" and "principles" (which are conceived on the analogy to animate organisms) would then define the form and the role of a word in a sentence (its function and relation to other words; word inflections; the patterns of syntax; etc.) on the model of physical, chemical and organic processes. What had been an underlying fallacious idea became in Chomsky's mind the explicit paradigm. Bewitched with those ideas, Chomsky embraced the idea that language represented a thingly object of nature (2007a: 76) of which grammar was a feature on the analogy on how we may think of chemical properties being features of organic material. He then modeled the role of the linguist on the analogy to a biologist or chemist whose task was to find these inherent natural properties of language and grammar.

For Chomsky real descriptive grammars (or "pedagogical grammars") lack any scientific value beyond serving as pedagogic aids (Botha 1991: 139, Botha refers to Chomsky 1986: 6). Far from belittling this function as Chomsky does, I need to note that I largely agree that this is what we need descriptive grammars for. In any case there can be no other grammars apart of these descriptive ones; no matter how unhappy Chomsky and his colleagues are with this fact of life, it cannot be

changed. But Chomsky was utterly unable to reconcile with this fact of life, he needed a grammar for linguistics to make it as sexy a science as any. He needed a concept of grammar that would accommodate all kinds of fancy academic speculations, opportunities that the enormously dull pedagogical grammars could not provide. A ‘pedagogical grammar,’ according to Chomsky, “does not examine the question of how the reader of the grammar uses [linguistic] information to attain knowledge that is used to form and interpret new expressions, or the question of the nature and elements of this knowledge” (Botha 1991: 139). This means that most incriminatingly such a ‘pedagogical grammar’ does not, according to Chomsky, attempt to provide an answer to the question ‘What constitutes knowledge of the specific language with which it is concerned?’ – The idea that a *grammar* would possibly provide answers to these neurobiological and psychological phenomena is outright absurd. Inanimate abstractions such as ‘a grammar’ can undertake such tasks only in fairy tales, in real life these issues are explained by people, neuroscientists, psychologists, or perhaps even grammarians, but not by grammars. – If we allow for Chomsky having meant here (and in all the other places where he expresses similar ideas) that instead of ‘grammars’ it is ‘generative grammarians’ that undertake these tasks and provide us with these answers, then that is not much better anyway. The study of the traces of verbal behavior, which ‘language’ ultimately represents, cannot possibly tell anything about the cognitive phenomena which a person experiences as a result of mental processing of verbal stimuli and how he expresses his feelings as a result of those processes.

As we have seen Chomsky entertains a very odd and idiosyncratic conception of grammar. Not only do his *a priori* methodological assumptions rule out all but the most metaphysical scientific theories, he is, furthermore, given to strange pronouncements such as the assertion that his goal is “the construction of a grammar that can be viewed as a device of some sort for producing the sentences of the language under analysis (1957: 11).” – I gave a quote because I have no idea what this means, but it is my reluctant task to try to interpret this against the body of Chomsky’s work. – First, we shall note that in constructing this sentence there must have occurred a system failure in Chomsky’s language device causing the surface structure and deep structures transmutation processes to converge (in pre-Chomskyan language we would have said: *this must have been a typing error*). For as the clauses are linked with ‘that’ Chomsky is essentially writing that ‘the *construction* of the

grammar' is the 'device' but he must have meant that the *grammar* is the device. But this is by no means clear as we shall see from the multitude of ways in which he treats *grammar* and the adjacent concepts. But, it is certainly bad enough to claim that *grammar* would be a *device*.

Evidently Chomsky does not use 'device' in the neutral meaning of something devised or contrived as a plan, procedure or technique, rather we note that he really has in mind a piece of equipment or a mechanism designed to serve a special purpose or perform a special function. He confirms this by saying, for example: "we can represent this grammar as a machine" (1957: 37).

Next we have to consider the idea that this *device* is said to generate *grammar* – why *grammar* and not *language*? Wouldn't grammar even in such a conception be a feature of the underlying thing, of the "natural object," as Chomsky perceives language to be (2002: 1)? And when language is generated wouldn't grammar anyway be the *description* of that language? I could not even potentially imagine what Chomsky had in mind – until I found this explanation: "When we speak of a grammar as generating a sentence with a certain structural description, we mean simply that the grammar assigns this structural description to the sentence" (1965: 9). So, he has thought of this dilemma. It follows that grammar anyway is nothing independent of language but rather the "structural description" of sentences, i.e. language in itself. Botha confirms that Chomsky most often lump together 'language' and 'grammar' (1991: 26). - Further contemplating on that odd pronouncement we note that when Chomsky says that the '*grammar* assigns' we have the pretense that grammar is a human-like agent or alternatively a kind of a recipe for making language; the latter should go a long way in explaining the enthusiastic reception his theories received in the early days of the computer industry, for it was just this "recipe" that the computer industry longed for in order to be able to make machines with "artificial intelligence."

We should note that we are here not dealing with just any device, but a very special one, one that never fails: it will never generate any "ungrammatical" sentences, or as Chomsky explains: "The grammar of L [a language] will thus be a device that generates all of the grammatical sequences of L and none of the ungrammatical ones" (1957: 13 - see also discussion of Chomsky's language device in Joseph, Love and Taylor, 2009: 13).

This means that somewhere deep down in the merriest chambers of Chomsky's *organ of imagination* he has concocted the idea of a fantasy device which would produce sentences. The idea is absurd. Grammar is a description of observed speech patterns which in abstraction are called language, and the *device* that produces speech is called a human being. It would yet be somehow logical and sane (considering the generally accepted misconceptions of language) if Chomsky had claimed that he had set out to *discover* a grammar, or even proclaimed success in such a discovery. Now, a physical device can, of course, potentially produce something, if human beings have set up the device so to work. A computer is a device that can be made to emit sounds similar to human speech or produce written texts, but still the computer would not be seen as a grammar producing device, because the grammar is what the human specialist has programmed the computer to do. But this does not represent any minor oversight from Chomsky's side, on the contrary, he explicitly rejects the idea that a grammar could be discovered telling that "the theory of linguistic structure must be distinguished clearly from a manual of helpful procedures for the discovery of grammars" (1957: 106).

The idea of perceiving grammar as the device that generates grammar by rules and principles is what has given name to this entire form of art as "generative linguistics" and must be seen as the most fundamental claim of the sect. This is what all the noise was about. And this is the very idea that Chomsky was above shown to have refuted when the Early Chomsky capitulated in the aftermath of the battles in Pisa. After Pisa the idea that something is generated was converted to signify the activities of the mythological "language organ." Now, said Chomsky, "the generative system is something real, as real as the liver" adding that "the utterances generated are like epiphenomenon" (2002: 110). That he describes the utterances as epiphenomena is in itself very telling of Chomsky's error, considering that an 'epiphenomenon' is generally taken to signify 'a secondary mental phenomenon that is caused by and accompanies a physical phenomenon but has no causal influence itself' (Merriam-Webster). The postulated lack of any casual contact must be what leads Chomsky to further claim that "language is an extra-human object" (2002: 62).

As if the idea of a device that produces grammar wasn't strange enough, Chomsky next claims that actually it is a "theory of language" that produces grammar by equating 'a theory of language' with 'gram-

mar.' He says, for example, that "a grammar can be regarded as a theory of language" (1965: 24); and "A grammar of language L is essentially a theory of L" (1957: 49). We remember from above how a grammar was supposed to be "a device of some sort" that "produces sentences," but now it turns out that this "device" is his "theory" – and the "theory" is the "device."

But with all the above Chomsky has still not exhausted all the possible ways to misrepresent these ideas. Whereas we just above heard that the grammar is the theory, he has earlier given another twist to the issue by defining a *theory of language* as "the criteria for selecting the correct grammar" ("Our problem is to develop and clarify the criteria for selecting the correct grammar for each language, that is, the correct theory of this language," 1957: 47). And now we also have a purported result, for Chomsky tells that the "linguistic theory" actually "succeeds in selecting a descriptively adequate grammar" (1965: 25). This proposition is the more extraordinary when we keep in mind that 'the theory of language' and 'grammar' had already been identified as the same, so now the linguistic theory/grammar *selects* itself, or equally *the grammar selects the grammar*. – Just in case, I need here to point out that properly by a *theory* we mean the ideas by which we explain things and phenomena, their origins, motions and interactions. The theory as such cannot do anything; it is only an explanation of observed phenomena.

At one point Chomsky points out that it is, however, not correct to refer to "generative grammar" as "a theory," rather it should be seen as "a topic"; Chomsky tells that it is simply a 'topic to study' (Botha 1991: 9, Botha refers to Chomsky 1986: 4-5; this issue was discussed above in reference to how Chomsky compares his art with the science of chemistry). In this version we therefore arrive to the extraordinary conclusion that it is this 'topic that linguists study' that 'selects the grammar,' but still this selection is not done by the linguists themselves. – Eventually Chomsky got so entangled in his conceptual definitions that he told that it is "language" that "generates the expressions of language" (2007a: 5). Forget grammars, theories, and topics being the same, now the very language that they were supposed to generate generates itself.

Even if we ignore the nonsensicality of the proposition as such and assume a human agent for selection, we are left with the idea that grammars can and should be *selected*. I remind that in reality a grammar is a description of how people speak. – You cannot *select* the way people speak, nor can one speak of selecting a grammar in any other of the ways Chomsky might have in mind, but instead a jury could select

the best of available descriptions. But Chomsky has never undertaken an evaluation of available grammars depicting the way people speak, nor has he ever made such a description. This paradox is explained by the fact that once again Chomsky has assigned a new meaning to a word, for him 'to select' seems not to mean what we would take it to mean, but rather must for him signify something like 'to produce' or 'to construct.' This is evident from his standard ideas about investigating "the possibility of constructing simple and revealing grammars of this form for natural languages" (1957: 11). This consideration brings us back to the above suggestion that '*the construction* of the grammar is the device,' for now with the postulation of 'a theory of language' as 'the criteria for selecting the correct grammar' we are almost there.

After his capitulation the grammar, the theory, the device, and other such merry ideas are all assigned roles in contributing to the functioning of the "language organ/faculty." Thus Chomsky says, for example, that "the theory of L (its grammar) must characterize the state attained by the language faculty" (1995: 3). But as always in an effort to guard against being caught of having said something too categorical he adds here his standard dilution "or at least in some of its aspects," but does not explain those aspects any further.<sup>8</sup> But as I have said the division into the Early and Late Chomsky paradigms cannot be seen to represent an abrupt shift from one line of speculation to another, rather we have to recognize that the seeds of the later pseudo-biology were already present in his early work. Thus the "theory of language" was already in *Aspects of the Theory of Syntax* told to be a "hypothesis about the innate *language-forming capacity* of humans" (1965: 30). In this connection 'grammar' was defined as the "innate schema" which "gradually becomes more explicit and differentiated as the child learns the language" (1965: 27).

The following sentences represent examples of the kind of simplistic sentences that form the material from which the theory/grammar/device /language/topic (but no human agent) is supposedly able to "select the grammars":

"John played tennis" and "my friend likes music" (1957: 86).

"I found the boy" and "the boy is studying in the library" (1957:88).

The advantage in using such kind of sentences instead of studying actual language practices is explained by Chomsky like this: "We can greatly simplify the description of English and gain new and important insight into its formal structure if we limit the direct description in terms of phrase structure to a kernel of basic sentences (simple, declarative, active, with no complex verb or noun phrases)" (1957: 106). It would then be so much easier to derive by repeated transformation "all other sentences from" these kernel sentences.

This also explains why 'grammar' for Chomsky does not represent a description of how people have been observed to speak but rather amounts to a metaphysical exercise in inventing meaningless structural qualities that languages are said to contain. In this vein Chomsky speaks about the merits of a grammar in anthropomorphic terms like this: "the grammar is justified to the extent that it correctly describes its object, namely the linguistic intuition – the tacit competence – of the native speaker" (1965: 27). - This is pure nonsense. Grammar is a description of how people have been observed to speak and does not tell anything about any underlying intuition or competence of a particular person. Intelligently we could take a real (pre-Chomskyan) descriptive grammar and compare a person's verbal behavior towards the general standards expressed by the grammar, this way we could pass judgment on the individual's competence.

As if the ideas of the linguistic intuition and competence were not nonsensical enough, Chomsky further claims that there is a more profound level of justification in accordance with which "a grammar is justified to the extent that it is a principled descriptively adequate system, in that the linguistic theory with which it is associated selects this grammar over others" (1965: 27). This level, we are told, represents a "more rarely attainable level" (which should serve to explain why only Chomsky and the faithful have been able to see the light). Chomsky also tells that a "fully adequate grammar must assign to each of an infinite range of sentences a structural description indicating how this sentence is understood by the ideal speaker-hearer" (1965: 4). We shall meet the "ideal speaker-hearer" below, where his true identity will be revealed as well. But in this connection we must see how the ideal speaker-hearer introduces us yet to another intriguing statement about how Chomsky defines grammar, this time the very "generative grammar." Chomsky says: "A grammar of a language purports to be a description of the ideal speaker-hearer's intrinsic competence. If the

grammar is furthermore, perfectly explicit – in other words, if it does not rely on the intelligence of the understanding *reader* but rather provides an explicit analysis of his contribution – we may (somewhat redundantly) call it a *generative grammar*” (1965: 4). In analyzing this proposition we have to bear in mind the various ideas of what a grammar is supposed to be that were already discussed above, all the definitions, counter-definitions, and circular definitions. Here we are faced with yet another one, but not just *any* other one, but the crown jewel of his speculation. But this one is even more difficult to decipher than the previous ones, for the arrangement of the words in this statement simply does not make sense. He has here joined ideas that clearly by the standards of any known logic do not belong together. How can one juxtapose the idea ‘if a grammar does not rely on the intelligence of a reader’ with ‘a grammar providing an explicit analysis of his contribution’? He is saying that never mind what the *reader* experiences and what kind of processes occurs in him when he *reads*, while the important issue instead is the analysis of the reader’s “contribution.” – I want to point out here that Chomsky, in fact, speaks here about a ‘reader,’ which makes the proposition even more absurd, for now the grammar, which is produced by the writer, is supposed to provide an explicit analysis of the reader’s competence! – And this analysis is not made by any human agent but is performed by no one less than the ‘grammar’! Here when there is a rare occasion of Chomsky having involved a human being, the *reader*, in the theory, he uses the opportunity to explicitly denounce the role of this human and confirm the preeminence of the anthropomorphic grammar. Talk about dualism! A human being can by the standards of some published grammar judge on the intelligence and contribution of another person, but ‘grammar,’ which is just a word we use, certainly cannot. This is not a mere semantic point, for when we spell out that the acting subject is a human being, then we have pointed out that Chomsky failed to assign a meaning to his proposition, and by this we demolish the fundamentals of the entire theory. If we wanted to assign any sense to the proposition, then we would need to transform the sentence so that it would contain a human agent. This could yield the proposition: ‘If the *grammarians* [instead of *grammar*] is furthermore, perfectly *objective* [instead of *explicit*] – in other words, if *he* [instead of *it*] does not rely on the intelligence of the understanding reader but rather provides an explicit analysis of his contribution...’ But with the human agent in place we cannot conclude the statement by saying, as Chomsky

did, that this would then be 'called a *generative grammar*.' We can simply not speak of a 'generative grammar', the whole concept is nonsense. Grammar is not a piece of equipment, a device that could possibly generate language or anything else.

The reader should note that Chomsky is yet to follow through with his method and actually "select a grammar" for neither Chomsky nor his eager colleagues from Hawaii to Pisa have yet even so much as put forward the sample grammars to choose from. Chomsky has never presented a grammar that would have been "selected" according to his method, nor has he even claimed to have detected a range of possible grammars from which to "select." We have not even been presented with any "grammars" or grammatical rules or descriptions of any kind. All we have to go by is the alchemical theoretical framework for this "selection" and the justifications for the framework.

Chomsky has said that "linguists must be concerned with the problem of determining the fundamental underlying properties of successful grammars" (1957: 11). Here another intriguing notion is introduced: the idea that grammars can be successful or not. In the old days, when scholars still had their feet on the ground, it was the success of the grammarian that was measured, his success in describing the language patterns. A grammar cannot be successful anymore than it can be unsuccessful, only people speaking or writing can be said to be more or less successful in expressing themselves in a way that corresponds to what somebody could consider to be a good grammatical standard, and most importantly, a speaker may be more or less successful in expressing himself so that his interlocutors grasp his ideas. – Similarly as above, Chomsky at one point says "many different grammars may handle the clear cases properly" (1957: 14). This is also a good example of the anthropomorphist fallacy with which Chomsky's thinking is permeated. For him words, sentences, and even grammars, represent organically living entities that are capable of a number of feats, like "handling cases" as it was told above. In the same anthropomorphic vein Chomsky tells that "we shall be prepared to let the grammar itself decide," this in the case "when the grammar is set up in the simplest way so that it includes the clear sentences and excludes the clear nonsentences" (1957: 14). We see how Chomsky purports to have introduced us to a - quite literally - living grammar, who behaves like an intelligent being, who *decides*! It is as if Chomsky on the analogy to the methods of classical conditioning wants to teach his fantasy grammar to do a proper job. - Now, I predict that somebody would say that it is unfair to

attack the theory with such verbal analyses; he might defend Chomsky by telling that this is just the way we speak and that we should not let that distract from the merits of the theory. But the problem is that this treatment of words and sentences on the analogy with the behavior of humans and cognitive animals and organic reactions is all there is to Chomsky's theories. - In this behaviorist vein of conditioning grammars, Chomsky imposes other requirements on them as well, for example, he speaks about "having a grammar meeting a certain abstract condition" (1965: 29) and he commands the grammar like this: "One requirement that a grammar must certainly meet is that it be finite" (1957: 18). This while in reality grammar represents a description of language, wherefore the only requirements that can intelligently be postulated in this regards is that the grammarian or linguist diligently, professionally and honestly works on his task to describe the language patterns observed in people's verbal behavior; thus a grammarian is like the mathematician: he records the possible.

The claim that a grammar must *be finite* is exorbitant and preposterous as such, for language practices – all the possible ways of speaking – cannot be finite, and a description, which is, in fact, an expression of an interpretation, is by its very nature open-ended, a new interpretation can always replace a former one – the more so as the social practices of language are in constant flux. The requirement that a grammar be finite comes as a direct consequence of the game-like character of Chomsky's theories. It is as if he were discussing with his buddies what kind of grammar he would make if he had the power of a god.

There are yet other interesting aspects to this linguistic theory and its relation to grammar that additionally confuse these already peculiar statements. We note that Chomsky tells us that "each grammar is related to the corpus of sentences in the language it describes in a way fixed in advance for all grammars by a given linguistic theory" (1957: 14). This means, that the 'theory of language' which was supposed to be the 'method for selecting a grammar' – which from the other hand was the 'grammar' itself (alias a 'device,' alias 'a topic') - has already made the choice by 'fixing all in advance.' (From this we also see how the seeds of the pseudo-biological speculation in the veins of the "principles and parameters approach" was present already in his 1957 *Syntactic Structures*).

## The Universal Grammar

These peculiar theoretical conceptions in regards to grammar are all part and parcel of the “generative grammar,” and culminate in what must be regarded as the philosopher’s stone of Chomsky: his “universal grammar.”

Chomsky tells that the “universal grammar” – or “UG” as it is called by the faithful - is a supplement to “the grammar of a particular language” and supposedly “accommodates the creative aspect of language use and expresses deep-seated regularities” (1965: 6). This is only natural, Chomsky argues, as these “deep-seated regularities” being universal “are omitted from the grammar itself” (this is supposed to represent a logical conclusion and could certainly by a Chomskyan linguist be expressed in the form of an Aristotelian syllogism). As if all the alternate conceptions of Chomsky’s grammars were not metaphysical enough, he felt a need for this concept with which to anchor his speculation even more firmly in the clouds. This “universal grammar” is supposed to serve the purpose of revealing that what we cannot see or hear – that is, those issues of which Wittgenstein recommended us to keep mum. It clearly follows from Chomsky’s narrative that he insists that while ordinary people cannot perceive these hidden nuances, Chomsky himself can, and supposedly a select group of generative linguists who have absorbed the teachings of Chomsky have also gained insight into these hidden secrets.

The study of “universal grammar” is supposedly an activity that aims at “the discovery that certain features of given languages can be reduced to universal properties of language, and explained in terms of these deeper aspects of linguistic form” (1965: 35). These in turn are supposed to represent “more specific constraints and conditions on the notion of *generative grammar*” (1965: 35). This again ties in with Chomsky’s idea of analyzing the simplistic sentences instead of actual language practices, for he concludes the previous dwellings by saying that by a successful formulation of the constraints and conditions “particular grammars” could “be simplified by eliminating from them descriptive statements that are attributable to the general theory of grammar,” that is, all those issues that possibly bear any relation to reality.

Only the above prescribed method of “universal grammar” would enable “real progress in linguistic theory,” Chomsky rules (1965: 32). The novelty of this idea of his consisted, in his own words, of the revelation that “a theory of language, regarded as a hypothesis about the in-

nate ‘language-forming capacity’ of humans should concern itself with both substantive and formal universals” (p.23, 1965). This much, Chomsky concludes, had not been understood by anybody before him. And, lo and behold, Chomsky pointed out that in the then contemporary linguistics there had been no explicit recognition of “the necessity for supplementing a *particular grammar* of a language by a universal grammar” which now was necessary in order to achieve his ingenious aims (1965: 6). Thus he makes it clear beyond any doubt that the credit of this “discovery” is entirely his. But, for some reason, now fifty years after this “discovery” and the widespread recognition of this presumed necessity, nobody has anyway produced a single bit of such “universal grammar” – and, as it was said above, even the master himself has now denounced the whole idea. (“*Those who maintain innate practical principles tell us not what they are*”; Locke 1694 Vol. I: 32).

In the introduction to *Aspects of the Theory of Syntax*, the book where he launched the idea of “universal grammar”, Chomsky tells that the book “will be concerned with the syntactic component of generative grammar, that is, with the rules that specify the well-formed strings of minimal syntactically functioning units (formatives) and assign structural information of various kind both to these strings and to strings that deviate from well-formedness in certain respects” (1965: 3). We can therefore (in this version) take “universal grammar” to be this “syntactic component” of the “generative grammar.” As always is the case with Chomskyan theories, there are competing definitions of this “universal grammar” as well. We have seen that this “syntactic component” alias “universal grammar” is also the “characterization of the language faculty,” as Chomsky told in his *Knowledge of Language*: “UG (universal grammar) may be regarded as a characterization of the genetically determined language faculty” (quoted in Joseph, Love and Taylor, 2009: 174). - As the attentive reader might already recognize, this reformulation obviously follows the rebranding of the ideas that belonged to the rule-system model so as to suit the pseudo-biology of the Late Chomsky. - The “universal grammar” then explains how language is acquired “by a specification of UG along with an account of the ways in which its principles interact with experience to yield a particular language.” According to these ideas the “universal grammar” is “a theory of the ‘initial state’ of the language faculty, prior to any linguistic experience.” – We should note that this is not how an ill-wishing critic describes this “universal grammar” but it is Chomsky himself who tells

that this grammar is the *genetically determined specification* of the “language faculty” which he purports to be a biological organ. Now, if there is any grammar that can be said to genetically specify organic life, then that is the *genetic code*, but until now there is no evidence that Chomsky and his cognitive revolutionaries would have come as far as postulating this. The genetic code may metamorphically be called the alphabet of life, but what it does is encode the biological processes that lead to and sustain life functions within an organism. But it cannot predict in which circumstances of nature the organism exists (to which influences it is exposed), therefore the genetic code can in no way predict the specific reaction patterns (behavior): it only supplies the organism with a system of reaction patterns. In the case of the human organism, the system of genetic code is so complex that it has endowed the human with a plastic neural system that enables the possibility to express an infinite amount of reactions. Speech represents the highest evolutionary levels of the possible expressions. – But according to Chomsky’s theories - and the theories of all the adherents to the metaphysical ideas of innate cognitive capacities for expressing socially derived ideas - what is genetically “programmed” is not the human vehicle, the body and its parts, and the processes they consist of, but the expressions (reaction patterns) in which the processes result. In other words, the nativists imagine that a human being is, as it were, born with a tape or memory stick implanted in the brain containing all the possible expressions of social practices, or as Chomsky says all “possible human languages” (2007a: 8). Exactly in accordance with these misconceptions Chomsky proclaims that the “language acquisition device” is “an innate component of the human mind” (Joseph, Love and Taylor, 2009: 174).

Above I compared the nativist ideas with a tape and a memory stick, but, in fact, Chomsky’s idea is more complicated than this, for he is essentially depicting the “universal grammar” as being part of a radar or a radio device which has been implanted in the brain of a newborn human and which automatically tunes in to the linguistic wavelengths it detects in the environment in order to endow the child with “language”. Lieberman in *Human Language and Our Reptile Brain* tells how the “language organ” is supposed to instantiate this “universal grammar” as a set of innate ‘principles and parameters’ that *exist* in all human brains.” The “universal grammar” is supposed to specify “the total range of morphologic and syntactic rules that can occur in any given human language” (2002: 8 – 12). Lieberman further renders how he has understood the intricacies of this Chomskyan conception like this: “Children

supposedly do not learn the rules that govern syntax by means of general cognitive processes such as imitation or associative learning. The principles and parameter coded in the hypothetical Universal Grammar are instead triggered to yield the correct grammar of a particular language as a child is exposed to normal discourse.”

## The Meaningless Argument

Considering all the abstractions in which Chomsky has framed his theories it does not come as a surprise that Chomsky concludes that “grammar is autonomous and independent of meaning” (1957: 17). But this statement itself is autonomous of meaning, that is, nonsensical, for it makes no sense to proclaim that grammar, this description of observed language practices, would be independent of meaning, for grammar *per se* is not even supposed to have a meaning but only describe meaningful propositions.

According to the generative linguists Cook and Newson, in *Chomsky’s Universal Grammar*, the ideas behind the “generative grammar” were precisely “intended to demonstrate that sentences could be grammatical but meaningless and hence that syntax is independent of semantics” (Cook, Newson 2007: 2) or as Chomsky himself says: “the notion of grammaticalness cannot be identified with meaningfulness” (1957: 106; 1957: 15). But, as was noted, I argue that the concept of grammar presupposes an analysis of meaningful statements, or statements that are at least purported to be meaningful; precisely the analysis should be made in regards to how successfully a meaning has been expressed. I have argued in this book (chapter *Speech and Language*; see also discussion in section *Bloomfield* in chapter *Notes on the Philosophy of Language*) that we, in fact, should extend the concept of grammar to cover not only a description of observed language practices but also an analysis of the logical construction of propositions of actual verbal behavior. We should not be satisfied with words in a sentence being arranged in accordance with the generally accepted language practices, and instead we should judge them against new criteria of *logical grammaticality*. According to these criteria a proposition should be so structured that the roles and actions assigned to the various words depict a phenomenon so that the depiction possibly accords with all we know of natural reality, the elementary principles of physics and organic life. In this way a logically grammatical sentence – totally at odds

with Chomsky - would have to meet the requirement of being meaningful *per se* (see chapter *Speech and Language*). We would then in a grammatical analysis precisely investigate to what degree a proposition is meaningful; this in addition to the description of the observed regularities and the role the various verbal symbols serve in sentences. Grammar is a description of meaningful statements and serves as a guide for people to express themselves more meaningfully. This as a proper grammar contains a description of the expectations of the linguistic community. Normally people purport to speak meaningfully, although not always succeeding in this endeavor, and with a better grasp of grammar they could improve on their communicational skills. Chomsky himself – and his readers - would greatly profit from Chomsky aligning his statements with the regular grammar of English speakers. It is only in jest – or science - that people may purposely intend to speak without meaning, but it would make no sense to try to analyze such purposely meaningless statements. The latter considerations apply especially to the “nonsentences” that Chomsky has concocted in his imaginary linguistic crucible.

In keeping with the above idea that the ‘the notion of grammaticalness cannot be identified with meaningfulness’ Chomsky explains that ‘the fundamental aim in linguistic analysis is to separate the grammatical sequences from the ungrammatical sequences of a language’ (or as Chomsky formulated the idea in his algebradabra: “the fundamental aim in the linguistic analysis of a language L is to separate the grammatical sequences which are the sentences of L from the ungrammatical sequences which are not sentences of L and to study the structure of the grammatical sequences”; 1957: 13). To note, this is but one among many of the “fundamental aims” that Chomsky has chartered for linguistics. The reader should remember that this aim – like all the other aims - is supposedly to be achieved by studying simplistic sample sentences that Chomsky thrills himself with inventing. But in reality a study of *grammaticalness* can only be conducted by studying actual verbal behavior, describe the observed patterns, and then to analyze how actual speech or writing corresponds to the pattern descriptions. An interesting consequence from such a study would be that when the actual speech would demonstrate frequent breaches (over a sample of individuals) against the described patterns, which are taken to be the grammar, then it would just have to lead to a correction of the descriptions, that is the posited grammar would have to accommodate for that new empirical material. But real people do not have any problem with

this: roughly, we can say that those linguistic constructions that are understood are grammatical and the patterns which are not, those are ungrammatical. The more, the whole idea of *speaking ungrammatically* is a fiction, because nobody can possibly do so, excepting a conscious effort to concoct ungrammatical sentences which are memorized so that the trick can be reproduced.

At one point in his career Chomsky revealed that the ultimate test for grammaticalness is ‘what is acceptable to a native speaker’ (“One way to test the adequacy of a grammar proposed for L is to determine whether or not the sequences that it generates are actually grammatical, i.e. acceptable to a native speaker, etc”; 1957: 13). But unfortunately he never took this route, he never ventured an empirical study of how people actually speak and how people react to sentences that do not meet their standards of actual grammar. Instead he tests the grammaticalness against what is acceptable for the “ideal speaker”, that is, himself.

There can possibly be no theoretical model for achieving the aim of making these judgments *a priori* beyond a proper context (this I will demonstrate by examples further down), but one may, of course, as Chomsky is fond of doing, contrive such simplistic and nonsensical sentences and declare that they are meaningless, but I have not yet grasped what would be the point with doing so. Anybody can concoct such sentences, for example, like this: “Siht ekil, elpmaxe rof.” Now we could exclaim, like Chomsky does, that everybody, even small children, would detect that this is not an “English sentence.” But what would we have achieved with this? Nothing. – We shall below take a look at the opposite phenomena, when Chomsky dresses designedly meaningless statements in a grammatical form. It will be shown that this endeavor is as meaningless as the sentences he has invented.

In this connection we are introduced to yet another of Chomsky’s absurd contradictions according to which “there is no way to avoid the traditional assumption that the speaker-hearer’s linguistic intuition is the ultimate standard that determines the accuracy of any proposed grammar,” but, this would not mean, Chomsky emphasizes, that this tacit knowledge is “immediately available to the user of the language” (1965: 21). Here he at once admits that the ultimate test for deeming what is grammatical occurs in empiric reality, but nevertheless he immediately proceeds with diluting that statement in favor of his own speculation by pointing out that ultimately people would not grasp the

true essence of grammaticality the way a generative linguist would do it – and therefore, again, the final call is with the mythological “ideal speaker-hearer.”

The issue about how to identify grammatical vs. non-grammatical sentences was of great concern for early computational linguistics. As language was not – and still is not – understood to represent social practices, scientists thought – and believed in Chomsky telling so – that language represented a kind of a thingly entity, a system that consisted of a ‘set of sentences.’ But they had nevertheless noticed that the quality of the thing was not faultless and quality problems were frequent leading to non-grammatical sentences being produced. To remedy this they needed Chomsky’s device to fix the problem. I will further down somewhat more in detail deal with the issue of computational linguistics, we shall then see that the science has somewhat advanced since these early days of the euphoria caused by Chomsky’s ideas. This is not because there would have been a paradigm shift in the accepted theories, but rather solely due to the effects of empirical trial and error and the need to anyway deliver functioning computer products. The theories of Chomsky simply did not work in reality, and therefore the computational linguists were forced to apply the empirical method of studying actual speech and design the programs in an attempt to imitate the empirically observed language patterns (and hereby constantly reprogram to cope with the changing patterns).

## The End of Chomsky's Grammar

This exposition of Chomsky’s ubiquitous grammar should serve to illustrate the conceptual mess and the unsustainability of the theories which finally led to Chomsky’s capitulation, as shown above.

We have seen from above how confused and at times absurd were the various pronouncements that Chomsky made vis-à-vis the ideas of a grammar. Knowing that Chomsky finally threw in the towel after the battles at Pisa, we recognize that we were right in being bewildered by all those ideas, for they come as natural consequences of the inherent unsustainability of those theories. When something which is fundamentally wrong and amounts to a physical impossibility is presented as a fact, then inevitably the presentation of it will be very confused and end up in total nonsense. This is, as I have shown, the hallmark of Chomsky’s entire speculations. Chomsky kept drifting back and forth between what had become his Scylla and Charybdis of the one *univer-*

*sal grammar for all language use* (or, *all languages*) and the conception of there being various sorts of *grammar*, and grammars for *various languages*. When trying to avoid the difficulties of pronouncing on particular grammars he was passing too closely to the postulate that there are no grammars at all, which he always must have recognized as risking his entire life work, and therefore he was forced to back off a bit again in favor of the array of grammars. This was how ultimately the “universal grammar” in the “minimalist program” was left with the role as a compromise with reality as “the theory of the initial state of the language faculty” (1995: 14).

Naturally there cannot possibly be any Chomskyan inherent grammar for a particular language, because - among other reasons - there are no particular languages and the concepts *language* and *languages* (*language* as a generic concept and also *languages* as referring to the hypothetically postulated various languages) merely refer to the perceptions we form of verbal behavior in various communities. There can only be grammars produced by grammarians as descriptions of actual language practices.

Were Chomsky to make a more intelligent - and honest - effort he could say that there is a *universal grammar for speech*. And, in essence, this is what his claims in the “minimalist program” amounts to behind all the academic jargon. But this would be so only if we were to accept that the concept ‘grammar’ is reemployed to signify the genetic cognitive abilities of a human being. And obviously I do not accept it, for to employ the concept grammar in that sense would merely amounts to one more instance of abuse of words. We have seen from Chomsky’s prolific work that biological phenomena can in no way be explained by reference to ‘grammar.’ Naturally we can observe in human beings a lot of similarities in cognitive mental processing of interpretations (“competence”) and expressions (“performance”), but the study of the memory traces of past expressions (language) will not tell anything about these cognitive mental processes – as fifty years of Chomsky’s theories should have served to convince even his staunchest admirers.

## The Stimulus-Free and Context-Free Arguments

Chomsky maintains that *language* (i.e., what we should understand as *speech*) is unconnected with any kind of external stimulus, that is, he claims that when a person speaks or writes he does it independently of

his environment, as it were in a vacuum. I refer to this argument as Chomsky's *stimulus-free argument*. This argument breaches against what I have identified as the most fundamental principle to be derived from the findings of modern neurobiology, the principle that all cognition – even all being – and the expressions that reflect cognitive processes are about the organism positioning itself in relation to its environment on any given moment. But, on the contrary, this stimulus-free argument forms one of the cornerstones of Chomsky's theory. I will review a few instances where Chomsky affirms this position so as to give the reader an idea of what he means. Perhaps most prominently he expresses it in his *Cartesian linguistics* of 1966, which in much is a book dedicated to the stimulus-free argument. There he says, for example, that according to the “the Cartesian view” (i.e. Chomsky's interpretation of a hypothetical Cartesian view) “in normal use, human language is free from stimulus control and does not serve a merely communicative function, but is rather an instrument for the free expression of thought and for appropriate response to new situations” (1966: 13; we note how even this statement as such represents a contradiction in terms, for how should we understand “response to new situations” otherwise than representing ‘reactions to new stimuli’?). He tells that he believes in “the fact that human language” is “free from control by identifiable external stimuli” (1966: 11). Further he says: “In summary, one fundamental contribution of what we have been calling ‘Cartesian linguistics’ is the observation that human language, in its normal use [the reader should note this interesting limitation, which represents Chomsky's typical way of diluting his statements – in what other use could language possibly be in than in its *normal use*?], is free from the control of ... external stimuli or internal states and is not restricted to any practical communicative function, in contrast, for example, to the language of animals” (1966: 29).

But Chomsky has managed to give even this issue an additional surreal speculative twist, for he is not satisfied with claiming that speaking (his “language”) is a stimulus-free activity in the sense that normal people would understand it as free of *external* stimuli. Of course, he rejects the idea of external stimuli, as it was shown above, but in addition to this, he also claims that speaking is unaffected by any *internal* stimuli, that is, according to Chomsky language happens as automatic processes of the “language faculty” independent of the rest of the body. Joseph, Love and Taylor have highlighted this extraordinary proposition and tell that Chomsky “confidently and repeatedly voices his claim

to have demonstrated that the contribution of the speaker is quite trivial and elementary” (2009: 116). When we try to interpret this statement in terms of ordinary statements then it yields that Chomsky refuses to acknowledge any (but “trivial and elementary”) effect of internal stimuli, that is, the effects of the cognitive processes of the subject himself on his proper speaking. Now, this explains what Chomsky meant with excluding external stimuli and “internal states.” According to Chomsky the “internal states” of the person do not affect ‘language’ to the extent they are beyond the operations of the “language faculty.”

But Chomsky, here again, has more absurdities in store for us. Never mind that the role of any form of external and internal stimuli is adamantly denied, Chomsky still tells that the human being in his language is guided by some *signals* from the environment. He tells, for example, that “primary linguistic data consist of signals classified as sentences and nonsentences with structural description” (1965: 32); and “certain signals must be accepted as properly formed sentences, while others are classed as nonsentences, as a result of correction of the learner’s attempts on the part of the linguistic community?” (1965: 31). - I admit that I have no way of knowing when Chomsky refers to *external* and when to *internal* signals, and, frankly, I think that neither does he. The above proposition seems to combine both types of signals in one. When he explains the operations of the “language faculty” and its “language acquisition device” he is more clearly speaking about external signals, for the “device” is among other things said to scan the environment in order to detect and process “input signals” (1965: 30). When Chomsky laid his hands on children’s language learning he returns to this argument and tells that environmental input “is not an important factor in acquisition”(Joseph, Love, Taylor 2009: 117).

The stimulus-free argument is, of course, devised as an anti-behaviorism tool, in order to discredit the exactly opposite argument of the behaviorists. This can also be seen from the salvo of anti-behaviorist rhetoric which Chomsky unleashes in this statement: “the speaker of a language knows a great deal that he has not learned and that his normal linguistic behavior cannot possibly be accounted for in terms of ‘stimulus control,’ ‘conditioning,’ ‘generalization and analogy,’ ‘patterns’ and ‘habit structures,’ or ‘dispositions to respond,’ in any reasonably clear sense of these much abused terms” (1966: 73).

The behaviorists were, of course, correct in the idea that behavior is a function of processing external stimuli, but where they went wrong

was with the postulation - in ignorance of the infinite variances of life - that some separate individual stimulus could be possibly detected as causing a specified behavior.

The stimulus-free argument obviously also forms part of all nativist *a priori* speculation, for any theories about a human possessing innate knowledge of cognitive ideas (cognitive feelings) presupposes that these ideas could possibly exist without them being the results of mental processes of interpretation of environmental stimuli. Williams in his *French Discourse Analysis* has correctly identified that Chomsky's stimulus-free argument amounts to nothing more, nothing less than the "denial of the relevance of the social" (2005: 34).

The reader should note how the paradigm of speech and language helps to take stock of the various considerations pertaining to this issue. When we clearly understand that the concrete action corresponds to *speech*, then we can follow the trace further into the biological considerations and account for the fact that speech reflects expressions of processes of interpretation of environmental stimuli. Correspondingly we also see that the fallacy of not grasping that language merely represents an abstraction of observed language practices leads to the misconceived ideas that these perceptual abstractions *exist* in their own right. And when somebody takes an abstraction to be something real, and then proceeds with interpreting the abstraction that has in his mind taken on a concrete form, then it is, of course, very understandable that from this follows the extended fallacy of thinking that the grand abstraction, language, is produced autonomously of stimuli. When one solely restricts his inspection to that of an abstraction, it is obviously impossible to trace the underlying real-life sources from which the abstraction is mentally compiled.

This kind of thinking is, of course, also affected by the detrimental analogy from mathematics. In a certain way we may say that mathematics can be practiced *more or less* as a theoretical context-free activity, and therefore it must have sounded intelligent to somebody that language could also be depicted similarly. But a cardinal misconception lies at the root of such an idea. This is the fallacy of not recognizing that mathematics represents a highly conceptualized system, where all its concepts are defined in relation to a unit and its fractions (Hellevig 2006). This essentially means that there is always a context to mathematics - the context is the unit, which is the object of the study.

Joseph, Love and Taylor trace the origin of Chomsky's *meaningless-argument* (of which the stimulus-free argument and the accompanying

context-free argument must be seen as aspects) directly to the teachings of his original mentor Zellig Harris, who very much modeled his linguistic theories on the analogy of mathematics (more about Harris below under the heading *Chomsky and the Brave New Computer World*). The authors tell that perhaps “the most significant continuity between Harris’s *Methods in Structural Linguistics* (of 1951) and *Chomsky’s Syntactic Structures* (1957) is the exclusion of meaning.” They say that “Zellig Harris’s whole enterprise, in fact, is to show how the phonological and grammatical units of language can be identified without reference to meanings of the utterances in which they may be held to occur” (2009: 125).

The reader should remember that I have shown (as Locke before me) that words do not mean anything but a person speaking or writing means by words. Words are the *means* for illustrating the speaker’s ideas. This signifies that all study of language free of a context (which gives the meaning and accounts for the stimuli) would amount to a study of nonsense – and in fact, if anything, that much is proven by the very work of Chomsky. But there is another point to be added to this as well, this is the fact that there cannot even in theory be a context-free analysis of language. Even the examples of supposedly context-free phrases that the Chomskyans present us with are, in fact, always rooted in a context; in those cases the context of the given scholar trying to prove his point, that is, present what *he means*. Below we will see how even the seemingly nonsensical sentences by which the Chomskyan generative linguists purport to prove their point could be given a new life as meaningful sentences were we to bake them into a proper context. Even what they term as “nonsentences” (i.e. non-grammatical sentences) may well receive a meaning with a proper background definition.

## Meaningless Linguistics

The *meaningless-argument*, the *stimulus-free argument*, and the *context-free argument*, ultimately led to language as such becoming meaningless for Chomsky. For him languages as we experience them in speech and writing are only irrelevant “surface structures” while all that has to be studied, he claims, are the hidden and abstract “deep structures” (i.e. the vapor which draws off from the crystal ball). Keeping with this Chomsky declared that the “ultimate outcome” of his “investi-

gations should be a theory of linguistic structure in which the descriptive devices utilized in particular grammars are *presented and studied abstractly*, with no specific reference to particular languages" (1957: 11). Earlier Chomsky had said that there was no point in trying to establish a relation between language use (i.e. verbal behavior) and meaning. This postulation is, of course, inherently connected with Chomsky's speculations about the "generative" and "universal grammars."

I have proposed to view language as an abstraction, but by that I do not mean that there would not be any underlying phenomena from which these abstractions are derived, on the contrary I mean that these abstractions reflect ideas we derive from social practices. But Chomsky's conception of abstractions in this regards is very different; of course, he does not regard language as an abstraction to begin with, and instead in a total logical somersault for him "language" is a material entity while the study of it is done in abstraction. Instead of doing what he should do, concretely study an abstraction, he abstractly studies something he conceives as a thing!

The worst outcome of these meaningless theories was that by them Chomsky in effect distributed this condition of nonsense to the linguistic science in general. We can say that the whole science became more or less meaningless during the 50 year reign of the Chomskyan revolutionaries and the generations they raised. This is what inevitably will follow from any activity which declares as its fundamental principle to be free from empiricist experience (Chomsky 1966; Chomsky 1967). Totally contrary to the idea that meaning is of no concern to linguistics, we should acknowledge that it is of foremost concern for the science. This insight follows directly from some of the main considerations of my paradigm, namely the idea of *interpretation of feelings*, the separation between *speech and language*, and the realization that not words mean but *people mean* by words. When people speak they are interpreting their feelings the way it has been explained in this book; they *mean* to express their feelings with their utterances. But the problem they encounter is precisely that of getting the interlocutor to correctly interpret the activity of meaning that the speaker displays. It is very seldom that a speaker (or a writer) succeeds in properly conveying his ideas to others. Now, what more important task could there, then, possibly be for a linguistic study than to reveal which are the problems connected with the activity of meaning? What could possibly be more important in linguistics than to find out how a person could better express his feelings and thus assign a clearer meaning to his verbal behavior!

The correct method of linguistic study would thus proceed from premises quite contrary to Chomsky's in all respects. The study of grammar, for example, should be a study of observed regularities, the results of the study serving as pedagogic aids for teaching language practices (the way a coach teaches to play football), that is, teaching how to express one's feelings clearly and so as to command the interest of the interlocutor. Such descriptions of grammar could also serve – as they do – as aids for how to devise computer software for translating and correcting writing and recognizing speech, etc. But this activity cannot be carried out under the assumptions that a linguistic alchemist like Chomsky could by digging through the fantasy structures of language penetrate to its “deep structure” and there detect the hidden rules by which one could “select” the grammars which transmute symbols from one level to another supposedly resulting in the emission of language from the “language-device” of the brain of the speaker.

## The Ideal Speaker-Hearer

I have shown how this perverse logic from the *stimulus-free argument* through the *context-free argument* lead to the *meaningless-argument* and to its extension to signify that the whole enterprise of language, and ultimately linguistics itself became meaningless. But it was difficult even for Chomsky in the long run to adhere to theories which were literally hanging in the air without any context and meaning. He felt the natural human need to assign them a context anyway. This is where enters the “ideal speaker-hearer” who provides the context and thus the meaning for Chomsky. He tells that a “fully adequate grammar must assign to each of an infinite range of sentences a structural description indicating how this sentence is understood by the ideal speaker-hearer” (1965: 4). I note that Chomsky alternatively refers to this concepts as the “ideal speaker-listener” (see e.g. pages 3 and 4 of Chomsky 1965) but I prefer to say “speaker-hearer” for it rhymes better with the Chomskyan prose.

I will now take the opportunity to introduce the readers to some of the mythic powers of the “ideal speaker-hearer.” In Chomsky's words *it* lives “in a completely homogenous speech-community” and “knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge

of the language in actual performance" (1965: 3). What can we say, a really impressive guy. But what does this fantasy hero have to do with science?

Considering Chomsky's fundamental rejection of the correspondence between meaning and language it is marvelous that one of the requirements he imposes on grammars is that they shall indicate how a sentence "is understood by the ideal speaker-hearer." To understand means *to grasp a meaning*, it then follows that this "ideal speaker-hearer" is conceived as a suprahuman being that understands the deep meanings that remain beyond the grasp of us normal people. (The whole idea of "deep structures" serves to indicate that there are hidden secrets that uninitiated people cannot obtain.) We note how according to this idea not only the 'speaker' but even the 'hearer' has to get his cue of how to understand the sentences directly *from the grammar* (although, we remember that Chomsky's very point was, on the contrary, that grammar is meaningless). A speaker may of course understand what he means himself if he remains in a relatively sane and sober conscious state, but the whole point of speaking is that the speaker tries to *convey his meaning* to the hearer, and it is only within a given context and by interpreting the whole act of verbal behavior that the hearer may understand a sentence. It is not the grammar that indicates how a sentence is understood by the hearer, but the cognitive capacities of the hearer and speaker to interpret and to express. There are no inherent mystical properties in sentences and grammar that could possibly do the trick of conveying a meaning, rather the speaker based on his experience of verbal behavior predicts what kind of expressions would hit home with the hearer so as to make himself understood.

But as Chomsky was increasingly confronted with the idea of the "homogenous speech community" and its "ideal speaker-hearer" he at some point deemed it necessary to water down these ideas a bit. He therefore admitted that "even if a homogenous speech community existed, we would not expect its linguistic system to be a 'pure case.' Rather, all sorts of accidents of history would have contaminated the system" (1995: 19). Such accidents, Chomsky explains, would be, for example, those of "the properties of (roughly) Romance versus Germanic origin in the lexicon of English." That is, Chomsky affirms that what we know to correspond to the normal development of language practices are but "accidents of history." Chomsky concludes these deliberations by affirming that the "proper topic of inquiry, then should be a theory of the initial state [of the "language faculty"] that abstracts from such ac-

cidents” (1995: 19). This means that Chomsky claims that this “initial state” is what corresponds to a “particular language” prior to anybody actually speaking it, that is, the position, as he says, in which the “language faculty” of a child was before the child later gained experience of the relevant language practices. (I will below discuss more in detail Chomsky’s conception of how a child “acquires a language”).

This postulation of the “ideal speaker-hearer” forms a central pillar of Chomsky’s art; it is supposed to be the prime concern of his linguistic theory (1965: 3). This is connected with Chomsky’s attempt to convey the idea that he would be engaged in objective studies of concrete linguistic material in the vacuum of a laboratory perceived on the analogy of how real scientists make experiments on chemical and organic material. Furthermore it is, of course, meant to protect his theories against any criticism, for all objections to the theory which are based on empirical investigations will be fended off with the reference to the “ideal speaker-hearer” who would have said so and so and understood an utterance so and so if he indeed would be ideal. But at the end of the analysis we need to look for the real people, real subjects, that stand behind abstractions, and in this case we did not fail to find one, for naturally this all means that the ultimate test for the *ideal* is how the master of this alchemy himself understands these ideas; thus the “ideal speaker-hearer” can be no one less than a certain linguist called Noam Chomsky, for only he is capable of correctly understanding ideally all these sublime theories in precisely the way that the author of the theories wanted them to be understood.

## Competence-Performance Theory

These meaningless arguments are also connected with Chomsky’s ideas about “competence and performance” which we now need to take a look at. Chomsky maintains that according to the competence-performance model we should make a “fundamental distinction between *competence* (the specific speaker-hearer’s knowledge of his language) and *performance* (the actual use of language in concrete situations)” (1965: 4). One would at first sight think that this would correspond to the distinction between understanding speech/writing (interpretation) and producing speech/writing (expressions), but this is not what Chomsky has in mind. In his conception ‘language use’ (performance) seems to follow more or less in line with how we normally understand

it as speaking and writing, however 'knowledge of language' ("competence") is something more metaphysical, it is – as most everything in Chomsky's theories – a purely theoretical category, something that only the "ideal speaker-hearer" hypothetically knows. The Chomskyan authors Cook and Newson explain that 'language knowledge' means "whatever it is that [speakers] have in their minds when they know English or French or any language, or, more precisely, a grammar" (2007: 11). It follows that these authors would think that the "entire language" is in their minds when they "know English," while in reality if somebody contemplates on what 'knowing English' means, then he does not have in his mind any more than the few considerations on the topic that his working memory can process at any given time. But we are intrigued to know what Cook and Newson imply that this "knowledge of English" signifies. They explain that "speakers of English know, among other things, that: "(11) Is Sam the cat that is black?" is a sentence of English, while: "(12) Is Sam is the cat that black?" is not; this, they stress, speakers know "even if they have never met a sentence like (12) before in their lives." – I must admit that this does not make us any wiser about the metaphysics of the "Competence-Performance Theory" and one would rather gather from this that "competence" then would simply mean what we normally refer to as 'understanding' or what I call 'interpreting.' This would yield the normal dichotomy of speaking and understanding, including the potential ability to express. But Cook and Newson have not grasped the fine points of the theory for the grand master himself does not agree, rather Chomsky maintains that only under some ideal conditions would "performance" be a "direct reflection of competence." He tells that in "actual fact, it obviously could not reflect competence" – and therefore vice versa "competence" could not reflect "performance" (1965:4). But this does not throw any more light on the mysteries behind these words. – However, in the *Minimalist Program* Chomsky again gives a normal sounding distinction of these saying that he wants to "distinguish between competence" which he now equates with "knowledge and understanding of language" and "performance" which is said to correspond with "what one does with that knowledge and understanding" (1995: 14). I would think that what one does with that is to listen, interpret, and speak.

My conclusion of this "Competence-Performance Theory" is that Chomsky has introduced it merely in order to cover up the inconsistencies between his theories and the actual observed practices and to give him liberty for more complete speculation. Chomsky's theories there-

fore concentrate on the metaphysical *competence side*, while the actual observed language practices belong to the *performance side*, with is too base a subject for Chomsky to deal with (see, also e.g. Chomsky 1965; 2007a).

The above example with the sentence that allegedly ‘is not a sentence of English’ confirms what I have already said about the Chomskyan way of concocting such simplistic sentences in the imaginary laboratory of the brain of the author. The sentences are so designed as not to conform to real language practices, but even so these fantasy sentences serve these cognitive revolutionaries as proof of the validity of their theories. But while doing so they are trying to walk the tightrope, because they want to hit as close as possible to acceptable language practices in order to give the impression that we are served some very fine scientific nuances. If not so, they could just invent conspicuously nonsensical sentences such as, for example: ‘Gello, X X amme Mike green.’ But then we would not be kept in suspension until they complete the analysis, as the sentence would be so obviously wrong that it would not impress even the most feeble-minded student of generative linguistics.

In view of this we may take a new look at the sentence with the black cat Sam. Cook and Newson had affirmed that “Is Sam is the cat that black?” is “not a sentence of English.” This is illustrative of a circular argument where the definition of ‘English’ in itself motivates the judgment. Here the authors proceed from the idea that what is ‘English’ are those sentences that correspond with their perceptions of correctly formulated grammatical sentences as determined by the elite of a community at any given time. Hereby they do not consider how people in reality speak but rather let themselves be influenced by the standards they have been taught to follow *in writing*. These standards omit most of the nuances that accompany a speech expression. Such written sentences do not capture, for example, features such as pauses, hesitation, corrections of utterances in midsentence, and tones and intonations whereby one expresses, for example, a question, surprise or fear (see discussion in chapter *Speech and Language*). Real scientists have proven that these are integral features of verbal behavior and that actual speech does not correspond to the way speech is usually depicted in writing. For example, the neuroscientist Christof Koch has told that “filling-in and reinterpretation of incomplete or contradictory data makes human speech intelligible” for the interlocutor (2004: 23). Koch

even gives a compelling example of this drawing on his own experience telling: "when comparing a videotape of Francis Crick being interviewed about our work with the exact, word-for-word transcript, I was struck by the discrepancy between what I heard and what Francis actually said. I simply didn't notice his incomplete sentences, dropped words, and repetitions." Lieberman also confirms these observations telling that experimental data has shown that "human speech, including that of university professors, generally is a sloppy, underspecified signal that deviates from textbook phonetic transcriptions" (Lieberman 2002: 24).

When we return all those considerations into the analysis, then we need to totally review our judgment of whether the sentence in question was a sentence of 'English' or not, that is to say, whether the sentence corresponds to the relevant language practices which we call 'English.' Now, therefore when we reinterpret the sentence 'Is Sam is the cat that black?' in view of all those considerations we may find it very intelligible, and therefore correct. To create a context for the reinterpretation we could picture ourselves in a puppet theater where one of the characters grinning and juggling his eyes around – maybe a fox - looks at the children in the audience and says "Is Sam," then pauses and looks around again, then repeats "is" in order to stress the question, adds "the cat" in order for the audience to understand what he meant by 'Sam,' pauses again and says "that black" as he wanted to say 'that black cat' in order to differentiate it from the other cats. By this reconstruction 'Is Sam is the cat that black?' is correct English, just too bad that the sentence does not capture all the real nuances.

In another example of this generative art Borsley and Newmeyer claim that: "Generative grammar is concerned, for example, with the fact that an English speaker knows that '*Which men does she expect to like each other?*' is acceptable, although '*Does she expect to like each other?*' is not" (Reference is made to *A Few Words of Telementation* by Michael Toolan in Harris, Wolf 1998). We may use the above introduced method for reconstructing these sentences in the background of a context and show how also this alleged "nonsentence" can acquire a meaning. Consider a real life situation, there are two women speaking, A and B, A says "Does she expect", then she interrupts her utterance looks attentively at B and continues by uttering "to like" directing B's attention to their mutual friend, a young woman C, who is talking with a young man, D, in the nearby table; she gives an expression of bewilderment and disbelief, after which she continues by finishing the sen-

tence with “each other.” We again saw how the verbal symbols by which the utterance was depicted omit many of the real features of a speech act (verbal behavior), and when we reintroduce them in this way then a meaning emerges.

Let’s now consider Chomsky’s own most famous line of nonsense: “Colorless green ideas sleep furiously.” - When I see this line, I cannot but help thinking that Chomsky clearly has some talent in poetry. - Chomsky declares that a sentence like “Colorless green ideas sleep furiously” is nonsensical but still grammatical as opposed to the sentence “Furiously sleep ideas green colorless,” which he declares both nonsensical and ungrammatical (1957: 15). These examples are supposed to prove his notion that ‘grammatical’ cannot be identified with ‘meaningful’ or ‘significant’ (“in any semantic sense”).

The problem here is again in how Chomsky defines ‘grammaticalness.’ For him a sentence is grammatical if the words are arranged in such a fashion that words corresponding to given grammatical categories occupy the positions which are customarily considered their proper locations in a sentence, that is, that nouns, verbs, attributes, etc. are in their “proper places.” Hereby he maintains that it is of no import whether the words thus arranged combine into a meaningful sentence. But this, on the contrary, as I have pointed out when discussing my view of grammar in chapter *Speech and Language*, is the very problem in human communication (see discussion on *logical grammaticality*).

Chomsky does not recognize that “Colorless green ideas sleep furiously,” which he has concocted as a nonsensical sentence, is no more nonsensical than many of his other statements like, for example, these: “Peter’s language generates the expressions of language”; “language is a natural object”; “The Minimalist Program explores the thesis...”; “The generative system is something real”; “many different grammars may handles the clear cases properly”; “linguistic theory succeeds in selecting a grammar”; “the grammar is justified to the extent that it correctly describes...”; “If the grammar is furthermore, perfectly explicit – in other words, if it does not rely on the intelligence of the understanding reader but rather provides an explicit analysis of his contribution – we may (somewhat redundantly) call it a *generative grammar*,” etc. - In all these sentences words are arranged in accordance with the accepted standards of grammar, but they breach against all we know about physics and biology in that in them words are reified and even anthropomorphized so that they are assigned human-like qualities to act. It is

this problem we should address in linguistics, we should analyze how people speak and identify what problems for the understanding this creates. Then we should consider how to remedy the problem. For a more detailed discussion of this topic I refer to my discussion of *Language of Things* and *Language of Feelings* in chapter *Processes and Concepts*.

I want to conclude this section by taking one more look at the beautiful line “Furiously sleep ideas green colorless.” Just a little remodeling and some gusto would convert this to as beautiful a sentence as its famous sibling. Let’s first say “Furiously!” with proper stress and strength, then “– sleep –” stretching the pronunciation and lowering the voice and tone, then we say in regular voice “ideas green”, pause, and a rapid “colorless.” The sentence now spells “Furiously! – sleep – ideas green, colorless.” (I assume that the exclamation mark and the hyphen do not form part of the “universal grammar”). In this reconstruction this phrase even seems quite grammatical. – Perhaps even more simply we could just add a couple of commas in the sentence and we would have a line of poetry: “Furiously sleep, ideas green, colorless.”

## Transmutation Rules

As we have already seen Chomsky’s metaphysical theories are in many respects similar to the traditions of alchemy (von Franz, *Alchemy*, 1980; Holmyard, *Alchemy*, 1990; Linden, *The Alchemy Reader. From Hermes Trismegistus to Isaac Newton*, 2005). Like the alchemists, Chomsky also labors under the influence of the thingly fallacy and breaches against the most fundamental principles of physics according to which only what has mass and energy can exist. Chomsky brings his theories to their alchemical summit with the delirium about the “transformations” that supposedly words and other linguistic perceptions are subjected to between their “deep” and “surface structures.” These ideas offer us a direct parallel with the main alchemical goal to transmute base metals such as lead into gold. We may, in fact, consider that Chomsky’s theories represent a historic continuation of the medieval alchemical speculations. To mark this connection, I prefer to use the original alchemist term “transmutations” instead of Chomsky’s own term “transformations,” as they any way mean the same.

Chomsky’s transmutation rules supposedly serve the purpose of revealing the underlying “deep structure” of sentences (we must understand this as “the hidden meaning”). This allegedly occurs through a se-

ries of artful manipulations by which the hidden meaning of the “deep structure” is converted into “surface structure” sentences.

Chomsky himself explains this alchemical principle by saying that “the syntactic component of a grammar must specify, for each sentence, a deep structure that determines its semantic interpretation and a surface structure that determines its phonetic interpretation” (1965: 16). He further explains that “the syntactic component of a grammar must contain transformational rules (these being operations of a highly special kind) mapping semantically interpreted deep structure into phonetically interpreted surface structure” (1965: 29). We are told that this “syntactic component of a generative grammar” contains “in addition to its base... a transformational subcomponent” (1965:17). These ideas expressed in the *Aspects of Syntax* followed on what Chomsky had told about these transmutations rules already in his *Syntactic Structures* (1957) where he said: “We consequently view grammars as having a tripartite structure. A grammar has a sequence of rules from which phrase structure can be reconstructed and a sequence of morphonemic rules that convert strings of morphemes into strings of phonemes. Connecting these sequences, there is a sequence of transformational rules that carry strings with phrase structure into new strings to which the morphophonemic rules apply” (1957: 107). At that stage Chomsky also pointed out that there supposedly were both transmutation rules and non-transmutation rules: “To apply a transformation to a string, we must know some of the history of derivation of this string; but to apply non-transformational rules, it is sufficient to know the shape of the string to which the rule applies”; 1957: 107). I have not been able to apprehend what was supposed to be the fine point behind this distinction, but then again why bother; keeping in mind that Chomsky himself has in connection with his capitulation admitted that this was all nonsense.

But nevertheless these transmutation rules offer a truly bewildering gleam into the intellectual scene of the second half of the last century when they were still taken seriously, even by their author. Let’s consider in detail what Chomsky in fact was saying. First, we note that these transmutations rules are told to be inherent properties of a so-called “syntactic component of a grammar”; further this “syntactic component” contains the “transmutation rules.” If there were any evidence that Chomsky would ever have studied biology, then we would think that he had modeled this scheme on the *gene* (corresponding to the *transmutation rules*) carrying *chromosomes* (*the syntactic component*) found in

the *cell nucleus* (grammar). These “transmutation rules” then, like any organic entities, are supposed to perform – all by themselves - the organic function of converting the “deep structure” into the “surface structure” (although all the sentences that have undergone any kind of transmutations up to date, have done so only in the hands of Chomsky and the faithful). And the essence of this conversion, Chomsky tells us, is to “map semantically interpreted deep structures into phonetically interpreted surface structure.” This again opens up new horizons in the study of language and mind, for when he speaks about something being “interpreted”, then, notwithstanding the passive form behind which he hides, there has to be a subject that has interpreted something in the first place. So far only two candidates for this daunting task have been proposed: these are either the “transmutation rules” or the “syntactic component.”

The concepts “semantically interpreted” and “phonetically interpreted” as well as their juxtaposition are hard to decipher and must ultimately be considered nonsensical. Considering how these concepts are habitually used in English language practices we have to ask, what was the point in choosing ‘phonetic’ as that what is juxtaposed with ‘semantic.’ To my mind these concepts cannot at all be juxtaposed. ‘Phonetic’ merely refers to the phenomena when utterances are pronounced by the exercise of the organs of articulation, therefore we would rather understand a juxtaposition between ‘phonetic (with sound, voiced) interpretation’ and ‘inarticulate (soundless, speechless, voiceless) interpretation’ by which juxtaposition we then would refer to something that is expressed to the public versus something which is only silently thought of.

It follows that when Chomsky speaks about a “semantically interpreted deep structure” he means a deep structure interpreted in regards to its meaning. This naturally is what all interpretations are about, but what is the point in adding the fancy sounding concept ‘semantic’ as an attribute to *interpretation*? We shall also remember Chomsky’s own *meaningless-argument*, the postulation that meaning is of no concern, but this time around, at the sublime peak of his speculations, it all of a sudden is the most important concern.

This analysis shows that even the very theoretical conceptions that Chomsky has formed of these “transmutation rules” amounts to utter nonsense. Against this background we anyway have to note that Chomsky was certainly right in pointing out - as he did in the parenthesis of one of the above quotes – that these “transmutation rules” are “operations of a highly special kind.” That much is clear.

We get another view of the transmutation rules by looking at a quote from the work of the two faithful, Cook and Newson, who in their *Chomsky's Universal Grammar* present the transmutation rules like this: "The original model, Syntactic Structures, took its name from the title of Chomsky's 1957 book, which established the notion of 'generative grammar' itself, with its emphasis on explicit 'generative', formal description through 'rewrite rules' such as  $S \rightarrow NP VP$ , as described below. It made a separation between the phrase structure rules that generated the basic structures, called 'kernel sentences', and transformation rules which altered these in various ways by turning them into passive or negative sentences etc.; hence its popular name 'transformational generative grammar' or 'TGG'" (2007: 2).

Lieberman has briefly captured Chomsky's alchemical enterprise in these words: "Chomsky's initial goal was to describe the grammatical "rules" or "transformations" that mediated between a hypothetical "deep," semantic level at which the meaning of a sentence is represented in the human mind, and a "surface" level that described spoken, grammatical sentences. The transformations were stated as formal, mathematical algorithms that mediated between the two levels" (2002: 12). In his criticism of these theories Lieberman provides this example of these imaginary machinations: "The 'kernel' sentence *Susan saw the boy*, close to the deep semantic level, could be transformed into surface-level passive sentence *The boy was seen by Susan* by means of an algorithm, a 'passive transformation rule'" (2002: 12).

The reader is also referred to Joseph, Love and Taylor in their *Landmarks II* which gives a fairly good account of what the authors call "the mythology of Chomsky's generative linguistics" (2009: 119).

A reader that has heard of Chomsky but who might never actually have read his books will be surprised to see what kind of algebradabra these transmutations actually amount to, therefore I will give a few examples of these magic formulae.

**The first example** is modeled on sentence (13) in *Syntactic Structures* (1957: 26). I will remake it in order to test how the scheme works on other "research material." I will refer to my sample sentence as (113). These operations are supposed to show "a simple example of the new form for grammars associated with constituent analysis":

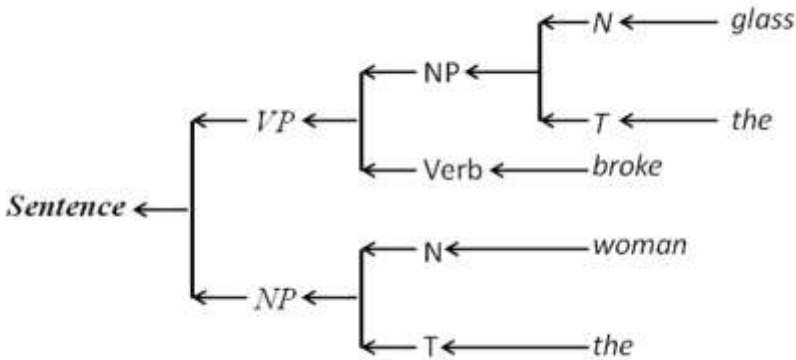
We start with sentence (113): (i) *Sentence*  $\rightarrow NP + VP$

- (ii)  $NP \rightarrow T + N$
- (i)  $VP \rightarrow Verb + NP$
- (ii)  $T \rightarrow the$
- (iii)  $N \rightarrow woman, glass, etc.$
- (iv)  $Verb \rightarrow broke, wiped, etc$

Then as a result of a series of transmutations called "rewrite rules" we are supposed to arrive to the derivation of the sentence "the woman broke the glass" as depicted below.

- (114) *Sentence*
- $NP + VP$  (i)
  - $T + N + VP$  (ii)
  - $T + N + Verb + NP$  (iii)
  - $the + N + Verb + NP$  (iv)
  - $the + woman + Verb + NP$  (v)
  - $the + woman + broke + NP$  (vi)
  - $the + woman + broke + T + N$  (ii)
  - $the + woman + broke + the + N$  (iv)
  - $the + woman + broke + the + glass$  (v)

Chomsky's explained the corresponding transmutations rule by telling that the second line of (114) was formed from the first line by rewriting the sentence as  $NP + VP$  in accordance with rule (i) of (113); the third line was then formed from the second by rewriting  $NP$  as  $T + N$  in accordance with rule (ii) of (113); etc. He told that this same "derivation" can also be represented "in an obvious way" by means of the following kind of a diagram:



(This diagram illustrates Chomsky's ideas but is not a direct reproduction of the one Chomsky presented in *Syntactic Structures*).

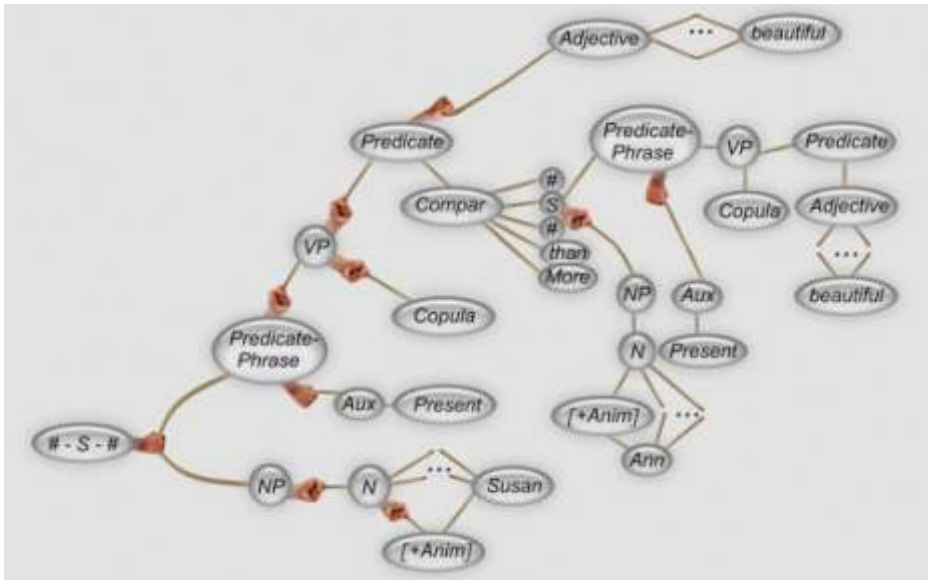
**The second example** is taken from *Aspects of the Theory of Syntax* (1965: 178). Now we will see how this example works with changing the research material; we are kind of doing another “mathematical operation” using the same formulae. My sample is modeled on Chomsky's sentence (34); I will refer to the new applied sentence as (334). This instance of fantasy transmutations is supposed to show how a simple surface sentence is formed “from the underlying deep structure.”

Chomsky asks us to “consider the rules that provide for comparative constructions of various sorts,” in particular, for such sentences as

(334) Susan is more beautiful than Ann.

According to Chomsky's logic “in this case, the sentence is formed from the underlying deep structure,” following previous conventions, given as the “full configuration” (335).

The full configuration (335):



(This diagram illustrates Chomsky's ideas but is not a direct reproduction of the one Chomsky presented in *Aspects of the Theory of Syntax*).

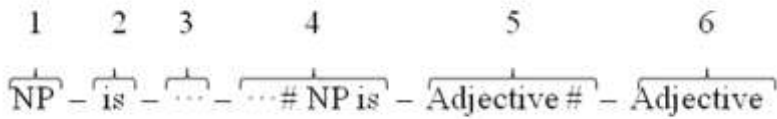
All the various “features consisting the lexical formatives” of (335) Chomsky would tell “are not given explicitly, but, rather, indicated by ...” (Chomsky means to say that they are indicated by the dots!).

The transmutation trick itself is done by deriving (334) from (335) as described above. Hereby the transformational rules are said to “first apply to the most deeply embedded base Phrase-marker” which in this case is identified as the sentence “Susan is beautiful.” After that, they reapply to the “full configuration” of (335), which through various undisclosed refinements has received this so-called “terminal string”:

(336) Susan is more than [# Ann is beautiful #] beautiful.

Upon this follows a “comparative transformation” which is formulated as an “erasure operation.” In this sublimation the “Adjective of the matrix sentence” is used “to delete the corresponding Adjective of the embedded sentence.” These sublimate yield a string of this form:

(337)



Chomsky gives here another hint of how we are to understand these operations, but I will only supply the quote, for I have no way of knowing what it means: “(where ‘... – ...’ is *as-as*, *more-than*, etc.), deleting 5 and #.”

Then, finally, “it [presumably the string] permutes 4 and 6 (technically, it places 4 to the right of 6, deleting 4).” – And this, then, is said to give:

(338) Susan is more beautiful than Ann is.

The sentence has now undergone an almost complete transmutation, where it not for the redundant ‘is’ after Ann. – But this is no problem, Chomsky would say, all that needs to be done as a final operation is to “delete the repeated copula,” which brings us back to (334): Susan is more beautiful than Ann.

And just imagine, all these marvelous transmutations, that we have witnessed in front of our eyes have taken place as operations of the “rules,” so Chomsky says. – But, the reader will be justified in suspecting that Chomsky has been pulling the strings behind the scenes.

Even when we can somehow understand that the majority of American linguists believed in the theory of these linguistic transmutations, it still defies explanation how it was possible that they accepted Chomsky’s claim to possess insight in such remarkable detail into how the transmutation processes actually occur! How on earth did people think that Chomsky would know that hidden from anything we may possibly observe occur processes that he depicts, for example, like this: “NP – is – ... – ... # NP is – Adjective # – Adjective.” In considering all these transmutations, we shall bear in mind that these are supposed to reveal the semantic level at which the meaning of a sentence is represented in the human mind. The linguists of the latter part of the 20<sup>th</sup> century must have believed that Chomsky had extrasensory percep-

tion into the secrets of the human mind by which means he derived these formulae.

A further example of these transmutations is provided by the faithful Cook and Newson in their effort to explain the difference between the "deep" and "surface structures" (2007: 3). We are presented these two simplistic sentences:

"(3) John is eager to please." This sentence is said to imply that "John pleases other people," and:

"(4) John is easy to please." This sentence is said to imply that "other people please *John*."

The authors explain that the difference is supposedly captured by the claim "that the two sentences have the same surface structure but differ in deep structure, where John may act as the subject or object of the verb *please*."— Naturally I cannot agree at all with the whole idea, but even if we would leave aside the "deep structure" part of it, then I would still not agree even with the claim that they have the "same surface structure," i.e. that they would be similar to their grammatical form. Clearly these sentences are different in many fundamental aspects. The illusion that these sentences would reflect differences in some mystical "deep structure hidden meanings" while the "surface structure remains the same" is entirely caused by the fact that the language practices that cover what we call 'English' have during generations changed in such a way that proper names are not *anymore* inflected. This is one of the reasons why the sentences may seem similar in construction but different in meaning. Another aspect that may be exploited for the purpose of creating this mystical illusion is connected with the fact that it has become acceptable in language practices to abbreviate the more original language pattern "It is easy to please John" as "John is easy to please," which in itself precisely reflects the fact that proper names are not inflected and that the rhythm of the sentence may therefore be preserved also in the abbreviated form. But because pronouns are not in the corresponding language practices used in the same way it would be considered unacceptable - and it could, indeed, lead to ambiguity - to say: "He is easy to please." We notice that the problem in this sentence is that 'he' is according to the present language practices used for marking the nominative form and the subject of a verb. Therefore the above sentence would most probably be understood as 'He has a manner of pleasing people' whereas to correspond with the form "John is easy to please" we would have to say "It is easy to please him." We should note that the problem here is connected with the idea

that the constructions ‘easy to’ and ‘hard to’ have come to imply an activity directed towards an object. But from all we know about changes in language practices there is nothing to exclude the possibility that people would in the future start expressing the idea ‘He has a manner of pleasing people’ as ‘He is easy to please.’ – Now, therefore with this kind of an analysis I claim to have falsified the theory of “deep structure” which Cook and Newson wanted to illustrate with their simplistic sentences. – Most importantly we should notice from this that all language use and speech patterns are exclusively oriented to meet the criteria of *meaning*: whatever is deemed understandable by the relevant interlocutor can be said to represent “correct English” or more generally, “correct language.” And these criteria are under constant flux.

## Chomsky’s Definition of Language

We may now take a look at how Chomsky actually defines ‘language.’ At the foundation of his movement in the *Syntactic Structures* Chomsky defined language on the analogy of algebra in these words: “From now on I will consider a language to be a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements. All natural languages in their spoken or written form are languages in this sense, since each natural language has a finite number of phonemes (or letters in its alphabet) and each sentence is representable as a finite sequence of these phonemes (or letters), though there are infinitely many sentences” (1957: 13). The definitions have undergone remarkable changes over the years, so that he, for example, after his capitulation and conversion to the pseudo-biological paradigm says in the *Minimalist Program* that we “may think of language, then, as a finitely specified generative procedure (function) that enumerates an infinite set of SDs [structural descriptions]” (1995: 14). Regarding this latter definition I refer the reader to the discussion of the of the pseudo-biological operations of the “language faculty,” whereas I will here concentrate on the former.

An analysis of this particular fallacy to define language in terms of a ‘set of sentences’ will provide us with interesting insight to the fallacies which have kept linguists from truly grasping the real essence of speech and language. (Chomsky has derived the notion from Bloomfield’s idea to regard language as a set of utterance or, as Bloomfield said: “the totality of utterances that can be made in a speech-community is the *lan-*

guage of that speech-community” (Matthews 1996: 129, in reference to Bloomfield’s *A Set of Postulates for the Science of Language*).

It makes no sense to involve the theoretical abstraction ‘sentence’ in the definition. The result is the same as if we would define ‘walking’ in terms of a ‘set of steps.’ To correspond with Chomsky’s ideas we could then claim that ‘*gait* is a system with an infinite number of steps’ and that ‘with *gait* the ideal walker could walk infinite distances.’ We could also think of this extraordinary idea on the analogy of conceiving of a brick house as a ‘set of bricks.’

Sentences are not things and can therefore not exist, and consequently cannot serve as the constituent elements for anything else either. Sentences, like all linguistic constructions, merely represent memory traces of past behavior and the perceptual abstractions we form on them.

Most importantly the idea of language as a ‘set of sentences’ conveys the idea that these sentences would exist somewhere ready for action, and this is precisely what Chomsky means: he means that speech (i.e. Chomsky’s ‘language’) signifies an act of instantiating by the “language organ/faculty” one of the possible preconceived sentences. In other words, the idea is that speech (i.e. Chomsky’s ‘language’) would consist of the emittance of a number of sentences from the stock of all possible sentences. Thus Chomsky takes sentences to be innate properties of the human mind (his “mind/brain”); speech then corresponds to an activity of selecting the needed sentences from the stock of all sentences and of arranging them for launch through the “language organ/faculty.” It needs to be stressed that according to this idea of Chomsky’s all the sentences people have said in the past and may possibly say in the future are already within the “language organ/faculty,” and when people express themselves in speech and writing they “use” these sentences. But this caused a logical dilemma for Chomsky as he noticed that a particular person does not express all the same sentences as other people have been observed to express. This, for him, curious phenomenon he resolved by explaining that human “languages are in part unusable, but none the worse for that; people use the parts that are usable” (2007a: 161).

But this is all nonsense; naturally there exist no innate sentences. And neither does speech consist of a repetition of identical sentences across the language community - people cannot even be said to repeat their own sentences. All sentences are in essence unique and non-repeatable. The impression that sentences are repeatable manifestations of some pre-existing sentences is caused by observing few simple and

reoccurring elementary utterances consisting of one or a few words, such as ‘Good day,’ or ‘Please, pass the salt,’ ‘What is the price?’; or simple utterances by which we address children such as: ‘Get the ball,’ ‘John is tall.’ When we then do as the generative grammarians of the Chomskyan school do, analyze the linguistic material that merely consists of such simplistic and mostly artificially concocted sentences, then we may, of course, be led to believe that these and other sentences are manifestations of repetition of the same *things*. But in reality they merely in view of their shortness happen to resemble earlier instances of speech; the longer the sentences the less there are similarities. A study of real verbal behavior would confirm that sentences are always unique. The reader may convince himself of this just by taking any of, for example, Chomsky’s books, and excepting the simplistic sample sentences he puts forward as his “research material,” it would only be by a rare coincidence that the reader could find any two sentences that are identical. - The idea of a set cannot be applied to something that by its very nature is always unique; correspondingly it would be nonsensical to speak about a climate consisting of ‘an infinite set of weather conditions.’ – Here I also need to refer to chapter *Speech and Language* where it was shown that written sentences to begin with represent perceptual abstraction that capture merely some aspects of the total speech act, and in a broader sense, of the total act of verbal behavior.

Now let’s return to Chomsky’s statement that this set is “either finite or infinite.” We have to note that it makes a pretty big difference if one wants to define something as either finite or infinite, and therefore the scholar had better make up his mind before he issues such a definition. In any case both ideas are wrong: the idea of a *finite set* of sentences is wrong, because naturally we can always express a new syntactic unit; and the idea of an *infinite set*, simply because it already is a contradiction in terms to speak of an infinite set - a set is by definition finite. If you characterize something as infinite, then it is already not *a set*. It is also curious to note that whereas Chomsky started the definition by wavering as to whether the set was finite or infinite, he just a few lines below ended it by stating that “there are infinitely many sentences.”

Chomsky also asserts that “an essential property of language is that it provides the means for expressing indefinitely many thoughts and for reacting appropriately in an indefinite range of new situations” (1965: 6). This represents one more of those meaningless generalizations which have no scientific value. We might as well say that ‘an essential

property of *gait* is that it provides the means for walking indefinitely many roads and for reacting appropriately in an indefinite range of new situations' (for example, by running away, or alternatively kicking in defense). Further I have to point out that I see no motivation for characterizing the possible reactions as "*appropriate* in a new situation" for very often verbal behavior tends to lead to very *inappropriate* reactions (as the case is also with 'gait behavior').

We shall note that the idea of language consisting of an infinite number of sentences is a standard claim of the Chomskyan revolutionaries, one of them, Burling, speaks about "an astronomical number of sentences" like this: "Any language with tens of thousands of words that can be joined into long strings allows astronomical numbers of sentences. In fact, thanks to recursive rules, there is no limit on the number of possible sentences...I saw Bill, so I spoke to him, and we talked for a while, but he got tired, and...Such a sentence could, in principle go on forever" (Burling 2007:35). – We could also walk on and on, till we drop down and die, or stop before that by exhaustion, and the same goes for speech.

In his definition Chomsky also claims that sentences would be "finite in length." This cannot be right either. According to Merriam-Webster a sentence is defined as: "a word, clause, or phrase or a group of clauses or phrases forming a syntactic unit which expresses an assertion, a question, a command, a wish, an exclamation, or the performance of an action, that in writing usually begins with a capital letter and concludes with appropriate end punctuation, and that in speaking is distinguished by characteristic patterns of stress, pitch, and pauses." According to this conception nothing could theoretically limit the length of a sentence. It is another issue that in practice, in actual verbal behavior, memory and other cognitive limitations restrict the lengths of sentences (even though, as we remember from above, these restrictions are said not to apply to the "ideal speaker-hearer," i.e., the alter ego of Noam Chomsky).

In reference to Chomsky's above quoted definition of language we are yet left with treating the pretense that "language" would consist of a "finite set of elements," whereof the elements would be "a finite number of phonemes," which idea is in turn equated with there being a finite number of "letters in its alphabet." The claim then is that each sentence would be "representable as a finite sequence of these phonemes (or letters)." (Similarly Chomsky says: a "language is defined by giving its alphabet - i.e. the finite set of symbols out of which its sentences are

constructed” 1957: 21). These ideas do nothing but underlie the false and simplistic assumptions on which the Chomskyan theories are built. Most importantly this is a manifestation of the fallacy to fail to comprehend that the sounds that we depict in writing by employing the alphabetic symbols merely represent a part of the whole speech act, or even more broadly speaking, a part of the whole act of verbal behavior (reference is again made to the chapter *Speech and Language* where the conception of the holistic nature of verbal behavior is discussed together with all the considerations as to all the bodily expressions which occur in connection with verbal behavior). In reality the alphabetic symbols which vaguely correspond to the sound patterns merely represent a standardized effort to symbolically capture some aspects of the speech act. We shall also note the very alphabet in no way represents an exclusive “set of elements.” Any linguist should know that one letter is at once made to stand for various sounds and by combining letters still more different sounds are depicted. Already by these considerations the alphabet is not finite, but we should further note that neither is it finite in the sense that there is nothing to exclude the possibility of people in the future adding new symbols into the alphabet (and, indeed, the alphabet in use in various language practices are already different). The linguist should also recognize that we symbolically depict speech and thought in writing not exclusively by means of the letters of the alphabet but with many other symbols as well, such as dots and commas, question and exclamation marks, hyphens and numbers.

Chomsky’s idea of ‘phonemes’ follows the same misconception as that regarding letters of the alphabet. We may define a ‘phoneme’ in these lines: ‘any of the abstract units of the phonetic system of a language that correspond to a set of similar speech sounds (as the velar \k\ of cool and the palatal \k\ of keel) which are perceived to be a single distinctive sound in the language’ (Merriam-Webster). The author of these lines has correctly identified a ‘phoneme’ as an ‘abstract unit’ and correspondingly correctly affirms that they are “perceived to be” as opposed to saying that they “are.” We may perceive these “abstract units” in infinite variances and they can therefore in no way be referred to as a “finite.”

All these ideas build on Chomsky’s misconceived maxim which purports that language would make “make infinite use of finite means” (e.g. 1965: 8). Firstly, we note, as it was explained above, that the means are certainly not finite. Secondly, we note, that humans make use

of these means, and it is not this perceptual abstraction 'language' that does it – and the result of this human activity are the perceptions we call 'language.'

What language really means for Chomsky is difficult to guess and this task is certainly not made any easier by statements allowing for the possibility that "the order of words is determined by factors independent of language" (1965: 7). This reminds us of the funny statement about 'language generating language' (2007a: 5). In the latter proposition language generates language while in the former language was said to be independent of language. – But in a real sense (not in the sense Chomsky refers to these issues) it is, of course, correct to say that 'language is independent' of language, for language is just the abstract description of the way people speak; language is thus entirely dependent on speakers. But hereby speakers are constrained by language, that is, language practices.

After rejecting the rule-system model, Chomsky in keeping with his pseudo-biology defines 'language' as "the generative procedure" (1995: 20).

And, of course, Chomsky amuses us with yet more competing definitions, like the one according to which 'language' is defined as a "particular choice of finite means" to which the "language faculty" has tuned into (1995: 14). Other pseudo-biological definitions include, for example, the definition of 'language' as "a natural objet, a component of the human mind" (2002: 1). Chomsky has motivated the latter definition by saying that "humans are alike enough in language capacity," and from this it allegedly therefore follows that "human language can be regarded as a natural object" (2007a: 76). –But humans are like enough in walking as well, but it has for this reason not occurred to anybody to define walking as a natural object (feet like mouths are natural objects).

The reader should by no means consider that these notes would have exhausted all the possible ways in which Chomsky defines language, rather following the logic of this generative theory we may by "finite means" define 'language' in "infinitely many ways."

## How Children Learn Language

Chomsky tells that human children are born with an innate "language-acquisition device" (e.g. 1965: 2 and 33). Basically we must consider this "language-acquisition device" to be the same thing as the "language faculty/organ," now only viewed from the perspective of

children's "language acquisition." At one point Chomsky tries to compromise with reality by qualifying this device as "the *hypothetical* [italics supplied] language-acquisition device," but even so adding that he considers it as "a useful and suggestive framework within which to pose and consider these problems" (1965: 47). We see here that Chomsky wants to say that he does not really believe that there is such a device. But this only adds to the absurdness of the theory, for Chomsky's device is not in the role of a metaphor that would help to picture some underlying fundamental reality, but instead the whole theory is molded around this device. Thus when Chomsky in the passing refers to it as a *hypothetical* one, then he in effect is only admitting that the whole theory is a fairy-tale.

According to Chomsky when the child is born the "language-acquisition device" is not yet operational and that "certain kinds of data and experience *may be* [italics supplied] required to set the language-acquisition device into operation" and "once the mechanism is put to work...the task of language learning is undertaken by the child" (1965: 33). Once in action the device, we are told, starts to scan the "language faculty" of the "brain/mind" in order to identify the grammars from which to select the needed ones; in Chomsky's words: it searches "through the set of possible hypotheses" (1965: 32). Grammar' is in this connection defined as the "innate schema" of the "language faculty" (1965: 27), while a "theory of language," which Chomsky was above told to equate with, among other things, 'grammars' and 'devices,' is "regarded as a hypothesis about the innate language-forming capacity of humans" (1965: 30; see also Joseph, Love and Taylor, 2009: 131). It follows that 'grammar' (in its various incarnations) is made to cover a lot of ground in this connection, too. It is at the same time the device itself, the innate schema and even the hypothesis of how this very schema develops. The operations of the "language-acquisition device" in the critical years of childhood supposedly gradually bring the innate grammar to perfection. (The idea about "innate schema" was later transformed into the ideas of the "initial state" and other states that the "language faculty" undergoes; I refer to above discussion of these issues). – Chomsky tells that the child has a "store of potential grammars" from which the selection is done (1965: 36).

In interpreting these ideas we have to keep in mind, firstly, that there can possibly be no question of choosing any "grammars," for grammar is the description of the way people speak, and that cannot be chosen,

and especially not chosen by a child who does not have an alternative but to endure the social practices around him; And secondly, a child does not form any hypotheses of language and grammar but imitates the observed practices. Chomsky goes as far as to claim that the child learns a language by discovering “what from a formal point of view is a deep and abstract theory – a generative grammar of his language” (1965: 58). He tells that the “child must have a method for devising an appropriate grammar” (1965: 25). This method is said to consist of (i) a “linguistic theory” which is used for specifying the grammar of a “possible human language”; and (ii) a “strategy for selecting a grammar.”

We see that Chomsky has assigned the child the daunting task to select ‘one of all the possible grammars’ to match ‘one of the possible human languages.’ This really means that Chomsky considers that the child has access to the relevant comparative material by way of being born with all the languages of the world stored in his brain complete with a grammar to go with each one. Then as he grows up in a specific community he has to determine to which one of all those possible languages, crammed in his brain, the language of the community corresponds. Chomsky stresses that “language learning would be impossible unless” the child is able to determine which of all the possible languages is the one he has been exposed to (1965: 27). Just imagine what mental anguish a child would have to go through, if this fable was true. Here I need to remind that there are no languages but only language practices that correspond to the way people speak in a given community. These practices can metaphorically be said to *reside in society*, but by no means in the brain: the child is only confronted with those language practices which he observes in his environment; those he imitates, and those he learns. Usually these language practices correspond to one so-called language, but some children are exposed to two or more languages, of which he learns best the one that he is more immediately in contact with. - To note, I here speak about ‘different languages’ to mark off language practices that differ to such a degree that people usually refer to them as different languages, but within these ‘different languages’ the child also comes in contact with various language practices, based on which he develops his own style of expression. A language practice is not something we can define in rigid terms; the more closely a group of people converge in their way of speaking the more we can speak of their joint practice forming a language practice. - All these language practices are in a constant flux as we have seen, for example, from the discussion on ‘Old English,’ ‘Middle English,’ and ‘Modern English’

(see chapter *Speech and Language*). These various forms of ‘English’ only represent very rough academic abstractions of the way people in England have spoken in various periods. In reality there have always been an infinite range of language practices. But following Chomsky’s logic ‘English’ would never have changed during the entire history, or how else could it have become genetically stored in the child’s brain? Or alternatively all the different language practices, past, present, and future ones (in infinite variances) would have to be stored there.

For more details on how Chomsky has conceived of this language acquisition device, please, see reference under note.<sup>9</sup>

In connection with these deliberations in the *Aspects of the Theory of Syntax* Chomsky expressed his wish to set “as a long-range task for general linguistics the problem of developing an account of this innate linguistic theory that provides the basis for language learning” (1965: 25). Unfortunately that is just what he did and inspired many a wasted carrier to join in, too. In this connection I also want to point out how Chomsky explained the difference between his theories and the traditional linguistics as the failure of the latter to investigate “the abstract conditions that must be satisfied by any generative grammar” (1965: 30). To do so, he prophesized would “offer extremely rich and varied possibilities for study in all aspects of grammar” (1965: 30). – But precisely these “investigations of the abstract conditions” is what went cardinally wrong; there is nothing abstract about speech, and the abstractions of language correspond to underlying verbal behavior which cumulate to the perceptions we form on social practices. That is what needs to be studied. But looking at the whooping success that Chomsky has enjoyed during his carrier, we must conclude that these abstract investigations certainly offered “rich and varied possibilities” for speculation.

Chomsky would not be Chomsky if he didn’t conclude all the above with saying that the “child who has acquired a language in this way of course knows a great deal more than he has ‘learned’” (1965: 32). This reminds us of those anecdotes about people extolling in awe how smart the kids in France are when they from young age has mastered such a challenging language as French. In fact, this is the whole essence of the theory, Chomsky seeks to explain these, for him, strange circumstances. As he does not understand that this is all about the human genetic endowment to cognitively imitate other people’s verbal behavior, i.e. social practices, he wants to invent a metaphysical explanation. (Compare

with Tomasello who tells that a child learns a language as an integrated part of the development of the child's "other cognitive and social-cognitive skills," 2003: 3). Children do not learn a set of sentences, but they learn words and the possibilities how to combine and modify them, not by following any metaphysical rules but by imitation of verbal behavior. Tomasello has correctly said that human "children are not innately equipped with a universal grammar applicable to all of the languages of the world equally. They are adapted to enter into joint attentional interactions with adults and to understand adult intentions and attention – and eventually to adopt adult roles in these interactions, including their use of particular linguistic conventions" (Joseph, Love, Taylor 2009: 187 – in reference to Tomasello's article *Bruner on Language Acquisition*, 2001).

Chomsky thinks it extraordinary that small children who do not even have the patience and skills to sit down to read the *Aspects of the Theory of Syntax* nevertheless learn the theory and the syntax that goes with it. Chomsky claims that children at a very early age acquire a *perfect* knowledge of language without any effort to *learn* or without anybody *teaching* them (see e.g. 1965: 28). In *A Review of B.F. Skinner's Verbal Behavior* (1967) Chomsky told: "Furthermore, this task is accomplished in an astonishingly short time, to a large extent independently of intelligence, and in a comparable way by all children." Chomsky is so imbued by MITspeak, the jargon of the crucible for these theories of linguistic alchemy, that he thinks that small children reason, and necessarily must reason, in the same way. This leads Chomsky to announce that young children are engaged in "theory construction," as he said in his misconceived criticism of Skinner (1967).

Chomsky speculates that the "language faculty is modified in response to linguistic experience, changing state until it pretty much stabilizes, perhaps as early as six to eight years old" (2007a: 118). This particular error of Chomsky's directly bears on the practice he and his colleagues are engaged in of analyzing simplistic sentences that they themselves concoct on the analogy of what a six- to eight-year-old child could possibly say. Then they turn around in awe and declare that even a six- or eight-year-old has mastered the sentences that were specially designed to suit their level. The whole idea that small children would learn language perfectly within a few years of age is misconceived and solely based on the premises of shutting out a study of empirical reality.

A six- to eight-year-old speaks at the level of six- to eight-year-old, and a ten-year-old speaks at the level of a ten-year-old, and hereby there

is a tremendous difference between the way the ten-year-old and the six-year-old speak. They can both potentially express their feelings in potentially intelligible phrases but only to the extent that their life experience has prepared them for it. Both can make grammatical sentences, but the ten-year-old can make more complex sentences and express more complex ideas. And if we were to compare the ten-year-old with a 16-year-old and a 20-year-old, respectively, then we would again note a great difference. All of our sample subjects would be able to pronounce a Chomskyan sentence like ‘John hit the ball,’ but they would not be equally prepared to express ideas that correspond to more nuanced and complex life experience. Thus I would predict that the ten-year-old could express an idea like ‘John hit Jim with the ball in an effort to get even,’ whereas the six-year-old could not do so.

We can only speak about phenomena, express ideas, about which we have prior experience, and we can formulate our ideas in speech only in accordance with the patterns in which we have observed similar ideas (feelings) to have been expressed in (broadly) similar contexts. It is totally to be excluded that a child of six or eight years could utter or write the kind of sentences that we discover in Chomsky’s books, or in any other academic books for that matter. Only after having gained experience of a particular subject, that is, having been merged into the corresponding social practices can one formulate and express ideas on the relevant subjects; only by studying a given field of science can one formulate and express the ideas relevant to the matters. But these considerations are in no way restricted to science and on the contrary apply to all life situations: we can properly express our thoughts only to the extent to which we have prior experience from the corresponding topic. For example, even the most adept native speaking English linguist would not be capable of properly formulate statements of law in the required syntax if he did not possess sufficient prior experience in reading, studying, discussing and writing legal texts. – Learning to express oneself properly in speech and writing is thus a life-long process, the perfection of which has no limits. This is not to be confused, as Chomsky does, with gaining elementary skills of speech expression.

Joseph, Love and Taylor confirm that Chomsky’s position is diametrically opposite to that what I argued above, telling that according to Chomsky “the adult’s knowledge of language is far too complex to have been acquired from experience” (2009: 172). The reader may judge for himself which one of these competing conceptions is right.

And I propose that the one who considers Chomsky right would step forward with a lecture on nuclear science – and then we will see what would be the outcome of that speech in case the candidate would not possess the relevant experience on the matter.

I shall add here that this fallacy of Chomsky's is naturally connected with his constitutional fallacies of considering that "language" is *stimulus free* and that *meaning* is of no consideration. But if so, then we should all be equally adept to speak about nuclear sciences – once our "language faculty" at the age of six or eight had reached the corresponding "state" of perfection.

Speech represents interpretation of feelings (opinions, ideas) and that is why ideas take priority over speech. You cannot speak about anything if you do not have anything to say, that is, if you don't have any corresponding ideas which you need to voice. And those ideas you can voice only if you have experience about how those ideas have been referred to by others. Thus we may commit to the flames Chomsky's maxim that says: "the child who has acquired a language in the way he speculates "knows a great deal more than he has learned" (1965: 33).

It seems that Chomsky and the generative revolutionaries have never heard about the idea of the plasticity of the neural system; the idea has certainly not entered their theories. It has not occurred to them that the effects that they seem to refer to the stabilization of the "language faculty" in reality – to the extent we may speak of a stabilization – is a function of diminishing plasticity. This corresponds to a long-term potentiation of synapses and strengthening of certain kinds of neural connections which restrict the limits of the possible processes (see chapter *Memory*). This occurs as a result of the child remembering and imitating those sounds and syntactic patterns that the child has experienced others in his environment to utter. Why would anybody want to believe Chomsky's fairy-tales of how some switches in a "language faculty" are connected to produce language, when we have available real evidence (presented in this book) from neuroscience of how these processes occur? We just need to recognize that, the by now aged cognitive revolutionaries, are not engaged in science and rather practice the beliefs of their sect. Lieberman gives a telling example of how pointless it is to try to scientifically argue against their beliefs. He tells: "Paradoxically, the failure of linguists to discover a set of algorithms that can specify the grammatical sentences of any human language is taken as evidence for the existence of an innate Universal Grammar" (2002: 12). In reference to Jackendoff, Lieberman tells that the logic of this argument is such

that the failure of the generative linguists to describe the actual rules of “universal grammar” after decades of study, whereas children detect them just like that, supposedly proves the very point that the “rules of grammar must be part of human innate knowledge.”

## Chomsky’s Rise to Prominence

Two main sets of circumstances conspired in bringing Chomsky to prominence. One set of circumstances was connected with the metaphysical trend in linguistics coupled with the imminent bankruptcy of the then reigning behaviorist paradigm in science at large; the other set of circumstances was the fundamental breakthrough in the computer industry that created a demand for computational linguistics with the promise that computers could replace human speech based on software that would model cognition and especially the promise that computers would become able to translate from and to any languages. Chomsky was to deliver on the promise. We shall look at these stories more in detail below under the headings *The Triumph over Behaviorism* and *Chomsky and the New Brave Computer World*.

## The Triumph over Behaviorism

Now that the reader has already been acquainted with the bewildering metaphysical ideas and internal contradictions with which Chomsky’s theories abound, it will be fitting to take a look at how B.F. Skinner – the man that Chomsky destroyed on his way to vainglory – alerted against these ideas. Admittedly Skinner was not able to develop a convincing theory on speech and language, but in one very crucial passage of his book, *Verbal Behavior*, Skinner has managed to highlight some of the most fundamental errors in which Chomsky’s theories are rooted (Skinner 1957: 7, 8). In this passage Skinner identified that the metaphysical school to which Chomsky belonged wrongly believed in the independence of language “apart from the behavior of the speaker.” He also alerted to the thingly fallacy according to which “words are regarded as tools or instruments, analogous to the tokens, counters, or signal flags sometimes employed for verbal purposes.” This is the fallacy to think that language represents material entities that according to the fantasies of linguists exist in their own right. Instead he stressed that what is material are the sound-streams that are emitted with expressions and the symbolic devices by which they are depicted on paper or the

“signals transmitted on a telephone or telegraph wire.” All these, he calls “records left by verbal behavior,” or “traces” of the behavior. Skinner alerted to the fact that the ‘traces’ were not yet the expressions and a study of them could not replace a study of real verbal behavior. In particular he noted that we must not formulate verbal behavior as the ‘use of words.’ This he illustrated by saying: “We have no more reason to say that man ‘uses the word *water*’ in asking for a drink than to say that he ‘uses a reach’ in taking the offered glass. In the arts, crafts, sports, especially where instruction is verbal, acts are sometimes named. We say that a tennis player uses a drop stroke, or a swimmer a crawl. No one is likely to be misled when drop strokes or crawls are referred to as things” but when words are referred to in a similar manner, then misunderstandings are frequent and “disastrous.” Skinner also alerted against the similar practice of assigning “an independent existence to meanings,” whereas he advocated the idea that words were merely symbolic means by which a subject expresses his particular meanings (ideas). Skinner rightly concluded these dwellings by saying: “It has been tempting to try to establish the separate existence of words and meanings because a fairly elegant solution of certain problems then becomes available.” – It is precisely this ‘elegant solution’ that the Bloomfieldian wannabe scientists were pursuing and which Chomsky brought to the aesthetic culmination in the eyes of the members of the sect.

By a brutal frontal attack on Skinner, being the leading propagator of behaviorism, Chomsky managed to discredit a whole generation of scholars and research programs. This took form of an article that appeared in the journal of the Linguistic Society of America, *Language*, in 1959 under the title *A Review of B.F. Skinner's Verbal Behavior* (republished in 1967 in Leon A. Jakobovits and Murray S. Miron (eds.), *Readings in the Psychology of Language*). The article purported to be a review of Skinner's *Verbal Behavior* (1957), while in reality it was more an attempt to discredit Skinner and the whole research paradigm of behaviorism. As we know Chomsky proved very successful in this maneuver. Doing so Chomsky successfully exploited the weaknesses of the behaviorist paradigm and his own inherent ruthlessness thanks to which he did not refrain from blatant fraud of crediting Skinner's book with ideas that were not there. These falsifications are well documented in *Landmarks in Linguistic Thought II* by Joseph, Love and Taylor in chapter *Skinner on Verbal Behavior* (2009: 105). Moreover this article gives an interesting account on how Chomsky used the weakness of the

dominating behaviorist speech theory of Skinner to launch his own speculation.

As if to smash more nails into the coffer of Skinner, Chomsky went on to demolish another of Skinner's books, *Beyond Freedom & Dignity* (Skinner 1971) this time in the New York Review of Books of 1971 under the title *The Case Against B.F. Skinner* (Chomsky 1971). As an example of his ruthless style we can look at this passage from the review: "Skinner's science of human behavior, being quite vacuous, is as congenial to the libertarian as to the fascist. If certain of his remarks suggest one or another interpretation, these, it must be stressed, do not follow from his 'science' any more than their opposite do. I think it would be more accurate to regard Skinner's *Beyond Freedom and Dignity* as a kind of Rorschach test" (Chomsky 1971).

These maneuvers of Chomsky and their academic consequences are often referred to as the cognitive revolution, but I prefer, for reasons presented in this book, to speak about a cognitive coup. The parallel with political revolutions is, however, aptly made, because here we can detect clear parallels with real political revolutions. We have an old worn out ruling class of behaviorists which is wasting its last energy in trying to blow new life into its decrepit old structures. We have popular discontent, but no one that is audacious enough to speak out. Enters Chomsky, fires his half-witted salvo on the ruling Skinner, and takes control of the realm. The behaviorists had truly discredited the whole scientific paradigm so very few could put up a fight, the more against the party allied with the mighty emerging promise of a new brave computerized world. And the result with the cognitive coup was like that of all coups: the pendulum swung to the opposite extreme. All the ideas that the behaviorists had maintained were fully rejected and replaced with the total opposites from Chomsky's whimsy repertoire. I would say that the main difference between Chomsky and the behaviorists was that the behaviorists had anyway recognized the fundamental principle of *mass and energy* in their theories, they did not claim as Chomsky does that language and its components were things of sorts, thingly entities, that could possibly be studied in imaginary test tubes, in an imaginary laboratory, located in the organ of imagination of a few savants. I will below return to Chomsky's attack on behaviorism and the surprising revelation, which we already encountered above, that Chomsky, in fact, is a behaviorist himself.

Parallel with his attack on behaviorism, Chomsky exploited the opportunities for speculation that had developed in the wake of the linguistic theories of Leonard Bloomfield. By this I refer to the perversion of linguistics by the structuralist approach introduced to America by Bloomfield (see discussion in chapter *Notes to the Philosophy of Language*). Chomsky also exploited the possibilities for extending the metaphysical speculation that the Bloomfieldians practiced, but the Bloomfieldians were themselves some kind of behaviorists (we do better in referring to them as pseudo-behaviorists; reference again made to chapter *Notes to the Philosophy of Language*; in summary: Bloomfield wanted to study linguistics by the methods of behaviorism, but by way of actually ignoring the actual behavior and merely considering the traces of the behavior), therefore we may by and large refer Chomsky's conquest over the Bloomfieldians also to the conquest over behaviorism. (For the notes in this and next paragraph I refer to Randy Allen Harris's *Linguistic Wars*, 1995, especially pages 21 – 54)

The Bloomfieldians mostly concentrated on phonology and morphology and only superficially dealt with the metaphysics of grammar (which they still mostly referred to as 'grammar' and not 'syntax'). It was Chomsky's mentor Zellig Harris who expanded the Bloomfieldian paradigm to include the metaphysics of *syntax*. As Randy Allen Harris says: "He set out to find methods for boiling down syntax to a set of patterns small enough and consistent enough that structuralist methods could go to work on them" (Harris 1995: 31). To accomplish this he imported the mathematical model of transformations into linguistics. Chomsky was then to build on this mathematical model of syntax to develop his own sort of *linguistic algebradabra*. Then, albeit being himself a product of the Bloomfieldian school, he set off to 'systematically dismantle the Bloomfieldian program' (Harris 1995: 33) in order to replace that with his own perverted genre of linguistic aesthetics. – I need to stress that the arguments flying back and forth between the Bloomfieldians and Chomsky are not to be considered as having any sort of scientific value and need to be regarded mainly as competing judgments as to the aesthetic merits of their respective forms of art. In this connection, I remind that words and other hypothetical linguistic elements are no things and therefore the discussion conducted in the vein of Chomsky and the Bloomfieldians merely refer to ideas of a vivid imagination. We shall also note that Chomsky in connection with his capitulation on the rule-system model has essentially confessed to this. – I shall add that the Bloomfieldian behaviorists initially approved of

Chomsky's attack on Skinner, whom they considered as a "false behaviorist" (see Joseph, Love, Taylor 2009: 118).

But, of course, the behaviorist paradigm, as it had become known by then, was an easy target for Chomsky to demolish. We have to stop for a while and consider what behaviorism meant (Watson 1997; Skinner 1957; 1971). Behaviorism was the idea that can be said to stem from the studies of the Russian scientist Ivan Pavlov (1849 – 1936). Among other phenomena he studied what are called conditioned reflexes. The idea was derived from his research on digestion in dogs. He had noticed that his test dogs when prepared to be fed began salivating, already before they actually could observe the presence of the food, by reacting to stimuli that was connected with the preparations for feeding, for example, they began to salivate already when they noticed the lab technician who brought the food. This research paradigm came to be known as *classical conditioning*, denoting a type of learning in which an organism comes to pair a neutral stimulus (a stimulus that anticipates something else) with a stimulus that evokes a reflex; correspondingly classical conditioning has also been called associative learning. - It should be pointed out that this whole idea was based on the misconceived presumption that the animals in such reactions (and in general) are not capable of cognitively (intelligently) processing the stimuli and cognitively anticipate the reactions and that they are mere automata that react to the chain of events.

It was the American savant, John B. Watson, who developed Pavlov's ideas into the behaviorist research paradigm based on a study of conditioning as an automatic form of learning including in humans. Watson and his behaviorist followers (most American psychologists and related scientists in the first half of the 20<sup>th</sup> century adhered to one or another form of behaviorism) postulated that only such considerations that are based on observable and repeatable correspondence between a stimulus and a reaction merit scientific recognition. The behaviorist thus established a research paradigm according to which the scientific study of human cognition and behavior was exclusively dependent on data collected from simplistic experiments made in laboratories or laboratory-like conditions based on observed external behavior. The behaviorists were vehement about their exclusion from the study any data that had to do with the biological apparatus including the brain and the neural system in processing stimuli; they categorically stated that such a study could not reveal anything about human beha-

avior. With this goes their peculiar idea that something they called 'consciousness' was supposedly subjective and thus not fit for a scientific study (I deal with this misconception more in detail in the chapter *Feelings, Emotions and Consciousness*). In fact, Pavlov's original research on the system of digestion provides a good parallel by which to illustrate this subjectivity fallacy, for as I point out the digestive system is not any less subjective (proper to each individual in any moment of life) than the neural and cerebral system would be. The task of science is precisely to give the general description of the conditions pertaining to a given matter in order to be able to treat an individual case against that generalized knowledge. We need to know the general conditions of mental processing (feeling, cognition, etc.) equally as we need to know the general conditions of digestion. – In addition to this foolish research paradigm of insisting only on recording the externally observable, the paradigm also ridiculously assumed that the causes for human behavior could be traced down to the effects of one or another separately identifiable stimulus, whereas in reality an infinite range of past and present stimuli affect at any moment the mental processes which lead to the reactions that we perceive as behavior. In reality the behaviorist experiments could possibly prove only one single fact, namely the fact that people react to stimuli, but for this we did not need half a century of foolish experiments conducted by scholarly looking people walking around in white lab coats and pretending to do science.

Not only does Chomsky denounce behaviorism but empiricism in general: he equates "behaviorist speculation" with "empiricist speculation" (1967) and condemns Skinner as an 'empiricist' (1965: 51). According to Chomsky Skinner's proposals are said to amount to "a paradigm example of a futile tendency in modern speculation about language and mind," this while Chomsky calls his own linguistic alchemy the "rationalist conception" (1967). – Here I have to note that later Chomsky, however, claims that his brand of speculation somehow amounts to an empirical study (for the various peculiar ideas as to this matter see Botha 1991, e.g. 42, 43, and 199). – 'Rationality' means for Chomsky the liberty to speculate without being bound by any of the constraints which we recognize by experience of natural reality. A very pearl of Chomsky's rationalist speculation is encapsulated in this piece of nonsense:

"By pushing a precise but inadequate formulation to an unacceptable conclusion, we can often expose the exact source of this inadequacy and

consequently, gain a deeper understanding of linguistic data...Obscure and intuition-bound notions can neither lead to absurd conclusions nor provide new and correct ones, and hence they fail to be useful in two important respects....[some linguists] have failed to recognize the productive potential in the method of rigorously stating a proposed theory and applying it strictly to linguistic material with no attempt to avoid unacceptable conclusions by *ad hoc* adjustments or loose formulation” (1957: 5).

That is the way to go about speculating! Now, 50 years on to this “rationalist conception,” one-man linguistic show, it is finally dawning on a few scientists where Chomsky’s “rationalism” has taken us.

Against Chomsky’s marked criticism of behaviorism it might come as a surprise to learn that he himself is a behaviorist. Chomsky has merely narrowed the range of the subjects whose behavior he studies; these can be put into two categories: (i) the behavior of the “ideal speaker-hearer”, i.e. the behavior of Noam Chomsky himself (compare Itkonen, 2008: “the only human that Chomsky qua linguists has ever studied is *himself*”), and (ii) the *behavior* of words, syllables, phrases and other perceptual abstractions.

The entire body of Chomsky’s speculations shows that he assumes on the analogy of the processes of organic life that words and phrases would have a capacity to behave like living organisms, and to transmute from one form, or one position, to another. I stress that this fallacy represents the fundamental underlying assumption of the entire body of Chomsky’s work and therefore any separate samples of these fallacies would be redundant, however some samples may serve to illustrate the problem for those who do not have the time and patience to study the originals. Thus, for example, we find Chomsky saying: “On the other hand, its [the phrase under analysis] *behavior* with respect to transformations and morphological processes obviously shows that ...” (1965: 190); “we find the apparently irregular *behavior* of certain words (e.g. ‘have,’ ‘be,’ ‘seem’) is really a case of higher level regularity” (1957: 107). This is consistent with how he reoriented behaviorism in presenting his research paradigm in connection with the aforementioned attack on Skinner saying: “If the contribution of the organism is complex, the only hope of predicting *behavior* even in a gross way will be through a very indirect program of research that begins by studying the detailed character of the behavior itself and the particular capacities of the or-

ganism involved" (1967). For Chomsky a word as such is an "organism." The *indirect way* of studying behavior which Chomsky refers to was his method of constructing the simplistic sentences by which he convinced himself of one or another aesthetic judgment, then took the judgment thence arrived at as a physical fact, whereupon he proceeded to analyze the *behavior* of the elements of his perceptual judgments, which he called *sentences*. Chomsky thus set out to concoct a number of fantasy sentences the behavior and transmutations of which he proceeded to analyze and successfully convinced the majority of American scientists that his aesthetic analyses of the behavior of these sentences would somehow explain the nature of human cognition and the expressions it takes.

## Chomsky and the New Brave Computer World

The second of the two major circumstances that catapulted Chomsky to fame was the promise he presented to computational linguistics just when the new emerging industry had been caught by a wave of belief in the capacity of computers to behave like humans - and perhaps replace them - in most all aspects of life. As computers were by then already operated by programs called *languages* then nothing seemed more natural to those savants than to make the computers *generate language* itself. The question was only, so they thought, about discovering the inherent rules of grammar and make the computer follow them. And Chomsky seemed to offer them a solution: his generative grammar would do the trick. The dream of the computer industry to possess this program can be compared with the dream of transmuting lead into gold, and it is here that Chomsky the alchemist jumped on stage. He would make good of the promise for he was in the possession of the *philosopher's stone* in form of his "universal grammar." - Chomsky has not, however, in his public writings ever directly said that this is what he was doing, he even seems to have explicitly denied it, but the denial does not change the fact that this was the way Chomsky was received, and most probably, the way Chomsky wanted to be received.

Computer sciences are naturally connected with mathematics and since Chomsky's peculiar theories were also modeled on mathematics there seemed to be a perfect fit. Chomsky had been indoctrinated with the mathematical approach to linguistics and syntax by his original mentor Zellig Harris. Harris was one of the first prominent promoters in America of so-called *structural linguistics* that stemmed from the teach-

ings of Saussure and the French ideas of discourse analysis (see e.g. Harris 1995; Some of the notes on Zellig are derived from an article on Zellig Harris in the Wikipedia). According to those ideas human culture and language are to be understood as forming a system of signs (see discussion on structuralism in chapter *Notes on the Philosophy of Linguistics*). These ideas amounted to the first steps the academic community took in alienating itself from reality in favor of speculating what a language would be when taken to be something real and independent from human practices. It was Leonard Bloomfield (1887 – 1949) who had first brought structural linguistics to the United States and initiated the American metaphysical traditions of linguistics, which Harris was to perfect, and Chomsky to refine to the absolute sublimation; Joseph, Love and Taylor tell that “Chomsky can be seen as having taken up his teachers [Harris] challenge to develop a formal system of axioms and deductive rules that would ‘synthesize or predict’ the well-formed sentences of a language”; and that “Harrisian distributionalism continues the Bloomfieldian tradition in being a speaker-free linguistics. It treats language as a closed corpus of data,” 2009: 126).

Harris thought that essential characteristics of language could somehow be converted in to mathematical models and that language could be presented as a product of mathematical analysis of language data. It was he who initiated the tradition of linguistic transmutations. These ideas of linguistic transmutations were derived from the ideas allegedly already propagated by Sapir and Bloom that semantics (that is, meanings) are included in the grammar and that there is no other meaning than the linguistic structure itself. This presumably purports to mean that one cannot study the grammar separately from the meaning or vice versa. (I note that Chomsky went one step further deciding to drop meaning altogether). Here I need to remind that my conception (concurring with Locke) is that there is no meaning whatsoever in any words, grammar, syntax (or whatever they want to call these imaginary entities). Nothing can mean anything in abstraction, only a person, a speaker, or a writer *means*; they attempt to *convey a meaning* by the words they utter and write (by their verbal behavior). This being the case, there cannot be any theoretically study at all of any hypothetical meanings of words taken out of their proper context. And even in the proper context, one cannot study the meaning of the words, but only try to establish what the speaker/writer meant, or what kind of words are typically used in a given context in an attempt to describe a given idea; that is, one can on-

ly study which have in the past been the patterns of imitation to denote similar ideas. That kind of study yields a good dictionary.

It was in Harris's book *Methods in Structural Linguistics* (of 1951) that the unfortunate notion of generative grammar first appeared. – Having concocted the idea according to which the signs for verbal expressions, words etc, possess a life of their own, the next step towards the intellectual abyss was taken by Harris in inventing the idea, derived from algebra, that among the various signs which stand for verbal expressions one could establish some sorts of correspondences in the way it is done in mathematics and that the proper arrangement of the various variables would yield the transformation of one expression to another. This led Harris to believe that he could devise rules of linguistic transformations (the transmutations I discussed above). He postulated that sentences could be divided into sets and subsets which then would be subjected to his artful mathematical mapping techniques. This was the method of linear algebra, where a mapping that preserves linear combinations is called a transformation. – Tellingly Harris has written a book called *A Grammar of English on Mathematical Principles* (of 1982), which reminds me of those modern dance performers who interpret other phenomena of life in the medium of dance. Thus similarly we could expect a dancer to give a performance called *A Grammar of English as Dance on Stage* – but that would certainly be a more intelligent endeavor for to be sure there are more parallels between language and dance than the case is between language and math.

That Chomsky was mainly seen (in the beginning perhaps including by himself) as a promise for delivering the magic formula for making computers that could produce and understand language (and hereby by virtue of the universal grammar understand all languages at once) is supported by many of the considerations I have already referred to, but I will also refer to a few other sources which confirm this. – Margaret Boden has in her *Mind as Machine: A History of Cognitive Science* pointed out the connection between Chomsky's theories and computational linguistics. She accounts for how Chomsky first gained recognition in the field of computers and how it was only thanks to that brand recognition that he was later noticed by linguists and psychologists. Boden tells that it was Chomsky's idea of a "context-free grammar" that led to the belief that one could codify "the lexical structure of artificial intelligence" (2008, p. 627 - 630). As I noted above Chomsky had modeled his theories of the context-free language on mathematics and therefore it must have sounded intelligent to the computer pro-

grammers and technicians that language could be depicted similarly. Massachusetts Institute of Technology (MIT) had been the front runner in the study of computer intelligence, for example, hosting the first conference in machine translation in 1952 (Martin Kay in Mitkov 2004: Xvii). It was there that Chomsky was to develop his theories as his syntactic structures had “seemed eminently suited to computer applications” (Martin Kay in 2004: Xviii). Chomsky’s influence over computational linguistics from 1950’s to 1980’s can also be traced in Jurafsky’s and Martin’s *Speech and Language Processing* (2009: 43). His early affiliation with MIT (Department of Modern Languages and Research Laboratory of Electronics) is telling by itself. There Chomsky held a post of the leading linguistic alchemist promising a revolutionizing doctrine on computational linguistics for the eager engineers, rather in the same fashion as medieval princes hired alchemists in hope of transmuting lead into gold (Holmyard 1990; von Franz 1980).

In this connection it is of significance to note which sources funded Chomsky’s early speculations. We see from the preface to *Syntactic Structures* (1957) that Chomsky acknowledges support from U.S.A. Army (Signal Corps), the Air Force (Office of Scientific Research, Air Research and Development Command), and the Navy (Office of Naval Research); and in part by the National Science Foundation and the Eastman Kodak Corporation. – More or less the same supporters stuck with him at least through the compilation of his *Aspects of the Theory of Syntax* (1965), where he acknowledged these sources of support: Massachusetts Institute of Technology, Research Laboratory of Electronics, by the Joint Services Electronics Programs (U.S. Army, U.S. Navy and U.S. Air Force); the U.S. Air Force (Electronic Systems Division), the National Science Foundation, the National Institute of Health, and The National Aeronautics and Space Administration.

Following Chomsky, early computational linguists believed that “language” could be generated (produced) by a machine that had been programmed to follow the rules of grammar. They believed that language amounted to a system, which inevitably lead to certain expressions if only the rules of grammar had been correctly discovered. These kinds of ideas reflect the fundamental fallacy of not understanding the true essence of grammatical *rules* as representing observed uniformities in language patterns as expressed in actual verbal behavior, and instead taking rules to represent inherent features of hypothetical systems (where a ‘system’ was perceived on an analogy to organic life), which

by the actions undertaken *by the rules* within the system would cause orderly language to be generated. - Below I refer to Wittgenstein saying that 'we predicate of the thing what lies in the method of representing it'; in this connection I want to stress that the misconception in regards to the nature of these rules is a case in point in applying this maxim: because we usually speak of *rules* as if they would be existing entities or inherent properties of entities (instead of accounting for them as observed regularities), people are thence led to predict that they must identify the rules in themselves. - When we grasp the real essence of a rule, then we understand that computer software can only reflect the recorded data pertaining to observations of real language practices. Only by statistical methods can such a program be made to predict what would be the proper expression in any given situation, but because human speech is so totally dependent on a given context and because language practices are in a constant flux these methods can never yield speech or text that would correspond to real verbal behavior (without a human editor being involved). - Interestingly Descartes knew as much even centuries before the first computers appeared, which can be seen from this interesting passage from his *Discourse on the Method*:

"if there were machines which bore a resemblance to our body and imitated our actions as far as it was morally possible to do so, we should always have two very certain tests by which to recognize that, for all that, they were not real men. The first, is that they could never use speech or other signs as we do when placing our thoughts on record for the benefit of others. For we can easily understand a machine's being constituted so that it can utter words, and even emit some responses to action on it of a corporeal kind, if it is touched in a particular part it may ask what we wish to say to it, if in another part it may exclaim that it is being hurt, and so on. But it never happens that it arranges its speech in various ways, in order to reply appropriately to everything that may be said in its presence, as even the lowest of man can do. And the second difference is, that although machines can perform certain things as well as or perhaps better than any of us can do, they infallibly fall short in others, by which means we may discover that they did not act from knowledge, but only from disposition of their organs" (1997: 107).

The fallacy of the early computational linguists, and most of those of today, was to think that they could possibly develop computer software

that would be able to produce similar cognition (intelligence) as the human body and to express this intelligence by 'emission of language.' This also means that they thought that a human 'emits language,' instead of understanding that a human expresses his feelings with his verbal behavior. Only human beings as cognitively conscious animals can express their feelings which is done by means of verbal behavior; this is why a computer can never be made to speak as a human. And a computer can never be made to possess intelligence comparable with human intelligence precisely for the reason that computers do not feel. Only a living organism can feel as a result of the bodily processes that evaluate the effect of a particular stimulus on the various bodily processes and on the overall wellbeing of the organism as measured by the homeostatic system. And to note, once a stimulus has in the lifetime of a human organism been detected and neurally processed, then it may any time in the future affect cognition in infinite variances in infinite combinations of mental processes of feeling; something that a computer can never be made to simulate.

I note, as I have said in other parts of this book, that cognition, thoughts, consciousness, emerge from cognitive feelings, that is, they represent further developments of the mental processes that create feelings (see discussion especially in chapter *Mental Processing and Feelings, Emotions and Consciousness*). When we speak we are thus expressing an interpretation of our feelings. Due to all these considerations speech ultimately represents a function of environmental stimuli and mental processes in infinite variances, which computers can never be made to do (as Descartes already knew).

This fallacy is also firmly rooted in the failure to conceive of speech and language as separate categories, that is, the failure to understand that a language merely corresponds to perceptions of social practices. Most importantly, the computational linguists did not understand that words are immaterial, i.e. they do not correspond to anything else than the perceptions we form of verbal behavior. As I have explained, this means that words, expressions, have no existence of their own, and that they only represent verbal symbols by which a living human being expresses an interpretation of feelings. Therefore a computer can never produce original expressions; a computer may only be made to produce expressions that correspond to programmed sequences of what people have said.

These fallacies are illustrated, for example, by a passage in Mitkov's *The Oxford Handbook of Computational Linguistics* where he says that the "fundamental problem of syntax is to characterize the relation between semantic predicate-argument relations and the superficial word and phrase configurations by which language express them" (2004: 70). The reader should by now be alert to these kinds of fundamental misconceptions which breach against our elementary knowledge of physics. We note that the author maintains that the subject which expresses these "superficial word and phrase configurations" would be no one less than "language" himself. Language is only the abstract perception we have formed of observed verbal behavior and can naturally not express anything – language is the expression in abstraction. The one who expresses is a human being. We also note how permeated with the Chomskyan linguistic alchemy this idea is when the author says that there is the "superficial word and phrase configurations" *versus* the supposed deeper structures of "predicate-argument relations." There are no "deep structures" in language, all we see, and all we hear, is all there is to it. In this connection we are reminded that even Chomsky who had invented these ideas has already capitulated and no longer holds these ideas. Chomsky himself, at best, refers to these 'deep structures' as an 'array of elements of cognition.'

By these considerations I hope to convince the reader to think of computational linguistics as a very empirical endeavor based on an analysis of how people in fact, in real life, tend to express themselves. The mathematical sciences are of use here only from point of view of programming technology to process the entered data; of essence here is the provision of statistical predictions about the frequency of one or another expression (linguistic pattern) in the context of other expressions (probabilistic models). But there are no, have never been, and will never be any formulae that could make a computer produce speech or written expressions independently based on some programmed rules. We see from Jurafsky's and Martin's *Speech and Language Processing* how computational linguistics is now maturing towards becoming this kind of an empirical science. The authors speak about a trend from the 1980's called "return to empiricism" connected with an increased use of probabilistic models (2009: 46). They also tell that the "empiricist trends begun in the latter part of the 1990's accelerated at an astounding pace in the new century" (2009: 39). But as I already told the more theoretical linguists are still not convinced that this is a purely empirical science, Jurafsky and Martin themselves seem to be wavering in this re-

gards, which is evident from this statement: “However, an understanding of human language processing can often be helpful in building better models for language. This seems contradictory to the popular wisdom, which holds that direct mimicry of nature’s algorithms is rarely useful in engineering applications” (2009: 48). In actual fact there is nothing that can be correctly done in linguistics in general nor in computational linguistics in particular that would not be ultimately rooted in an understanding of human language practices, that is, the expressions humans make. As long as this is not understood a lot of efforts will be spent in vain.

It is against this background of trying to satisfy the computational needs that we have to decipher the narratives of Chomsky. We may, for example, take a new look at this peculiar statement: “The grammar of L will thus be a device that generates all of the grammatical sequences of L and none of the ungrammatical ones” (1957: 13). Here we see that Chomsky was so eager to jump to conclusions that he had forgotten that he would have to differentiate between the device (computer) and the software (grammar) and instead he mixed them up in one, the device (grammar) being at the same time the software (grammar). Later it seems that Chomsky has, be it consciously or unconsciously, realized that he has to differentiate between the device and the software; this when he has introduced the “language faculty” as the device and the grammar-cum-theory in a role reminiscent of the software. - Something else in the above statement also points to the promise of magical software: it is the bold proposition that his device would only generate the grammatical sequences and none of the ungrammatical ones, that is, Noam Chomsky would make a device that never fails.

Even so, having identified the two causes for the cognitive coup we still have to wonder how such products of a vivid imagination came to be accepted as science in the second part of the 20<sup>th</sup> century. This reminds me of John Maynard Keynes’s characterization of the work of another revolutionary, namely Marx, of which Keynes said: “Marxian socialism is such an illogical and dull doctrine that it must always remain a potent to the historians of Opinion, that it can have exercised so powerful and enduring an influence over the minds of men, and, through them, the events of history” (Ebenstein 2003: 84). That is to say, that this is a case for mass psychology. Psychologists should evaluate in terms of crowd psychology how it is possible that Chomsky’s extraordinary speculations were raised to the pinnacle of science in the

age when people were sent to the moon in rockets and the principles of genes were discovered. How was it possible that this fundamental derangement of the scientific mind took place leading scientists so cardinally to lose contact with reality that hallucinations became acceptable and disorganized verbal behavior the standard? How was it possible that individually knowing and intelligent people were to come to believe in these fables? What could explain this prevalence of collective mental formation above the individual? Having stated those questions, I know that the answer is to be sought for in the very language practices, that is, in the way language bewitches thinking when particular kinds of expressions (and the ideas that they are tied with) receive a dominant circulation. As a consequence of these considerations there will always be one or a few branded authorities who will be regarded as the gurus in any particular field of social practices in their capacity of inventors of the most fashionable expressions which at any given time are taken to represent profound ideas in respect to their particular fields. In the case of Chomsky, he had received such brand recognition and therefore his expressions were accepted uncritically. Chomsky and Chomsky's theories as such are of no interest, and of no value. Anybody can come up with lunatic ideas, but the question is why they are adhered to?

Chomsky's very theories prove empirically how language practices affect thinking. The theories he has concocted and the following they have enjoyed prove in themselves the so-called Sapir-Whorf hypothesis according to which thought is affected by the way we speak, by the words we hear and by the ideas we connect them with (see chapter *Notes on the Philosophy of Language*). This in turn corresponds to Wittgenstein's idea that: "Philosophy is a battle against the bewitchment of our intelligence by means of our language" (*Philosophical Investigations*, art. 109). This means that the whole point of philosophy, and hence science in general, is to account for the way we speak in order to determine if it makes sense in accordance with the natural reality we can observe and then to conceive of new ways of expressing our ideas so as to realign them with the natural reality. Very similarly to the Sapir-Whorf hypothesis Wittgenstein said "We predicate of the thing what lies in the method of representing it" (*Philosophical Investigations*, art. 104; compare Whorf 1956). – And similarly: "The limits of my language are the limits of my world" (*Tractatus* 5.6.1.)

Long before Sapir, Whorf, and Wittgenstein this problem had already been identified by Locke who contemplated on the idea with these words:

*“Interest, though it does a great deal in the case, yet cannot be thought to work whole societies of men to so universal a perverseness, as that every one of them to a man should knowingly maintain falsehood: some at least must be allowed to do what all pretend to, i.e. to pursue truth sincerely; and therefore there must be something that blinds their understandings, and makes them not see the falsehood of what they embrace for real truth. That which thus captivates their reasons, and leads men of sincerity blindfold from common sense, will, when examined, be found to be what we are speaking of: some independent ideas, of no alliance to one another, are, by education, custom, and the constant din of their party, so coupled in their minds, that they always appear there together; and they can no more separate them in their thoughts than if they were but one idea, and they operate as if they were so. This gives sense to jargon, demonstration to absurdities, and consistency to nonsense, and is the foundation of the greatest, I had almost said of all the errors in the world; or, if it does not reach so far, it is at least the most dangerous one, since, so far as it obtains, it hinders men from seeing and examining” (Locke 1694 Vol. I: 238).*

Most importantly the lesson we learn from the adventures of Chomsky - as I pointed out already in summarizing his illustrations of the ubiquitous grammar - corresponds with another one of Wittgenstein’s lasting wisdoms, namely that “we must do away with all explanation, and description alone must take its place” (Philosophical Investigations, art. 109).





# **A Biological Philosophy**

## **Volume II:**

### **Mental Processing**



# 1 MIND

When scientists discuss the issues that form the subjects of this book they refer to something they call the “mind.” This in itself tells a lot about neurophilosophy, for there is no such thing as the ‘mind.’ By this the contemporary scientists and philosophers are merely repeating the age-old fallacy to regard the ‘mind,’ and its predecessor, the ‘soul,’ as some kind of separately existing agents. The contemporary neuroscientists, obviously, do not admit that this is what they are doing as they wish to explain the ‘mind’ in quite material terms. But the wish to do so, does not yet imply that they are actually doing so. Neuroscientists have failed in their noble attempts to give a materialistic explanation for human cognitive experience (mental phenomena) because they have not succeeded in liberating themselves from the bewitchment that the received concepts exercise on their thinking. They have retained the linguistically received background assumption that ‘mind’ is to be treated as a separate entity of sorts. (See chapter *Mental Processing* for a discussion of the fallacies of materialism). Thus ‘mind,’ de facto, continues to be perceived as an entity in its own right on the analogy to the ‘soul’; an entity which resides inside the human body and reveals itself through cognition – or more correctly, in the vocabulary of contemporary neuroscience: reveals itself “in consciousness.” Ever since the ‘soul,’ with the separation of science and religion, was rejected from scientific discourse, scientists have sought for other explanations for the corresponding phenomena. But hereby they have not proceeded much further than using the concepts ‘mind’ and ‘consciousness’ as euphemisms of ‘soul,’ substituting the academically more hygienic ‘mind’ and ‘consciousness’ for the tainted ‘soul.’ – But the discourse centering around these concepts has not contributed in any significant manner towards a description of how cognitive consciousness emerges from bodily processes, as it is now shown in this book.

Neurophilosophers have not realized that ‘mind’ represents merely an abstraction, just as I have shown the case to be also with the concept ‘language.’ There is no such biological organ or complex of tissues or neural or cerebral circuits which possibly could be identified as the ‘mind.’ Properly we may speak about a ‘mind’ only in reference to the cognitive reflections that emerge as results of mental processing of stimuli, that is, the *natural dualism* between the body/brain and the exter-

nal stimuli being interpreted (*new dualism*). ‘Mind’ cannot be explained by the biology of the brain and the nervous system, because ‘mind’ itself is a product of the nervous system interacting with the environment, with social practices. ‘Mind’ is thus the perceived result of human mental processing of stimuli (interpretation), and especially of processing the stimuli that we experience in form of social practices (most notably language). ‘Mind’ represents the results, reflections, or perceptions we form (in abstraction) of our own and other people’s cognitive activity.

‘Mind’ should thus be seen as a result of cognitive activity: the output of organic processes, but not the organ which processes, nor the processes themselves. In order to grasp this and to identify the true essence of the phenomena falling under the concept ‘mind,’ it is helpful to run the concept through the four elements of the *organic process model*, as I have done in chapter *Mental Processing*. There I proposed to ask whether ‘mind’ forms part of the first element of the organic process model, the *neural apparatus, the body* or a *bodily part*? I replied that it does not. Next I asked whether ‘mind’ corresponds to the second element of the organic process model, *bodily processes* and again replied in the negative. Then we had to determine whether ‘mind’ corresponded to the third element, *the stimuli being processed*? Again the reply was negative. Finally I asked: ‘Does ‘mind’ correspond to the fourth element, *the process output*? To this question I proposed to reply in the affirmative, for ‘mind’ is best seen as the output of the body/brain processing stimuli (in view of the sorry state of neurophilosophy, I am compelled to remind the reader that the brain is a part of the body). But here I pointed out that, even so, we still would experience a difficulty in characterizing the ‘mind’ as the process output. This has to do with my conception of ‘mind’ representing some kind of a meta-abstraction of all the perceptual abstractions we form. I will try to explain this idea below.

Most importantly we will have to fully recognize the social dimension of ‘mind,’ that is, that ‘mind’ is a product of social stimuli being processed by the biological body. As I will tell in chapter *Mental Processing* (section *new dualism*), the recognition of the social influence on cognition is altogether relatively recent. Concurring with Lewes, I am ready to identify August Comte as the origin of the idea (Lewes 1879a: 6). But even so the ideas have still not been widely recognized and receive only fleeting mentions, if any, in modern neurophilosophy. Lewes, himself, had a much more developed conception (than

Comte) of the social dimension of 'mind'; as a lonely voice he identified that "our search for the conditions and pre-conditions of the phenomena [of mind] is therefore solely directed to the organism in relation to the external world and to the social world" (1879a: 13)<sup>1</sup>. Lewes rightly called for a "recognition of the Mind as an expression of organic and social conditions," and by this "recognition of the social factor as the complement to the biological factor," he said, the first step would be taken towards a proper understanding of our subject (1879a: 5)<sup>2</sup>.

In ordinary language we refer by 'mind' both to how a person thinks in a particular instance, and a person's general way of thinking, his general propensity to think in a certain way, or perhaps his style of thinking. An example of the latter is, for example, when we talk about an artist's ideas in general, such as when we talk about "Proust's mind..." Further we make generalizations and speak about the mind of a population in a given time and place, for example, 'the German mind of the 1930's.' In correct use we may by 'mind' also refer to a person's feelings (opinions, taste) on something in particular or in general. But neurophilosophers speak of 'mind' in an absolute sense by reifying the abstraction<sup>3</sup>.

It is in this sense of referring by 'mind' to the general propensities of thinking that I encounter the problem of defining 'mind' as the process outcome, for the general propensity to think is never an outcome of a process, it is only a perception combining all our past experience pertaining to a relevant issue. All what we can think of is not, and all what we have thought of have not been, produced all at once in one go, therefore the ideas are never simultaneously present so that we could examined what the 'mind' consists of. On an analogy with the fallacious linguistic theories of Chomsky we could say that the 'mind' does not consist of a 'set of ideas' (compare Chomsky's conception of "a set of sentences").

Summarizing the above we could say that 'mind' on the subjective side is a perception we form on the experience of having observed our own and other people's cognitive behavior. 'Mind' can be considered to represent both particular instances of cognitive behavior and the general perceptions we form of all such behavior. On the objective side 'mind' could be seen as corresponding to mental processing of environmental stimuli that leads to cognitive consciousness. In other terms, we can also say that by 'mind' we refer to the phenomena which result from the interaction of social practices (past and present expressions) with the biological neural apparatus. Whatever we settle for we should note that

at the end of the analysis ‘mind’ is a social and linguistic construction, in a way a social fiction, and by no means an object for neuroscience. The most important conclusion to be drawn from all this is that by ‘mind’ we may intelligibly only refer to the results of mental processes.

From the above we should also draw the conclusion that there cannot exist any kind of a ‘mind-body problem,’ anymore than there can be a ‘pink elephant-body problem,’ because in both these hypothetical problems there is one element that does not correspond to any kind of physical reality: both ‘mind’ and ‘pink elephants’ are merely perceptions we form as reflections of mental processes, and neither correspond to a physical reality.

The contemporary philosophical conception of ‘mind’ tallies with its popular meaning as evidenced, for example, by the definitions in Merriam-Webster, where ‘mind’ is “the element or complex of elements in an individual that feels, perceives, thinks, wills, and especially reasons” or “the conscious mental events and capabilities in an organism” or “the organized conscious and unconscious adaptive mental activity of an organism” (Merriam-Webster). This dictionary definition is also interesting inasmuch it almost verbatim repeats the definition that Lewes more than a century ago criticized in reference to the 18<sup>th</sup> century philosopher, Thomas Reid, who had said: “By the mind of man we understand that in him which thinks, remembers, reasons, wills” (Lewes 1879b: 4). I note that Lewes criticized this position precisely because of the fallacious belief of taking ‘mind’ to represent such a thinking entity<sup>4</sup>.

By way of example, I will refer to how some of our contemporary neurophilosophers employ the concept. One of them, Patricia Churchland, equates the ‘mind’ with the brain and is vociferous in condemning those “who deny that the mind is identical with the brain” (1989: 317). This is a very peculiar position, for by maintaining that something ‘is identical’ we mean that they ‘are the same,’ and if they are the *same*, then we would have to wonder what was the point Churchland wanted to make; why wouldn’t she just tell that she has established ‘mind’ as a synonym for ‘brain’? That there anyway is, even in her conception, a difference follows from the way she speaks of “how the brain-mind works” (1989: 315), for we must presume that she would otherwise not want to use the two alleged synonyms in this way tautologically. The brain as comprising the center of the nervous system has been identified as a human organ, we therefore have to take it for granted that Churchland refers to this same organ as it has been depicted and described in

science. It would then follow that Churchland wants to study how the brain works in conjunction with some metaphysical entity that she terms ‘mind.’ These considerations are confirmed by her call for a “unified theory of the mind-brain” (that is, in her logic a unified theory of two synonyms). But we have a unified theory of the brain, which is what real neuroscientists know about the anatomy and the biochemistry of the brain. As in Churchland’s own conception the ‘mind’ and the brain are the same, then a theory of ‘mind’ could possibly not contribute anything to the theory of its alter ego, the brain. Here we see again, how conceptual philosophers get lost amidst their proper concepts.

Johnson-Laird wants to see the ‘mind’ as “a symbol-manipulating device” (1988: 35). But we already have the ‘symbol manipulating device,’ that is, the brain which manages all the organic processes in the body, and in this regards, it in particular manages the processes of *conceptualization*, which precisely are about ‘symbol-manipulation.’ As we all already know – or at least all should know – that the brain as a physical organ manages these processes, then we cannot but wonder why Johnson-Laird have felt a need to postulate the existence of a ‘mind’ as a competing “device”? The ‘mind’ is the product of the operations of the brain-device.

Kandel almost concurs with Churchland saying that he has invented a “new science of the mind,” the most important principle of which is that “mind and brain are inseparable” (2006: xii), however, he anyway adds that “mind is a set of operations carried out by the brain.” Thus he is essentially saying that the apparatus processing and the processes are inseparable, which really represents tautological nonsense, for, from one hand, this is, of course true: there cannot be a process separate from the apparatus where the process runs, but from the other hand, it is scientifically essential to distinguish between what is a process and what is the vehicle performing the process. Additionally one needs to distinguish between the processes and the process output (where only the latter corresponds to ‘mind’).

Kandel motivates his “new science of mind” by a set of arguments, like these:

- “The brain is a complex biological organ of great computational capability that constructs our sensory experiences, regulates our thoughts and emotions, and controls our actions”
- “The brain is responsible not only for relatively simple motor behaviors, such as running and eating, but also for complex

acts that we consider quintessentially human, such as thinking, speaking, and creating works of art.”

- “Looked from this perspective, mind is a set of operations carried out by the brain, much as walking is a set of operations carried out by the legs, except dramatically more complex.”

These are, in fact, quite fantastic claims coming from such an eminent neuroscientist. In the two first quoted passages he tells – lo and behold – that the brain is an essential organ for all human actions. Who is left to be convinced of this! Who would think that the brain is not equally important for “simple motor behaviors” as “for complex acts”? What authority does the enumeration of these facts lend to speculation? – But, anyway, he then in the third of the quoted passages performs a logical somersault, as he now juxtaposes “walking,” as “operations carried out by legs,” with “mind,” as “operations carried out by the brain.” This although he had just earlier reminded us of the elementary biological facts that all operations, including simple motor behaviors “such as running and eating” is what the brain is responsible for. Even when admitting to not having seen a single synapse in my life, I dare challenge Kandel with the claim that walking is an operation carried out by the brain (when observing walking we merely notice the somatic connection to the legs more conspicuously than with other brain operations). – This is, in fact, a good illustration of Kandel’s error, and of the “mind-body problem” more in general, for Kandel postulates that in the brain there would occur some mental operations that are unrelated to the other processes that occur in the body. This whereas we should in reality conceive of the brain as the organ which centrally manages all the sensations and actions of the body through the systems of homeostasis, of which cognitive feelings represent an extension (see chapter *Mental Processing*). Walking is the result of mental processes – processing of stimuli that lead to the bodily expression of walking. Other stimuli and other mental processes lead to the expression of cognitive feelings, or thoughts, which may ultimately find expression in speech (but which necessarily result, if not in speech, then in some kind of expression; see chapter *Expressions*). But the same mental processes may well lead both alternatively and simultaneously to speech and other bodily expressions such as, for example, turning around, lowering the chin, or raising the eyebrow, in fact, the very act of walking may be one of these

alternative or simultaneous expressions. All bodily expressions are results of mental processing, and all mental processing – conscious or unconscious – leads to expressions, be the expression walking or speaking. Kandel does not seem to be recognizing the fundamental fact that the life of any organism is always (at any given moment, and continuously) about positioning itself to its environment by the mechanism of interpretations and expressions. There is thus no fundamental difference between the cognitive operations what, it seems, Kandel fumbles to define as “biology of mind” and other bodily expressions.

Damasio’s confusion in regards to ‘mind’ can be demonstrated by a series of quotes from his work:

“The conscious mind and its constituent properties are real entities, not illusions, and they must be investigated as the personal, private, subjective experiences that they are” (1999: 308). – I claim that the contrary is true, that is, ‘mind’ is sooner an illusion than a real entity. It is peculiar that Damasio in the same proposition refers to these “real entities” as “subjective experiences” for ‘experiences’ certainly are no entities. Damasio has in *Descartes’ Error* (2000) criticized Descartes for his conception of the dualism between ‘mind’ and body, but we have to note that it is by no means any better to conceive of ‘mind’ as a “real entity” in the way that Damasio does it.

“Although both mind and behavior are biological phenomena, mind is mind and behavior is behavior” (1999: 309). – What we precisely should understand is that ‘mind’ is a phenomenon which is the product of the synthesis of the biological with the social. And as such ‘mind’ is more a social than a biological phenomenon and correspondingly more an object for psychology than neuroscience. For that matter, the same can be said for ‘behavior’; and we should not forget the connection between ‘behavior’ and ‘mind,’ ‘behavior’ is preceded by ‘mind,’ behavior is a result of the cognitive processes that are referred to as ‘mind.’

“Because the mind arises in a brain that is integral to the organism, the mind is part of that well-woven apparatus” (2003: 195). – ‘Mind’ is not a part of the apparatus, rather ‘mind’ is the product of the apparatus.

“Emotion and related reactions are aligned with the body, feelings with the mind” (2003: 7). – This misconception mirrors that of Kandel when he juxtaposed “walking” as “operations carried out by legs” with

“mind” as “operations carried out by the brain.” Lewes already in 1879 alerted against this fallacy as evidenced by this quote: “But how about the antithesis between Feeling and Thought? There are many philosophers who interpret this antithesis as meaning that Feeling in some mysterious way comes from the Body, whereas Thought has a purely spiritual origin in the Mind. The reduction of both to Modes of Sensibility will seem a complete destruction of the spirituality of our higher functions. That reduction, however, is the irresistible conclusion of the scientific principles of a biological Psychology. It is, indeed, in opposition to the view held by the majority of psychologists, and by the general public” (1879b: 3)

“The mind exists because there is a body to furnish it with contents” (2003:206). – It is ‘mind’ that is the “content,” the body by detecting signals in the environment furnishes the apparatus with stimuli which then get processed to become “the content.”

But I have also detected a passage where Damasio expresses the idea of ‘mind’ in largely correct terms like this: “What I am suggesting is that the mind arises from activity in neural circuits...but many of those circuits were shaped in evolution by functional requisites of the organism, and that a normal mind will happen only if those circuits contain basic representations of the organism, and if they continue monitoring the states of the organism in action. In brief, neural circuits represent the organism continuously, as it is perturbed by stimuli from the physical and sociocultural environments, and as it acts on those environments” (2000: 225).

I shall also note that Bennett and Hacker show their better selves in the discussion of ‘mind’ and quite correctly tell that “the question ‘What is the mind?’ may be altogether misleading – precisely because the mind is not a kind of thing. Rather in speaking idiomatically of the mind we are speaking of a wide range of characteristic human powers and their exercise, and of a range of human character traits” (2003: 105).

It should not come as any great surprise when I announce that the theories of Chomsky are also mired in these fallacies. I shall here repeat briefly what was said in the chapter *A Review of Chomsky’s Verbal Behavior* about his peculiar conceptions of the ‘mind.’ Chomsky also speaks about ‘mind/brain’ “as if the mind and the brain were one and

the same entity,” (Bennett, Hacker 2003: 104). But Chomsky would not be Chomsky, if the case would be settled with that. Rather while he – likewise as Churchland was above shown to do – equates the terms, he simultaneously posits some kind of a difference between them. Thus he speaks of “mind/brain interaction” (2007: 1), as if two synonyms could interact with each other. This time we receive an explanation for this peculiar logical construction: Chomsky connects the metaphysical ‘mind’ with the natural organ ‘brain’ with the motivation that ‘mind,’ in fact, is “the brain viewed from a particular perspective” (2007: 76). And this “particular perspective” turns out to be nothing more, nothing less, than Chomsky’s own speculations. This conclusion follows from yet another of his explanations, according to which he by ‘mind’ means “the mental aspects of the world” (2007: 75). To fend off any criticism of this extraordinary statement he adds that the definition is given “with no concern for defining the notion more closely.” – The result of all this is that Chomsky equates the brain with the ‘mind’, but not quite, for the ‘mind’ is the brain “viewed from a particular perspective,” which through the operations of Chomskyan logics yield that the ‘mind’ is ‘the mental aspects of the world.’ Connecting this with the initial premises it follows that Chomsky must think that the brain also is ‘the mental aspects of the world,’ but only viewed from yet another perspective. But this is quite consistent with his theories in general –for Chomsky everything is something viewed from a peculiar perspective.

We shall note that as the ‘mind’ is not an entity, then it cannot have any kind of form or structure. This means that the ‘mind’ cannot be said to be modular in structure as the Chomskians claim (see Botha 1991: 109). But a scientist could intelligently claim that the *brain* is modular, and perhaps we may even allow for it being modular in structure, but it is certainly not modular in respect to the results (expressions) that the mental operations yield.

This fallacy of taking the ‘mind’ to be some kind of an entity and to equate it with the brain becomes the more difficult to comprehend when we consider that these fallacies have been exposed long ago, among others, by Lewes as it was shown above. Lamarck had already in 1809 in his *Zoological Philosophy* expressed his bewilderment on how some of his contemporary authors treated ‘mind’ as an entity (Lamarck, 1809: 286). Lamarck refers to a passage quoted from said authors, where they proclaimed: “not only do we not understand nor ever shall understand how impressions on the brain can be perceived by the mind and produce images in it.” To this Lamarck retorts that he wishes “to ask what is the

peculiar entity called mind in the cited passage.” He adds that this ‘mind’ of theirs is considered to be “a remarkable entity which is alleged to be in relation with the acts of the brain, so that the functions of this organ are of a different order from those of the other organs of the individual.” To conclude Lamarck says: “In this fictitious entity, which is not like anything else in nature, I see a mere invention for the purpose of resolving the difficulties that follow from inadequate knowledge of the laws of nature... These questions puzzle us because the procedure of nature, and the different kinds of transformations that she is always producing, are not yet ascertained.” – We can only wonder that this critique still today remains so valid.

## 2 PROCESSES AND CONCEPTS

In the last half a century or so we have been presented with most valuable insights into the neurochemistry of neural processes; we have sent spaceships far out in the cosmos; and with the aid of computers and information technology scientific data is processed at incredible speed and transferred to any part of the world in the matter of seconds. But notwithstanding this remarkable technological progress that has enabled scientists to gather unprecedented and marvelous data about the physical nature and living organisms, there has not occurred any corresponding improvement in the philosophical paradigms by which the new findings are scientifically interpreted. The problem is that while our technology has changed, the ultimate means by which we interpret the results, namely language, has not changed much at all. Most scientists are still hostages to the *conceptual method* which, dating back to the age of Plato and Aristotle, is as old as Western science. Scientists still approach their subject matters and research findings with the inherited models of trying to match physical and biological processes to their received conceptual frameworks, to which they give priority over the processes they observe. This is where we need a fundamental paradigm shift: we have to understand that instead of analyzing the concepts by which we try to illustrate our ideas we have to give priority to the study of the underlying biological processes, and try to match the concepts to the processes we observe and not the other way around, as it is presently done. And doing so we shall never lose sight of some fundamental scientific principles, which are: (i) the principles of evolution, by which we should understand that all living organisms are genetic successors of lower forms of life; (ii) the evolutionary principle also entails that a complex organism incorporates *both* processes that run the same way and yield the same expressions as they did in the primordial forms of life, *and* processes that are based on the former but due to the increased complexity yield other expressions; (iii) the principle of a unitary (holistic) character of all organic processes, which follows from the previous principle; according to this principle all organic and neural processes are unified so that they all bear on the homeostasis of the organism, and through the homeostasis affect “each other”; (iv) the previous considerations also mean that all the processes are interdependent

as I have depicted it with idea of *the hermeneutical evolutionary spiral* (see chapter *Mental Processing*).

With these principles in mind we have to dispel the myth about the correspondence of a given concept to an underlying reality, and learn to depict the processes themselves. As all organic processes occur in infinite variances, then we cannot expect that this reality could possibly be captured by rigid application of concepts. We have to understand that all processes leading up to cognitive feelings and cognitive consciousness are but aspects of biological process in infinite variances.

The fallacy of the conceptual method of science is the failure to recognize that there can never be a real correspondence between the words and the objects, processes, and phenomena which we describe with the words. Words and phrases only represent our *interpretations* of the objects and processes. Thus strictly speaking we do not *gain knowledge* and *learn facts* but *make interpretations*. But not only should we exchange *knowledge* and *fact* for *interpretation*, rather we also need to apprehend that the very interpretations are enfeebled at both ends of the processes. *Firstly*, the interpretations are processed in the background of the received social practices, thus the concepts of the past affect the way we perceive things and phenomena; *secondly*, an interpretation is rendered vocal by verbal expressions (speech or writing). These expressions amount merely to feeble attempts to render the original interpretation the way we feel it. Again, all these attempts are governed and restricted by our social practices, which set the limits of what can be thought of independently and what can be said. An expression of an interpretation never corresponds with the underlying interpretation (for all the reasons laid forth in this book).

By a study of nature and life we can never hope to find what concepts would correspond to, but by using concepts we may attempt to express what the processes are like. Thus, for example, we cannot try to identify what kind of processes the concepts 'mind', 'consciousness', 'memory, would possibly correspond to, because these concepts are mere social and linguistic fictions.

When we make statements about the organic nature we have to keep in mind that we are treating phenomena that are made up of processes in infinite variances. We have to understand that we cannot convert into a scientific language of concepts the eternal flux inherent in the processes. The more complex the underlying issue the more difficult it is to express our opinions or feelings as to the matter, this because the

method of analogy breaks down, we are left on uncharted territory left without the language patterns that have taken us so far. This is the problem in science but equally in everyday personal relations. The advances in physics and chemistry followed hand in hand with conceptual clarity – the success of mathematics being entirely a result of it. But in psychology and neuroscience no movement towards conceptual clarity has taken place and correspondingly no advance in paradigm descriptions has followed, this notwithstanding all the technological improvements that have enabled scientist to identify more and more details about the anatomy and biochemistry of the nervous system.

True to these ideas it has been my aim with the present book to launch a criticism of the traditional conceptual method of neuroscience, psychology, the philosophy of mind, and, of course, linguistics. By this I want to illustrate how concepts should only be treated as artificial devices that can help describe our ideas, but that we should not, as the overwhelming majority of scientists do, allow us to think that concepts as such stand for the underlying reality that we want to depict. We have to dispel the myth of the correspondence of the concept to an underlying reality, and instead find concepts that help us to illustrate what kind of processes constantly occur in infinite variances. In particular in regards to the subject matter of this book, we have to understand that all the processes leading up to cognitive feelings and cognitive consciousness are all but aspects of unified biological processes, which I propose to denominate ‘feelings,’ which in turn represent evolutionary derivatives of organic homeostasis.

These considerations bear on the question of what we may possibly treat as *real*, *existing*, or as something that can *be*. Clearly concepts, which are only words and not matter with mass and energy, are not real and existing, they cannot possibly *be*. But even the existence, the reality of processes is not a straightforward question. To say that a *process is real*, is not strictly speaking correct, for a process can be postulated to be real (i.e. having been real) only to the extent we speak about a completed part of a defined process, but in regards to a process in the generic sense we cannot correctly speak of it in terms of *existing*, in terms of *being*. For a process as such does not *exist*, only various movements combining materials that exist have occurred; and these combined movements we may conditionally call ‘processes’ (we make even a bigger mistake to speak in the singular of a ‘process’ having occurred). Following Heraclitus, we would say that one cannot experience the same process twice, or, the same process is never repeated. All organic

reactions are results of an organism reacting to manifold stimuli causing a variety of processes (potentially in infinite variances); there is never a result (within a living organism) of the processes in the sense that the processes would have ended, therefore each seeming result is only a reflection of the present outcome of the process in a given moment. In regards to the subject matter of this book, this entails that due to the complexity and interdependency of the infinite variance of processes it amounts to a real impossibility to account for which stimuli, and exactly which processes cause a given behavior.

Thus we can say that biological processes are *real*, for such phenomena occur, but we cannot say that a process *is*. In line with the above we should understand that there are bodily expressions that are *material*, for the whole organism is a result of, a concoction of, organic expressions, but each expression is a mere reflection of a process in continuous flux (which lasts as long as we live). Material expressions cannot be said to exist separately, only the whole organism as a concoction of the expressions exist; for any separate (living) part of the organism is an expression of an infinite variance of processes in flux, which makes it impossible to postulate an existence for any of the parts.

Concepts never capture the underlying flux of processes, rather they tend to correspond to a standstill, that is, they depict a hypothetical situation as if all the processes had ceased to run. This is a hypothetical situation in regards to living organisms, but in one unfortunate case it corresponds to a real situation namely, in the case of death, for all organic manifestations, all life, occurs exclusively as processes where a standstill cannot correspond but with death. When all the processes cease to run, then the organism is dead. In view of these considerations, I tend to reject the applicability of the word 'state,' as in 'mental states.' The word *state* conveys an idea of a definite, unalterable condition of being, which corresponds with its etymological origin of *standing* or being in a definite position. By the use of it we thus convey the idea of a standstill which is contrary to the eternal flux of all processes of life.

A special predicament connected with the conceptual method is the fact that the concepts are most often given in the nominal form. This nominal form yields either the anthropomorphic fallacy of giving the concept a role as a human-like agent or at least it conveys the same unfortunate idea of a standstill, this while a verb form would better convey ideas of actions and processes. This predicament and the cure are well illustrated by the alternate concepts 'memory' and 'remembering.' The

use of the nominal concept ‘memory’ leads to a misguided research paradigm as the postulation of the concept necessarily entails the idea that there must be such an entity in the body or its brain that corresponds to that concept. This whereas the verbal concept ‘remembering’ more readily points to the process-like character of the underlying phenomena (see detailed discussion in the chapter *Memory*). Correspondingly the belief in the reality of the nominal concept ‘mind’ and its sister ‘consciousness’ (i.e. the perverted neurophilosophical conception of it) has lead to the idea that there necessarily must be something in the brain that corresponds to these concepts, this instead of seeing “the mind” as the product of mental processing of stimuli, and ‘consciousness’ as the being aware of organic and neural phenomena. In scientific terminology nouns can only correspond to abstractions. This is also illustrated by considering the abstract concept ‘consciousness,’ which has led to so much confusion in neurophilosophy. If we inquire in abstraction: ‘What is consciousness?’ then we will inevitably get engaged in nonsensical aesthetic discussions of the type that Searle presents us with (see chapter *Mental Processing and Feelings, Emotions and Consciousness*), but if we ask: ‘What does it mean *to be conscious*’ then we have posed an interesting question for scientific research. With the verbal question we are led to study the underlying phenomena in all their infinite variances, this while the nominal form yields academic humbug.

These conceptual fallacies are rooted in our language practices which cause the human predicament to speak in terms of a *language of things*, which I juxtapose with an ideal *language of feelings* (a more detailed discussion will follow below). This fallacy weighs heavily on the scientific enterprise, on our understanding of science, and has lead to the dominance of conceptual thinking over that of thinking in terms of phenomena and processes in flux. I refer to these fallacies in science as the *conceptual method of science (or conceptual fallacy)*. This is when the concepts in which *scientific interpretations* are expressed (note the use of word, *interpretations* instead of *knowledge*) are taken to correspond to an underlying reality. In the language of science concepts are assigned the primary role, and most every scientist unfortunately sees his role as that of a mechanic who tries to match reality to the, for him, far superior concepts. But, on the contrary the real scientific endeavor should be that of attempting to match the concepts to reality, an attempt that would force one to find new ways of conceptualizing and speaking about reality. The conceptual method has converted science to the measure of nature, when in fact nature should be the measure of

science. This is what connects the juxtaposition of the *language of things* and *language of feelings* with the problem of scientific expression. The language of things is what predisposes all discourse to center on the role of concepts and what causes concepts to be taken as if they corresponded to a thingly, material reality; concepts are even taken to be things in themselves (once upon a time that idea was even promoted as the supreme philosophical truth by the linguistic alchemist Immanuel Kant, an idea that was subsequently actively adhered to by most of the scientists in the Western world). A language of feelings on the contrary would liberate our thinking, our perceptions, to recognize that natural reality is formed by an infinite variance of phenomena and processes in constant flux.

To understand these ideas, we should when we think and speak about natural reality recognize a distinction, from the one side, between the physical nature consisting of spatial and temporal processes involving matter with mass and energy, and from the other side, the aspects of human life that we may call *social*, which stems from matter with mass and energy, but itself cannot be identified in these terms.

Thus the central message of this chapter is to alert to the need to recognize the fallacies of the conceptual method, that is, the whole enterprise of believing that concepts could possibly stand for knowledge. Instead we should realize that concepts may only help us in illustrating our interpretations of the phenomena which we study.

## Rigidity of Conceptual Definitions

By the above considerations I am not implying that we would have to ban concepts from science, instead I am merely alerting— as Locke did before me — against the fallacy to take concepts to stand for independent meanings on a par with natural reality itself. Each word is a concept; what we refer to as ‘concepts’ are merely words that we have assigned a special meaning in a given field of human activity. In a proper context each choice of word helps to add a nuance to the picture of our feelings that we want to convey. In science the context and the ideas we want to convey are more rigidly delimited by the very character of the activity. In any scientific theory the concepts form the kernel of an already delimited sphere. Therefore, in science a correct reference to and treatment of concepts become crucial for the logic of the propositions. To a large extent science is about defining concepts, and words become scientific

concepts by the definitions they are given. Now, therefore, definitions are both necessary and perilous for science: without definitions science cannot advance, but rigid beliefs in definitions put science at risk. Each word is a concept, but a defined concept risks becoming a scientific illusion. A received belief in rigid definitions of concepts is antithetical to scientific progress. We therefore need to define the concepts in an open-ended fashion, so that the concepts are defined in the context of the proper discourse, that is, to keep them delegated to the role of aiding our expression, not limiting it. I shall try to render what I mean by reference to Lewes. Lewes pointed out the difference between “clearness of conception” and “clearness of definition” (1879b: 7). He explained that a *conception* is “a *generalised* point of view which embraces all that is known in particular of an object or a process” whereas a *definition* is “an *abstract* point of view arising at the expression of some few well-marked particulars.” In this idea a conception represents the ideas that we form of a certain type of phenomena, whereas a definition is the “truncated appearance” of the conception when presented in a definition. Through the definition the conception is thus stripped of many of the nuances that the idea originally involved, or as Lewes said: “Many ideas which are without equivocation or obscurity lose their clearness directly they are fixed in rigid verbal limits. For example, every one knows what is meant by Feeling, Sensation, Intelligence, Will, &c.; yet all attempts to define them have been unsatisfactory. One may say of them what St. Augustine said of Time, ‘If you do not ask me, I know; but if you ask me, I do not know.’”

The conflict between real processes and the artificial concepts is also well captured by Lewes who explained the origin of the conceptual fallacy like this: “We abstract one element from a complex whole, and having named it, make it stand for the whole. Thus Stimulation is abstracted from Reaction, and Motor-impulse from Movement: not that such isolations are really possible; but, having named the two aspects or stages of the one process, we are apt to regard them as separable and independent” (Lewes 1879b: 46). This bears on another fallacious background assumption of the conceptual method, this is the *ceteris paribus* fallacy of science: the erroneous approach of scientists to identify a given research theme, assign a concept as a name for their project, and then to treat the theme without considering the surrounding reality, that is, to treat the subject as if all other surrounding things (factors) and processes remained same and unchanged.

## Deconstruction of Concepts

I have in this book undertaken a series of conceptual deconstructions whereby I have shown what the real biological and social considerations are that fall under one or another concept. All these exercises have revealed the biological and social processes that in reality affect the phenomenon at hand instead of the conceptual drapery in which they have been enwrapped. Such deconstructions I have in this book undertaken in regards to concepts such as: ‘mind,’ ‘consciousness,’ ‘language,’ ‘memory,’ and ‘emotion.’ In *Expressions and Interpretations* (Hellevig 2006) I have deconstructed the concept ‘law’ and shown that instead of attempting to define ‘law’ through various concepts we should instead understand ‘law’ as a *social practice of competition of arguments*. Following Adam Smith I have also made a deconstruction of the concept ‘economy’ to show how it merely refers to those social practices that we view from the point of view of the management, use and evaluation of private and public resources (Hellevig 2006). In *All is Art* (2007) I deconstructed the concept ‘democracy’ and showed that we should think of democracy also in terms of social practices; as those social practices that affect power relations in society, or democratic practices. In this connection I may also refer to a concept which is not so widely in use anymore but which serves well to highlight this conceptual fallacy, this is the concept ‘volition.’ One cannot biologically study ‘volition’, because that would be a linguistic study, but one could study, what are the neurobiological processes that make an organism *strive* after something. In doing so we should have to identify those features of the processes by which we distinguish *striving* from other organic processes of movement (and most probably nothing would come out of it). Similarly on a higher cognitive level one could study why a person shows excess tendencies – or on the contrary, lack of interest - to something that we call ‘willing’, but that would be a study in psychology or psychiatry, for there is no hope to find any neurobiological processes that would especially conform with this type of behavior, not to mention the futility of trying to find some special ‘faculties’ or organs responsible for this ‘willing.’

A special dilemma that concepts cause is that of determining which concepts can be validly used to discuss all biological phenomena and which will have to be restricted merely to a discussion of human cognitive behavior (and that of the human’s closest evolutionary predeces-

sors). This is the anthropomorphic fallacy. An example of the paradigm distortions this can lead to is offered by my discussion of Eric Kandel's abuse of the concept 'memory,' his postulation that a snail possesses 'memory' (see chapter *Kandel's Search for the Neural Correlates of the Concept 'Memory'*). I will not repeat this discussion here, but I will use the opportunity to illustrate by reference to Romanes the difficulties we are faced with in making the conceptual choices in these kinds of situations. Romanes discusses this issue with great lucidity in his *Mental Evolution in Animals* (Romanes 1886) by reference to the ideas of the unity and interdependency of all mental process which he in essence depict on a continuum of neural processes very much like I have suggested to think of the *Lamarckian continuum*:

"Neither Feeling nor Choice appears upon the scene of life suddenly. We cannot say, within extensive limits, where either can be said to begin. They both dawn gradually, and therefore in our everyday use of these terms we only apply them where we see their applicability to be apparent. But when we endeavour to use these same terms in strict psychological analysis, we are at once met with the difficulty of drawing the line where the terms are applicable and where they are not. There are two ways of meeting the difficulty. One is to draw an arbitrary line, and the other is not to draw any line at all; but to carry the terms down through the whole gradation of the things until we arrive at the terminal root-principles. By the time that we do arrive at these root-principles, it is no doubt true that our terms have lost all their original meaning; so that we might as well call an acorn an oak, or an egg a chicken, as speak of *Dioncea* feeling a fly, or of a *Drosera* choosing to close up on its prey. Yet this use, or rather let us call it abuse, of terms serves one important purpose if, while duly regarding the change of meaning which during their gradual descent the terms are made gradually to undergo, we thus serve to emphasize the fact that they refer to things which are the product of a gradual evolution – things which came from other things as unlike to them as oaks to acorns or chicken to eggs. And this is my justification for tracing back the root-principles of Feeling and of Choice into the vegetable kingdom. If it is true that the plants manifest so little evidence of Feeling that the term can only be applied to them in a metaphorical sense, it is also true that the power of Choice which they display is of a similarly undeveloped character; it is limited to a single act of discrimination, and therefore no one would think of applying the

term to such an act, until analysis reveals that in such a single act of discrimination we have the germ of volition” (1886: 54).

## No Philosophical, Only Linguistic Problems

Ludwig Wittgenstein deserves lasting credit for having identified that at the heart of the matter there are no philosophical problems, and what are thought of as such are merely linguistic problems. Here I will present this idea briefly, for a more detailed discussion of this idea I refer to my *All is Art* (2007). Although the theme was central for Wittgenstein’s entire (later) philosophy, the reference to this theme is most famously made in his polemic with Karl Popper, which is depicted in *Wittgenstein's Poker* (Edmonds, Eidinow 2005). Wittgenstein knew, as I do, armed with the grammar of thinking which Wittgenstein had developed, that there are no philosophical problems, only linguistic problems and linguistic confusion. This was one of the most important points that Wittgenstein wanted to push through. He said it in many ways in various connections and this is what he wanted to make Popper aware of, but Popper - a hostage to the very same linguistic problems - refused to listen and refused to think. Popper continued to insist that philosophy involved “real problems that immediately affected the world at large,” while not understanding that there was no difference in what Wittgenstein said by his proposition in regards to these “real problems,” for Wittgenstein did not say that there were no “real problems,” he said that these real problems are caused by linguistic problems; and therefore unless we tackle the linguistic problems the real problems will not disappear.

To put this in the right context we have to understand that by *philosophy* we should refer to *all that a human being can know* from science to our everyday belief. By philosophy we thus mean all considerations pertaining to an attempt to fundamentally grasp the phenomena of life. When we speak of knowing something, or knowledge, then we should by this properly mean that *what can be expressed in words*, for what cannot at least tentatively or potentially be expressed in words that is not yet knowledge, it is mere animal cognition. Knowledge then is connected with human language practices; knowledge is of a social character. In the same way as we share a language practice, we also share knowledge, or more correctly: individual knowledge is a manifestation of collective knowledge practices. - Even more fundamentally, we

should understand that instead of ‘knowing’ something or having ‘knowledge,’ we ‘interpret’ things and phenomena and correspondingly we form ‘interpretations’ (see e.g. chapter *Interpretations*). - And these practices are, like all social practices, rooted in language practices. What we can think of is based on the ideas we have experienced others to express, and on the models we have thus adopted. We adopt these models in form of the interpretations we assign to the concepts and conceptual structures we experience others to express by their verbal behavior (speaking and writing). These interpretations are, naturally, based on how we in a broader sense interpret the context in which we experience the expressions, and this again is dependent on all the past language practices and the way they have cumulated to form the values that the people in a given community adhere to. Through the process of interpretation these values of a culture become our individual values, individual but rooted in our interpretation of the common. By these considerations we should arrive to the realization that all our thinking is at the end of the analysis rooted in the language practices of the community, the concepts and the conceptual patterns in which ideas are expressed. Wittgenstein expressed that idea and its cure by saying: “Philosophy is a battle against the bewitchment of our intelligence by means of language” (*Philosophical Investigations*, art. 109).

To further illustrate this idea, I want briefly to account for how my conception of speech and language bears on this issue. First we have to understand what the essence of language is. We have to be able to reply to the question ‘*What is language?*’ Until this book no satisfactory answer had been given to this question. Hereby the great paradox is that what had prevented people from understanding the essence of language was in itself a linguistic problem. By this I refer to the failure to clearly distinguish between *speech* and *language*, as I have now done it. By *speech* I refer to the biological ability, based on the genetic endowment, to utter and interpret sound expressions; by *language* I refer to the social practices of verbal behavior (speaking and writing), or the perceptual abstractions we form of these social practices. The social practices of language, or language practices, provide individuals with life experience for creatively imitating the verbal behavior of each other. Speech thus refers to actual behavior which is a manifestation of biological activity, while language refers to an abstraction, a perception we form of those practices. Speech occurs at a given moment, language never takes place and never exists in any form, it is only by reflecting on all our experience of verbal behavior that we form perceptions of what language

is. Each speech utterance is always a new and unique act, but it is firmly rooted in the social practices of language. An individual models his speech and his writing on the relevant social practices. These considerations also bear on my conception that the mental processes we call *thinking* should be defined in terms of a merger of concepts from language practices with the underlying mental processes of feelings. By applying verbal concepts to mental images we can be said to engage in conscious thinking, and finally we can express the thoughts in speech – or, more correctly, we can tentatively express an interpretation of them (see chapters *Mental Processing* and *Feelings, Emotions, and Consciousness*). We should thus recognize that the social language practices of a community are not something external to thinking but more fundamentally a part of it. Thus language – i.e. language practices – affects in a decisive manner what we can say, how we interpret others and what we can think of. This is what causes the *bewitchment of our intelligence by means of language*. Here the question is not about any metaphysical or mysterious influence, but rather very human influences – human, all too human. In the social practices ideas are expressed in a certain manner, using certain concepts and phrases. These concepts and phrases predisposes us to think of the underlying ideas, phenomena and things in a certain manner – predisposes us to form certain conceptions of them. Correspondingly the social practices affect and restrict what we possibly can think of, what we can possibly perceive.

Social life is a function of the capacity of the human animal to cognitively interpret and express his feelings, and – most importantly – to imitate the expressions of others. Language and all other social practices are a function of this imitation. Language is the *living memory* of all the expressions which people have made. Language, all social practices, all what humans have ever cognitively performed do not exist, only memories of them exist insofar as one human being remembers these practices (perhaps remembering with the assistance of an external source in form of a material collection of symbols depicting the practices). In the previous proposition I said “memories of them exist,” this I did because our language practices led me to express this idea with this phrase even when I explicitly argue in this book that it is wrong to talk about ‘memories’ as *existing* (see chapter *Memory*). In that proposition I made a choice between the misconception in which the phrase is rooted and the benefit I could derive from pointing out another misconception. This, as I needed to point out that language and other social practices do not

have a real existence in the same way matter of mass and energy does. By saying that they ‘exist in memory’ I merely meant that a person may as a result of the neural phenomena that we refer to as ‘memory’ repeat (consciously or unconsciously) an expression that he has made or experienced earlier. These phenomena occur because we process present stimuli based on the neural processing patterns that have been adapted to function in a given way based on previous processing of stimuli. ‘Memories’ are the cognitive results of processing present environmental stimuli in the background of all our life experiences, as encoded in our neural processing patterns. ‘Memories’ are the impressions that mental processes lead to when the processes “recognize” a past experience in the continuous process of interpreting the present. ‘Memories’ are not a collection of snapshots, mental clips or tokens that one has collected and which would exist stored in the recesses of the brain, rather language and other social practices give rise to what we perceive as ‘memories’ as a result of interpreting the present.

All social practices are like games - or like language – and merely correspond to imitations of past behavior by present behavior. When we form the abstractions of language we artificially join in cognition the features of observed social behavior that we deem, consciously or unconsciously, to best describe the phenomenon in question; the phenomenal status of which is too often forgotten as we are burdened by concepts. - Any social practice can only be referred to in abstraction: We abstract certain features out of the behavior of a group of people, baptize it with a concept, and declare that something thence *is* – the act of naming a perception creates the idea that the perception represents something existing. This can be compared with Locke saying in regards to the “reality of things”: “Because men would not be thought to talk barely of their own imagination, but of things as really they are; therefore they often suppose the words to stand also for the reality of things” (Locke 1694 Vol. II: 6).

## Language of Things and the Thingly Fallacy

There is another aspect to the problem of linguistic bewitchment: this is the general human propensity to speak on the analogy on how things in the nature are perceived to be and to interact with each other. To this propensity I refer by the conception *Language of Things* (alternatively the *Thingly Fallacy*), which I in turn juxtapose with the ideal of a *Language of Feelings*. This fallacy, which is embedded in all human lan-

guage practices, causes thinking and expression to follow the models by which we perceive to experience things in the nature. In addition to being embedded in the language practices this fallacy is on a more fundamental level rooted in the way humans biologically perceive reality. Humans have in evolution become biologically predisposed to perceive and conceptualize phenomenal reality on the fashion on which things in the nature are experienced in direct visual perception (see chapters *Mental Processing* and *Interpretations*).<sup>1</sup>

The thingly language and the grammar derived from it are fundamentally anchored in the evolutionary formed biologic system of perception, which has evolved as a function of interpreting the physical nature. For example, an organism at a lower evolutionary level than the human has at some point evolved to perceive through the system of vision a tree, thus an image of a *thing* is created in the brain; the thing *tree* has been conceptualized. Higher up in evolution ending in the human a social abstraction, e.g. “law” undergoes a similar process of perception, eventually to become conceptualized in the manner of a thing. – Only by directed conscious socially based efforts can we try to withstand the thingly hold of our perceptions. – When we form (what are called) thoughts we according to this perceptual bias assign the concepts roles in speech that correspond to the thingly analogies. At the same time when this causes the problems of the language of things it also forms the common bases for all languages, this is the reason why the Chomskyans can always show - in an effort to prove their speculation – that all languages in the world supposedly have a common set of “universal grammar.” But in reality to the extent the grammar of various “languages” (i.e. the social practices of speaking characteristic of a given population) demonstrate certain fundamental similarities these are merely manifestations of the fact that people biologically conceptualize experience in a similar way on the thingly analogy. By evolutionary process the human brain has developed in such a fashion that it processes stimuli that may lead to conceptualization of abstract experience on the analogy of how concrete things in the nature are perceived. As all people share the same genetic endowment, all tend to conceptualize the elementary features of language in the same way (Damasio 2003: 199). This is what explains the universal features of speech as opposed to the metaphysical explanations that Chomsky has put forward for his “universal grammar,” or which Steven Pinker has

identified as the “remarkably similar design principles” of “all languages” (Pinker in Kandel, Schwartz, Jessell 2000: 1169).

We thus have two influences, the biological and the social, which mutually reinforce the fallacious propensities to think and speak in the language of things as if we at any given time were observing and describing the relations of things. We therefore assign to concepts (words) such roles that would accord with those of things in the nature: we picture words as if they could possibly have the capacity to undertake actions and serve as objects of actions. Hereby the concepts by which we should merely name perceptual abstractions and paint our ideas may become reified (treated as things) and even animated (endowed with human-like abilities for intelligent actions). The belief in a real and material existence of concepts comes as a result of these practices, which assign concepts rigid reified and anthropomorphic roles in language patterns. Our thingly language is so constructed that all words are perceived on a thingly analogy and assigned roles in the linguistic patterns that correspond to the interactions of things in the nature even when the word as such do not refer to anything concrete. Even abstract terms such as *law*, *democracy*, *economy*, *capitalism*, *state*, *science*, *scientific method*, *linguistics*, *happiness*, *love*, *hate*, *goodness*, are converted into humanlike agents with their capabilities of thinking, remembering, reasoning, willing. I will illustrate these fallacies with a few examples from George Soros’s *Open Society* (2000) and the *Age of Fallibility* (2006); there Soros says: “Capitalism is very successful in creating wealth” (2000: xii). - This although we should all know that it is people who create, and not this concept ‘capitalism.’ Similarly Soros considers that “Scientific method has been able to develop its own rules,” and that “Scientific method has been very successful in the study of natural phenomena” (2006: 217). - But we know that any success that there has been in scientific discovery has been made by people not methods. Further Soros says: “Scientific method produced amazing discoveries and technologically allowed their conversion to productive use” (2000: 123). - This when Soros should know that these actions are not undertaken by this conceptual abstraction ‘scientific method,’ but by people who produce and people who allow things and actions to be undertaken. Similarly Soros says: “The freedom of thought allows critical thinking and the freedom of choice allows the market mechanism to operate” (2000: 131). - According to Soros these two combinations of words act as some kind of supranatural agents with the capacities of *thinking* and *allowing*. Next Soros tells: “Open society has nothing against religion”

(2000: 131). - Like in fairy tales, this pair of words ‘open society’ is said to have one or another opinion on religions.

We may frown at ancient personification of concepts like nature as ‘Mother Nature,’ time as ‘Father Time,’ virtue as a goddess (Arete), but few notice how deep a hold these practices still have on us. “Scientific Method” represents precisely the same kind of personifications of complex phenomena as ‘Mother Nature’ and ‘Father Time.’ Fundamentally all religions are rooted in this anthropomorphic fallacy, but so is, to a very large degree, all the perceptions we form of natural and social reality.

## Things and Perceptual Abstractions

How the thingly fallacy affects the broader subject of this book, neurophilosophy, is well illustrated by an example from Bennett’s and Hacker’s *Philosophical Foundations of Neuroscience* in which the authors claim that it is their firm conviction that their perceptual (conceptual) abstractions correspond to things. They maintain that even though the conceptual abstractions with which we refer to such phenomena such as “laws and legal systems, numbers and theorems, games and plays” are “neither material objects nor stuffs” they nevertheless *exist* in their own right (2003: 358). Further they affirm that “wars, revolutions and cultures, performances of plays, birthday parties and funerals” are *things* that may “occur, happen, or exist at a time or from a time.” In a peculiar act of pseudo-dualism these authors replace the denial “that there are mental or spiritual substances” with the postulation that instead these concepts by which we name our perceptions would be *thingly objects* that *exist* as such. This idea of the *existence* of those imaginary things plays a crucial role in Bennett’s and Hacker’s argument to undermine traditional (ontological) materialism according to which all that exists is made of, or consists of, matter. The authors consider that they have proved that “laws and legal systems, numbers and theorems, games and plays, political parties, a society and its culture, inflation” and even “economic growth” exists even when they are not made of matter. – We may illustrate the underlying fallacy by contemplating a bit on what we truly refer to by the concept “economic growth.” Of course, ‘economic growth’ does not *exist*, rather it represents a perceptual abstraction which people form by considering a number of data, which data enter the judgment to the extent people have learned through past practices to

involve them in the subject. (I must stress here that the exposition of this fallacy and the circumstances that leads to it forms a central theme of this book and my whole *biological philosophy*, therefore even when I am tempted to further refer to passages where I have discussed issues that directly bear on the present one, I will refrain from it so as not to be misunderstood by stressing a few particular considerations at the expense of most all issues treated in this biological philosophy). LeDoux marches shoulder-to-shoulder with Bennett and Hacker on this issue when he delivers his fantastic list of *things* that he tells are stored in his brain; these are: “Bicycling, Speaking English. The Pledge of Allegiance. Multiplication by 7s. The rules of dominoes. Bowel control. A taste for spinach. Immense fear of snakes. Balancing when standing. The meaning of ‘halcyon days.’ The words to ‘Subterranean Home Sick Blues.’ Anxiety associated with the sounds of a dentist drill. The smell of a banana pudding.” Completing the list LeDoux asks: What do all of these have in common? They are each things I’ve learned and stored in my brain“(1998: 179). Reading these lines, one would think that LeDoux had been forced under duress to confess to the thingly fallacy that he in reality, naturally, would not believe in. Things are defined through mass and energy, in which terms we may certainly characterize a banana pudding, but not the perception that LeDoux has formed of its smell. Were LeDoux to say that he has stored the banana pudding itself in his head instead of the smell, then he would at least be talking in terms of physical reality, for we may well conceive that a bit of banana pudding remains stored in the head for a limited duration, for example, in between the teeth.

But this fallacy is by no means particular to Bennett, Hacker and LeDoux, these authors merely belong to the small minority that have converted the underlying unconscious fallacy to an evident erroneous conception in which they believe. In this they follow the old traditions dating back to Kant and perhaps even further back to Plato and Aristotle (Hellevig 2006) and Karl Popper’s more recent nonsense about the theories of “World 1, World 2 and World 3” (Hellevig 2006 and Hellevig 2007). According to those theories Popper divided “all that exists” into three domains: ‘World 1,’ containing: ‘the world of physics, chemistry and biology’; ‘World 2,’ containing: ‘the world of psychological states, dispositions and processes’; and ‘World 3,’ containing: ‘the sum of the total of the objective and abstract products of the human mind – theories, numbers, and even tools and institutions considered abstractions’ (sic! according to Popper abstractions exist). We should note how

interestingly the word *real* in his theories came to denote the theories of a “World 3” which contain all abstractions of the mind, like symphonies, numbers, elves and small green elephants – which in reality all are products of how we *interpret* the phenomena given the thingly fallacy. For Popper ‘*to exist*’ did not signify a biological, physical reality, but was a figure of speech, a linguistic conception, a product of scientific fantasy in regards to phenomena devoid of mass and energy. He rejected the insight that all these ideas – ‘the knowledge’ as he thought – were merely the traditions of all bygone generations reflected in language. Popper argued that “objective knowledge, the kind we find represented in books, tapes, computer memory, has *an autonomous existence* from the psychological or physical states that produced it and in which it may be represented.” – At the very least this would mean that the opposite to *objective knowledge*, i.e. *subjective ignorance* (misunderstanding), would have an equally autonomous existence. – Sadly enough Popper did not advance in science as much as to grasp the physical reality of things, to understand that language and knowledge are not things but mere reflections of social practices as processed by the biological human organism; they are mere expressions and interpretations – mere perceptions in competition.

Contrary to these Popperian theories the cognitive paradigm which I present in this book implies that *truth* and *knowledge* should not be regarded as terms applicable to science, for instead of *truth* and *knowledge* we should in science speak of *interpretations* and *expressions*. The traditional concepts *truth* and *knowledge* belong to a static worldview implying that something absolute and given has been discovered and will remain valid for all times; this when we very well know that in science one interpretation is constantly replaced by another.

John Stuart Mill who in many senses should be counted among the foremost empiricists anyway at one point lapsed into the thingly fallacy, this when he precisely wanted to formulate his conception of these issues in his *A System of Logic Ratiocinative and Inductive* (1843). Although he goes through a well documented process of analyzing the ideas that weigh on the issue he concludes the analysis with an unfortunate “enumeration and classification of all Nameable Things” according to which the following classes of things are claimed to exist:

1. “Feelings, or States of Consciousness”
2. “The Minds which experience those feelings”

3. "The Bodies, or external object, which excite certain of the feelings, together with the powers or properties whereby they excite them..."
4. "The Successions and Co-Existences, the Likeness and Unlikenesses, between feelings or states of consciousness...." (1843: 83).

On the way to reaching these misconceived conclusions Mill noted: "All names are names of something, real or imaginary; but all things have not names appropriated to them individually" (1843: 26). This corresponds to the historic fallacy of connecting the existence of something with *it* (we do not possess a pronoun to denote the non-existing) having been assigned a name. This idea is followed with a remarkable insight which Mill expresses like this: "When we have occasion for a name which shall be capable of denoting whatever exists, as contradistinguished from non-entity or Nothing, there is hardly a word applicable to the purpose which is not also, and even more familiarly, taken in a sense in which it denotes only substances" (1843: 51). But immediately following upon this, Mill inappropriately adds: "But substances are not all that exists, attributes, if such things are to be spoken of, must be said to exist, feelings certainly exist. Yet when we speak of an *object*, or of a *thing*, we are almost always supposed to mean a substance." The idea that 'feelings exist' is not as unambiguous as Mill wants it. We may well say that feelings exist, in the sense that they exist as a function of mental processes, but we are not right in postulating that a feeling would exist in the sense of a particular feeling existing, that is, in the sense of a feeling we become aware of (this should be compared with what I said above about the existence of processes).<sup>2</sup> I have explained that feelings in this sense are to be seen as process outcomes, as reflections of continuously running mental processes. Therefore, more correctly we may say that the processes exist (and even that only conditionally, as it was shown above) but the reflections of the processes do not exist as such. We merely form perceptions of that which existed. Most importantly, when we speak about *something existing*, it implies that the thing exists longer than momentarily as a reflection of a current process, and in this sense feelings do not exist in any case (reference is made to chapter *Mental Processing* where these issues have been further elaborated). – Mill even proceeds so far as to discuss whether the word 'thing' is appropriate in this connection: "If, rejecting the word Thing, we endeavour to find another of a more general import, or at

least more exclusively confined to that general import, a word denoting all that exists, and connoting only simple existence; no word might be presumed fitter for such a purpose than *being*” (1843: 51). But by proposing the concept ‘being’ instead of ‘thing’ he is not giving a potential solution to the problem, instead he only redefines the problem: being is a predicate to a thing- a thing *is*, and what *is*, is a thing. The true solution is to do as I have done: to reject the idea that what does not possess mass and energy would be a thing, or could be said to exist (to be).

The thingly fallacy as described above is what leads to the grammar of the language of things by which I refer to the mostly unconscious (or automated) ideas that are manifested in the grammatical subject-predicate structures of the propositions we form in speech, and in accordance with which we construct sentences on the model of a nominal subject, a verb of action, a nominal object and the various attributes that modify the other roles in the sentence. As I juxtapose in this book my ideas on speech and language with those of Chomsky, I must again in this connection also point out that the subject-predicate model is not a manifestation of any hypothetical “universal grammar” as Chomsky wrongly assumes, but rather manifests our biological propensity to conceptualize reality and the corresponding influence of social practices.

## Language of Feelings

It is my firm conviction that the enterprise of science – and even everyday interactions between people - is seriously hampered by the bewitchment of thinking caused by the thingly fallacy thus described. For a historic analogy to my thoughts on this issue, I want to draw the reader’s attention to the fact that John Locke, even when not discussing these issues in the same way and with the same terminology as I do it, was fundamentally addressing these same problems. I completely concur with Locke’s observation that “were the imperfections of language, as the instrument of knowledge, more thoroughly weighed, a great many of the controversies that make such a noise in the world, would of themselves cease; and the way to knowledge, and perhaps peace too, lie a great deal opener than it does” (1694: 61). And certainly, we must conclude with Locke in saying that “we should have a great many fewer disputes in the world, if words were taken for what they are, the signs of our ideas only; and not for things themselves. For, when we argue about matter, or any the like term, we truly argue only about the idea we ex-

press by that sound, whether that precise idea agree to anything really existing in nature or no. And if men would tell what ideas they make their words stand for, there could not be half that obscurity or wrangling in the search or support of truth that there is" (1964: 67).

This being the case I cannot conceive of a more important task to be undertaken in philosophy, than the study of language use, that is, language practices, and a constant criticism of these fallacies with the aim to develop more suitable practices for expressing feelings and opinions. The enterprise starts with the recognition that at the root of the problem we have the misconception of what 'language' is; this is the failure to understand that language is not a thing but a practice, the most supreme manifestation of social practices.

In order to move beyond the thingly analogies and the ensuing conceptual method we would have to learn to speak about processes, phenomena, and feelings in flux. For this we should try to develop a *Language of Feelings*. This would be a way of expressing where we move away from the thingly analogies at every possible instance and instead try to express the infinite variances of complex thinking the way we speak of shades of color; tunes of music; dimensions, and depth. Of all these words, perhaps better than any an analogy with which to describe the subtlety of what is needed is offered by 'tunes of music' – this idea should convey an image of the infinite nuances that our feelings, on which cognition is based, display at any given moment.<sup>3</sup> Instead of the subject-predicate model of the language of things we would need to develop other models of expression; models that would enable us to add new nuances to cognition and finer aspects to expressions. This would be a way of expressing which would reflect the real mental processes of feelings; the ever present subtle nuances of feeling should find an outlet in these new expressions of the language of feelings.

I have found a very interesting quote on this subject, the problem of the thingly language and conceptualization, in James in a section he calls: "The sources of error in psychology" (1957 VI: 194). Here James both identifies the problem of the language of things as well as the fact that we lack what I call a language of feelings, James saying: "The absence of a special vocabulary for subjective facts hinders the study of all but the very coarsest of them." This proposition is taken from a longer passage that goes like this:

"...from the Misleading Influence of Speech. ... most men to-day employ almost exclusively the vocabulary of outward things. The cardinal

passions of our life, anger, love, fear, hate, hope, and the most comprehensive divisions of our intellectual activity, to remember, expect, think, know, dream with the broadest genera of aesthetic feeling, joy, sorrow, pleasure, pain, are the only facts of subjective order which this vocabulary deigns to note by special words. The elementary qualities of sensation, bright, loud, red, blue, hot, cold, are, it is true, susceptible of being used in both an objective and a subjective sense. They stand for outer qualities and for the feelings which these arouse....The absence of a special vocabulary for subjective facts hinders the study of all but the very coarsest of them. Empiricist writers are very fond of emphasizing one great set of delusions which language inflicts on the mind. Whenever we have made a word, they say, to denote a certain group of phenomena, we are prone to suppose a substantive entity existing beyond the phenomena of which the word is the name. But the lack of a word quite as often leads to the directly opposite error. We are then prone to suppose that no entity can be there; and so we come to overlook phenomena whose existence would be patent to all, had we only grown up to hear it familiarly recognized in speech. It is hard to focus our attention on the nameless."

I have on these pages expressed my opinion that the way human beings conceptualize reality is ultimately rooted in the biological processes of optic vision (chapters *Mental Processing* and *Feelings, Emotions and Consciousness*). This is what predisposes the human to the thingly analogy. To illustrate this idea I will refer to an opposite case, a case of feeling that is not born from the connection to vision, this is the feeling of *odor*. McNeill tells that a "case of thought without language may be the experience of odor" (1995: 271). He explains that "odors are, as we say, ineffable, and this is because odors lie within the nonverbal circle." As McNeill is engaged in a study of what gestures reveal about thought, he stresses that we cannot describe odors with gestures although gestures normally accompany and complement speech. McNeill asks us to consider what the gestures for odors could possibly be like. I think that McNeill with these considerations has, indeed, demonstrated how conceptualization in all essence is based on the thingly analogies we experience by direct vision. But this also shows that there are other less developed areas of cognition which also affect our overall cognitive abilities; and therefore it also means that the human possesses the biological means for breaking the thingly spell.

As we do not conceptualize odors and tunes of music the same way we conceptualize most experience we are naturally predisposed to consider that odors and music come in thousands, or perhaps infinite, subtle variances. With a language of feelings we should learn to express all these variances; learn to master softer and more subtle expressions that picture a multifaceted, multidimensional, nuanced world that correspond to our real underlying feelings of the infinite variances of life. But as of now we only have this grammar of the language of things which leads us to artificially carve up reality into conceptual units, and then we tend to believe that these units represent thingly entities, things-in-themselves, that correspond to an underlying reality. We are then compelled to express all our feelings, which truly and inherently represent ongoing processes in infinite variances, on the mechanistic subject-predicate model.

I do need to stress that I am not calling for an attempt to contrive a new language based on these principles that I have put forward here; I am sure that would not be feasible. I am not even calling for any kind of radical overhaul of our language practices as I do not consider that we can do anything much about these fallacies; but what we need to do is to realize the influence that the language of things wields over cognition and expression. A general awareness of this fallacy would force people to be more attentive to how they formulate their propositions. However, I consider that in science we should draw immediate conclusions from these ideas and indeed attempt a radical overhaul on how we formulate our *most important* scientific propositions. In this regards we should immediately condemn theoretical presentations that are written in the style of the metaphors of the language of things. Reified and anthropomorphic words have no place in the paradigm statements of science. Having recognized this fallacy, I am constantly contemplating where in my own texts to adjust the thingly language towards the ideal of the language of feelings but often there is no choice but to use the thingly patterns. – What concerns language of feelings in general, here I wish that artist would take the lead, to play with words to explore what could be expressed in a language of feelings.

By juxtaposing a language of things with a language of feelings I run the risk of being misinterpreted as referring not to a scientific discussion but to ideas that belong to the realm of sentimentality and aesthetics. But instead to reject that misconception, I want to emphasize that the ideas of sentimentality and aesthetics indeed form aspects of a scientific discourse and are necessary entangled with all the else.

This being our linguistic confinement, the task of philosophy must naturally be to battle against it. We are put on the road to victory by accepting as our strategy the paradigm of expressions and interpretations which I advocate. This paradigm implies the realization that instead of *understanding* something as positive facts we *interpret* things, processes and phenomena, that is, we form perceptions of them. Correspondingly it implies that we are not dealing with *facts* but with *expressions* and *interpretations*, that is, attempts to convey one's interpretation of things, processes and phenomena by verbal expressions rooted in social practices. By accepting this strategy we have turned the investigation around and can now engage in endless battles against the linguistic fallacies which cause us to misinterpret reality and pervert our expressions. This battle will have to be fought concept by concept, and idea by idea – and alas, from here to eternity.

### Thingly Philosophers vs. Process-Philosophers

Above I referred to the thingly traditions dating back to Kant and further back to Plato and Aristotle. These and likeminded authors represent the majority of all philosophers and have done an immense amount of harm by firmly anchoring the Western philosophy in the thingly fallacy. What is remarkable is that in doing so they have only solidified the fallacies embedded in language practices, they have, as it were, put their stamp on the fallacies of folk ignorance and firmly fixed them in the academic creed. But parallel to this mainstream thingly movement there has in every historic epoch been dissidents, whose main message has precisely been that of alerting against the conceptual and thingly fallacies and proposing instead to conceive of natural phenomena and all phenomena of life as processes (although not always in these express terms). Many of the process-philosophers have been in the philosophical community as well-known as their thingly counterparts; their ideas have even been praised and well quoted, but nevertheless their central message has been ignored. Process philosophy has always lost to the thingly philosophy. In ancient Greek philosophy, starting from the earliest times of record, we have the same division into process philosophers and thingly philosophers; Heraclitus being a process philosopher par excellence, whereas Parmenides can be seen as the propagator for a thingly philosophy, which was to be cemented by the teachings of Plato and Aristotle (Guthrie 2003). Kant explicitly juxtaposed his thingly

conceptual philosophy with the process philosophy of Hume (Hellevig 2006). As interesting as it would be to make a total historic review of the ruling thingly traditions and the process dissent, I do not have the time and resources to undertake such an analysis in this connection, instead I will limit myself to enumerating the process philosophers whose work I have some knowledge of. As examples of European process-philosophers I will mention all the so-called British empiricist philosophers: Francis Bacon (2008, 2009), John Locke (1694), George Berkeley (2009), David Hume (1999, 2004), Adam Smith (1991), John Stuart Mill (1843). As I have shown in many sections of this book, George Henry Lewes (1879a, 1879b) absolutely deserves to be included among these formidable empiricists. Along with Locke, Lewes is perhaps the one that has most insight to offer to the modern reader. Of authors who wrote in the German language I would mention Goethe (Naydler 2006), poor Nietzsche (Hellevig 2006) and Dilthey (1989)<sup>4</sup> and of course Wittgenstein (1965, 2004; Hellevig 2006). To conclude this brief list of process-philosophers I would place, perhaps on top of all, the father of evolutionary theory, Jean-Baptiste Lamarck (2006).

Interestingly the same line of division can be traced in Chinese philosophy where Confucius can be seen to have advocated a thingly conceptual philosophy, whereas Laozi (Lao Tzu) spoke in terms of process philosophy (Laozi 1993; Confucius 1997; Wangdao 1997; Keping 2004; Dainian 2002). The very name by which we know the most famous text attributed to Laozi, *Tao-Te Ching*, where Tao refers to 'the way of all life,' points to its process-character.

## Locke's Advice

Instead of treating concepts with such reverence we should understand that the concepts of language mainly serve as the symbols of our ignorance. Concepts are needed as auxiliary devices by which we illustrate our interpretation, but for this to happen the concept has to illustrate the underlying reality. This again means that we constantly have to redefine the concepts, but in so doing we have to carefully mark how the way we utilize a concept deviates from the way it has hitherto been used, we thus arrive to a new intermediary definition by describing the reasons for which we motivate a new usage. I have shown that the breach of these principles is the hallmark of Chomsky's theories (chapter *A Review of the Verbal Behavior of Noam Chomsky*). Chomsky frequently employs familiar concepts in fundamentally new ways, but does not ex-

plain the difference or the reasons for the new employment, or at best gives metaphysical and naïve explanations that merely serve to cement his speculations. Chomsky thus constantly breaches against the demand for scientific clarity which Locke expressed saying that we should “apply Words to such ideas as common use has annexed” (1694 Vol. II: 78). As we have seen in the case of Chomsky, this is still the cardinal fallacy of modern science, and therefore it is worth quoting Locke at length on this still very valid advice he gave for remedying the conceptual fallacies:

Apply Words to such ideas as common use has annexed them, for it “is not enough that men have ideas, determined ideas, for which they make these signs stand; but they must also take care to apply their words as near as may be to such ideas as common use has annexed them to. For words, especially of languages already framed, being no man's private possession, but the common measure of commerce and communication, it is not for any one at pleasure to change the stamp they are current in, nor alter the ideas they are affixed to; or at least, when there is a necessity to do so, he is bound to give notice of it. Men's intentions in speaking are, or at least should be, to be understood; which cannot be without frequent explanations, demands, and other the like incommodious interruptions, where men do not follow common use” (1694: 78).

Declare the meaning in which you use words, “because common use has not so visibly annexed any signification to words, as to make men know always certainly what they precisely stand for: and because men, in the improvement of their knowledge, come to have ideas different from the vulgar and ordinary received ones, for which they must either make new words, (which men seldom venture to do, for fear of being thought guilty of affectation or novelty,) or else must use old ones in a new signification: therefore, after the observation of the foregoing rules, it is sometimes necessary, for the ascertaining the signification of words, to declare their meaning; where either common use has left it uncertain and loose, (as it has in most names of very complex ideas;) or where the term, being very material in the discourse,

and that upon which it chiefly turns, is liable to any doubtfulness or mistake)” (1694: 78).

Use the same word constantly in the same sense. “If men will not be at the pains to declare the meaning of their words, and definitions of their terms are not to be had, yet this is the least that can be expected, that, in all discourses wherein one man pretends to instruct or convince another, he should use the same word constantly in the same sense. If this were done, (which nobody can refuse without great disingenuity) many of the books extant might be spared; many of the controversies in dispute would be at an end; several of those great volumes, swollen with ambiguous words, now used in one sense, and by and by in another, would shrink into a very narrow compass; and many of the philosophers (to mention no other) as well as poets works, might be contained in a nutshell” (1694: 84).

And when not so used, then the variation is to be explained! (1694: 84).

## Order out of Chaos

In *Order out of Chaos* Ilya Prigogine accounts for how physicists progressed to an understanding of quantum mechanics and further to modern thermodynamics (Prigogine, Stengers 1984). This story provides a striking example of the relationship between the conceptual language and scientific interpretations. It illustrates the dilemma between, on the one hand, the need for concepts as tools (artificial devices) for improved scientific interpretation, and on the other hand, the limits that concepts impose on thinking. We understand from Prigogine’s account how, as long as there remains aspects of material reality to be further explored, the yet unknown can be covered by concepts and the way we arrange them; but when we reach the limits of the knowable, then the conceptual framework of language breaks up in pace with improved interpretations of the underlying complexity of processes. This also shows what a barrier received language practices may amount to on our way on formulating a true understanding of the phenomena of life. At the end of the analysis any phenomenon of life is at least as infinitely complex as the phenomena of thermodynamics.

Prigogine tells in reference to Niels Bohr that “quantum mechanics obliges us to speak less absolutely about the localization of an object” which implies “that we must give up the realism of classical physics” (1984: 224ff). Referring to *realism* Prigogine must mean *the postulation of realism*, the hypothetically declared realism of conceptual science. Bohr had explained that it “is only the quantum phenomenon as a whole, including the measurement interaction, to which we can ascribe numerical values.” Thus for Bohr the “interaction between the quantum system and the measurement device could be treated only holistically, that is, they could not be decomposed from each other.” This Prigogine explains to mean that all “description thus implies a choice of the measurement device” and “a choice of the question asked.” - “In this sense” Prigogine continues, “the answer, the result of the measurement, does not give us access to a given reality. We have to decide which measurement we are going to perform and which questions our experiments will ask the system. Thus, there is an irreducible multiplicity of representations for a system, each connected with a determined set of operators.” - I hope that the reader sees that these are the same issues that pertain to any phenomena and the way we express them. We can *a priori* only describe a phenomenon within the framework of the language practices of the relevant community (in the case of Prigogine the French and English languages and the language of Western quantum physicists). The above quoted ‘quantum device and its measurement device’ correspond to the complex phenomena under observation and the language by which we express them; ‘measurement interaction and ascribing values’ corresponds to discussing the phenomena and assigning concepts to correspond to the description. - Thus, briefly, Prigogine tells that we can only speak about something from a given point of view within a given conceptual framework.

Prigogine concludes that this “implies a departure from the classical notion of objectivity, since in the classical view the only ‘objective’ description is the complete description of the system as it is, independent of the choice how it is observed.” Here Prigogine implies that an independent description of a given system amounts to an impossibility, for the description is always dependent on the choices (limited by the received framework of the observer). In this connection I feel the need to point out that the whole idea of a ‘system’ is *an illusion in itself* - a system in itself is an abstraction, an abstraction as perceived by the observer in order to analyze reality in relation to him self.

Developing the idea Prigogine moves on to speak about language as such. He tells, in further reference to Bohr, that the “physicist has to choose his language.” This had been expressed by Bohr through the *principle of complementarity*, according to which we “can measure coordinates or momenta, but not both.” Prigogine elaborates on this idea saying: “No single theoretical language articulating the variables to which a well-defined value can be attributed can exhaust the physical content of a system. Various possible languages and points of view about the system may be complementary. They all deal with the same reality, but it is impossible to reduce them to one single description. The irreducible plurality of perspectives on the same reality expresses the impossibility of a divine point of view from which the whole of reality is visible.” This leads Prigogine to draw the conclusion which, corresponds to the central thesis of this present book of mine namely, that: “The real lesson to be learned from the principle of complementarity, a lesson that can perhaps be transferred to other fields of knowledge, consists in emphasizing the wealth of reality, which overflows any single language, any single logical structure. Each language can express only part of reality. Music, for example, has not been exhausted by any of its realizations, by any style of composition, from Bach to Schönberg.” – To enhance the clarity of the idea I would, rather than refer to ‘any single language’ and ‘each language’ refer to ‘language’ in the general so as to convey the idea of language as a universal social practice. Further elaborating on the previous, I would suggest that what Prigogine, in fact, meant with ‘language’ was a reference to a given framework of expression, the *system* (so to say) of expressing ideas within a given framework of social practices. And at the end of the analysis Prigogine is saying that we can only express certain aspects of reality, while the whole of reality can neither be comprehended nor rendered by us; this because we never command a full view of reality and our perceptual apparatus which is tightly merged with that of speech (by which we participate in language as social practices) sets the limits on how we can possibly grasp reality. In a blow against the pseudo-realists, Prigogine stresses that “the reality studied by physics is also a mental construct.” He tells that traditionally the scientist held an opposite belief rooted in the myth of the exactness of physics. This paradigm error was, according to Prigogine, embedded “in the belief that literature corresponds to a conceptualization of reality to ‘fiction,’ while science was taken to express objective ‘reality.’ Thus this academic illusion was destroyed from the very core of its bastion.

Our thingly language converts processes to concepts, and then the concepts become for us the fictive reality. Only those, like Prigogine and Bohr, who have gained a glimpse of the utmost frontiers of reality, will know that reality cannot be captured by language. The mistake is to assign language the role of the highest measure for what can possibly be and what is true or not. With our new understanding of the real essence of language, we see that language can only serve as a hermeneutic instrument to move from one interpretation to another.

Prigogine showed us that when nature is studied to the minutest details then all that is left is mass and energy in an infinite variance of processes – the unsustainability of the conceptual method has never before been exposed more forcefully. The effects of this realization on philosophy and the social sciences are immense, after all we shall remember that any intelligible real correspondence between concepts and the underlying objects can even theoretically only be postulated in reference to things in the nature, i.e. material entities that can be identified in terms of mass and energy, as opposed to social phenomena. Now we have seen that even here the conceptual method breaks down as our interpretations improve. The more fallacious, then, to labor under the assumptions that the concepts of philosophy and social science would conform to an underlying reality. In this connection we should also note that the concepts of *neuroscience* - which are under scrutiny in this book – are not to be considered as concepts of natural science (that would refer to objectively identifiable qualities of mass and energy), rather they are misemployed social and philosophical concepts. This is why I think we would be more correct to refer to that field of inquiry as *neurophilosophy*.

## The Fallacious Belief in Innate Knowledge

All conceptual science is at the end of the analysis always connected with the erroneous belief that human beings would possess some kind of innate, or *a priori*, knowledge. The belief in the existence of such innate ideas is called *nativism* or *innatism*. The traditional adherents to these ideas maintain that certain *ideas* or *knowledge* are readily available for the human at birth by virtue of the child being born as a human being. In contemporary alchemy there are two main lines of explanation for how the person at birth got endowed with these ideas and knowledge: according to the now more modern nativist fallacy the ideas are innate

through alleged genetic inheritance; the more traditional view holds that some kind of a god or soul actually implants these ideas in the human being. All these theories – whether they are called *a priori theories*, *innatism* or *nativism* (I will use them synonymously except for when a special distinction is stressed) - have in common the insistence that the special ideas, knowledge or intellectual behavioral skills have developed independent of experience. If this would be so, then we would be faced with a great paradox: how come we do not even share in common the very idea of nativism! In obvious contradiction to observed reality the adherents to these theories maintain that the areas they have defined as innate would represent something that are universal to all humanity and independent from learning (experience), in view of an alleged universal consent to those ideas (classical *a priori* speculators) or uniformity of behavior (modern nativists). Locke already attacked the idea of ‘universal consent’ saying: “Universal Consent proves nothing innate. This argument, drawn from universal consent, has this misfortune in it, that if it were true in matter of fact, that there were certain truths wherein all mankind agreed, it would not prove them innate, if there can be any other way shown how men may come to that universal agreement, in the things they do consent in, which I presume may be done.---- But, which is worse, this argument of universal consent, which is made use of to prove innate principles, seems to me a demonstration that there are none such: because there are none to which all mankind give an universal assent” (1694 Vol. I: 15).

These are examples of such alleged innate ideas<sup>5</sup>:

- “Ideas about ethical truths.” (Strange, though, that the people that claim that these are “innate truths” have never reflected on the fact that each person is endowed with a totally individual set of these “ethical truths” which, the more, change from moment to moment).
- “Notions of good and evil” (ditto).
- “Logical and mathematical truths” (I will shortly below treat this hallucination).
- “Metaphysical notions concerning transcendent objects like God or souls” (But different people even in one and the same country believe in so many different gods; how come the nativists don’t draw any conclusions from the fact that there is this array of gods. In their logic the gene that is responsible for the

idea of a god seems to be mutating in infinite variances from person to person).

- “Notions of causality, i.e. the idea that all events have a cause” (The whole idea of ‘causality’ represents an abstraction, therefore nobody can have an innate notion of such a generalized idea; only in a concrete case of experience can we validly postulate a causal relation).
- “Avoidance of hazards, such as heights or potential sources of contagious disease.” (This idea may refer to cognitively determined behavior, in which case the underlying determination of what are hazards is totally a function of social experience; to certain extent this may also refer to biological reflex actions, but in this case the question is not about ‘knowledge’ or ‘ideas’ of any sort).

As I said above some contemporary authors have slightly modified the *a priori* fallacy they adhere to. These authors prefer to distinguish between *nativism* and *innatism*, referring to their own brand of speculation with the former concept. In this camp we have Chomsky and his fellow cognitive revolutionaries. Their point of distinction as compared with the followers of the traditional doctrine lies in that they maintain that the human is not necessarily born with all the knowledge and ideas claimed to be innate, but that he instead is born with an apparatus that necessarily will develop so as to possess those ideas. This seems to be their compromise with reality following the fact that they cannot find any good reason to motivate why a small child does not possess at once all the same ideas as a brain surgeon and a nuclear scientist does. According to these peculiar ideas innate beliefs are the phenotypes of certain genotypes that all humans have in common. They thus claim that what we normally understand as *experience* is an inevitable outcome of genetic development. Hereby they ignore all the dissimilarities in human behavior and only by abstractly considering the similarities in human behavior they come to postulate that a certain type of behavior must represent innate knowledge for otherwise, the argument goes, one cannot justify the similarities. They cannot grasp that the similarities are due to two simple facts: (i) the biological fact that all humans are humans, which genetically restricts what humans can do; and (ii) the social fact that humans imitate each other. The latter fact is totally ig-

nored, while the former fact has received a perverted interpretation, which really is what causes this entire fuss. This, I will below proceed to make evident.

In philosophic discussion the linguistic alchemist Immanuel Kant is traditionally singled out as the standard-bearer for the nativists; this while the contemporary nativist usually prefer to – erroneously so – refer to Descartes (hence Chomsky’s “Cartesian linguistics,” Chomsky 1966). In keeping with the above introduced division between the conceptual (thingly) philosophers and process-philosophers, we may say that the former always also adhere to the nativist fallacy, which then goes all the way back to Plato.

The nativist ideas are juxtaposed with empiricism, of which John Locke is considered as the most famous proponent, but the other British empiricists before and after him should be seen as having advocated the basically same ideas. In *Expressions and Interpretations* (2006) I discussed the ideas of one of them, namely David Hume while I in this book refer to the work of Locke. Locke is famous for having said that the mind is a *tabula rasa* or *blank slate* (in actual quote he compared the “mind” with a “white paper, void of all characters, without any ideas” (1964 Vol. I: 50). By this Locke meant that knowledge arises exclusively from individual life experience.

The nativist fallacy is enwrapped – how else – in linguistic problems. In the problem of properly understanding what is ‘knowledge.’ The nativists confuse ‘knowledge’ with the ‘ability to form knowledge’ through mental processes of interpretation. What these savants take to be *innate knowledge* is not knowledge at all but a *capacity*, an *ability* or *capability* to perform certain cognitive mental interpretations and express these interpretations. *Knowledge* (properly *interpretation*) is the reflection (result) of the mental processes, but not the ability which has enabled the processes (nor the processes themselves). All humans are born with a more or less equal ability to form knowledge, but what knowledge they form is entirely dependent on their particular life experience. We thus are genetically, biologically innately equipped to perform mental processes of interpreting ourselves in relation to the environment. These processes give rise to ideas and cognitive behavioral skills, such as speaking in accordance with a language practice.

Thus, it is the biologic ability that is innate and not the “content,” that is, knowledge (interpretations) acquired through the exercising this ability. No empiricist has ever claimed that the ability would not be innate, it seems that they have not even detected that this would be the

foolish counterargument of the nativists. We see from how Locke discusses *knowledge* and *ideas* versus *abilities* that he could not even conceive of the possibility that these were confused. This can be seen, for example, from the following quote (hereby I note that the concept ‘faculty’ which Locke uses below corresponds to that of ‘ability’): “There is nothing more commonly taken for granted than that there are certain principles, both speculative and practical, (for they speak of both), universally agreed upon by all mankind: which therefore, they argue, must needs be the constant impressions which the souls of men receive in their first beings, and which they bring into the world with them, *as necessarily and really as they do any of their inherent faculties*”(italics supplied; 1694 Vol. I: 15). We see how Locke in this quoted passage precisely tells that the believers in innate ideas (principles) take the reality of innate ideas to be *as given as innate faculties/abilities*. We should note that, *firstly*, he juxtaposes these ‘innate ideas (principles)’ and ‘abilities (faculties)’; and, *secondly*, he clearly presents the latter as something nobody doubts.

Thus the dispute between the camps represented, on one side, by Locke and Hume, and on the other side, by Plato, Kant, and Chomsky, is not about whether people are biologically similarly built (which nobody doubted), but precisely whether knowledge, ideas, beliefs (issues we can potentially render in words or perceive as mental images) are inborn or not. For example, Kant maintained that knowledge of mathematics provided perfect examples of *a priori knowledge* telling that: “Mathematics gives us a shining example of how far, independently of experience, we can progress in a priori knowledge” (Kant 2003: 46 – the notes on Kant in this section are based on my original discussion of these issues in *Expressions and Interpretations*, 2006). He asked us to consider the formula ‘ $5 + 7 = 12$ ’ as an example of *mathematical a priori* that everybody knows “independent of experience.” This is a bewildering statement considering that children, at least when I was young, spent 2 years in school to learn these equations, and I presume it must have been the same when Kant was a kid. A century before Kant made this astonishing statement, Locke had said quite on the contrary: “A child knows not that three and four are equal to seven, till he comes to be able to count seven, and has got the name and idea of equality; and then, upon explaining those words, he presently assents to, or rather perceives the truth of that proposition” (1694 Vol. I: 19).

We learn mathematics as a social practice, and mathematics as a discipline has developed as any social practice. But this is not generally understood, the reason being that mathematics represent such a rigidly conceptualized social practice that people are led to think that mathematics itself is a reflection of natural reality (when it is only a measurement system). And therefore the nativists think that this natural reality that mathematics is supposed to be a manifestation of must somehow be implanted in the brain. The rigidity of the conceptual framework of mathematics is a manifestation of the fact that in this field of social practice we deal with various aspects of a unit; mathematics is exclusively about conceptualizing all aspects of the world (to which it can be applied) in relation to a unit and its fractions (see Hellevig 2006 *Mathematics – The Language of the Unit* and other considerations in regards to mathematics). This tight conceptual framework means that in the name of mathematics it is very difficult (but not impossible) to claim whatever comes to mind as other scientists can verify the new claims within the received unitary conceptual framework. Mathematics is basically a highly conceptualized language, and therefore it is not so that mathematics exists in the nature, but rather that nature can be rendered in the language of mathematics: we do not detect mathematical relations in nature (and the cosmos) but we measure nature in terms of mathematics. Compare mathematics with a ruler by which we measure lengths, all distances in cosmos could possibly be expressed in terms of the ruler, but it does not mean that the cosmos would consists of so many rulers.

Kant wanted to prove by the simple mathematical expression ' $5 + 7 = 12$ ' that mathematics represents innate knowledge, and most philosophers have for some peculiar reason accepted the argument. But if the knowledge of that simple equation proves inborn a priori knowledge of mathematics, then shouldn't we be equally equipped to innately know all the more complicated mathematical formulae as well, for example, this one:  $e^{ix} = \cos x + i \sin x$ . Frankly, I do not know what that means, but my brother who knows mathematics better than I has said that this is the so-called Euler's formula, which is used in complex analysis that demonstrates the deep relationship between the trigonometric functions and the complex exponential function. In order to make sure that my ignorance of said formula was not due to any specific mutation of the gene responsible for this particular instance of alleged innate knowledge, I asked other people if they knew the formula. But the others I asked did not either have the faintest idea of what that formula could

possibly mean, so I could rest assured that this instance of mathematics did not demonstrate any form of innate knowledge and everything was in order with my genes in this respect. I hope that the reader should now draw the conclusion that neither is the expression ' $5 + 7 = 12$ ' a manifestation of any such innate knowledge.

Above I told that the original empiricists simply claimed that all our knowledge comes from experience and that the foolish idea to doubt whether our abilities are innate or not was not raised at all. But Kant, as all the nativists, was not able to draw the line between *knowledge* and *abilities*. This is why Kant confused the debate by introducing the claim that *space* and *time* represented, along with mathematics, perfect examples of a priori knowledge (Kant 2003: 46; 47, 67). Thus Kant said: "There are two pure forms of sensible intuition, serving as principles of a priori knowledge, namely, space and time" (2003: 67). But in reality instead of proving any form of *a priori knowledge* 'space' and 'time' prove that human beings, like other higher animals, have a biological ability to cognitively conceptualize their environment and that they have the ability to conceptualize their experience of themselves in relation to other events in the environment (that is, they have the ability to sense time). But to conceptualize or perceive space and time does not mean "to have knowledge of space and time" – on the contrary, knowledge precisely (properly *interpretation*) is about conceptualizing an experience in relation to space and time. 'Space' and 'time' do not meaning anything by themselves, i.e., we can merely involve these relation in our life experience; we may sense 'space' and 'time' as part of our experience, but certainly they are not things-in-themselves, and do not mean anything by themselves; we cannot know 'space' and 'time'. (Psychologist have shown that it takes time before children learn to correctly relate themselves to space and time — we know that even some adults experience great difficulties in this respect).

For a lucid criticism of Kant's a priori philosophy, I refer to Lewes's excellent and still very valid critical review in his *Problems of Life and Mind - The study of Psychology* (1879a: 171 – 177).

Eric Kandel, whose memory theory I have critically reviewed in this book, also confuses knowledge with the biological ability to produce knowledge. Laboring under these misconceptions Kandel says: "Kant, one of the forefathers of cognitive psychology, argued that the ability to represent space is built in our minds" (2006: 307). I cannot help but asking whether Kandel could conceive of a single person that would not

agree with this. Of course this ability is based on the genetic endowment; but ability is not knowledge. Kandel refers to our cognitive abilities as “built-in templates” and without referring to the relevant source he wrongly claims that Kant argued – allegedly contrary to Locke – “that we are born with” these “built-in templates.” Further Kandel claims that “those templates that Kant called a priori knowledge, determine how sensory experience is received and interpreted” (Kandel 2006: 202). (We should note that Kant has not said so, and that we are only served a loose interpretation of the ideas which Kandel has based on superficial information). I remind, what was said above, that Locke himself made the difference between ‘knowledge’ and ‘ability’; at best these “templates” correspond again to abilities. The inability to distinguish between the content and the ability leads Kandel to make statements like this: “The anatomy of the neural circuit is a simple example of Kantian *a priori* knowledge, while changes in the strength of particular connections in the neural circuit reflect the influence of experience” (Kandel 2006: 203). Here we have Kandel affirming that “the anatomy of the neural circuit” is “knowledge.” Kandel has knowledge of the anatomy, but the anatomy as such is not knowledge.

In order to point out how widespread is this fallacy of confusing knowledge with the biological ability for interpretation, I must also refer to Damasio saying: “Neither our brains nor our minds are tabulae rasa when we are born. Yet neither are they fully determined genetically” (2000: 111). We see that Damasio also confuses the biological abilities for forming knowledge (interpreting), that is, what he refers to by ‘the anatomy of the brain,’ and the knowledge we may acquire (the interpretations we make through the operations of the brain); it is the latter to which he wants to refer by ‘mind.’ The very point is that only the brain is genetically determined (being subject to relatively minor anatomic changes induced by experience), whereas ‘mind’ is a socially determined perceptual abstraction which refers to the reflections caused by the operations of the brain (mental processes in interpretation of environmental stimuli), and is thus not at all determined genetically, and cannot be genetically determined, because it is not an entity in the first place. Thus our ‘ideas,’ for which the concept ‘mind’ stands, are not genetically determined at all. (For a detailed discussion of my conception of ‘mind’ I refer to chapter *Mind*). Whether one accepts my view on ‘mind’ or not, I think that most people on reflection would concur in broadly saying that ‘mind’ represents the ‘content’ (properly reflections) of the mental processes, while brain is the apparatus that produc-

es ‘mind’ in complex mental (neural) processes. ‘Mind’ stands for our ideas, what we can think of; it is about thoughts which can possibly be rendered in words (at least tentatively), or in another form of deliberate expression. - In this connection I also remind that thinking, which is one aspect of the grand perception ‘mind,’ in itself is a function of social practices; thinking comes about when we merge in our mental processes concepts from social practices with the cognitive feelings produced by the extended homeostasis (see chapter *Feelings, Emotions and Consciousness*).

Basically the question of innateness is a question of what kind of processes get, so to say, hardwired, that is, what kind of life experience is passed on to the new generation in the genetic inheritance. In animals on lower levels of evolutionary hierarchy most reaction patterns they express are to a very high degree genetically determined, or, in other words, the range of possible flexibility is rigidly restricted by the genetically inherited process patterns. In fact, the range is, of course, restricted in humans as well, but in humans – and this is the very point – the abilities for cognitive mental processing are so complex that even given the restrictions the potential outcomes of these mental processes are infinite in range. Human cognitive plasticity is a result of the immense amount of possible neural synapses and the infinite range of differences in the strengths of the synapses and other neurochemical considerations, as well as the interconnections between the processes. These factors effectively create an infinite variety of possibilities for interpretation. (This by itself shows that Chomsky goes wrong with his speculative maxim about “finite means”). This is also why “mental content” (reflections from mental processes, patterns of thinking, ideas) and the way we express them do not get hardwired.

To round up this discussion of the nativist fallacies I want to refer to some of the fundamental underlying misconceptions that guide nativist thinking, which I have detected in analyzing the work of Noam Chomsky. Of course, the entire body of Chomsky’s work is through and through a manifestation of the nativist fallacy. It is precisely the rejection of the ideas of how all cognitive functions of a person – yes, all life – is a function of empirical reality that has led to Chomsky’s desperate speculations. All the misconceptions he entertains and the total conceptual quagmire follows from denying real empiricism. Therefore the whole chapter *A Review of Chomsky’s Verbal Behavior* can be seen as a criticism of the fallacies of nativism. But here I shall refer to some

choice considerations which, as it were, explain the “deep structure” of the nativist fallacy.

Firstly, I remind about the “stimulus-free agreement.” This was Chomsky’s claim that brain processes occur independent of the organism processing environmental stimuli. This is probably true - in the case when a person lies in coma. But in the case of all healthy persons all brain processes are reactions to interpretation of environmental stimuli in a given context. And when we apply such interpretations gained in one context to another context, we are in essence only applying our life experience in a new situation. Thus we approach a new moment of life always with the cumulative experience from the past.

*Secondly*, I remind that according to Chomsky (and all the nativists) what is genetically programmed is not just the anatomy of the brain (we are reminded that not even that is solely a function of genetic inheritance) but even all the results of the brain processes are said to be pre-programmed to yield certain verbal expressions. That is to say, that according to Chomsky the human does not possess the discretionary ability for mentally processing environmental stimuli, and instead what we normally would understand to be the results of mental processing of stimuli, that is, our ideas and the way we express them, are results of innate processes that necessarily yield the given behavior, of which speech (Chomsky’s language) is a manifestation. The Chomskyan nativists imagine that a human being is, as it were, born with an organic tape player or memory stick implanted in the brain, which organically matures so as to eventually contain all the possible expressions of social practices, or as Chomsky says a “finite set of sentences” and “all possible human languages” (2007: 8). He is essentially depicting his “universal grammar” as being part of a radar or a radio device which has been implanted in the brain of a newborn human and which automatically tunes in to the “linguistic wavelengths” it detects in the environment in order to endow the child with its own “language.” This corresponds to what was said above about the point of distinction of Chomsky and his fellow cognitive revolutionaries (vs. the earlier adherents to innatism) being that they maintain that the human is not necessarily born with all the knowledge and ideas claimed to be innate, but that he instead is born with an apparatus that necessarily will develop so as to yield those ideas.

*Thirdly*, we have to note how the nativist position is connected with their peculiar conception of the metaphysical entity they call “the mind.” I remind that their champion, the master Chomsky himself, tells

that by “mind” he means both the *brain* and “*the mental aspects of the world*” (see *A Review of Chomsky’s Verbal Behavior*). This means that he uses the concept ‘mind’ as the prism through which he views alternatively the physical organ *brain* and all the perceptions that the human by aid of the brain forms of the environment. By ‘mind,’ which, I stress, he terms “*the mental aspects of the world*,” he refers, in actual fact, to all his experience of observed reality. But he then proceeds, as it were, to project these “aspects” back into the brain. For him these “aspects of the world” are then features of the brain. Therefore they (the aspects), in this line of logic, are to be considered innate. I think that until now none of the nativists have offered, like Chomsky does, such illuminating insights into the peculiar unconscious logic from which all kinds of ideas of innate knowledge stem. Thus when we criticize Chomsky for holding these peculiar views, we have to keep in mind that this is not a question of what he wants or not, rather he cannot find any other explanation on which to bottom his theories. Any innate theory on the organic workings of perceptual abstractions will in the end have to be anchored in a broad category of speculation. We have to be grateful for Chomsky actually making this manifest for none of his nativists predecessors have bothered to follow the logic through to its ultimate bankruptcy the way Chomsky did it.

Chomsky’s theories and their reception is a story which illustrates in every aspect what Locke said about “how men commonly come by their principles” – this is how it goes:

*“This, however strange it may seem, is that which every day’s experience confirms; and will not, perhaps, appear so wonderful, if we consider the ways and steps by which it is brought about; and how really it may come to pass, that doctrines that have been derived from no better original than the superstition of a nurse, or the authority of an old woman, may, by length of time and consent of neighbours, grow up to the dignity of principles in religion or morality. For such, who are careful (as they call it) to principle children well, (and few there be who have not a set of those principles for them, which they believe in,) instil into the unwary, and as yet unprejudiced, understanding, (for white paper receives any characters,) those doctrines they would have them retain and profess. These being taught them as soon as they have any apprehension; and still as they grow up confirmed to them, either by the open profession or tacit consent of all they have to do with; or at least*

*by those of whose wisdom, knowledge, and piety they have an opinion, who never suffer those propositions to be otherwise mentioned but as the basis and foundation on which they build their religion and manners, come, by these means, to have the reputation of unquestionable, self-evident, and innate truths” (1694 Vol. I: 36).*



### 3 MENTAL PROCESSING

In this chapter I will account for my conception of how both in an evolutionary sense, and in the life of any given organism, all organic and neural processes may be conceived of as processes of movement that are combined in more and more complex processes within the framework of the homeostatic system and eventually in the human being yield consciousness of one's own cognitive feelings and thoughts. I conceive of these processes on a continuum which starts with physical movements, which combine into organic processes and neural processes (which are organic processes of a special sort), which further combine through the homeostasis to feelings, which give rise to cognitive feelings, which may develop to mental images and phenomena that correspond to conceptualization of abstractions, which latter two embedded in the underlying cognitive feelings may develop into thoughts when the human in a state of consciousness applies his experience of language and other social practices to the cognitive feelings. In accordance with this conception, I hold that all phenomena of cognition are results of such neural processes which I in their developed form characterize as mental processes yielding cognitive reflections.

In order to understand the relation between the biological processes of a human and human interaction in society, we first need to form a proper conception of the mental – to understand what we properly should refer to when we say 'mental.' Instead of taking 'mental' to signify the same as what is usually thought of as 'mind' (or some properties of it) we should by 'mental' refer to *the neural processes* that lead to cognition. This connects with my proposal to regard neural processes on a continuum going from simple physical processes to ever more and more complex and sophisticated, reentrant and high-speed processes. The latter I term *mental processes*. With the concept 'mental' I thus refer to these mental processes or phenomena connected with them.

Thus 'mental' is not the same as the 'mind' or anything else in that metaphysical vein, it is simply a word denoting enormously complex physical, neural processes, which occur in infinitely complex, high-speed, reentrant circuits with feedforward and feedback loops. (Regarding the idea of reentrant processes, I refer to Edelman and Tononi 2001 and Edelman 2006). Somewhat simplifying I suggest comparing *physical* and *mental* with a picture and a film. To grasp this we should re-

member that a film merely represents a series of pictures projected in rapid succession showing the objects in successive positions slightly changed so as to produce the optical effect of a continuous film in which the objects move. When the film is run quickly through a projector the reflections of it appear to us as something living as opposed to the individual pictures which are still. The film has only one dimension at a time, the fast projection of the series of pictures, but the mental processes are multidimensional and combine at any given time the effects of a variety of simultaneous processes which are in constant relations of feed forward and feedback, reentry, remote signaling, etc. In view of these considerations, I am not introducing the *film metaphor* as a scientific analog to what 'mental' should be taken to be, but rather as an aid to put us on right track in how to conceive of these issues<sup>1</sup>.

In present neuroscience and philosophy 'mental' has not been defined the way I propose here and this has lead to great conceptual confusion. In principle I could have started with an attempt to account for how the concept is presently used in order to orient the reader in the subject, but considering the total conceptual quagmire in which these issues are surrounded I thought it expedient anyway to start right off with what I regard as my correct conception of 'mental.' I shall return below to a discussion of how the concept has been historically understood and employed. My ideas on the 'mental' are in turn based on my conception of *organic movement* (*movements of living organisms and the processes within them*; regarding 'movements' I also refer to chapter *Expressions*). The simplest types of organic movements we may call *physical movements* (e.g. the movements of an amoeba, or the movements of a cell in a multicellular organism). In animals that have a neural system some of the organic movements are monitored by neural cells (neurons). Neural processes represent organic movements of neurons, or movements within neurons and along the neural pathways. In regards to an animal with a simple neural system we may still conceive of the movements as physical movements, but those neural movements in a more evolutionary developed animal which are processed on a higher level we should call mental movements, or *mental processes*. We shall bear in mind that as we move to an evolutionary more developed animal the primitive movement patterns are not replaced by the more developed mental processes, rather various movement patterns from the most simple to the most complex occur all the time simultaneously, the lower level neural processes are integrated in the more advanced mental

processes (the *principle of unity and interdependency of organic phenomena*). Thus we should conceive of a continuum of organic movements, or organic processes, where the movements (*processes*, or *reaction patterns* of interpretation and expression) at one end of the continuum (upstream) could be called *physical processes* and at the other end (downstream) we would have the complex and sophisticated movement patterns I call *mental processes*. In between these ends there are movements, or processes, which we may chose to describe as more or less *physical* versus more or less *mental*, or we could say that they display both physical and mental process features. But nowhere on the continuum would we be able to draw a definite line of demarcation between various types of organic movements in an attempt to define what are to be regarded as mental processes versus simple physical movements. On the contrary, instead of attempting a delimitation of the processes we should think of all the processes as intertwined. For example, what we call ‘memory’ can well be depicted on this kind of a continuum showing how the cognitive ability of humans consciously to remember is just an outgrowth of these same organic movement patterns where at the end of the continuum we have human ‘memory’ (see chapter *Memory*). Lamarck was the first one to genuinely understand and document these principles in his *Zoological Philosophy* (1809), therefore in order to include all his wealth of insight into the concept I prefer to call this evolutionary continuum, the *Lamarckian continuum of mental evolution*, or shortly the *Lamarckian continuum* (additionally referred to as the *evolutionary continuum*).

While the continuum provides a first approximation of the idea, I have developed an even more forceful metaphor to depict the idea that all organic features are interdependent both in their evolutionary genesis and their functions in a living organism. For this purpose I propose to call into mind the image of a double helix where each loop in the mesh potentially communicates with another both forwards and backwards. According to this image we could think of simple physical movements and progressively more complex movement patterns simultaneously affecting each other along the mesh all the way up to the complex mental processes – and back from mental processes all the way down to the simple physical movements. In this manner the more simple movements continuously affect and are affected by the more complex ones. It is these processes of continuous interdependency that makes for mental processes and ultimately cognitive feelings (and the conscious derivatives of them). I call this simile *the hermeneutical evo-*

*lutionary spiral (evolutionary spiral, hermeneutical spiral).* This image should convey the idea of the evolutionary historical interdependency as well as the present interdependency of organic features in an organism. This is a multidimensional spiral that emanated in one central point from which all its organic features have progressively grown outwards in such a fashion that one outgrowth has been caused or enabled by an earlier feature, whereas the new outgrowth in turn affects the earlier feature (or processes) and all others in the vicinity. As the spiral develops all the interrelations between the points in it become more and more complex. This hermeneutical spiral should push home the idea that the genetic development has not been linear in the sense that one particular feature would give rise to another particular one, but rather such that all the features have developed in infinite variances by way of impulses they have received from the other features. In regards to human behavior we should then realize that all the various types of behavior we recognize, or the abilities (“faculties”) we perceive, only represent surface level perceptions of an infinite array of similar organic processes that lead to different outcomes – or rather perceived outcomes – in any given situation. This means that we should consider all human behavioral features (abilities, faculties) as reflecting various aspects of unified processes. Various process patterns start multiple reactions to stimuli simultaneously, and the processes connect with each other in complex ways so that a lower level process catches up with a higher level one, and there is feedback to all directions continuously.<sup>2</sup>

One of the most difficult issues to understand about mental processes is the fact that while the mental processes are material the process results are not material, being only reflections of the material processes. This is why mental processes can conditionally be said to *exist* – as far as we may postulate a process to exist (I refer to chapter *Processes and Concepts for a discussion of the question of existence of processes*) – but the resulting thoughts do not exist (this idea is discussed more in detail below and in chapter *Feelings, Emotions and Consciousness*). Thoughts and all cognition emerge as reflections of mental processes. We may also, for example, say that thoughts represent expressions of reflections of mental processes, or more correctly thoughts and even cognitive consciousness represent merely *fleeting* reflections of a potentially infinite variance of mental processes. I guess that a physicist could in principle explain these phenomena of thoughts as reflections of mental processes in terms of mass and energy. Most probably the phys-

ical explanation would point to such a gradual loss of energy on the border of the process - in relation to the particular infinitely small sub-process presently reflected in consciousness - that the result could be considered of as immaterial. Even when I consider myself to be a materialist, I share with Descartes the idea that thoughts are immaterial. In my conception of these phenomena the immaterial thoughts are simply the results of immensely fast, complex, intricate and sophisticated neural processing of stimuli of which we form perceptions; they have a material origin, but to their essence they are immaterial (see chapter *Feelings, Emotions and Consciousness*). In any case, what is at stake here is not whether we define 'thoughts' as material or immaterial by applying the rigid conceptual method of either/or; what is decisive is that 'thoughts' cannot be conceived of as material entities, or any other kinds of entities, on the analogy of things.

As I already pointed out, these ideas which I now propose are new: earlier 'mental' has not been described in this way. It seems to me that nobody has so much as bothered an attempt to really grasp the meaning of the concept. Tellingly enough, an Internet query with the search word 'mental' did not even yield any high ranked articles on the theme. And a dictionary like the Merriam-Webster defines 'mental' as follows: "of or relating to the mind; specifically: of or relating to the total emotional and intellectual response of an individual to external reality <mental health> : of or relating to intellectual as contrasted with emotional activity: of, relating to, or being intellectual as contrasted with overt physical activity: occurring or experienced in the mind : inner <mental anguish> : relating to the mind, its activity, or its products as an object of study : ideological f : relating to spirit or idea as opposed to matter; of, relating to, or affected by a psychiatric disorder <a mental patient> : mentally disordered : mad, crazy: intended for the care or treatment of persons affected by psychiatric disorders <mental hospitals>; of or relating to telepathic or mind-reading powers." - These definitions are open to a lot of criticism starting with the cardinal error of identifying the 'mental' with the 'mind.' I cover a lot of that criticism on the various pages of this book and shall therefore not immediately here get into the details, but I ask the reader to note how conspicuously absent is the proper definition of 'mental' as referring to the kind of neural processes I depicted above.

In this connection it becomes necessary to point out that I am not attempting to argue what would be the etymologically correct use of the term<sup>3</sup>, rather I merely maintain that to make sense of cognitive pheno-

mena we need a concept ‘mental’ which is understood in the way I here propose. When I assign ‘mental’ the meaning of ‘mental processing’ (or ‘of relating to mental processing’) I am not correcting a linguistic misuse, but proposing conceptual clarity. I am effectively proposing a new concept to stand for these kinds of neural processes. But even when the use I am proposing is new, we can still trace in the relevant literature from the last one hundred or so years a gradual shift towards this kind of employment of the term. But this has not been accompanied with any amount of conceptual clarity and rigidity.

We cannot properly grasp any aspects of human behavior if we do not first properly understand what are the organic processes that produce behavior. Most importantly we first have to understand that all behavior is, in fact, results of organic processes; they are results of such organic processes that on each level of complexity (from the most simple physical processes to the most complex cognitive processes) are about an organism interpreting itself in relation to its environment. This means that human behavior, including speech, is about mental processing of environmental stimuli. We then need to inquiry what are the real biological processes behind mental processing and how they cumulate to cognitive processes such as ‘thinking’ and behavior such as speech. We have seen from my exposition of Noam Chomsky’s theories that when the real biological processes behind cognition and behavior are not accounted for and not understood, then what follows cannot be but linguistic alchemy where one concept is explained by reference to another concept and so on in an endless merry-go-around without any connection to biological reality.

At the ultimate bankruptcy of his conceptual speculations Chomsky anchors his speculation in the conception he holds of what he calls the ‘mind/brain.’ He connects the metaphysical ‘mind’ with the natural organ ‘brain’ with the motivation that he needs to connect the two “entities” because ‘mind’ in fact is “the brain viewed from a particular perspective.” Next ‘mind’ or this ‘particular perspective on the brain’ is explained as the “mental aspects of the world” (2007: 106). It seems that by these “mental aspects of the world” Chomsky refers (mostly unconsciously) to all his experience of observed reality. And as Chomsky’s life experience is mainly gained in the field of speculative linguistics, it is only natural that all the ideas that he portrays on the brain reflect nothing but these speculations. - I refer to chapter *A Review of Chomsky’s Verbal Behavior* for a more detailed discussion of these issues. - The

reader is thus presented with two complete opposite conceptions on what we mean by ‘mental’: (i) my conception in accordance with which I propose that we should refer by ‘mental’ to complex neural processes that eventually may yield cognitive processes, human behavior, cognitive consciousness, and speech by which we take part in language and other social practices; and (ii) Chomsky’s conception that ‘mental’ is the perspective by which he portrays his life experience, through the concept ‘mind,’ on the brain.

### **Neural Processes vs. Mental Processes and States vs. Processes**

Now I will develop my presentation as to how the two concepts ‘neural processes’ and ‘mental processes’ relate to each other. In my conception ‘neural processes’ refer to the organic movements in neurons – between neurons and within neurons. In reference to the *Lamarckian continuum* we can then say that ‘neural processes’ encompass all the movements from the simple physical ones to the complex mental processes. Thus while ‘neural processes’ is not a synonym to ‘mental processes’ the two concepts may often be used synonymously without any detriment to clarity. This idea may be illustrated by taking a look at an instance of what I deem as misuse of the two terms. In their criticism of “classical reductionism” Bennett and Hacker assert that a milder form of the “metaphysical materialism” inherent in classical reductionism implies the “claim that mental states, events and processes are in fact neural states, events and processes, that mental attributes are in fact identical with neural ones” (2003: 357). We may deduce from the above that Bennett and Hacker hold the opposite opinion and maintain that mental processes would not be identical with neural processes. That is a misconception insofar as all mental processes are neural processes, whereas we need not call all neural processes mental processes (as depicted on the continuum). But this is not the distinction the authors have in mind, one therefore wonders in what Bennett and Hacker conceive them to differ in. It seems that the authors in line with most everyone conceive of ‘mental’ as signifying those phenomena which I refer to as ‘cognition’ and ‘cognitive phenomena (activity),’ i.e. what is actually produced by mental processes, or the phenomena to which most authors refer to by ‘consciousness’ and ‘mind.’ This is a misconception that Lewes had already alerted to (the “great mistake is transforming the antithesis of conscious and unconscious into the equivalent of mental and

physical,” 1879a: 21). I from my side assert that ‘cognition,’ ‘consciousness,’ ‘mind’ should not be equated with ‘mental’ and rather be conceived of as the results of mental processes, or the reflections of such processes (subject to my more detailed deconstruction of these concepts in this book).

Considering the above it seems that Bennett and Hacker curiously enough would be longing for the ‘soul,’ or something of the like that they could add on top of the material neural processes in order to form for themselves a satisfactory conception of these processes that they deep in still regard as essentially dualistic. But even when they seem to be in the dark about where to search for the dualistic element, they still are somehow right in searching for such an element – for there is *one* (or more correctly *many*) as I shall below explain with the conception *new dualism*.

But before continuing I need to object to the entire idea of speaking about ‘mental and neural *states*.’ As I explain in chapter *Processes and Concepts*, the word *state* conveys an idea of a definite condition of being, which corresponds with its etymological origin of *standing* or being in a definite position. It conveys an idea of a standstill which is contrary to the eternal flux of all processes of life, for as I have explained all organic manifestations, all life, occur exclusively as processes where a standstill cannot correspond but with death. The word *event* is definitely better than *state* but nevertheless also risk conveying an idea of a something occurring in a limited framework; therefore it seems to me advisable to stick to the word *process* when describing organic phenomena. In any case we get a better grasp of the underlying ideas by exchanging *state* and *event* for *process*. (Another issue to speak about ‘being in the state of consciousness’; by this we do not refer to any hypothetical ‘conscious states’ but simply to the organic processes of attending to phenomena with self-reflexive awareness; we are here speaking of a mode of being).

A reference to another passage from Bennett and Hacker will additionally illustrate this problem (2003: 112). Here the authors postulate that there is “no such thing as a mental process” telling that instead there are only “neural processes” that take place in the brain (I remind that I had defined mental processes merely as more complex neural processes), however, after denying the existence of mental processes they say that the brain processes “need to occur in order for the person, whose brain it is, to be going through the relevant mental processes.”

This manifestation of the dichotomy between mental processes and brain processes is based on the very peculiar conception that the authors have formed of 'mental processes.' This again is a manifestation of the confusion of 'mental' with 'cognition' and 'cognitive reflections' (i.e. what is produced by mental processes) or the phenomena to which most authors refer to by 'consciousness' and 'mind.' The authors seem to reserve the concept 'mental processes' to denote the reflections or perceptions that a human being forms of conscious cognitive activity, thus for them 'mental processes' in such are immaterial (or quasi-immaterial as it emerges when we account for some other considerations they refer to). As an instance of such 'mental processes' they give "reciting the alphabet in one's imagination." Something prevents the authors from realizing the connection between brain processes and the conscious reflections, perceptions, they give rise to. These ideas of Bennett and Hacker provide a good example of the most fine-tuned quasi-dualist speculation: they reject classical dualism, but yet for them "mental processes" represent something else than a continuation of the physical processes.

A little further on Bennett and Hacker say something very promising when they point out the "unhelpfulness of the dichotomy of mental and physical" (2003: 117). They tell that "it is tempting to try to demarcate the domain of ordinary psychological concepts by invoking the contrast between the mental and the physical and identifying the psychological with the mental, on the assumption that the mental and the physical constitute two exhaustive, exclusive domains." At this point I was expecting that they had understood the continuum, but, on the contrary, they go on to re-emphasize the difference and to postulate that in addition to these *two things* there are "many *things* [italics supplied] that are neither physical nor mental." This position is close to the ideas of Karl Popper and others that count perceptual abstractions as *things* (compare chapter *Processes and Concepts*), although what is new is the claim that all things are "neither physical nor mental." This is a position which admittedly is very hard to decipher. Having said that the authors go on to render a Popperian list of imagined "things" such as "the laws of the land", "the laws of physics and of logic", "numbers and theorems", "statements"; they even identify "rumours" as things, which certainly must amount to an academic record of *thingly thinking*. We should here take notice of the total conceptual confusion; the authors have not understood that those issues that they list as "things neither physical nor mental" are merely immaterial expressions and interpretations, our per-

ceptions in competition - they are the stimuli in the physico-mental process, and the output in form of reflections or perceptions. Here we see how the thingly worldview and thingly language tricked these savants to think in terms of *things*. Instead of grasping the biological continuum and comprehending that social phenomena (including linguistic concepts) are reflections of biological processes, the authors labor under the idea that there would exist a range of things as it were on a continuum from material to immaterial things (their mental things) with all the things that are “neither physical nor mental” in between. – I remind that under my conception there are either things with mass and energy or social expressions, which shall absolutely not be considered as things of any sort.

The authors seem to consider that there would be some kind of an accepted dichotomy between physical and mental (immaterial), a position which they want to correct by introducing all the quasi-physical-quasi-mental things. This is a very confused proposition, for clearly all ideas that a person have are reflections of mental processes, this whether the reflections refer to things such as stones or non-things such as legal norms. Clearly we do not need to have stones in the brain to think of stones. All in all this shows how ‘mental’ is often misconceived to correspond to the dichotomy of physical versus non-physical (immaterial), where ‘mental’ is taken to belong to the latter. - Bennett and Hacker do not leave anything to doubt regarding this confusion of theirs, for they are kind enough, to point it out yet in another fashion: “The category of the mental, unclear as it is, might profitably be used to demarcate a subcategory of the psychological that concerns certain features of the distinctive powers of the intellect and the will of a living being” (2003: 118). ‘Mental’ for them is then something metaphysical connected with the ‘psychological,’ which in turn is connected with the “powers of the intellect” and the “will”. Having learned this we would have to inquire into these linguistic concepts, what are the ‘psychological,’ ‘the intellect,’ and the ‘will’? But I already replied to this question: I have told that they are linguistic concepts that do not correspond to anything biological, except by the way all social phenomena ultimately stem from biological interpretations and expressions. The psychological merely represents a certain perspective that a human observer may take in contemplating human behavior. Thus all references to ‘psychological’ are connected with purely social considerations that represent perceptions on observance of human behavior. Similarly ‘the intellect’ is a concept

by which we may denominate the capacity of interpretation and its correlation with possible cognitive actions, but certainly there is no human organ, nor part of the brain, nor any neural processes that would correspond to 'the intellect'. And certainly there are no organs, nor ensembles of organs, nor process that would possibly correspond to the "the will."

These fallacies are also illustrated by Churchland's claim that "mental states reduce to brain states" (1989: 277). Were Churchland to think of these occurrences in terms of 'processes' instead of 'states,' then she would not make this meaningless statement at all, for in that case she should surely understand that 'brain processes' would merely be another term for 'neural processes' or 'mental processes.' This because the brain is merely the organ where mental processes mainly occur. But most importantly she should then understand that there is more to 'mental processes' than the anatomy or configuration of the brain at any given moment, and that it is the processes that yield cognition and not the configuration of the brain, which is implied by the idea that 'mental states reduce to brain states.' Essentially she wants to justify by this idea her belief in classical materialism, which essentially denies any role to external influences. Quite simply the position represents an ignorance of the fact that mental processes are about interpreting the environment by way of processing external stimuli; ignorance of the fact that mental processes form an integral part of all neural and somatic processes that affect the homeostasis (and vice versa are directed by the joint effect of the homeostasis).

The most important consideration here is that, while the reflections that reach our cognition are produced by neural processes (mental processes), there is never any *given state* of cerebral, neural patterns that would correspond to a given idea, thought or whatever we want to call this output of mental processes. Think about the *film metaphor*: when we watch a film, there is no particular snapshot that forms the film we see, the impression of a living action is produced only as a result of running the images in rapid sequence.

Similarly Damasio juxtaposes "neural patterns and mental patterns" by saying "we do not know all the intermediate steps between neural patterns and mental patterns" (1999: 159). Damasio also says: "When I refer to the *neural aspect* [emphasis mine] of the process I use terms such as neural pattern or map" and "When I use the term image, I always mean mental image. A synonym for mental image is mental pattern" (1999: 316). We see from the above that Damasio postulates a dualism between 'neural aspects' and 'mental aspects.' By this dichot-

omy Damasio makes a false parallel as if the phenomena would consist of two separate elements, when in fact ‘neural patterns’ are the physico-mental processes and what he calls “mental images” are output of the neural (mental) processes. Damasio speaks about “the mental contents of feeling, the ingredients, the stuff that makes a feeling” (2003: 83). This is not correct, for the ‘mental’ is not the content, rather the stimuli that are being processed and the process results (reflections) are what we may call ‘content.’ The real insight is that the physical, neural, processes which I call ‘mental’ (after reaching a certain complexity and sophistication) give rise to feelings followed by perceptions, which only seem to have a content in the perceptual reflections we form of the reentrant circuits, the reflections of the processes. I remind that we have to think of these processes as being processes of interpretation of stimuli, which stimuli can be of a material, physical nature, or of immaterial nature, i.e. social, expressions of verbal behavior. But hereby it is important to realize that we should not refer to the immaterial stimuli as ‘mental stimuli’ - mental is the process of treating the stimuli and not the stimuli themselves.

LeDoux also subscribes to the metaphor of “mental content” saying: “An idea, an image, a sensation, a feeling: each is an example of what psychology call mental content – stuff that is in the mind” (LeDoux 2003: 175). The reader should note the mythological place “mind” where LeDoux claims this “mental content” to reside in. LeDoux might as well explore the possibility of this ‘mind stuff/mental content’ residing in the Agartha, the Avalon, Atlantis or perhaps the Camelot (I refer to my deconstruction of the concept ‘mind’ in chapter *Mind* from which it follows that we should not conceive of ‘mind’ as corresponding to a biological entity).

Koch provides us with another angle to this misguided statement of the question assuring us that “there must be an explicit correspondence between any mental event and its neuronal correlates” (Koch 2004: 17). The neurons are the elements in the neural pathways where the mental processes take place, so obviously there is a correspondence, but the “mental event” (this must mean the cognitive reflections or some phenomena like that) reflects the processes as a whole, and therefore the neurons cannot possibly correlate in any one-to-one correspondence with the cognitive reflections: the cognitive reflections represent a series of neuronal events.

The above considerations also tie in with the traditional question in the philosophy of mind: ‘whether mental and physical properties are reducible to each other.’ Well, clearly they are, as explained above: ‘mental’ is just a name for more complex and sophisticated, high-speed, reentrant physical processes. For clarity I have to refer to another particular linguistic fallacy in this connection, this in reference to Edelman and Tononi asserting that “other materialistic positions insist that although consciousness is generated by physical events in the brain, it is not reduced to them but, rather emerges from them” (Edelman, Tononi 2001: 4). I cannot comprehend why these scientists would want to raise as a real scientific difference the juxtaposition between ‘reduction’ and ‘emergence.’ Clearly the real biological processes are about ‘emergence’ – cognition emerges as reflections of mental processes, but there is no problem in a scientific theory to start from the opposite end and to describe the process results in terms of reduction (as long as the real direction of the process is kept in mind). But perhaps the authors wanted merely to point out that the reflections that are produced by the processes cannot be identified in the biochemistry of the original configurations of the neural processes– that would, of course, be a correct position to maintain. However as the quoted statement was delivered in criticism of “other materialistic positions” it seems that Edelman and Tononi do not share the idea and rather seem to affirm that there is a “consciousness” substance separate from ‘brain’ substance” (2001: 5).

## New Dualism

To grasp my conception of ‘mental’ we need to understand that mental processes are about processing stimuli. This is what led me to postulate the paradigm which I call *new dualism* – the dualism between the body and the external stimuli being processed by it. According to this idea the essence of neural (mental) processes is to process external stimuli that have been detected (received) by the sensory organs (sensory receptors). These processes correspond to organic interpretation. Processes of organic interpretation further lead to bodily expressions which are reactions to these interpretations (gestures and speech among such expressions). At some point the joint outcome of the various processes simultaneously occurring are brought up to a cognitive level where higher-order mental processes occur both unconsciously and consciously as reflections of the lower level processes. These higher order processes are what correspond to what we may call cognitive beha-

avior or the kind of activity we refer to as pertaining to the intellect or intelligence. – The factor external to the body in mental processes are thus the stimuli that are being processed by the neural system, and not a metaphysical ‘soul’ or ‘mind.’ This is why I propose to think of the processes of the brain/body interpreting stimuli in terms of the dualism between body and stimuli. To make this idea manifest and to highlight these issues against the misconceived classical dualism I refer to it as the *new dualism* and alternately as *natural dualism*.

According to the philosophy of materialism no external factors are to be postulated as influencing cognition. This materialism was developed by way of a pendulum swing in response to classical dualism. The fundamental conception of dualism is that a human being has two dimensions, or consists of two different kinds of substances: the body consisting of physical matter, and the immaterial ‘mind’ (‘soul’) that is joined to the body. Philosophers also refer to dualism as the *mind-body problem*, which points to the misconceived conundrum as to whether one is to consider that human cognitive behavior is produced by the ‘mind/soul’ that visits the body or whether all cognitive intelligence just pops up from the body, without the agency of mind and any other external source. As philosophers often equate, as we have seen, ‘mental’ with ‘mind’ they also speak about a dualism between ‘mental’ and ‘physical’ (see e.g. Searle, 1997 and Bennett and Hacker, 2003; chapter *Mind*).

The mind-body dualism is usually referred to as a conception of Descartes; this as he had made the idea into a central theme of his philosophy (but it should be stressed that he did not by any means invent it). While most contemporary authors, having embraced the ideas of materialism in one or another form officially and vehemently reject Descartes’ dualism, they anyway seem to be, what I call, quasi-dualists, that is, they labor under a paradigm in accordance with which there remains a little bit of dualism after all. This has led to a series of unsuccessful attempts to postulate various *quasi-dualistic* theories where the role of the ‘soul’ has been given to one or another academically more hygienic conception such as ‘mind,’ ‘consciousness’ and even some more delicate metaphysical conceptions, as we saw already from the above discussion. Often all these metaphysical concepts are also referred to as the ‘mental.’ In their diluted versions of dualism most contemporary authors have settled for the concept ‘consciousness’ to account for the residue of what originally was the ‘soul’ and then became

the ‘mind.’ My idea to consider (in accordance with the *organic process model*) all these issues in terms of the *new dualism* should serve to quell this thirst for something *metaphysical* as I now offer a *natural dualism between external stimuli and a body processing those stimuli*.

It seems to me that it has been wrong both to advocate the mind-body dualism and to deny it. In my deconstruction of the concept ‘mind’ I have shown that ‘mind’ itself (in its proper use) is best seen as a product of this *natural dualism* between the body and the external stimuli: ‘Mind’ represents the reflections or perceptions we form in abstraction of our own and other people’s cognitive activity. It is the result (outcome) of the dualism between the body - including the brain and the entire neural system – and the external stimuli that the body interprets. Thus to those that claim that “mind is more than just our brain” we may answer: Yes it is: the mind is a product of the processes of the brain (and the body) interpreting external stimuli. To explain this we could even resort to the beloved computer metaphor of the cognitive revolution, but this time around assigning it an intelligent meaning. The brain could be compared with a computer (hardware and software) to which input data is entered in form of the external stimuli. A computer then processes the input data and yields an output in form of calculations or texts; similarly ‘mind’ is the output of the cerebral and other neural processes.

## More about New Dualism

As it was mentioned above the positions of denying dualism are usually referred to as *materialism*. By the theory of materialism philosophers mean the idea that all *that exists* is made of matter and that there is nothing beyond matter that affects all human phenomena, including ‘consciousness.’ Misconceived ideas of *existence* and *being* are what seem to lie at the roots of these philosophical problems. These, in turn, are connected with what I call the thingly fallacy, the idea that linguistic expressions (and all other social practices) could possibly be said to exist or *be*. If we understand that social expressions do not exist even when we may experience them through the media of human behavior and traces of behavior, then we may grasp how immaterial social practices affect cognition in form of immaterial stimuli. This in turn will allow us to expel from our paradigm the materialist ideas according to which all we may perceive must necessarily correspond to something existing so that these erroneous ideas will no longer be allowed to be-

with thinking. – By stressing the materiality of all that can be perceived and by rejecting any validity to non-material considerations the materialists mean that there is no ‘soul’ or anything similar beyond the body and the brain that affects human cognitive behavior, and consequently – they consider – that only the functioning of the brain needs to be explained. For example, Francis Crick, in his aptly named *Astonishing Hypothesis*, maintains that he, you and me are “*the detailed behavior of nerve cells*” that is, that all human cognitive activity (“You, your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will”) are “no more than the behavior of a vast number of nerve cells associated with molecules.” Further he equals the ‘mind’ with “the behavior of our brains” which according to him can be explained “by the interactions of nerve cells (and other cells) and the molecules associated with them” (Crick, 1995; also criticized by Bennett and Hacker, 2003: 355). This is a similar position that Koch was above reported to have advocated.

In connection with the above some crucial facts need to be stressed: *firstly*, that all cognition starts with an interpretation of the stimuli that the sense organs (or sense receptors) have detected (reacted to); thus the question is always about a process of interpretation, organic interpretation that proceeds both unconsciously and consciously and on various cognitive levels (from low to high); *secondly*, that the sources of the stimuli are partially material and partially immaterial (as was explained above); *thirdly*, notwithstanding that part of the stimuli *stem* from material sources, both types of stimuli anyway undergo a similar organic treatment in the body, i.e. both enter cognition through processes of interpretation, i.e., neither type of stimuli enter the body in a direct fashion (other issue that we are more genetically disposed to treat certain material stimuli in a given way). – I shall below discuss more in detail the ideas pertaining to the immateriality of social stimuli.

Above I have argued that both the classical dualists and the materialists were wrong in respectively postulating and rejecting the dualism of body and mind. However, if I were to judge which idea was more wrongheaded, the materialist or the dualist, then my verdict would fall on the materialist position, for certainly we need to search for an influence external to the body/brain to explain cognition. In a way Descartes came closest so far by explaining sufficiently correctly the functioning of the body and the neural system but as he had notwithstanding his extensive studies of the human body not found any traces of some *ideas* or

*knowledge* existing in the body he drew the conclusion that they must be the results of an external influence. He called this influence alternately ‘mind’ and ‘soul’ (1997: ix), the ambiguity in terminology already per se pointing to the fact that he did not advocate a religious explanation as such (by force of circumstances it served his life well to remain ambiguous on this so that those who wanted to read in a religious explanation were welcomed to do so; see 1997: Introduction). The idea of social practices had not been voiced before him nor under his life time, and still today this idea has not been duly recognized in philosophy, therefore Descartes could not think of the social practices as forming this external influence (this as such is an example of the Sapir-Whorf hypothesis and of what Wittgenstein said about our language forming the limits of our thinking). - See discussion in chapter *Mind*, where I concur with Lewes’s account that August Comte (1798-1857) was the first to realize the social dimension on the level of a scientific paradigm. - But, indeed, the idea of a ‘soul’ is not so far from the idea of social practices. We could, indeed, conceive of social practices as “entering the body” in form of people participating in the social practices of a community, in interpreting other people’s behavior (expressions) and expressing one’s own feelings. (In view of these considerations we may also understand why Descartes postulated the sharp difference between humans and other animals, for animals do not participate in language and other social practices). By this I do not, however, maintain that Descartes would have understood social practices as the external influence, on the contrary, I do not believe he did – and as I argued above due to the prevailing language practices his thinking was put on wrong track - but he was right in searching for an external influence. Thus, instead of conceiving of the external influence as a soul that enters the body through the pineal gland, as Descartes is interpreted to have claimed in *The Passions of the Soul* (1997: 372), we shall conceive of the external influence as social practices entering the body through the eyes and ears.<sup>4</sup>

As was already said above, due to the inherent dualism between body/brain and the external stimuli the materialist neurophilosophers with any vestige for honest contemplation have not been able to reconcile their anti-dualist position with the observed reality. They have recognized similarly to Descartes that indeed no traces of ideas are to be found residing within the brain or the nervous system. This has turned many of the materialists into some sort of the already mentioned quasi-

dualists. Searle serves as an illustrious example of this school. In his *The Mystery of Consciousness* he maintains that “consciousness” has “an existence of its own” but all the same vehemently asserts that the acceptance of that claim does not amount to an acceptance of dualism itself (Searle 1997: Preface). Searle tells that many philosophers “believe that if you grant some real existence to consciousness you will be forced to some version of dualism.” In Searle’s opinion one is condemned as a dualist if one accepts that there are “mental phenomena such as pains.” According to Searle’s logic this denial of the “real existence of consciousness” also amounts to a denial of “the obvious fact that we all have inner, qualitative, subjective states such as our pains and joys, memories and perceptions, thoughts and feelings, moods, regrets, and hungers.” – It seems, however, that Searle is seriously lost amidst the concepts, for obviously nobody denies that there are such phenomena as ‘pain’, ‘feelings’, ‘moods’ and what else he listed. Searle confuses the outcome of a process with the process itself, that is, he confuses the fact that we experience (are conscious of) such phenomena that we refer to as pains, joys, memories, etc., with the explanation of how they come about, what their essence is. The dispute in philosophy is solely about the causes for these phenomena, not the fact of us experiencing such phenomena. The classical dualists claimed that these “mental phenomena” were the manifestations of a ‘soul,’ the materialists on the contrary deny the existence of the ‘soul’ and instead claim that “mental phenomena” just spring up from the body (without any external prompting) – but neither party deny the reality of “mental phenomena.” Searle claims that the materialist (or reductionists) even wanted to “eliminate consciousness” altogether by denying “the real existence of the conscious states.” This is, of course, nonsense. Nobody can “eliminate consciousness,” except for in individual cases by, for example, administering a drug that does the trick or by violently knocking off somebody.

But Searle has unbeknownst to himself identified what is hindering him, and many of his colleagues, from really comprehending these issues. This becomes evident from his initial statement where he maintains that “consciousness does not seem to be ‘physical’ in the way that other features of the brain, such as neuron firings, are physical. Nor does it seem to be reducible to physical processes by the usual sorts of scientific analyses.” This shows that Searle has not realized that mental processes are merely physical processes of a more complex, fine-tuned

and sophisticated character and that cognitive experience such as cognitive consciousness are reflections (like sparks from the wheels) of these processes. I hope that my above presentation and especially the *film metaphor* could help Searle to recognize this. But we should not be keeping our breaths for we note that Searle goes so far as to explicitly deny the possibility that ‘consciousness’ could be reduced to something else (this is in reference to Searle censuring Denett for being a philosopher who wanted “to eliminate consciousness by reducing it to something else”). But notwithstanding that he from the one hand denies the possibility to reduce ‘consciousness’ to any other biological processes, he on the other hand claims that “it is as much part of our biological life as digestion, growth, or photosynthesis.”

All these confused considerations lead Searle to postulate that “consciousness is a natural biological phenomenon that does not fit comfortably into either of the traditional categories of mental and physical. It is caused by lower-level microprocesses in the brain and it is a feature of the brain at the higher macro levels.” This definition of ‘consciousness’ contains another hint to what has bewitched his thinking, namely the idea of conceiving of ‘consciousness’ as a “feature of the brain” when he should think of it as features of *brain processes* – or even more correctly, as reflections of such processes. (We note, however, that here Searle has anyway correctly identified that consciousness is caused by ‘lower-level microprocesses in the brain’; but why does he then not rest content with this insight, and why does he not carry it to its logical conclusion of realizing that consciousness merely represents the peak of all the mental processes on the continuum from lower-level to higher-level processes?)

In the same vein Edelman and Tononi embrace quasi-dualism criticizing “some materialistic positions” for denying “any ontological or epistemic validity to consciousness.” They think it wrong “to insist that there is literally nothing else beyond the functioning of brain circuits or, at least, that there is nothing else that needs to be explained” (2001: 4). If these authors only understood that the *else* that needs to be considered represents the stimuli that are processed by the brain, then the question would be put to rest. But they are looking for something mysterious to be explained. Edelman and Tononi affirm that materialists (like the present author) make the “mind-body problem disappear by denying or explaining away the conscious side of it” (2001: 5). I remind that ‘consciousness’ should not be seen as anything mysterious or supernatural: consciousness is merely a reflection of a series of very com-

plex and sophisticated mental processes which in all essence is nothing much more wonderful than the ability to see (which in itself is of course a wonder). - The way to make the mind-body problem disappear is by recognizing the idea of *new dualism* and the *organic process model*, which explains it, and especially by recognizing the role of immaterial stimuli of expressions (social practices); and by stressing that there is no such organ or entity as the “mind”, that there is nothing biological or physical that can possibly correspond to it. “Mind” is a purely speculative, linguistic, aesthetic concept, and therefore the problem of mind cannot be posed in natural sciences (whereas the corresponding cognitive reflections and behavior may be the object for psychology; I refer to the more detailed discussion of the mind fallacy in chapter *Mind*). - Notwithstanding all the confusion Edelman and Tononi— perhaps unconscious of their own theory, after leaving the philosophical side of it to rest for a while, render these very healthy and largely correct statements in regards to our subject: “Unconscious aspects of mental activity, such as motor and cognitive routines, and so-called unconscious memories, intentions, and expectations play a fundamental role in shaping and directing our conscious experience”; and: “We examine several kind of neural processes that remain unconscious but that, by virtue of their interactions with the dynamic core, can influence conscious experience or be influenced by it” (2001: 176). We see that in this instance the authors have identified that the underlying neural activity is *mental*, and that it has both an “unconscious” and “conscious” aspect.

## Material Processes and Immaterial Reflections

‘Mental’ is rarely used in scientific discourse except for as an attribute thrown in when the author seems to be speaking of something relating to the ‘mind’ or when relating to something ‘immaterial’ that supposedly occurs in the ‘mind’ or affects it; thus people speak of ‘mental stimulus’ when they mean a non-material stimulus, for example, what we hear or read. To comprehend the essence of ‘mental,’ what mental processes are, we should understand that while the neural or mental processes are material, the reflections of these processes are not. Hereby it is necessary to note that the external stimuli in themselves originate both from material (thingly) sources and non-material sources, i.e. a human interprets both stimuli that have a material origin (e.g. by seeing a tree, or experiencing the wind) and stimuli that do not have a material

origin, such as the whole body of social practices. For example, speech represents social practices and although the activity of speaking is physical (material) the ideas expressed are not, nor are the perceptions we form of what has been spoken (language practices) physical. What confuses the understanding here is that in another dimension the expressions of social practices may seem as if they had a quasi-existence in form of the concepts and ideas which a human being may produce as a function of the organic processes of remembering.

We should note that the stimuli that these processes treat may stem either from material (thingly) sources or non-material sources (language and other social practices), but we should not call the stimuli 'mental' in either case. As the authors of old made the term 'mental' to stand for what is immaterial, they also came to think that not only the product is immaterial (thoughts) but also what causes the thoughts is immaterial, that is, they did not understand that cognition and thoughts are products of neural processes and instead postulated that they were products of an immaterial agent such as 'mind' and 'consciousness' In line with what I have argued above I maintain that even the so-called materialists have in essence conceived of 'consciousness' as of a kind of immaterial agent producing immaterial thoughts, but they have been vehement in denying that this was what they actually thought (as Searle was above shown to do). The materialists had understood that cognition must be a function of some kind of material processes, but as they did not understand what these processes could possibly be, they postulated that they must be the products of the metaphysical 'consciousness.' 'Mental' corresponds to mental processes which are physical (material) in nature, but the output of the processes (reflections) are not material (as it was explained above). 'Mental' is thus not an immaterial thing, but a biological transient process. We merely catch glimpses of the processes, something we could call intermediary results of the process (which processes finally end at death) – these glimpses are our reflections and perceptions. - This is also why the ideas that Bennett and Hacker were above told to refer as "things neither physical nor mental" ("the laws of the land", "the laws of physics and of logic", "numbers and theorems", "statements," "rumours," "green elephants," etc.) are no 'things' but perceptions that are reflections of mental processes.

## The Organic Process Model

After this description of my conception of ‘mental,’ I will now discuss the *organic process model* more in detail. This issue can properly be grasped only by reference to the other themes that I discuss in this chapter, including: *mental evolution*; *the connection of the mental with somatic processes*; *the fundamental unity and interdependency of organic phenomena*; *mental images*; *conceptualization*, and *the nature of the stimuli that affect the processes*.

The fundamental fallacy of materialism and neurophilosophy in general has been the failure to comprehend that all organic life consists of infinitely many – and potentially infinitely complex – processes, and that all living fundamentally represents reflections of these processes that are in a continuous flux. Instead of comprehending the processes-nature of all life and instead of formulating scientific propositions in terms of processes, scientists have since the beginning of the scientific enterprise been led by the *language of things* to perceive of and speak of reality in terms of concepts. This although at the very dawn of science the Greek philosopher *Heraclitus* had with his thesis *panta rhei* – all is in a flux - advocated a process philosophy. But this position, famous as it became, was to succumb to the conceptualists, the schools of Plato and Aristotle that set the tone for philosophy and science for the following two thousand years up to our times. (These issues are discussed more in detail in the chapter *Processes and Concepts*).

Concepts correspond to a standstill, and as all living is in a continuous flux, a standstill can only correspond to death. This is why the conceptual method is so detrimental for a real scientific understanding. By the conceptual method I mean the fallacy to let oneself be overly guided in science by rigid conceptual definitions. Scientists – like all people - tend to take the concepts to stand for reality instead of accepting them merely as artificial devices we make use of for describing reality and illustrating our *interpretations*. By following this wrongheaded approach a scientist, be it willingly or unwillingly, preposterously thinks that he necessary must search in a biological organism for the neural correlates to concepts (see discussion in chapter *Processes and Concepts*).

To remedy the dilemma caused by the *conceptual method* and in order to put neuroscience on right track we should recognize the process-like character of cognition and all that can be subsumed under cognitive

behavior (feelings, perceptions, thoughts, volition, intentions, etc). I therefore, in accordance with this conception which I call the *organic process model*, propose to view all phenomena of life – both natural and social life – as organic processes and reflections of such processes. This is a paradigm model which serves us in navigating the main component features of an organic process. The model should serve as a quick reference for verifying that the scientific statements we make correspond with the paradigm of organic processes (for if they do not, then we will already know that they are misconceived), and which role in the process our statements are intended to clarify.

The organic process model illustrates how all organic processes involve four elements, or separately analyzable categories: (i) a body (the organism; or part of body); (ii) the bodily processes (it is not enough to understand that there is a body and its parts, e.g. a brain and a nervous system, rather we have to understand that these bodily parts have a function of *processing* nutrients and stimuli); (iii) the stimuli being processed (bodily processes need stimuli as input); (iv) the process output, which I call expressions; hereby this category is perhaps better considered separated in *internal output* (the feeding of one process with the result of a previous process) and *external output* (expressions proper). (This latter statement needs to be qualified insofar as I do not think that we can as such posit the point where one process starts and where another ends, neither can we draw a rigid line between the expressions that are visible and directed to the external versus those that are internal; internal expressions shine to the outside, and the effects of external expressions penetrate to the inside. Therefore this distinction is done entirely for the sake of presentation). The organic process model highlights the importance of recognizing the process-like character of organic life and that we in a scientific endeavor have to separately identify the vessel (body); the processes; what is being processed (stimuli); and the process outcome (result).

Thus, when we, for example, in neuroscience or neurophilosophy are dealing with a particular concept we have to test it by trying to fit it into the organic process model. This test gives us a first understanding of what in the real world the concept corresponds to. We can, for example, take the concept ‘mind,’ and run it through the four elements of the organic process model. We should ask ourselves whether ‘mind’ forms part of the first element *body* or a *bodily part*? We answer in the negative. Next we ask: ‘Does mind correspond to the second element, *bodily processes*?’ The reply is ‘No.’ Then, we ask: ‘Does mind correspond to

the third element the *stimuli being processed*?' We again answer in the negative: 'No it does not.' Finally we ask: 'Does mind correspond to the fourth element, the process output?' To this question we may tentatively answer in the affirmative, for 'mind' is the output of the body (brain) processing stimuli. But we have to remember that 'mind' is so only in an abstract sense, that is, when we perceive our ideas in a general sense or otherwise. Perhaps if we wanted to be more exact we would even deny that 'mind' would qualify as the output of the processes, for in reality the output is a cognitive feeling or an expression based on that. At no particular instance was a 'mind' produced as the output of the organic process model; or if somebody claims that the particular instances of cognitive behavior should be deemed to constitute 'mind,' then he would merely be redefining the concept 'mind' to mean 'a particular instances of cognitive behavior,' and from this it would also follow that the old concept 'mind' was made redundant. (I refer the reader to a more detailed discussion of the concept 'mind' in chapter *Mind*). - Now, let's run the same questions in regards to 'mental.' What is the role of 'mental' in the organic process model? 'Is 'mental' a bodily part? No. 'Does mental correspond to bodily processes?' Yes, it is a description of the physical processes that in their complexity and degree of sophistication merit the name 'mental process.' 'Does mental correspond to the third element the stimuli being processed?' No, it does not. And finally: 'Does mental form part of the fourth element, the process output?' No, it does not.

An organic process results in expressions which correspond to the process results (reflections). These expressions are interpreted by other people and creatively imitated when they in turn produce expressions that correspond to their feelings (feelings which are the result of mental processing). This social process of interpreting and producing expressions cumulate to social practices shared by a community of people that live in proximity (or communicate through common media). Language is the most fundamental of all social practices and serves as the absolute precondition for all the other social practices to develop. These *social practices are immaterial inasmuch they exist only in the potentiality of memory of living human beings*. The immateriality of social practices should not be confused with the fact that many traces of social practices are indeed material such as, for example, a paper on which phrases are written. In connection with discussing the organic process model and mental processing in general it becomes important to stress that the

immaterial social practices and most importantly language cause a material effect on the human who has detected the act (by way of observing human behavior) or the carrier (e.g. a building, a piece of art, a traffic sign) as the detection, or reception through the sense organs, leads to neural (mental) processing of the stimuli.

## Mental Evolution and Unity and Interdependency of Organic Functions

The principles of evolution are almost universally and sufficiently correctly accepted in science – *in principle*. They are *in principle* understood and accepted but the *practical value* of this knowledge has remained fairly poor. Scientists have not in practice thoroughly integrated the evolutionary principles into their research paradigms. It seems that the evolutionary principles are treated the way most people relate to the fundamental religious postulates of their congregation: they repeat them, claim to believe in them, and sometimes even under the act of reciting actually believe in them, but then they conduct their lives quite detached from these principles. I maintain that we should take evolution seriously and for real. We have to understand that each organic act, all organic processes of today are derived from the primordial processes of life. Evolution has not proceeded by leaps, or as Lamarck said “in all nature's works nothing is done abruptly, but she acts everywhere slowly and by successive stages” (1809: 46). Similarly as this gradual progression is true for the evolutionary history of organisms, it is also true in regards to present life functions of any given organism, so that all life processes that pertain to more recent evolutionary developments are all the time seamlessly integrated in those that are of a more ancient evolutionary origin.

We should also understand that there are never any changes in (what we can call) the principles of how organic life functions: All life processes function in the basically same way as is most remarkably illustrated by the genetic code. An organism of today is a conglomerate of all the organic features of the previous generations down to the very first unit of organic life. While there has been a change in the complexity and sophistication of the processes and the ensuing abilities, there has been no change in the principles. – It is with these considerations in mind that I want to stress the principles of mental evolution, the evolution of cognitive functions.

When an organism processes stimuli it is de facto interpreting the environment or its position in the environment. It is this constant interpretation of the environment and the organism's position in relation to it that has driven evolution as an animal population has become genetically endowed with an enhanced ability to interpret; this coupled with the ability to express its reaction to the interpretations. The first person to fully and correctly formulate an evolutionary theory (to my mind not superseded by anyone to this date), Jean-Baptiste Lamarck in his *Zoological Philosophy* (1809), was in fact analyzing the gradual perfection of the organic senses – that is, the interpretive abilities. Based on his findings Lamarck developed an evolutionary hierarchy that was based on the *mental evolution* that he detected in species, that is, the *ability to process stimuli in ever increasing complex ways and the potential possibility to react, to express the necessary reactions in response to the processes*. The cognitive abilities of the human represent the culmination of these evolutionary processes. The theme was taken up by other 19<sup>th</sup> century scholars, of which George Romanes with his *Mental Evolution in Animals* (1886) stands out as a good example. The importance of these studies was largely recognized in the 19<sup>th</sup> century but later fell into oblivion, and the sort of studies were even ridiculed by future generations of scientists. In his book Romanes clearly documented how a simple organism had developed certain functions and organs that on the next evolutionary level were retained but in a modified and advanced form together with the primordial functions, so that mental process patterns and corresponding organic features were modified and added on layer upon layer or feature upon feature. It is as a result of these processes that the human of today is a conglomerate of forms of life ranging from the primordial ones to the advanced cognitive abilities. In this connection what is important to realize, and what needs fully to be recognized, is that the most advanced forms of capabilities for cognitive intelligence and, of course, even speech is nothing but the result of evolutionary processes of expressions and interpretations, where all the highest functions are but enhanced combinations of the lower ones. The human is thus an evolutionary product that has gradually been built up on the genetic design from lower forms of life, going back to the simplest primordial cell. Hereby most fundamentally all organic processes are functions of movements. Gradually movements have become more sophisticated and complex in higher forms of life. The neural system has developed to coordinate and enhance movements, so as to reach the

level of sophistication and complexity that corresponds to what I call 'mental processes.'

Of our contemporary neuroscientists Damasio has more than most other authors anchored his paradigm in the evolutionary principles, and we can see that he has clearly benefitted from it. We can see this from the way he presents the "construction plan of our homeostasis" telling that "it consists of having parts of simpler reactions incorporated as components of more elaborated ones, a nesting of the simple within the complex" (2003: 37). Damasio clearly illustrates how the human organism contains simultaneously all the processes that have evolutionary developed in its line, and shows how all the bodily processes occur simultaneously and in parallel, the new ones embedded in the old ones, and vice versa.

In *Thinking in Sound. The Cognitive Psychology of Human Audition* the editors, Stephen McAdams and Emmanuel Bigand, in their introduction express these ideas of the unity and interdependency of organic phenomena as follows: "the originality of the cognitive project is the desire to present an integrated picture of the ensemble of intellectual processes, in making evident the continuity that exists between more elementary aspects of these activities (sensory information processing) and more abstract aspects (symbolic information processing). The cognitive project therefore goes beyond the traditional division into independent intellectual function: perception, memory, learning, language, intellection, etc" (1993: 1). This book inspired me with hope to think that somewhere behind the hype of the cognitive revolutionaries a real enterprise of cognitive science is still going on.

In view of these kinds of considerations I came to regard an organism through evolution as a *perpetual interpretative device* that has in the course of immense time bifurcated into various organisms that have in their given environment met the challenges to interpret the environment with the means available to them and lived and genetically reproduced to the extent they have been able to express the reactions to the interpretations. An organism thus, in the evolutionary sense, is a *perpetual interpreter* that processes stimuli to the best of its capabilities, and hereby continuously adapts its capabilities of expression and interpretation. Romanes expressed corresponding ideas like this:

"Here the objective was to trace the ultimate principles of physiology... These principles we found to be the power of discriminating between different kinds of stimuli irrespective of their relative degrees of

mechanical intensity, coupled with the power of performing adaptive movements suited to the results of discrimination. These two powers, or faculties, we saw to occur in germ even among the protoplasmic and unicellular organisms, and we saw that from them upwards all organization may be said to consist in supplying the structures necessary to an ever-increasing development of both these faculties, which always advance, and must necessarily advance, together...the method of evolution has everywhere been uniform; it has everywhere consisted in a progressive development of the power of discriminating between stimuli, combined with the complimentary power of adaptive response” (Romanes 1886: 62).

Even as recently as 1932 Bartlett discussed similar ideas in a very lucid fashion. But, regrettably due to the misconceived copyright laws, I cannot here render those marvelous ideas, and therefore I will refer to the original (Remembering, 1995: 217). – I must note that these dreadful copyright laws are truly an obstacle for the development of social sciences; for in social sciences we are merely dealing with arguments of one or another author, and when we thus are prevented from directly referring to the relevant arguments by sufficiently at length rendering them in direct quotes, then we cannot correctly illustrate the ideas we criticize or the statements we refer to in support of our propositions. Thus, each author is kind of forced to start to build up his arguments from scratch. The correct method of social science would require that propositions of science were freely quotable to the extent that they serve to make evident a particular idea. I for my part surely grant that passages of my texts are to be utilized in this manner; I even wish it to be done, remaining utterly perplexed as to why a scientist would possibly want to restrict such practices. After all, an author wants his ideas to be spread (even when the reference is negative). But hardly is this a question of the will of the authors, rather it is a question of misconceived efforts cumulating in the greed of heirs, publishers and lawyers, and the stupidity of lawmakers. – The practice of having to ask for permissions for quoting is naturally ridiculous, leading to huge delays in publication and all kinds of complications even involving the necessity to subject your own work for censorship to the copyright holder and risking that the ideas thus disclosed would spread before publication. Thus, on the contrary, the unpublished work is stripped of any real protection.

These evolutionary principles should never be let out of sight when considering any organic or social phenomenon, because each one in the very finest of its aspects has its ultimate roots in the unity and interdependency of body and the nervous processing system operating the body in relation to the environment. From this also follows the recognition that all organs and organic abilities are somehow in a relation of unity and interdependency to each other. All organic features, the anatomy, and organic capabilities conspire to bring out new behavioral features (corresponding to cognitive processes) produced by a biological machinery, the parts of which have originally been developed for other organic functions, for what would seem as simpler functions. – But we should even be wary of making the juxtaposition between simple and complex organic evolutionary features; *firstly*, because at the end of the analysis the “components” that make for one sort of behavior cannot be separated one from another; and *secondly*, because it would be quite absurd after all to call the basic life maintaining functions *simple*.

I refer to these issues as the *principle of unity and interdependency of organic functions, or organic phenomena*. Regarding these evolutionary principles I also refer back to what was said above about the *Lamarckian evolutionary continuum* and the *hermeneutic evolutionary spiral*. Lewes especially emphatically wrote about the need to recognize the unity of both mental phenomena (that is the higher functions on the Lamarckian continuum) and corresponding unity of organic processes. Therefore I truly recommend his *Problems of Life and Mind* for further reading on this theme (especially those of the volumes of the book which I have referenced in the present book, 1879a and 1879b). In this connection I refer as a sample of his thought to this passage: “Had this truth respecting the organism been generally insisted on, instead of quietly passed over as unquestioned, there could hardly have arisen the belief in the reality of the artificial distinctions which assign Feeling, Thinking, and Willing to distinct agents. The unity of mental life, so emphatically proclaimed, would have been recognised as implying a corresponding unity of organ, and uniformity of organic process” (1879b: 85). – Most importantly, had the unity and interdependency of organic phenomena been recognized, Chomsky’s artificial speculation concerning ‘language’ would hardly have ever received the wide recognition it did as the overwhelming paradigm of linguistics for half a century.

## Mental and Somatic Processes

In the foregoing I have established the 'mental' as the name for the complex neural processes that produce cognition. Above I accounted for my conception of the essentially unity and interdependence of all organic phenomena. I explained how I see all these mental processes as intertwined with all the other organic processes wherefore they should never be treated as if they were some standalone processes (or worse, treated as thingly entities of sorts). This also means that we must recognize the holistic nature of bodily processes which are usually divided into *somatic and neural (mental) processes*. This connects with the insight into the most important principle of organic life, namely the principle that the organism constantly positions itself in relation to the environment by all means available to it. Evolution has occurred as a result of constant readjustments of the organic features that enable this positioning in relation to the environment. Evolutionary progress means that a type of organism has developed and genetically transmitted to subsequent generations enhanced means of interpreting and reacting to the environment for optimal positioning. This then means an adaptation both in the sense of momentary adjustment in each moment of life and an adaptation of species in an evolutionary sense. This holistic nature of bodily processes is rarely recognized in science while the accepted paradigms of the scientific community at large remain rooted in ideas that essentially amount to a belief in a peculiar dualism between somatic and mental processes. Damasio, however, is among the few that has forcefully tried to advocate the holism between somatic and neural processes. In particular he has done it when speaking about *somatic markers* (1999; 2000).

In neuroscience it is already widely accepted that the brain maps the environment in relation to the body, and that these maps are multidimensional in both ways, that is, the brain maps not only the body in relation to the environment but also all the different parts of the body in relation to each other and the environment. This in turn is a function of the fact that each received environmental stimulus has an effect on one or another part of the body – this effect is recorded as the somatic marker.<sup>5</sup> Even the highest cognitive mental processes are at the end of the analysis about the body in relation to the environment, the difference (between cognitive and more simple neural operations) being only

in the higher degree of complexity and multidimensionality of the processes (compare with below reference to Damasio 2003: 49).

That the idea of *mental evolution* goes hand in hand with that of somatic markers should be grasped already from the self-evident fact that the nervous system has evolved as a network of cells for coordinating body movements, from the simplest physical movements of the primordial organisms to the complex system of movements that I term mental processes and which lead to cognitive feelings and cognitive behavior. This is also confirmed by Damasio who says that from “chemical homeostatic processes to emotions-proper, life-regulation phenomena, without exception, have to do, directly or indirectly, with the integrity and health of the organism.” Damasio continues: “Without exception all of these phenomena are related to adaptive adjustments in body state and eventually lead to the changes in the brain mapping of body states, which form the basis of feelings. The nesting of the simple within the complex ensures that the regulatory purpose remains present in the higher echelons of the chain” (2003: 49; in reference to the discussion of the relation between ‘feelings’ and ‘emotions’ in chapter *Feelings, Emotions and Consciousness*, I note that Damasio’s presentation would benefit from assigning priority to ‘feelings’ instead of ‘emotions’).

According to the modern understanding of the concept *environment* there is no great difference between considering stimuli as external or internal to the organism, thus there is no difference in the fundamental principle of coordination of internal and external movements. The difference is only to be postulated in the complexity and sophistication of the nervous system and the body it serves. In every case it is a question of communicating and interpreting the environmental stimuli and their effects on the organism and to execute a reaction to it (expression).

In evolutionary higher organisms the neural systems have developed to coordinate the organic processes, the internal and external movements, the body in relation to the environment in ever more complex ways. This is why the representations that are produced in the brain are always dependent on the brain-body interactions, the brain systems relating the body to the environment, as Damasio says: “the representations your brain constructs to describe a situation, and the movements formulated as response to a situation, depends on mutual brain-body interactions” which are based on the evolving representations of the body which the brain constructs as it changes under chemical and neural influences (2000: 228).

Damasio wants, however, to emphasize a difference between “body reaction and mind reaction” or “body readouts vs. mind readouts” (2000: 157), but I am afraid that this might represent a conceptual error. To reach conceptual clarity about these issues, we have to bear in mind the organic process model coupled with the rejection of the alchemical concept ‘mind.’ ‘Mind’ is a social conception that does not directly correspond to biological phenomena (see deconstruction of the concept ‘mind’ in chapter *Mind*). There can, therefore, be no “mind readouts” versus “body readout.” For obviously all the brain processes represent processing of signals brought to the brain by the neural system of which the brain forms a part, all are thus ‘brain readouts.’ A more correct juxtaposition would be that of *somatic processes* versus *neural processes* (which distinction would only refer to the degree of complexity of the processes); bearing in mind that the neural processes are auxiliary to the somatic processes, the neural system reads the signals that the other bodily systems produce. (I also remind that the more complex neural processes are what I characterize as ‘mental processes’). We have to remember, as it was said above, that all brain processes are always about brain (neural) processes mapping the somatic processes and relating each stimulus to the body and its parts. The neural processes can thus be said to represent a management system for the somatic processes.

The brain readouts feed into the enhanced homeostatic system of ‘feelings.’ In the fundamental unity of phenomena ‘feelings’ are always about the body in relation to the environment, therefore, ‘feelings’ are both caused by bodily processes and lead to bodily processes as expressions. In my interpretation I would thus render the idea of *somatic markers* by telling that cognitive reactions are anchored in the system of correlating environmental conditions (stimuli) with their effect on the body (and its parts) and consequently the whole homeostasis, which develops feelings of higher and higher cognitive value, or complexity, up to conscious recollection of some reflections of them. This should be compared with Damasio’s proposition according to which: “The background body sense [presumably he means what Lamarck referred to as ‘inner feeling’] is continuous, although one may hardly notice it, since it represents not a specific part of anything in the body but rather an overall state of most everything in it” (2000: 152). This should mean that the nervous system all the time monitors the body and therefore creates feelings, which effectively amounts to the framework within which to correlate the effects of new stimuli processing. *Consciousness*

signifies the awareness – on the different levels of cognition – of those processes of processing of particular stimuli that have a marked effect on a given part of the body, where the awareness is being felt as a mark of altering the overall homeostatic status. In justification of my interpretation of these phenomena attention is also drawn to Damasio's idea that somatic markers serve as criteria that sets the ranking order among possibilities, they "express at any given time, the cumulative preferences we have both received and acquired" as they function by automatically "assigning of varied degrees of attention to varied contents" (2000: 199). A further reference to Damasio supports this conception, here Damasio tells that the background to his idea lies in the principles of evolution, the fact that the brain apparatus evolved "to ensure body survival as effectively as possible" this by "representing the outside world in terms of the modifications it causes in the body proper, that is, representing the environment by modifying the primordial representations of the body proper whenever an interaction between organism and environment takes place" (2000: 230). – In this connection it is interesting to note how similarly Lamarck explained these issues as seen from the following quote: "The emotions of the inner feeling can only be recognized by man, who alone pays attention to them, but he only perceives those which are strong, which excite his whole being, such as a view from a precipice, a tragic scene, etc.... Indeed, as the result of organic or vital movements which are produced in every animal, that which possesses a nervous system sufficiently developed has physical sensibility and continually receives in every inner and sensitive part impressions which continually affect it, and which it feels in general without being able to distinguish any single one" (Lamarck 1809: 316).

Damasio has shown how all knowledge, i.e. all interpretation, is eventually, dependent on how the body reacts to any given stimuli; cognitive impairments, he shows, are connected with the problem to "produce a somatic state", that is to say, connect the stimuli with the overall homeostasis of the body; this means that what is missing is the feeling of "of how ...bodies ought to behave relative to the evoked factual knowledge" (2000: 211). He tells how patients with cognitive disorders respond to physical stimuli, but "that they will not respond if the trigger was a mental stimulus but not available in direct perception" (2000: 220). Obviously this insight to the disorders must be enlarged to encompass also the reactions produced in so-called healthy people, for all problems of cognition (which always represents a processes of interpretation) are due to the fact that we cannot produce a cognitive reac-

tion as long as we cannot sense the connection to our body, for example, think about reading about a catastrophe that has happened in a far away country: as long as we do not have direct exposure to the relevant stimuli through the body, we do not react to the news adequately.

In view of the facts of mental evolution it is truly bewildering that most scientists today still doubt the somatic marker hypothesis. This really entails that they entertain serious doubts as to the unity of the organic processes, in fact, it shows that they have not yet fully accepted the principles of evolution. This is what Damasio himself tells about the failure of his colleagues to recognize this truth: “Despite the many examples of such complex cycles of interaction now known, body and brain are usually conceptualized as separate, in structure and function. The idea that it is the entire organism rather than the body alone or the brain alone that interacts with the environment often is discounted, if it is even considered. Yet when we see, or hear, or touch or taste or smell, body proper and brain participate in the interaction with the environment” (2000: 224). Too few recognize the fundamental fact, as Damasio says, that the “the organism in the relationship play of consciousness is the entire unit of our living being, our body as it were; and yet, as it turns out, the part of the organism called the brain holds within it a sort of model of the whole thing” (1999: 22). - Naturally, there is some tentative understanding of this, for example, we may notice how fundamentally the somatic principle is connected with the idea to conceive of the hippocampus as a spatial processing system for navigating the environment as proposed, for example, by O’Keefe and Nadel in *The Hippocampus as a Cognitive Map* (LeDoux 2003: 112). MacLean in essence also adhered to the somatic marker thesis as it becomes evident from how LeDoux reports about his research telling that “MacLean believed that emotional feelings involve the integration of sensations arising from the external environment with visceral sensations from within the body” (1998: 94). LeDoux considers that MacLean’s theory was “in essence a feedback hypothesis about the nature of emotion” similar to James’s (1998: 94).

Damasio tells that his theory has been censured for what the critics call “a lack of current, prevalent experience of anything bodily as they go about their own thinking” (2000: 234). Bennett and Hacker confirm this line of criticism claiming that there “need be no somatic changes accompanying the thought that the rate of inflation is likely to rise – but one may well fear it will” (2003: 213). They say: “One’s pulses need

not race in order for one to hope that tomorrow's picnic will be a success." Were I not by now to a certain degree immune to academic science, then I would certainly be more amazed by such kind of anti-examples. Bennett and Hacker should only speak for themselves, if they are not excited by economic events, there certainly are many who are. As I write this book we are experiencing the worst financial crisis since the 1930's, and I can tell you that there are a lot of people who feel the economic news with all their body. And if Bennett and Hacker do not care particularly about picnics, there are many that do, think about a little girl waiting to be taken out for picnic on the first day of summer. The authors would amend their misconceived criticism if they were to see the connection and similarity of the phenomena at hand with those concerning what we know about the unconsciousness (see chapter *Feelings, Emotions and Consciousness*): The more we have experience about a particular type of phenomenon that acts upon us as a stimulus, the more calmly we react to it and notice it much less in a conspicuous fashion. The reactions to various stimuli come in varying degrees of strength and accordingly we may well feel some sort of a stimulus but be already so used to it that the mental processing does not turn on the conspicuous body reactions as the stimuli is processed more directly by mediation of the relevant automatic brain circuits (compare with Damasio's conception of the 'as-if-loops', Damasio 2000 and 2003). The human is so evolutionary adapted to life that the reaction patterns to most reoccurring stimuli become automatic and unconscious. This is also why we speak about 'emotions,' which are conspicuous reactions in situations we find especially important to our pains and pleasures (see chapter *Feelings, Emotions and Consciousness*).

Bennett and Hacker ironize that according to the theory "culturally inculcated gut reactions provide the basis for rational decision making." But so it is! Damasio himself replies to the critics by telling that he is not claiming anything more than that these somatic representations are always present in one or another degree, and most importantly he stresses it by reference to the evolutionary principle which by itself proves the connection between body and cognitive processes (2000: 234). He also retorts to the critics with his idea of the "as-if loop," which should explain the varying degrees of conspicuous bodily reactions and consciousness. According to this idea the brain processes may in certain reoccurring situations more or less do without the somatic feedback processes based on the reaction patterns set by passed life experience (2000: 157, 234; this idea is also expressed by Gallese, Keys-

ers, Rizzolatti 2004). Damasio stresses, however, that to one degree or another “the body remains *in the loop*” (Damasio 2000: 234).

The idea of somatic markers bears directly also on the theory of speech and language. It provides strong arguments for how we should conceive of meaning, that is, the question of what is to be considered as the “correct meaning” of words and statements. In my conception the meaning of words, utterances and phrases is ultimately a function of how a verbal stimulus is in a given context processed by the body, and ultimately how it is somatically marked. The *meaning* should thus be considered as the usefulness, value, that the neural and somatic processes award the stimulus in the overall homeostasis – that is, its contribution to the overall feeling.

It is however quite peculiar that Damasio’s statements about the somatic dimension of cognition come as revelations to both himself and his contemporary critics as these ideas were clearly voiced already by the 19<sup>th</sup> century scholars. For example, George Henry Lewes had a well-formed understanding of these issues already in the late 19<sup>th</sup> century. I will render under note<sup>6</sup> some quotes from his work which illustrates his insight to these issues.

There is one special kind of somatic marker that I think most adult persons will understand, that is the somatic marker connected with sexual orgasm. This is the prime example on how the representation of a particular part of the body connects to the overall homeostasis, well-being, of the body, and brain processes. We know that for an orgasm to come about all these reactions, or processes, have to be in perfect coordination, in perfect harmony.

## Environmental Stimuli and Homeostasis

One of the most capital problems that have throughout history wreaked havoc in neurophilosophy is connected with the failure to recognize that all organic and social processes are fundamentally about a relationship between stimuli and an organism processing stimuli (new dualism). This relationship naturally follows from the main principle of biological philosophy in accordance with which all phenomena of life (both organic and social) are functions of an organism positioning itself in relation to its environment. My proposal to view all phenomena of life through the paradigm of the *organic process model* serves to illustrate this correspondence. When all organic and social processes are tested against

this model one will be forced to consider the proper process relations. I remind that the *organic process model* encompasses the following elements: (i) a *body* (the organism; a bodily part); (ii) the *bodily processes*; (iii) the *stimuli* being processed (bodily processes need stimuli as input on which the processes work); (iv) *the process output*, which I call *expressions*, hereby this category may be separated into *internal output* (the feeding of one process with the result of a previous process) and *external output*, i.e. *expressions* proper.

A very typical manifestation of the ignorance of the aforementioned principle is the wide acclaim and approval that Chomsky has received for his theories that outright reject any significance to stimuli and which propagate the fantastic idea of stimulus-free cognitive behavior (see chapter *A Review of Chomsky's Verbal Behavior*). Chomsky represents, of course, the ultimate ignorance as to this matter, but the road to the reception of his theories was paved by the overall idea that thinking (cognition) - which is the basis of all social - would be a standalone "mental" function. This in turn is naturally connected with the quasi-dualistic ideas where the "mystery of consciousness" replaced that of the mystery of the soul. Most importantly, what the scientists have missed is to consider the entirety of social practices as stimuli that affect cognition (I refer to the above discussion of the quasi-dualists and my ideas of *new dualism*).

But we also have to recognize the connection between *social stimuli* (please note, that I demonstratively want to refer to this as *social stimuli* instead of *mental stimuli*, as so many erroneously do) and the *body* on an even more profound level, that is, we have to recognize how social stimuli affect all the organic processes. This ties in with the discussion of the integral connection between all mental processes and other bodily (somatic) processes as discussed above. We shall acknowledge that there are stimuli of various forms; stimuli in form of material, e.g. nutrition (*material stimuli*); stimuli as physical and chemical phenomena (*stimuli stemming from material sources*); and stimuli of a social character e.g. speech, texts, art, and artifacts (*social stimuli*). Each type of stimulus is processed basically in a similar organic fashion. The fact that social stimuli have to undergo the same processing as purely material stimuli and stimuli stemming from material sources causes the human dilemma, because the organism is evolutionary better prepared to process material stimuli (and those reflecting material sources), whereas social stimuli has to be processed by higher order mental interpretation processes which by definition are vague, and lacking any direct

evolutionary predispositions for establishing the “content” i.e. character/meaning of the stimuli (establishing its value in the overall homeostasis).

Now we must recognize that social practices (language practices) form stimuli that affect the body in a quite physical way, for example, when we become aware of a word the body sets out to process the stimulus that the word represents by quite material organic processes. Thus the effect of a word is caught in the biological system of continuous homeostatic processing which means that the effect of the word is processed against all the previous life experience (as that has been organically determined. Hereby I mean by ‘experience’ the same as Lewes, who said: “The experience of this organism are the modifications it undergoes. These are generalised in the abstract term Experience,” 1879a: 172). At the end of the process the word (the effect of the word as it has been processed organically) is assigned its position in the mental maps that the organism constantly forms in the process of positioning the body (or its parts, the various processes) in relation to each other and the environment. – This is how a word receives a quite physical (organic) meaning; the word receives an inner meaning in the human in relation to all the other life experience (this idea has been developed in chapter *Speech and Language*).

*We may now recognize how at the end of the analysis the connection between the natural biological world and that of the social is not a mysterious one but that of the relation with body and stimuli.* We should understand that the processing of social stimuli follows on an evolutionary continuum from the processing of purely material stimuli. At no point is there a break between the ways how material versus social stimuli are processed, and at every point the processes of somatic and neural reactions are intertwined. With these considerations the idea concerning homeostasis becomes a central hub for understanding all the various connections and cross-roads of human cognition and behavior from the different points of view (evolutionary theory, biology, neuroscience, philosophy, social sciences). This because when treating the subject of homeostasis we encounter in one topic all the ideas that so neatly describe the lower level phenomena, but at the same time the idea of homeostasis also remarkably gives a platform for understanding all the higher processes. In the system of homeostasis each stimulus is processed in the binary mode of pain and pleasure resulting in a trace (a neural reaction pattern) that is indicative of either increasing or decreas-

ing the well-being of an organism. In the homeostatic system of an evolutionary advanced organism the quite bodily sensations of pain and pleasure are complemented by socially and cognitively induced feelings of pain and pleasure. Here we see again how the bodily (somatic) processing systems precede and interact with the mental processing system. Understanding homeostasis is thus the gateway to understanding all human behavior and the connection between natural sciences and social sciences (compare Damasio (2003: 32, 37)).

The first insight into the complex mechanisms of homeostasis occupy a central place in Lamarck's evolutionary theories. Lamarck did not use the word 'homeostasis' instead he used the concept 'orgasm' (although not in the meaning in which it was discussed above). Lamarck recognized that feelings represent an evolutionary advancement on the organic homeostasis. Lamarck spoke about both 'inner feeling' and 'feeling,' hereby the term 'inner feeling' was reserved to represent the advancement from the purely organic homeostasis towards cognitive feelings. Thus in Lamarck's vocabulary 'orgasm' and 'inner feeling' both represent aspects of the idea of homeostasis (Lamarck 1809; Lamarck's idea of 'inner feeling' is very similar to Damasio's ideas of background feelings, 2000: 143).

After Lamarck the 19<sup>th</sup> century scholars accepted the idea of homeostasis as a central paradigm of cognitive studies and a wealth of wisdom can still today be redrawn from the works of many of them. For example, Lewes entertained very advanced ideas in this regards. He recognized that all bodily processes are about processing stimuli against the reaction patterns formed by past processing telling that all acts of life experience have left in one way or another their marks in the homeostatic system capturing the individual's entire life experience. Lewes argued that the results of stimuli processing (organic interpretation) leave traces in the system of mental processing (movement patterns in the neural system; neural reaction patterns), and that mental processing always occurs within the framework set by the earlier movement patterns formed by previous experience. These ideas are illustrated by the following quotes from Lewes work:

“The organism is a system of forces; Experience is a system of feelings. Only as each impression derived from without is taken up, assimilated, and finds its place in this system, does it become an element of Experience; but once fixed there, it is a condition which determines the assimilation of others” (Lewes 1879b: 90). - “The Inner Life thus

represents the whole of our Experience. Developing with the evolution of Experience, it becomes a Logical and Co-ordinating System which enlarges perception and regulates action, rendering us more and more independent of the immediate stimulus, more and more masters of the external...It modifies, annuls, or magnifies the effect of an impression; so that at one moment we are undisturbed by the roar of the crowded streets, at another are distressed by the buzzing of a fly. Through it all feelings are capable of revival even in the absence of their original stimuli: and this revival makes pre-perception a factor in perception; recognition a factor in cognition” (Lewes 1879b: 86).

Lewes concluded these considerations by an aphorism saying “I am the product of all that I have felt,” which he devised by modifying Alfred Tennyson’s “I am a part of all that I have met” (*Ulysses*). By this Lewes captured the idea of perpetual processing of life experience based on previous life experience.

We need to acknowledge that the human organism is like a sponge sucking in all the stimuli from the environment, and in the process all stimuli, each stimulus, leaves an impression, a trace in the organism. Each stimulus causes a new body movement, and each stimulus is processed simultaneously with other stimuli, all bearing simultaneously on the feelings produced, and in some cases the conscious cognitive perception we form of them. This also explains the phenomena called ‘memory.’ ‘Memory’ is the effect brought about by processing of new stimuli when the stimuli bear semblance to something experienced earlier and thus get processed in a similar fashion as those corresponding to earlier experience. The previous processing always predisposes the processing of new stimuli in line with previous reaction patterns. This should also explain why we should not think in terms of any mysterious “storage of memory”, and why we should recognize that instead of storage it is just a question of a certain stimulus (stimuli) unleashing similar neural reaction patterns. These processes from moment to moment lead up to the level of conscious cognition where a similarity between new and old processes causes the cerebral system to yield the perception of ‘memory’ (I refer further to the chapter *Memory*). – Lewes has expressed this same idea by saying “every succeeding impression is combined with the effects of its predecessors, and the groups thus formed constitute first sensations, then perceptions. A perception is

always a judgment; the effect of a present stimulation is combined with and ranged under the residua of past stimulations” (Lewes 1879b: 225).

In order to grasp that idea it might be helpful to reflect on how the behaviorists had misconceived the idea of stimulus processing. They had developed a quasi-science, the idea of which was to identify how various stimuli affect human behavior. The idea was cardinaly wrong already due to the simple reason that we are at any given moment affected not only by a particular stimulus but rather by an infinite range of present stimuli. Even more, we are at any given moment affected by all our previous life experience, that is, the previous stimuli that have accumulated in form of neural reaction patterns or predispositions for them. This is why there is no way of separating the effect of this or that stimulus on human behavior. When we understand that all the present stimuli are processed based on the process patterns set by past stimuli processing, then we understand that the whole effort to try to identify the effect of the individual stimulus is vain. Additionally we should recognize the extraordinary minuteness of all the stimuli that possibly may enter our organic interpretation system, or as Kandel, Schwartz and Jessell explained it: “Neuronal signaling depends on rapid changes in the electrical potential difference across nerve cell membranes. Individual sensory cells can generate changes in membrane potential in response to very small stimuli: receptors in the eye respond to a single photon of light; olfactory neurons detect a single molecule of odorant; and hair cells in the inner ear respond to tiny movements of atomic dimensions. Signaling in the brain depends on the ability of nerve cells to respond to these small stimuli by producing rapid changes in the electrical potential difference across nerve cell membranes” (2000: 105; see also p. 625). Correspondingly Bartlett was convinced that “conduct may be directly determined by remote stimuli even when we have no real justification for positing the presence of sensorial images of any kind” (1995: 210; this should explain why we react “when somebody is staring in our neck”). Edelman confirms that studies have established that feeble, degraded, or short-lasting stimuli that people fail to consciously perceive (*subliminal perception*) may still lead to behavioral responses (2001: 67).

In producing ‘feelings’ the organism is processing stimuli which is like the input data in the process. But nobody should think that the input data would be “entered in the body” on the analogy of how we enter data in a computer, choosing what to enter. On the contrary we cannot choose the input data that produce ‘feelings’: the input data consists of

all the present phenomena and all life experience – and to a certain degree we can even consider that the input data is there in the form of our genetic endowment. – Also to note, the input data is not restricted to what we hear and see as interlocutors in social dialogue, it is not only that what we consciously experience, rather the data comes wrapped in all the subliminal perceptions and all the nuances of our life experience, which all are processed in infinite variances. No stimulus is ever separated from the environment and from the other processes that go on in the organism; we experience any “piece of data” as part of everything else we experience at the moment. This is, of course, also the reason why cognitive memories are revived – like Proust so unforgettably showed (2003) – by sensations of taste and smell, ambiance, and whatever. – These circumstances should awaken us to the fact that a lot of what goes into processing ‘feelings’ is based on something that is best termed as wrong input data, data taken out of context, data misunderstood, misused and misconceived. Naturally, the worst bits of input data come in the form of our thingy language, the inferior quality of which easily leads to whole cultures going berserk, like it has so often been the case.

## Feedback

To complete the above discussion on stimuli processing and the infinite variances in which such processes occur we also need to recognize the feedback relations of stimuli processing. When a human organism processes a stimulus it processes simultaneously other stimuli, potentially an infinite variance of stimuli. The very paradigm of *expressions and interpretations* illustrates that at each stage of processing one reaction leads to another in the minutest degree possible. This also implies that there is a continuous process of feedback (feedforward) in the cumulative processing of stimuli. This should be recognized instead of trying to propose simplistic and mechanistic explanations to human reactions as it is done, for example, in ‘emotion theory,’ which I review critically in this book. William James’s famous example of the relationship between stimuli and reaction illustrates this fallacy. James maintained that the common-sense idea, as he calls it, that ‘we see a bear we become frightened and therefore run’ is wrong, and that instead the correct sequence would be that ‘we meet a bear and run, and because we run we experience the emotion of fear.’ I think that in the end James

was wrong, not so much for having rejected the “common-sense” view in favor of his reversed order, but for the very idea that there would be a rigid order of sequence from stimuli (bear), reaction (to run) and emotion (fear) or vice versa. Instead James should have understood that all stimuli lead to intricate actions of stimuli processing with perhaps infinitely refined feedback relations. (The relevant passage is quoted in full under note<sup>7</sup>). At the heart of the matter this is an analysis of the various concepts of emotion theory. Basically James is denying the existence of an emotion called “fear” or one called “anger” or one called “feeling sorry/sadness” (an idea I approve of as such). I think that he in fact wanted to say that the stimulus does not trigger ‘fear’, or ‘anger’ or ‘sadness’ but complex reaction patterns of feeling. But we see here what pitfalls are created by the idea of considering various emotions as thingly entities – in fact, the very fallacy James wanted to counteract – as if they would have an independent existence, when on the contrary we can only use the emotion concepts as approximations of how we perceive the complex process of feeling in a given situation. I will return to these problems of emotion theory and feeling in the chapter *Feelings, Emotions and Consciousness*, where I advocate the idea that feeling is the biological process in question and emotions are only conceptual abstractions.

It is important to note that the more complex the organism the more intricate and infinitely varied are the feedback/feedforward loops. This also means that it is impossible in the study of human cognition to find any mechanically describable cause and effect relations. Damasio describes these feedback processes like this: “As thoughts normally causative of emotions appear in the mind they cause emotions, which give rise to feelings, which conjure up other thoughts that are thematically related and likely to amplify the emotional state...More emotion gives rise to more feelings and the cycle continues until distraction or reason put an end to it” (2003: 70). I remind that in my conception it would be preferable to revise the order between ‘emotions’ and ‘feelings’ so as to give the primary role to ‘feelings.’

This feedback loop is very evident in speech, were all the organic movements that cumulate to speech, all aspects of feeling and cognition and motor control, bear upon each other in very minute loops of expression and interpretation; one sound, one word, one idea, one movement, always affects another. McNeill in reference to Lev Vygotsky describes such feedback loops like this: “The relation of thought to word is not a thing but a process, a continual movement back and forth from thought

to word and from word to thought” (McNeill 1995: 218, in reference to Vygotsky’s *Thought and Language*); similarly McNeill wrote: “If language alters thought, that is, if the conceptualization of thought and the formulation of language are allowed to develop interactively, the evolution of the utterance can have an influence on its own development by calling for reconceptualizations” (McNeill 1995: 232).

## Mental Images and Conceptualization

A very central point in understanding human cognition and how feelings are created out of mental processes that lead to cognition is the understanding, from one side, the idea of *mental images* and, from the other side, the relationship between mental images and *conceptualization*, and the verbal cognition (verbalizing) that follows from the latter. In this connection I refer to my idea on how mental processes lead to enhanced homeostasis in form of feelings, which feelings may further lead to cognitive feelings. It is somewhere around the threshold of cognitive feelings that mental images occur.

There has been some controversy as to the appropriateness of talking about mental images (Bennett and Hacker 2003). But we can all verify for ourselves that we indeed experience mental images just by closing the eyes and recalling a scene to mind; indeed, when we dream we experience mental images. We should consider the phenomena thus referred to as mental images on the analogy of seeing live images, that is, direct and conscious observance of our surroundings in the present moment with open eyes (*optic vision*). Precisely as mental images result from mental processing so does optic vision. We have to remember that optic vision is the result of a mental interpretive process, the eyes and the corresponding brain regions do not function as mechanical photo or movie cameras but rather represent a complex neural system of interpretation, where the reflections of light are transferred to the brain through neural impulses, which there undergo a complex mental processing which yields the image of direct optic vision. Naturally, then, such processing also occurs in the brain in regards to stimuli that is not directly perceived through optic vision, but are based on the neural patterns formed through earlier direct vision and occur through a revival of the similar mental processes (embedded in all the other stimuli that have been previously experienced), thus yielding images of indirect vision – what we call mental images.

Vision represents a major evolutionary step towards human cognition. I predict that it will one day be shown that all the biological processes linked with conceptualization are also very much connected with the same processes that create vision. Somewhat simplifying (ignoring for a while that all biological phenomena represent processes) we could think of concepts as snapshots of visual reality in relation to the body, or organic movement patterns corresponding to the visually experienced reality – kind of ‘as-if-visions.’

For mental images to emerge the animal has to be aware of them, therefore consciousness is connected with mental images; but on the other hand there must be various mental processes that are simultaneously competing for emerging as mental images keeping in mind that consciousness, too, is shifting from one series of mental processes to another. Many species of animals on an evolutionary scale must have this ability to form mental images. I would think that those animals that can see can also to some extent form mental images the way it was described above.

The next evolutionary level of cognition corresponds with the stage where in some animals there developed the ability to conceptualize part of the images, that is, they became endowed with the (mostly unconscious) ability to identify what is common in various images and assign them their place in the overall system of somatic markers. This kind of conceptualization, the ability to form conceptual abstractions, represents the big evolutionary step towards cognitive consciousness. Evolution was brought forward when the animal line from where humans stem became genetically endowed with the ability to make ever more complex abstract conceptions and gained the ability to manipulate and be guided by the abstractions in their activity of interpreting the environment. Eventually animals have enacted concepts by bodily expressions, by bodily movement patterns, facial expression, gestures and etc – and with sound. - This is why it is correct to say that animals can think, but they think in mental images, not in verbal concept; they must possess the ability to be conscious of mental images. This should be compared with what is said below in regards to human “visualizers” and “verbalizers.” – I will discuss the ideas of conceptualization more in detail in chapter *Feelings, Emotions and Consciousness*.

At some point the animal which preceded the present human in the primate line gained the ability to pronounce sounds that correspond to the individually held concepts (individuality of concepts and individuality of words, but similarity in the population through imitation). With

concepts developed the ability to manipulate and manage mental images. The decisive evolutionary adaptation on the road to humanity occurred with the development of the ability to assign a verbal name to the concepts, which in turn endowed humans with the ability to verbally manipulate images. By applying verbal concepts to mental images we can be said to engage in conscious thinking, and finally we can express the thoughts in speech or, more correctly, we can tentatively express an interpretation of thoughts and the underlying feelings. McNeill seems to have a similar conception of thought as image and word, he says: "All would suggest that thought is image and word. This picture of mental life as the dynamic combination of opposite modes of representation, is fundamentally different from the linear, mechanical picture of thought and language that has been the mainstay of information-processing ideology for psychologists" (McNeill 1995: 271). - Contrary to the misconception which I am correcting, speech represents only a feeble attempt to render thoughts in verbal symbols based on the conventions of language practices. We shall remember that thoughts are only momentary fragments of the ongoing mental processes which produce feelings; as Bartlett said "The image, to be communicated, has itself to be expressed in words, and we have seen that this can often be done only in a most halting and inadequate manner"(1995:225). We have to understand that there is only a tentative correlation between speech and thought.

I would say that deep down, in a profound sense, images are movements mapped against the previous experience; we could therefore conceive of the evolutionary origin of images as kind of simulations of how a situation under the given conditions would be enacted against prior experience.

The idea that cognitive feelings first emerge as mental images is quite well accepted in the relevant scientific community, although not universally. I think it is therefore illustrative to look at the opposition to the idea. Bennett and Hacker in *Philosophical Foundations of Neuroscience* (2003) ironize about the idea by targeting Damasio's discussion of mental images. They refer to a passage in Damasio's *The Feeling of What Happens* (1999); there Damasio is quoted as saying: "There is a mystery, however, regarding *how* images emerge from neural patterns. How a neural pattern becomes an image is a problem that neurobiology has not yet resolved." Bennett and Hacker retort that it "would indeed be a mystery; and not one which neurobiology would ever be likely to resolve" (2003: 305). In this context the authors categorically reject the

idea that a visual image would occur as a result of “neural events.” They say: “How, we may then wonder, can such neural events produce something so categorically distinct from nerve excitation as ...an image in the brain? Where, we may then wonder, does the ... visual image occur? And if it occurs somewhere in the brain, how is it that we see it? But, of course, no such things occur at all.” Very illustratively of the misconception they continue: “To see a red apple on the table before one is not to see an image of a red apple; nor is it a matter of the brain seeing a red apple. When one sees a red apple, there is no image of the red apple in the brain or anywhere else. One sees an image of a red apple on a table when one looks at a Cézanne still life. One *has* an image of a red apple when one vividly images a red apple, but one does not *see* the image as one *has*. And the brain neither sees anything nor has images of anything.” – This is bewildering, one gets the idea that one is reading a student who admires Wittgenstein but who has not profoundly understood his philosophy and instead take Wittgenstein’s method to mean that one should be a verbal besserwisser, always twisting and turning the tongue around in order to show the “true meaning.” According to Bennett and Hacker not only Damasio, but also Sherrington, Edelman and Crick are equally ignorant of these linguistic finesses (2003: 137). – Bennett’s and Hacker’s ideas contradict our elementary knowledge of how vision occurs as the ability to interpret our surroundings from the visible light signals that reach our eyes. The act of seeing starts when the lens of the eye focuses on an object onto a light-sensitive membrane in the back of the eye, the retina, which is already part of the brain. The photoreceptive cells detect the photons of light and respond by producing neural impulses; these neural impulses in turn are processed in various systems of the brain. It is the resulting brain processes (mental processes) that cause the feeling of seeing an image. This in turn is the result of the evolutionary developed genetic endowment to interpret certain signals (stimuli) in a certain fashion; through interpretation of simple movement patterns to ever increasing complexity brains of the same species of animals have become accustomed to interpret the signals in a similar fashion, and more: those species have developed evolutionary which have been able to develop a system of correctly interpreting the surroundings, such as interpreting a cliff as a cliff in order not to bump the head against it. – Thus clearly all images are images formed by mental processes in the brain. As it was said above, seeing does not happen, as Bennett and Hacker seem to think as if the eyes were some kinds of cameras recording the surround-

ings for the benefit of a homunculus watching the film somewhere behind the eyes. - In fact, Damasio describes the idea of mental images in a quite convincing fashion (see 2003: 199).

Bartlett already knew how the ability to experience mental images evolved to enhance adaptability to new situations, the capacity of the animal to become more flexible in his reaction patterns (1995: 218). He tells how the evolutionary precedent was a 'memory system' (or "the capacity to be influenced by past reactions") that "lead to stereotyped behavior" producing "relatively fixed series of reactions." At the same time he stresses that this is not an evolutionary stage the human has passed and left behind, but that we rather still even "on a higher level of behavior" are very much inclined to falling into automated serial reactions ("the unwinding of responses in a fixed chronological order is very common"). This tendency "to drop into serial reactions" is especially obvious "when we are tired, delirious, slightly intoxicated, or when, for any reason, critical keenness is relaxed." It is by the ability to experience mental images that we are able to "pick bits out of schemes" and thus increase "the chance of variability in the reconstruction of past stimuli and situations, for surmounting the chronology of presentations." With these visual images, Bartlett continues, a human being "can take out of its setting what happened a year ago, reinstate it with much if not all individuality unimpaired, combine it with something that happened yesterday, and use them both to help him to solve a problem with which he is confronted to-day."

The important lesson from this is that consciously seeing something, that is, engaging in direct or optic vision is not a process cardinally different from having a mental image of a scene or an idea or an event that one is mentally processing (feeling) without present visual observation. In the case of mental images it is the organic ability that is referred to as 'memory' that feeds the mental processes with the stimuli which are interpreted to create the images. Compare this with Damasio maintaining that images are "the main content of our thoughts, regardless of the sensory modality in which they are generated and regardless of whether they are about a thing or a process involving things; or about words or other symbol, in a given language, which correspond to a thing or process" (2000: 107).

The relation between perception of mental images and verbal manipulation of the images has been insightfully discussed by Bartlett in his *Remembering* (1995) in reference to his practical experiments on how

various subjects form perceptions on images and ideas that they have been presented with and how they subsequently render their perceptions in words. Bartlett demonstrated the varying degrees by which people are directly guided by mental images as opposed to possessing the ability to verbally manipulate the images. In discussing his tests he refers to two groups of people correspondingly as the “visual type of subject” (“visualizer”), that is, those who are more directly guided by mental images and the “vocalising type” (“verbalizer”), who manipulate the mental images by words. The visualizer uses verbal descriptions but he is mostly guided by his mental images, whereas the verbalizer has a tendency to give priority to the verbal descriptions. Bartlett said that the major difference between the verbalizer and the visualizer is to be found in the different ways in which they draw secondary associations and use analogies. Bartlett found that the general method of the verbalizer when a sign is presented to him ‘is to attempt to fix it by a description,’ often through the means of “some secondary association.” The verbalizer relies more directly on his verbal analyses: For him, once the name is given, it is “the first thing to be recalled, and the sign is apt to be reconstructed from the name” (1995: 111).

I wanted to dwell somewhat at length on these issues as they are so instructive in explaining the general essence of thinking (with which subject I will deal more in detail in next chapter). I also wanted to highlight these issues because of their great practical value: I think psychological studies would greatly benefit from a recognition of these ideas that so much explain about human behavior and the differences in modes of thinking that different individuals display. I indeed consider that humans may, conditionally speaking, be divided into these two categories of visualizer and verbalizer. But hereby I need to stress that I do not think that the difference between individuals is a categorical one but that there rather is a difference in degrees and that we are best to think of all these differences on a continuum where on the one end we have the visualizers and on the other end the verbalizers.

With great insight Bartlett discusses the visualizer’s “affective character” of image perceptions, that is, the tendency to react emotionally to the images (1995: 222 -224). Bartlett pointed out that there is a great mismatch between the affective features that the strong visualizer perceives and the possibilities to render that in language. Bartlett tells how the visualizers are emotionally attached to the memory scenes that the mental images display. In a rapid succession of mental images the emotional mark may become attached to various scenes where they do

not originally belong. The problem to render the corresponding ideas in speech is due to the mismatch between the emotional character of the perception and the linguistic means of expressing the perceptions, as Bartlett says: the emotional character of these perceptions “defies adequate expression” for we do not possess the verbal means of “matching the delicate distinctions of affective response of which men are capable.” The consequence of this is that the subject is not able to fully conceptualize the phenomenon in question; he may describe the images, or name them, but remain unable to coherently understand their significance. Bartlett concludes that it is as if the images merely provided “a kind of aesthetic luxury.” In his tendency to react emotionally to the images the visualizer combines interests of very different nature and origin, and this, says Bartlett, helps to explain “the great wealth and variety of images which may often be observed in the typical visualizer.” Bartlett pointed out that this was natural because the human means and varieties of emotional response far outweigh the possibilities of verbal descriptive expressions. But the variety of emotion response comes at the cost of not being able to discriminate the essential features of the images.

Bartlett’s studies show the evolutionary value of the capability to verbally manipulate mental images. The verbalizer has received an advantage to manage the images which enables analytical control of the images and focusing on the essential. In modern terms we could apply the metaphor of an editor reviewing a large sample of films with all the possibilities that technology gives to him to manipulate them: he can speed forward, rewind, slow down, make a snapshot, combine strips etc. And thus he can stop at will to contemplate the minutest details by applying the whole conceptual arsenal to it. This is how Bartlett describes the advantages of the verbalizer:

“Genuine classification is more apt to be used by the verbalizer. He puts a number of signs together and uses the name of the whole group to economise his effort to remember details. The person who relies largely upon words and descriptions is definitely on the look-out for possible common relationships: of opposition, going right-ward or left-ward, having the balance to the top or to the bottom, and the like. Moreover, these relations are not merely noticed, they are used... On the whole, the verbalizer seems to work in a more hesitating doubtful frame of mind, and more deliberately.” (1995: 112).

Bartlett reports that his studies showed that “strong and persistent visualizers” were rapid, and “prone to be confident and optimistic about the accuracy of their memory reproductions in the face of evident misrepresentation of the material” (1995: 111). The actions of the more analytical verbalizer were, on the other hand, markedly lacking in confidence; Bartlett says that the verbalizers readily resorted to inferences as they proceeded with their verbal descriptions and were especially committed to give consistency to their descriptions. In doing so, the verbalizers paused to consider alternative possibilities before giving their final reports. Therefore they displayed an attitude “of uncertainty and doubt” (1995: 60).

Obviously we cannot make a judgment as to which is a more capable person in general: the verbalizer or visualizer; first of all, all people combine both abilities to some degrees, whereas some are stronger as visualizers and some as verbalizers; secondly, for some kind of activities it is more useful to be stronger in the one ability than in the other. The poet, the inventor, the discoverer represent for Bartlett the typical visualizers, who are people that can combine vivid images without waiting for verbally formulated reasons. Among the visualizers Bartlett has also identified “those who, possess the sensitivity which responds to hidden connexions, but wander at haphazard from one topic to another in a manner that appears wholly inconsequential both to others and to themselves” (1995: 224).

Damasio has also noticed how even mathematical symbols are imaginable which is what enables us to know them and manipulate them consciously. He says that insightful mathematicians, like Albert Einstein, describe their thinking as dominated by images (2000: 107).



## 4 FEELINGS, EMOTIONS AND CONSCIOUSNESS

In the previous chapter, *Mental Processing*, I established as the main principle of a biological philosophy that all phenomena of life (both organic and social) are functions of an organism positioning itself in relation to its environment. It was shown how mental (neural) processes through the system of organic *homeostasis* on a higher level of processing bring about cognition. 'Homeostasis' can be defined as 'the ability of the body or a cell to seek and maintain a condition of equilibrium or stability within its internal environment when dealing with external changes'; in other words: it is 'the tendency of an organism or a cell to regulate its internal conditions, usually by a system of feedback controls, so as to stabilize health and functioning, regardless of the outside changing conditions.'<sup>1</sup> Usually by homeostasis scientists refer to questions pertaining to the maintenance of metabolic equilibrium, basic reflexes and other such life sustaining organic operations, that is, the issues pertaining to the processes of biochemistry, cell growth and sustenance, and maintenance of cell structure and integrity. These organic functions are said to be managed by the autonomic nervous system. Here it is worth repeating what I already said about homeostasis in the previous chapter telling that in the system of homeostasis each stimulus is processed in the binary mode of pain and pleasure resulting in a trace (a process outcome) that is indicative of either increasing or decreasing the well-being of an organism. Building on Damasio's insight (combining it with that of Lamarck), as explained in the previous chapter, I came to realize that *cognitive mental processes*, that is, such activity that involves mental processing of conceptual abstractions and expressing corresponding to ideas, must be seen as manifestations of a more advanced system of homeostasis. Thus in the homeostatic system of the evolutionary advanced organism the quite bodily sensations of pain and pleasure are complemented by socially and cognitively induced feelings of pain and pleasure. Quite naturally then the more primitive functions that were said to be managed by the autonomic nervous system are complemented by those produced by the central nervous system in connection with the peripheral. This again illustrates how the bodily (somatic) processing systems precede and interact with the mental processing system. These considerations led me to conclude that understanding homeostasis is thus the gateway to understanding all human

behavior and the connection between natural sciences and social sciences.

Thus I consider that all neural processes (including those I call 'mental processes') play a role in the homeostasis, that is, in the maintenance of the equilibrium of the human organism in relation to its environment. Those neural processes which I term 'mental processes' build upon the lower level metabolic processes (and similar organic processes) of homeostasis and combine then with the homeostatic systems which involve the processing of conceptual abstractions (all which we may become cognitively conscious of). This combined effect of all the mental processes, I call 'feelings.' In my interpretation, then, all cognitive activity (behavior) is anchored in the system of correlating environmental conditions (stimuli) to how they affect the body (parts of it) and consequently the whole homeostasis; this in turn develops feelings of higher and higher cognitive value, or complexity, up to conscious recollection of some reflections of them. 'Feeling' represents the joint reactions of all the bodily processes, neural and somatic, as their cumulative result at any given moment.

I have suggested that we should recognize the unity of all biological processes and depict all mental processes on a continuum from the most simple physical movements to the most sophisticated and complex mental processes that culminate in consciousness (the *Lamarckian Continuum*, see chapter *Mental Processes*). On the continuum there is no clear break from physical processes to mental processes, there is no way of delimitating what is to be considered as physical and what as mental; and I argue that, in fact, that would not needed, for all these processes are anyway interconnected through the system of homeostasis. In connection with the present discussion we could depict a continuum which monitors the evolutionary complexity of neural processing so that we start from the processing of simple sensory stimuli, then proceed to *homeostasis*, i.e. the more complex processes corresponding to the coordination of the well-being of the whole organism, and further on the continuum we would have the higher level mental processes that we should call *feelings*; next we would have those feelings that I call *cognitive feelings*; and at the furthest end we would have *cognitive consciousness*. The *cognitive feelings* are those of which we from time to time may become *cognitively conscious* of; and which may develop into *thoughts*; whereas thoughts (in combination with the underlying cognitive feelings) in turn form the basis of *speech* and other human *expressions*. - I

will explain below that thoughts indeed ‘form the basis’ of expressions, but that expressions also manifest other cognitive feelings which cannot be considered as qualifying as thoughts; this also has to do with my conception that ‘thoughts,’ or ‘thinking,’ is to be defined through the ideas of consciousness, as will be explained below. This, whereas we should realize that at any given time most of the mental processes of interpretation, or of cognitive feelings, occur unconsciously; these unconscious cognitive feelings affect at any time the conscious feelings and our expressions of the feelings that primarily are thought to be of a conscious nature. - ‘Feeling’ is the joint outcome of neural processing of stimuli for the well-being of the whole organism, whereas consciousness is the awareness of some parts of the processes on various levels of physical to mental processing (the dichotomy of ‘physical vs. mental’ would perhaps correspond to the of ‘non-cognitive vs. cognitive’ processes). Of all the cognitive feelings occurring in a body “one feeling” (more correctly ‘some aspects of the feelings’) come up to cognitive consciousness from moment to moment, and always only for a fleeting moment.

Under this conception ‘feelings,’ thus represent the underlying processes for all cognitive activities (phenomena of intelligence), for example, what is called ‘thinking’ and ‘consciousness’ are merely aspects of ‘feeling.’ This conception was widely (but not universally) accepted in the 19th century, for example, Lewes was a staunch advocate of this view.<sup>2</sup> The consciousness of feelings (i.e. being consciously aware of feeling), I call ‘cognitive consciousness’ (this is a condition of ‘thinking’ but not ‘thinking’ itself, as will be explained below). The important feature of ‘*cognitive consciousness*’ is that it is what enables us to interpret the processes of *cognitive feelings*, which in turn may lead to cognitive perceptions in the present, thinking, remembering etc. At any given time when we are *cognitively conscious* of one or another mental process of feeling, there occur in the body (unconsciously) other mental processes which create cognitive feelings. Any of the processes of feeling may eventually emerge into consciousness.

The ability to become momentarily *cognitively conscious* is the most important evolutionary aspect that has enabled the faculty of speech and the social practices called language. But while recognizing this, it is equally important to realize that consciousness is only a part of the whole process of feeling and that this organic ability is only one aspect of the much more widespread ability to feel unconsciously. To feel consciously represents moments of becoming aware of some of the uncon-

cious feelings. Conscious feelings function like managers of much bigger and omnipresent unconscious operations, which both affect each other.

I have above already introduced the notions 'cognitive feelings' and 'cognitive consciousness'; later I will discuss the phenomena I refer to as 'conceptualization.' It is my aim that the phenomena thus referred to by these concepts should be recognized as the real objects of neuropsychological studies instead of the very misconceived ideas in regards to the concept 'consciousness' that presently occupy the interest of neurophilosophers.

To really understand what is at stake here, it is of crucial importance to reach clarity between the concepts 'consciousness' and 'cognitive'. The cognitive ability represents a high evolutionary and organic stage of mental processing and consciousness; it is the stage when the organism becomes self-reflexively aware of some fleeting sparks of the cognitive mental processes. But the fleeting moments of consciousness serve nevertheless as kind of a management system where important aspects of the processes are identified against all the cumulated life experience so as to help interpreting the organism in relation to its environment.

I maintain that to properly speak about 'cognition' we have to recognize that what we can cognitively experience is always such that we can be conscious about (consciously aware of). From this there follows an important consideration namely, that the process of cognition brings to play all the social practices we are aware of; this means that as soon as we consciously cognize then we apply the concepts of social practices to the feelings (as we have interpreted them – and this is where we so often go wrong). To exemplify what I mean by this I tell that I consider that 'thinking' is always a predominantly conscious process (although some aspects of thinking remain unconscious). 'Thinking' is the result of combining the concepts of language (social practices) to the underlying feelings. When I say this I really mean that as soon as we are cognitively conscious then we kind of take part of the reports that are fed to us by our 'memory', that is, the system of remembering; the organic process of going through all past experience relating to the present situation (see chapter *Memory*). Feelings process 'memories' which pop up to consciousness and enter our present processes of thinking.

I need to explain my terminological choice of the word 'cognition' and its derivatives ('cognitive feelings,' 'cognitive consciousness,'

etc.), for the word is not unambiguous as such. It is in general used to signify cognitive mental processes, and products of these processes; ideas relating to or involving conscious intellectual activity, such as thinking, reasoning, or remembering (Merriam-Webster). But it could also be used in accordance with its etymological meaning of ‘to come to know,’ ‘to become acquainted with,’ ‘to perceive directly,’ ‘to recognize’ etc. In this meaning it would not be exclusively applicable to ideas pertaining to intellectual activity. This corresponds to the way Descartes seems to have employed the word ‘cogitare’ (see Thomas 2006). We could in this meaning apply it in a parallel fashion in which I describe ‘consciousness’ (see below in this chapter) as being applicable to the being aware of various sensations, from bodily sensations of pain and hunger, up to the self-reflexive awareness of one’s feelings. But as I need a word to define the higher-level mental operations, I have settled for using ‘cognition’ in this meaning (but hereby, I explicitly deny that its applicability would in principle be limited to the stages of cognitive consciousness). Thus by ‘cognition’ I mean much the same as what is meant with ‘intellect,’ (and ‘intellectual activities’), and I could therefore in principle have used this word instead. But the word ‘intellect’ also carries a historic burden, whereas it, *firstly*, is taken to mean ‘the power of knowing as distinguished from the power to feel,’ which is precisely the distinction that I want to reject; and *secondly*, by this word people often refer by way of judgment to the supposed higher powers of for “rational or intelligent thought,” which represents another distinction that explicitly does not fit my philosophy. As my method is not the conceptual method, but process method, I do not want to attempt a rigid definition of the concept; the concept is not here of primary concern, rather the ideas which the concept serves to illustrate are. But I stress once more, my aim with this book is not to define the concept ‘cognition,’ or any other concepts, instead my aim is to describe the underlying processes, which compels me to use one or another concept as coherently as possible without lapsing to conceptualism.

Damasio and LeDoux can be considered as the modern pioneers of feeling, who after a century long oblivion have brought feelings back to neuroscience (as shall be explained below). But my conception of ‘feeling’ differ from these neurophilosophers inasmuch I advocate a more comprehensive role for ‘feeling’ in the neuroscientific paradigm. Insightful and immensely valuable as their work in redirecting neurophilosophy has been, these neurophilosophers have, however, not fully understood that by ‘feeling’ we should refer to the mental processes that in

accordance with my above discussion could be seen to create a cognitive homeostasis. To a certain degree these authors remain hostages to the conceptual method and the thingly fallacy that lies on its foundation. This is evident from the way they juxtapose the concepts ‘feeling’ and ‘emotion’ and other concepts (such as ‘appetites’ - more detailed discussion to follow) as if they were separately recognizable entities that could possibly be juxtaposed with each other, while they all are but various aspects of the same processes, of which the fundamental ones are ‘feelings.’ These fallacies may be represented by a passage from Damasio where he says: “There is growing evidence that feelings, along with the appetites and emotions that most often cause them, play a decisive role in social behavior” (2003: 140). In addition to representing the thingly fallacy, as explained above, this proposition is troubling inasmuch it represents a gross understatement about the role of ‘feelings.’ In my conception feelings do not “play a decisive role in...” but constitute the medium of which all behavior are aspects of. ‘Emotions’ and ‘appetites’ (whatever the latter is supposed to signify) are but aspects of behavior which are based in ‘feelings’ – ‘emotions’ are, as it was noted above, perceptions we form of certain conspicuous features of ‘feelings’ as we have become accustomed to perceive them. Damasio, on the contrary, puts ‘feelings,’ ‘emotions’ and ‘appetites’ (almost) on the same line, as if they were all some kind of ingredients that are added into the base which creates behavior. But when all these are perceived as such kinds of ingredients, then we are left wondering what Damasio thinks is the base itself (for me ‘feelings’ is the base). – Above I qualified my rendering of Damasio’s conceptions by saying that he *almost* puts them on the same line; this because, in fact, he subjugates ‘feelings’ to the influence of ‘emotions’ and ‘appetites,’ telling that the latter two ‘cause feelings.’ But this means that Damasio is merely claiming that one and another *concept* cause *other concepts* to emerge. What else could he possibly mean by saying that “appetites” cause feelings? This should be juxtaposed with my conception in accordance with which ‘feelings’ are caused by mental processes that form part of the homeostatic system. We could therefore better say that “the homeostatic system” causes ‘feelings,’ and ‘feelings’ cause behavior.

Thus in my conception ‘feeling’ corresponds to the primary phenomena, whereas ‘emotion’ should be considered merely as socially influenced perceptions we form of complex behavior, which behavior in turn represents manifestations of the underlying feelings which are in a con-

stant flux. Correspondingly the names assigned to the various alleged emotions - (such as: *acceptance, anger, anticipation, disgust, joy, fear, sadness, surprise*; Plutchik) - should not be taken to correspond to any kind of scientific reality, but rather we should regard them as conditional tags, which merely serve a conversational purpose. We should understand that what are perceived as 'emotions' are organic phenomena that in infinite variances reflect the infinite variances of underlying feelings. In my view an 'emotion' does not represent a higher or lower form of organic processing on the Lamarckian continuum, i.e., 'emotion' does not correspond to anything independent from the biological processes of sensation, homeostasis and feeling, rather 'emotions' are the perceptions that we form of behavior when we identify in an act of behavior one or a few conspicuous features that we class in accordance with how we connect them with the ideas we have formed of these various emotions (as we are predisposed to do so by the influence of social practices).

## A Deconstruction of the Concepts of Neuroscience

In order to properly understand the essence of 'feelings' in neuroscience, we need to proceed with a deconstruction of the concepts of neuroscience similarly as it was already done in regards to the concept 'mind' (see chapter *Mind*). It is these concepts that cause so much confusion in the cognitive sciences. We have to identify what – if anything – the popular concepts in neuroscience correspond to and what is their relation to 'feelings.' It will be especially important to deconstruct the concept 'consciousness'; to dethrone it from the pinnacle of the cognitive sciences and to show how the corresponding phenomena, in fact, form part of the processes of feeling, being aspects of them, the most developed aspect, but also the most fleeting aspect. It will also be important to dwell somewhat more on the difference between 'feeling' and 'thinking,' and the derivative of the latter, 'reason.' Finally I consider it important to deconstruct the concept 'emotion' and to show the true essence of the phenomena so called in relation to 'feeling' (as I already indicated above).

To a large degree this entails a criticism of the traditional *conceptual method* of neuroscience, psychology and the philosophy of mind. We have to understand that instead of analyzing the concepts by which we try to illustrate our ideas we have to give priority to the study of the underlying biological processes (an illustration of this was given above

when I discussed Damasio's conception of the 'role that feelings play in producing behavior'). Hereby we have to constantly keep in mind their unitary (holistic) character, and evolutionary background, as well as both the evolutionary and present interdependency of all these organic processes (*the hermeneutical evolutionary spiral*). We have to dispel the myth about the correspondence of a given concept to an underlying reality, and learn to depict the processes themselves (an example of which is my conception of how 'feelings' are based in the homeostatic system). As all organic processes occur in infinite variances, we cannot expect that this reality could be captured by rigid application of concepts. We have to understand that all processes leading up to cognitive feelings and cognitive consciousness are but aspects of biological process in infinite variances. These issues have been discussed more in detail in the chapter *Processes and Concepts*.

## The Perversion of Consciousness

Sometime around the turn of the 20<sup>th</sup> century the insight into how cognition emerges from feelings fell into oblivion and was replaced with a perverted conception of 'consciousness.' – In the 19<sup>th</sup> century, at least beginning with Lamarck, feelings were recognized as constituting the basis for all cognitive behavior (Lamarck 1809). Accounting for the fact that psychological concepts such as "sensations, perceptions, emotions, sentiments, volitions, and ideations" were at the end of the analysis recognized as *feelings*, Lewes also proposed to establish *feeling* as the "generalised expression for what all mental states have in common" (Lewes 1879b: 8; see also, e.g., Lewes 1879b: 379; similarly James said: "sensations are *first* things in the way of consciousness," James 1957 Vol. II: 3). However, already in Lewes's time (the latter part of 19th century) the abuse of the concept consciousness was widespread. Lewes himself wrote that most of his readers would equate 'feeling' with 'consciousness' and that it was this twist of concepts that mislead scientists to postulate some kind of dualism between 'consciousness' (which they equated with 'thinking') and all the other aspects of mental processes.<sup>3</sup> Alerting against the conceptual confusion caused by 'consciousness,' Lewes voiced his regret that the concept could not be altogether banished for all the "numerous ambiguities and misapprehensions" it gives rise to (1879b: 143). Lewes exposition of the conceptual confusion is still today very valid as we can see from these two quotes:

“That we can have thoughts and not be conscious of them, perform actions and not be conscious of them, have perceptions and not be conscious of them, are facts which prove that a theory of the Mind must be very imperfect which is limited to conscious states, unless the meaning of the term Conscious be so extended as to include unconscious states” (1879b: 14) - “There is a third meaning, which makes Consciousness the ideal spectator of all the passing phenomena, internal and external. In this sense it is another term for Mind. Again, it is used synonymously with Cognition and with Attention” (1879b: 145).

By time the misconception became the rule and the 19<sup>th</sup> century insight into the *evolutionary continuum of mental processes and feelings leading to cognitive behavior* faded away and was eventually replaced by an esoteric belief in the mysterious ‘consciousness.’ By the 1960’s the speculations centering around the concept ‘consciousness’ had become firmly anchored and raised to the level of the scientific paradigm as a result of the so-called cognitive revolution. The cognitive revolutionaries, representing a pendulum swing to the positions of the behaviorists, advocated that ‘consciousness’ and ‘mind’ again had to be made the foremost objects for scientific research. This was a position that the behaviorists had vehemently objected to in adherence to their own misconceived “scientific method,” according to which only such facts that could be retrieved from and tried in laboratory tests could be admitted as scientifically relevant. Most interestingly, though, the “cognitive revolution” did not imply that one would actually have to bother with the biological facts about organic and neural processes, rather the criticism of the behaviorists for rejecting the study was the winning argument in itself (see chapter *A Review of Chomsky’s Verbal Behavior*). Thus the “cognitive revolution” essentially spelt a return to medieval beliefs in dualism of matter and soul, only this time around ‘soul’ was replaced by ‘consciousness’ in that equation (‘consciousness’ itself alternating with ‘mind’). - The professors were so taken by the fact that somebody said the obvious (i.e. that the brain should also be studied) that they did not bother any further with the actual details on brain research. In fact, no details were presented, and no were requested either. Instead the revolutionaries were granted carte blanche to indulge in the wildest speculations on the nature of cognition, “consciousness” and “mind” as long as they kept to the mantra of the need to study the brain processes as well. It is thus that the “cognitive revolution” came to imply a reversion to a kind of alchemic speculation of the virtues of a series of linguistic concepts with disregard to all facts of not only human be-

havior but also biology, neuroscience and evolutionary history. The alchemist trick of the cognitive revolution was to earn authority and recognition as one who knows what he is talking about by depicting the brain on the cover of his book, and by lining up some elementary facts about the structure of the brain and neural system together with their Latin names in the introductory chapters. As a rule, done with the fancy illustrations and the enumerations of the basic facts of brain anatomy, the cognitive alchemist lifts the discussion up to metaphysical heights leaving the reader to wonder what the supposed connection between the anatomy lessons and the ensuing speculation was, other than to earn the license to speculate.

Only in the last two decades of the 20<sup>th</sup> century with the work of Changeux, Damasio and LeDoux did real mental processes, feelings and emotions of a human being again become objects of a study of neuropsychology. Very tellingly, though, these authors presented their theories, as it were on a tabula rasa, as if they represented new research results without any historic antecedents omitting all references to the flourishing scientific insights of the 19<sup>th</sup> century. However, notwithstanding the few inroads to a scientific understanding of feelings and cognition, neurophilosophy still today remains largely dominated by the speculation launched by the cognitive revolutionaries.

In the previous chapter, *Mental Processing*, I have discussed the fallacy of assigning 'consciousness' the role of successor of 'soul' and 'mind' in the dualist paradigm. For the quasi-dualists, as I call those savants, 'consciousness' is a mystery *entity* that performs basically the same feats that were earlier awarded to the 'soul' and the 'mind.' Sometimes – and this in the better cases – they seem to utilize the term 'consciousness' as a synonym for 'mental', however without themselves always *consciously* understanding it; sometimes – causing more harm to the subject – 'consciousness' seem to mean all those mental operations we call intellectual activities of the human (I have proposed that we instead would utilize the term 'cognitive consciousness,' to depict the idea of being aware of some aspects of the corresponding mental processes). The underlying idea for using the concept in this way seems to be connected with another fallacy: that of *rationalism* or the idea of humans possessing a *reason* (the idea that all thinking and the rendering of thoughts is a rational process which the subject would remain fully in control of). All these peculiar ideas that 'consciousness' is made to refer to seem to stem from the fundamental ignorance of the fact that 'physi-

cal' and 'mental' cannot be juxtaposed, but only seen on a continuum (the Lamarckian continuum) starting from the simplest physical movements and proceeding to more and more complex and integrated physical movements, which latter type of processes we might call 'mental processes' (see chapter *Mental Processing*).

These are fallacies that almost all neurophilosophers subscribe to, unfortunately even Damasio and LeDoux to a certain degree. It is therefore that I in illustrating this fallacy will restrict myself only to a few examples. Francis Crick launched the *astonishing hypothesis* that there is a "mystery of consciousness" which he wants to crack (1995: xi). Christof Koch, who also thinks that "consciousness is the major unsolved problem in biology" tells that his "strategy has been to try first to find the neuronal correlates of consciousness" (2004: xiii; imagine if somebody in the same line wanted to find the neuronal correlates of the soul). Koch also gives us a classical example of how the conceptual method of sciences turns reality and narration upside down; this when Koch says: "Underlining my choice is the tentative assumption that all the different aspects of consciousness (smell, pain, vision, self-consciousness, the feeling of willing an action, of being angry and so on) employ one or perhaps a few common mechanisms. Figuring out the neuronal basis for one modality, therefore, will simplify understanding them all" (2004: 15). I note that it is wrong to say these are 'different aspects of consciousness,' rather one should say that all sensations – on the different levels of mental processing, on the different levels of awareness – are such that we may become conscious of. 'Consciousness' thus represents aspects of all these named organic and neural phenomena; 'consciousness' corresponds to the salient features of being aware of the underlying processes.

Kandel, Schwartz, and Jessell in turn agree with Koch's assertion telling that we "need to probe the deepest of biological mysteries - the biological basis of mind and consciousness" (Kandel, Schwartz, & Jessell: 2000: xxxvi).

Damasio tells that he considers that the concept 'consciousness' is "the part of mind concerned with the apparent sense of self and knowing" (1999: 27). Nevertheless, this original location of the seat of consciousness as "part of the mind" did not preclude Damasio from, in the same book, giving a more down to earth definition of consciousness as "an organism's awareness of its own self and surroundings" (1999: 4). In the same vein Damasio tells that something *exists in consciousness*: "Most of the words we use in our inner speech, before speaking or writ-

ing a sentence, exist as auditory or visual images in our consciousness” (2000: 106).

John Searle, who must be seen as one of the leading contemporary propagators of this fallacy, tells in his *The Mystery of Consciousness* that according to the consensus “consciousness does not seem to be anything *physical* in the way other features of the brain are, such as neuron firings,” and neither has it been accepted that “consciousness” could be “reducible to physical processes” (1997: xii). In the background of these considerations Searle tells that philosophers seem to think that if they were to “grant real existence to consciousness” then they would “be forced to some version of *dualism*” between the “mental and the physical.” According to Searle some of the contemporary scholars accept the dualistic view, but most adhere to “materialism” which, according to Searle implies that “consciousness should be eliminated by reducing it to something else” (1997: xiii). This reduction would lead, Searle tells us, to “consciousness” being treated “as brain states described in purely physical terms.” Searle rejects both these views, because according to him the materialist view would “deny the real existence of conscious states” - thus he juxtaposes ‘mental states’ with ‘conscious states’ and believes in the reality of both. Searle is right in concluding that this would mean a denial of the ‘existence of conscious states,’ but the more, contrary to what Searle claims, it is so: ‘consciousness’ is not a thing, and ‘consciousness’ cannot be said to exist! There are no ‘conscious states’ – instead there occur in the organism processes of consciousness, awareness. I note that we may, however, speak of *being in a conscious state*, that is, being in the mode of self-reflexive awareness, but hereby no moment of this corresponds to Searle’s “conscious states.” ‘Consciousness’ represents an aspect of the awareness of some *processes* that *are real* (real at the moment of the experience), but there are never any corresponding ‘real states.’ Similarly it is wrong to claims that ‘mental states are real.’ It is wrong to speak about ‘mental states’ to begin with, for there are only *mental processes* which combined with the stimuli from the environment on the highest level of mental processing we experience as *consciousness*, but what we experience are only reflections of the processes in fleeting moments, as a film (compare with the film metaphor presented in chapter *Mental Processing*), which does not exist, but gives an impression of existing. I refer the reader to a criticism of the idea of ‘mental/brain states’ in chapter *Mental Processing* and further to *Processes and Con-*

*cepts*, in which latter chapter I also discuss the issue to what degree we may postulate that ‘processes are real.’ Thus in his version of *quasi-dualism*, Searle has postulated a dualism between ‘mental states’ and ‘conscious states,’ but as this analysis shows what he terms as ‘conscious states’ (and what should properly be thought of as ‘processes of consciousness’) are, precisely, reducible to his “mental states,” if we understand them as ‘mental processes.’<sup>4</sup>

All these confused ideas as to the nature of ‘consciousness’ has established the concept as the umbrella term for purported explanations for all aspects of cognition, as Damasio says, without irony (1999: 127). This is the very fallacy. Instead of being taken as the umbrella it should have been recognized as no more than the ferrule, the small metal tip, crowning the umbrella. By trying to cover all aspects of the study of neurophilosophy under the concept ‘consciousness’ scientists have, in fact, replaced the study of the biological reality of mental process by a study of the concept ‘consciousness.’

The real mystery is not ‘consciousness’ but rather the fact how this misconceived linguistic concept came to be treated as such. This absurd idea illustrates how social practices affects the way we perceive reality and how our perceptions come to represent reality. Lewes correctly said: “That an organism can feel and think is doubtless mysterious. The fact that it does so is all we are concerned with, and is neither more nor less mysterious than the fact that the organism can live and move” (1879a: 11).

## The Subjectivity Problem

As mentioned above, the behaviorist had insisted that ‘consciousness’ could not be scientifically studied on the grounds that conscious experience could not be objectively studied by means of their own rigid methodological paradigm. That conception is known as the problem of *subjectivity* of consciousness, the alleged special dilemma that ‘consciousness’ poses by representing phenomena of subjective conscious experience. This alleged problem was very crucial for the behaviorists’ research paradigm, but strange enough the myth of this problem outlived the behaviorists and is still referred to as a real issue and major problem in cognitive sciences. Perhaps what continues to confuse the scholars is the hangover from the conceptual method which converted ‘consciousness’ into that mysterious entity. But I cannot conceive in what way mental processes would be any more, or any less, subjective

than any other organic processes. Science is about identifying and recording general conditions that affect a species and then applying that knowledge to particular cases. We always go from particular and subjective data to general data and then apply that back to the particular and subjective. The task in science is not to explain the particular subjective feelings but to describe in general the mental processes that lead to the feelings and how they are reported (as Lewes said: "Psychology investigates the Human Mind, not an individual's thoughts and feelings," Lewes 1879a: 5). We may compare this with the task of explaining how a film is produced and projected on screen and note that the former has nothing to do with the task of explaining the plot of a particular movie.

I cannot accept the argument that brain processes would in any way be more subjective than, say, for example, digestion. All that is known about digestion is generalized knowledge compiled from a study of the digestive system of concrete individuals and concrete biological processes. That has established what we know about digestion in general. Then again in examining and treating a patient this generalized data thus retrieved through the study of various individuals is applied to a particular person's particular digestion processes. But who would not admit that digestion of particular nutrients in a particular person at a particular moment would not amount to highly subjective processes? Yet nobody has rejected the application of the generalized data on digestion to the individual cases by reference to the subjective nature of digestive experience. Why then would a study of brain processes require any different approach? Correspondingly in neuropsychology a general understanding of mental processes is reached by the study of various individuals and then the findings are applied to a particular person under observation. — We should not let us be confused by the fact that the study of mental processes is made much more difficult by the sheer complexity of the processes and the nature of the stimuli that affect them. This does not motivate a change of research paradigm (and there can indeed possibly not be any): it should only serve to highlight the complexity of the problem and the difficulty to express any opinions on the subject by applying the rigid conceptual method (but instead in practice these difficulties have, in fact, led to the strengthening of the misconceived conceptual method by which scientists tries to hide their ignorance of the real processes behind the conceptual drapery). To a large extent the stimuli that affect human mental processes occur as

immaterial reflections of language and other social practices which makes it impossible to establish the effect of a particular stimulus, especially so when we consider how difficult the endeavor would be also when considering that all experience that a person has undergone has left a trace that affect the processing of present stimuli by what is called 'memory' (see chapter *Memory*). – Neither should we consider that a special problem would be posed by the fact that the reports that a person gives on his proper feelings are always inherently subjective. In neuropsychology, as in any science, we observe particular events, phenomena and behavior from various points of view, and the subjective reports merely form a part of all the evidence that may be considered.

Bennett and Hacker have detected a particularly telling statement of the subjectivity problem in Searle's *The Mysteries of Consciousness* (Bennett and Hacker 2003: 245). They tell that Searle refers to the *subjectivity problem* with the compelling argument that he would be at loss if he were asked to prove that *chairs* (the pieces of furniture that people sit on) are not conscious. Searle is told to admit: "If by some miracle all chairs suddenly became conscious, there is no argument that could disapprove it." Based on this we may suspect that poor Searle will experience similar doubts in regards to the possible scenario that the chairs would pick up their cell phones and dial for home delivery of pizza. Most probably Searle could not even think of any argument to prove that the chairs were not human, or as Bennett and Hacker put it: "if 'by a miracle' (which transgresses the bounds of sense) all chairs become conscious, as in fairy-tales, one would not need to prove it, one would see it – as the chairs woke from their slumbers, yawned, smiled and started talking to each other. But in fairy-tales, the chair has a face!"

## A Demystification of Consciousness

From the above discussion it becomes clear that the 20<sup>th</sup> century scientists and philosophers assigned very peculiar meanings to the concept 'consciousness' by which it was made to cover anything from the 'mental' to the 'soul.' Somewhere in the margins 'consciousness' retained its original and true meaning of awareness, albeit restricted to awareness of cognitive experience. This use of the concept, in its healthy sense, corresponds to what I want to call 'cognitive consciousness,' that is, being self-reflexively aware of cognitive feelings, or yet in other words: being aware of the reflections of mental processing of conceptual abstractions together with the awareness of being aware. But by their linguistic

twists the professors came to ignore all the other lower level feelings and organic sensations that an organism may from moment to moment *become aware of*. This neglect is connected with their failure to grasp the Lamarckian evolutionary continuum and to understand the natural unity and interdependency of all organic and neural processes and to understand how a higher level mental process corresponds to degrees of minute increase in complexity and sophistication of the basically same processes that occur on a lower level.

The correct insight into the nature of 'consciousness' is to be reached by considering all the phenomena of which we may become conscious of – that is, all we can become aware of – as phenomena on the evolutionary continuum. At one end of the continuum we depict the physical sensations (bodily reactions) that we may become aware of, such as touch, pain, cold, warmth, light, thirst, hunger; gradually as we proceed on the continuum we reach those kinds of consciousness that correspond to an awareness of cognitive feelings, concepts, thoughts etc., that is, all those processes that involve the processing of conceptual abstractions (or as some say, 'intellectual activities'). There is no point on the continuum where the corresponding processes and phenomena would be to that degree different in nature that they would merit the separate denomination of 'consciousness' as opposed to the other phenomena which we may identify on the continuum. In this connection, I refer to my discussion of 'memory' and want to draw the attention of the reader to how this continuum depicting the various degrees of consciousness exactly corresponds to the continuum depicting memory – both being merely aspects of each other or the same underlying processes and phenomena (see chapter *Memory*). Those two continua, in turn, correspond to the main Lamarckian continuum ranging from physical movements to mental processes of higher and higher degree of complexity. Correspondingly 'feeling' and 'consciousness' are always intertwined, consciousness always being an aspect of 'feeling.' 'Consciousness' is the awareness of 'feeling', while 'feeling' as such corresponds to the 'mental processing.'<sup>5</sup> It is when 'feelings' concern the higher order mental processes, processing that leads to the evoking and forming of concepts and the emergence of cognition, that we reach a different stage of complex awareness that allows us to consider, to a certain degree, our own feelings and even manipulate them – only this last stage is what our contemporary scientists admit to be covered by their sacred concept of 'consciousness'. I would rather refer to these kinds of processes by the

term 'cognitive consciousness' by which I mean the fleeting peak aspects of feelings that possibly may arise through the processes of cognitive recollection and ultimately be expressed (at least tentatively) by speech, and by other deliberate symbolic devices such as body languages, gestures, objects of art (including symbolic expressions in artifacts, etc).

'Knowing a feeling' actually means a cognitive conscious interpretation of the feeling resulting in conceptualization of feelings, that is, the application of concepts from the social practices to 'feelings.' Thus 'consciousness of a feeling' does not mean that there would be any kind of a one-to-one surveyance of the 'feeling', for there cannot be any; 'feeling' is a biological process that can only be tentatively interpreted, no more. The interpretation may lead into formulations of conscious thoughts using the concepts of language (from social practices) and eventually an expression in speech or writing of the interpretation of the feeling. We should also bear in mind that 'feelings' change all the time, for feelings represent the joint reaction of all the processes and the input that through the processes of homeostasis build up to feelings. These processes are in a constant flux and therefore there is at no point a 'one feeling'; what we think of as such a 'one feeling' merely represents the peak of the process at any given time. Therefore even what reaches consciousness (i.e. what we become conscious of) is there only for a fleeting moment. However, even the fleeting conscious moment is important for readjusting and managing the processes of cognitive feelings and the whole homeostasis.

We should now recognize how 'consciousness' is a feature of mental processing that represents the most developed stage of mental evolution and the extreme end on the Lamarckian continuum of organic processing displaying the most complex and sophisticated mental processes. In this extreme end the momentary flashes in the *web of consciousness* enhance the organic capability of interpreting the position of the organism in relation to its environment and to express the reactions by consideration to the highest amount of variable stimuli possible. The minute progression of values, or the minute degrees, on the continuum correspond to an enhanced ability to conceptualize, that is, to (mentally) form concepts corresponding to experience of abstract cognition and to invoke earlier conceptualized experience (concepts) in the mental processes. When the feelings which are under progress concern conceptual abstractions, then we may speak about *cognitive feelings*. And a consciousness of such feelings we may call cognitive consciousness.

Cognitive consciousness enables thinking, the reflections of what may become expressed in speech. ‘Consciousness’ is the tip of the iceberg of mental feelings.

By accounting for consciousness in this way we recognize that there is no specific mystery of ‘consciousness’ in comparison with any other mental processes. We therefore realize that the research task now becomes strictly biological: that of trying to identify the complex reentrant mental processing circuits and the biochemistry involved in them, while keeping in mind that these processes are about processing environmental stimuli (reference is made to the ideas of new dualism presented in the chapter *Mental Processing*). The reader should also remember that the fundamental complex, unified, and interdependent processes behind cognition and all cognitive behavior are ‘feelings,’ which on a cognitive level mostly run unconsciously but from time to time result in conscious considerations. Keeping the continuum in mind we may call some of the feelings ‘cognitive feelings’, and at some point – when affected by conscious manipulation by applying words (concepts) to the mental processes of feeling we may postulate that ‘thinking’ occurs. Conscious thinking means that we are self-reflexively aware of contemplating our feelings in relation to our learned language practices.

The evolutionary value of cognitive consciousness lies in that the organism observes itself similarly as one observes others and in this way the environment is made to include the organism itself, and thus more fully integrating the homeostasis of the separate organism to include the whole environment.

## Web of Consciousness

The awareness, i.e. consciousness, of the various sensations continuously varies in intensity; from moment to moment the awareness is stronger or lighter, but most of the time the sensations that are continuously processed all over the body are not brought up to awareness at all, or more correctly, do not trigger conscious awareness. Similarly on the higher cognitive level of consciousness our thoughts are momentary fragments of ongoing mental processing of feelings. At all moments all kinds of conscious phenomena, cognitive as well as non-cognitive, are mixed with “each other”; consciousness shifts by non-perceptible nuances from one process to another. I prefer to refer to these pheno-

mena with Lewes's metaphor *the web of consciousness*, which most properly reflects these ideas.

The reader is perhaps more familiar with another metaphor in regards to consciousness, the *stream of consciousness* known to most through the work of William James. But few know that James took the metaphor from Lewes who had introduced it a decade or so earlier in his *The Principles of Psychology* of 1879 (1879b). Lewes had, however, in the same book expressed the idea with the even more striking metaphor of *the web of consciousness*. This image corresponds more exactly with my view of consciousness as momentary flashes of awareness of varying degrees of sensations and feelings, of varying levels of cognitive complexity, sophistication and intensity. Lewes said: "the true comparison for sensorial reaction is that of a *web*. The attitude of the Sensorium is a fluctuating attitude which successively traverses and re-traverses all the positions of the sensorial field, and which thus successively brings now one and now the other point into the daylight, leaving the others momentarily obscured though still impressing the sentient organism;..." (1879b: 175).

## Unconsciousness

*"Deep down in the recesses of the organism there are thus influences at work, which only emerge into consciousness at intervals, but which are always modulating the mental state. Besides the intellectual and sensible motors which we can detect without difficulty, there are organic motors which are rarely appreciable"* (Lewes 1879b: 112).

Mired in their admiration of the concept 'consciousness' it did not occur to the 20<sup>th</sup> century neurophilosophers that there must be another side to the coin, that is, if there is 'consciousness' then there must also be 'unconsciousness.' Tellingly the latter term does not even form part of their vocabulary. This illustrates once more the perverted role assigned to 'consciousness', not as a juxtaposition to 'unconsciousness' but as a synonym to the hypothetical 'mind.' This does not amount to any small oversight, rather it played a hugely detrimental role in perverting the scientific understanding of mental processes and the role of 'consciousness' in them. When 'consciousness' was not juxtaposed with 'unconsciousness' – as it should have been – it became an independent stand-alone mystical entity. Or perhaps it was the other way around, that is, due to the fact that 'consciousness' was regarded as that mystical entity

ultimately modeled on the soul, the scientists could not possibly accommodate it with anything as vulgar as unconscious mental processes. Thus the 20<sup>th</sup> century neurophilosophers did not conceive of conscious processes as emerging from the unconscious ones (naturally not even fully understanding that the question was precisely of processes). They fatally failed to recognize 'consciousness' as merely representing the highest stage of mental processes, the phenomena on the tip of the Lamarckian continuum

While the image of a continuum helps us to reach an initial understanding of the relationship between unconscious and conscious processes we again have to turn to a more complex image to move to the next level of scientific understanding of these phenomena. The above introduced image of the web of consciousness should aid us in this. We could say that the web of consciousness brings ever competing sensations and feelings up to the level of consciousness, but only for fleeting moments and all the time distracted by the other processes that are constantly assailing the threshold of consciousness. Most mental processes go on unconsciously only to pop up as momentary sparks in consciousness. We should simply recognize that there are psychophysical processes that we are consciously aware of (to some degrees), and then there are all the other neural (including mental) processes that we are not consciously aware of. It seems to me that this is the only distinction – i.e. that between unconscious and conscious processes - we should posit and there is no need to postulate other degradations such as, for example, the "subconscious." Again I want to revert to Lewes for some lucid illustrations of this idea. Lewes expressed the relation between unconscious and conscious processes when he pointed out that "the conscious state is a *salient* state of Feeling, the unconscious is the *masked* or latent state" (1879b: 152). Similarly he explained that the "process may be unconscious, and suddenly, without any increase in its energy, but by a mere change in some concurrent processes which had *masked* it, acquire the distinctness of a conscious state" (1879b: 151). His insight into this subject is further illustrated by another passage where he says: "the affections thus produced are one and all unconscious states which at any moment may become conscious, and this not because the movements become more energetic or the sounds louder, nor because their sensorial processes are changed, but simply because of their changed relation to other processes: ..." (1879b: 151). Lewes had thus understood that the processes themselves did not fundamental-

ly differ from each other and that they rather should be seen as differing in intensity and conspicuousness. His true insight into the nature of consciousness was the recognition that not the force of the processes as such was decisive but rather the delicate relations between them.

The considerations which I have rendered above in regards to the nature of 'consciousness' and the 'unconsciousness,' should alert to the fact that we cannot validly postulate that mental processes are either conscious or unconscious. Consciousness is not a question of a switch between the positions 'on' and 'off,' rather we experience subtle degrees of consciousness of various processes at the same time. Lewes also dealt with this issue telling that the idea to rigidly mark off these domains was one more consequence of the "scientific method" to assign concepts to perceived reality. Correspondingly we tend to denominate as "unconscious" those changes "in the organism which are obscure and fugitive"; and "conscious" those that "are more salient and enduring" (1879b 152). Lewes stresses that this need not pose any problem in everyday language, but that it is decisive to recognize it in science.

Further we should note that not only are the unconscious processes those that form the material for the conscious processes, but the unconscious processes affect behavior and cognition in the present and in later moments. This is confirmed by LeDoux, who has more clearly than most of the contemporary neuroscientists understood the role of unconscious mental processes. LeDoux tells that "stimulus processing that does not reach awareness in the form of conscious content can nevertheless be stored implicitly or unconsciously and have important influence on thought and behavior at some later time." LeDoux also confirms that "information can be simultaneously processed separately by systems that do not give rise to conscious content, leading to the conscious representation in some and unconscious representation in other systems" (1998: 33). Similarly Damasio tells that a considerable number of mental "images formed on any topic go unnoticed or barely noticed at one time or another" (1999: 129).

## **The Mastery of Learned Unconsciousness**

What was said above about the transient and variegated relation between unconscious and conscious processes bears also on another important consideration which I will for the sake of presentation refer to as 'the learned unconsciousness.' This idea will again show how intricate the relationship is between the phenomena we should assign under one

and the other of these concepts. Most often we understand by unconscious processes something that has not yet become conscious, or which never will. But we should note that with equal emphasis processes that have initially been experienced and learned as conscious activities are, as it were, relegated to the sphere of the unconscious (or should I say *lifted* to the unconscious?). Many of the behavioral patterns which we operate unconsciously should be seen as representing such experience that has become automated through initial conscious reflection. When we master a behavioral pattern, such as walking or consuming food, then we subsequently incorporate that in our life experience so that future execution becomes automatic, or more correctly, semi-automatic. I wanted to characterize the process as semi-automatic instead of just automatic in view of considering that those of these behavioral reactions that occur mostly unconsciously anyway are managed by fleeting moments of conscious detection of clues that unleash the a whole array of unconscious reactions. This all occurs in processes of constant feedback from conscious awareness to unconscious processes. Thus the unconscious processes are unconscious only to a certain degree. Typing should serve as a good example of such a semi-automated activity; even if one is not especially trained in touch typing and only use the two-finger search and peck method, one notes how part of the typing process occurs unconsciously and part consciously; sometimes the conscious part serves to correct the process, but at times conscious attention only disturbs the act.

These considerations hold true for every aspect of human behavior and obviously they are hugely important for forming a proper understanding of the ability to speak. Each word or language pattern that we have learned to master becomes part of our arsenal of automated behavioral patterns. These considerations concerns the lexicon but, of course, also the way we tie together various lexical items, that is, form grammatical patterns. But further this also applies to the way we structure and conduct our verbal behavior in general. The more experienced, skilled, knowledgeable a person is in a given subject the more confidently he will express his ideas in speech and writing. For this person a great deal of the considerations on which others would have to dispense scarce conscious resources have already formed part of his unconscious repertoire, and therefore he can direct the conscious energy on the finer points that define the behavioral act. This is, in fact, how some individuals become what we call virtuoso in any field of art, such as a highly

skilled musical performer or sportsman, or in any other endeavor, such as a politician or a comedian in their respective fields. Such a virtuoso is constantly capable of integrating behavioral patterns that he has consciously experienced and learned into the unconscious repertoire at a greater speed than his peers, and thus he is free to concentrate all his consciousness on excelling in finer and finer aspects of his task (compare James: 1957: 472, 496)

## Conceptualization

At some point on the Lamarckian continuum of mental processes there occur phenomena which I call cognitive feelings of which we in turn may become cognitively conscious. This is the stage where humanity comes to play, that is, the hypothetical borderline between animal mental processes and the processes that puts the human apart. This because this is the stage where the abilities to conceptualize experience in form of conceptual abstractions emerges ('conceptualization'). The ability to conceptualize is what has ultimately enabled human speech. But hereby I am not claiming that conceptualization represents a unique human ability, rather I think that to some extent conceptualization of abstractions occurs in animals deep down the evolutionary ladder. I think that the development of the ability to conceptualize must be connected with vision and thus at least all animals that can form adequate visual images can also conceptualize experience to some extent.

With these issues pertaining to what I call *conceptualization* we are at the crucial junction in understanding cognition and all cognitive activities and behavior. According to the organic process model that I presented in this book all organic activity can be seen as functions of interpretation and expression on an evolutionary continuum ranging from simple physical movements to cognitive processes. Following the organic process model, I have stressed in several parts of this book that all functions of organic life is always about processes where an organism posits itself in relation to its environment. This corresponds to the organism interpreting the environment in relation to itself. The genetic endowment for mental processes in humans has evolved so that the human has gained the ability to encode cognitive experience of abstract phenomena in form of mental processing of abstractions (conceptualize experience). In any given situation the human forms new abstractions, which are related to formerly conceptualized experience in a process which forms new conceptualized experience. The new conceptualized

experience is then assigned its place in the general system of life experience (a “place” in form of the neural patterns forming our human life experience). For this to happen a state of cognitive consciousness seems to be a necessary condition. I presume that concepts are stamped in consciousness, meaning that it is precisely in the moments when the animal is consciously aware of its feelings that concepts are formed. LeDoux expresses a like idea when he accounts for the evolutionary utility of consciousness saying it provided the organism “with a convenient way of organizing things – for distinguishing behaviors that we call emotional (for example, those involved with fighting, feeding, sex and social bonding) from those that reflect cognitive functions (like reasoning, abstract thinking, problem solving, and concept formation)” (1998: 126).

Under this paradigm speech represents the highest evolutionary stage of interpretations and expression, the ability to systematically orally express concepts, conceptualized experience. (Already at least Locke, 1694, and Condillac, 2001, had identified this relation between conceptualization and speech – an idea that Herder wanted to expropriate from Condillac, in Rousseau and Herder 1966). For a discussion on how the phenomena of conceptualization affects our speech and language practices I refer to the discussion of *language of things* in chapter *Processes and Concepts*.

In this connection reference is also made to what was said about somatic processes and somatic markers in the chapter *Mental Processing*. This inasmuch that when an organism conceptualizes experience then each experience is being related to how the environmental stimuli fit the well-being of the body through the effect on the relevant bodily parts. This may be compared with Edelman saying: “by concept...we mean the ability to combine different perceptual categorizations related to a scene or an object and to construct a ‘universal’ reflecting the abstraction of some feature across a variety of such percepts” (2001: 104). Similarly LeDoux tells: “Convergence zones also allow mental representations to go beyond perceptions and to become conceptions – they make possible abstract representations that are independent of the concrete stimulus” (2003: 105).

The mental ability to form concepts must have evolved on top of all other organic systems as, so to say, a management tool that enables the mental processes to orient towards the relevant experience by clues that these concepts serve us with. The concepts thus serve like beacons that

draw the processes towards relevant previous experience, and once highlighted unleash the encoded reaction patterns in conjunction with the reaction patterns that process the new experience so as to make best use of previous experience in a new situation. This conceptualization occurs in the brain processes referred to as 'short-term' or 'working memory.' In those brain systems various cognitive perceptions are simultaneously processed and lead to conceptualization of new experience in the background of old by, as it were, creating 'concepts' by comparing new experience to past experience, and then assigning the new experience a proper relation in regards to past experience. This is similar to the idea which Damasio expresses like this: "The association between a certain mental image and the surrogate of a body state would have been acquired by repeatedly associating the image of given entities or situations with the images of freshly enacted body states" (2000: 156). I would consider that it is this very 'assigning of the relative place' what corresponds to conceptualization. I assume that each abstract conception corresponds to a neural reaction pattern where the synaptic strengths in the involved neural circuits correspond to the "encoding" of the conception. But this does not imply that a static map would have been created, rather the maps must be in constant flux continuously monitoring the flux of life of the organism in its environment, that is, each new moment of life through the new experience affects all the previous neural patterns. – These considerations are also important in regards to linguistics. The concepts that correspond to words must also develop in the above described fashion. Words are always related to a given life experience embedded in previous life experience. Words are processed neurally like all other stimuli, so that the linguistic abstractions that have been experienced (in speech and text) are neurally interpreted like all other cognitive stimuli; they are in working memory assigned a place in relation to the overall life experience by way of relating the present verbal stimuli to the present spatial position of the organism in accordance with how past experience has been neurally encoded in reaction patterns. This is why each word is always understood uniquely by each person in general, and by each person in every new moment of life. Thus neural processing of the stimuli that originate in words is always a private, unique and everchanging phenomenon. This naturally means that a word does not, and cannot, carry an objective meaning, as the meaning is created (interpreted) in the body by each unique act of mental processing.

The difference between processing concepts and other neural processes is most likely to be found in that abstractions involve so many diverse 'neural maps' of the whole organism in relation to an abstractly conceptualized environment corresponding to a given situation that no motor actions could possibly correspond to them. It is not to be excluded, that this is the very reason that has lead to conceptual expressions, and eventually to speech, as an outlet for the corresponding feelings and the urge to express in words that what could not be expressed by motor acts. These considerations also bear in general on my conception of 'memory' (compare with my conception of 'cognitive memory'). I remind that I consider that 'memory' properly speaking is about having the (seeming) feeling of cognitive consciousness about past experiences in a way that can be rendered by abstract expressions (for example in speech by language). In order for this to happen one has to be able to conceptualize experience, this will enable the organism to relate new experience to past experience and so to say reawaken those neural reaction patterns that correlate the new experience with the past experiences. Kandel has correctly drawn attention to this when he discusses 'spatial memory' and his insight that "spatial memory requires conscious attention" (2006: 295). However, in the chapter *Kandel's Search for the Neural Correlates of the concept 'Memory,'* I am compelled to criticize Kandel's conception of 'explicit memory' which he in regards to the rat experiments he refers to as related to 'spatial memory.' Kandel had said that "memory deficit in impaired mice occurs just in explicit memory" (2006: 328). This was, of course, a mistake when we remember that Kandel defines 'explicit memory' as "what can be expressed in words" (2006: 437), for to express something in words is not an ability that mice are known to possess. But, nevertheless, Kandel was here on right track. This we will understand if we remember that 'what can be expressed in words' first needs to be conceptualized. So therefore, in reality, his rat experiments illustrated the movement on the Lamarckian continuum towards evolutionary more complex processes, process where conceptualization comes to play. Kandel seems to be telling that by 'explicit memory' he in this connection means 'spatial memory' (2006: 329). And it seems to me that the processes and phenomena connected with 'spatial memory' are precisely those issues where the sources of conceptualization are to be found.

Further, it was in connection with contemplating on Kandel's presentation of the case of H.M. (reference is made to chapter Kandel's

*Search for the Neural Correlates of the Concept 'Memory'*) that I started to suspect that 'conceptualization' represented the decisive phenomena to understand in order to grasp the phenomena of human memory. I started to assume that when Kandel told that 'H.M. had lost his memory,' it meant in reality that he had lost the ability to conceptualize new experience. I figured that what had to be understood was the difference between his ability to form what Kandel calls 'implicit memory' versus the inability to 'form explicit memories' (or what I call 'cognitive memory'). I therefore suspected that the surgery that had caused the problem in H.M. had, in fact, resulted in an interruption in the complex activity of mental processes, as opposed to the ever-occurring processes of potentiation (of which Kandel speaks). It is as if H.M. was not able to assign the new experience a proper place in the system of his overall life experience, that is, his brain processes did not anymore enable the transfer of the processing result (the joint outcome of it) to the next relay station of brain processes. This led me to hypothesize that the processes termed 'working memory,' in fact, serve this role of conceptualizing experience in form of mental processing of abstractions, forming of new abstractions, comparing new conceptualized experience with previously conceptualized experience, and to assign the new conceptualized experience its place in the general system of life experience ("place" in the meaning the configuration of the neural patterns forming our human life experience in the relation to all other configurations). For this to happen a state of cognitive consciousness seems to be a necessary condition. H.M. in fact, had retained the ability of being in a state of cognitive consciousness, that is, the 'working memory' processes were running, but the processes results could not be formed, perhaps because some of the access pathways to 'long-term memory' (that is to the processes which encode the experience beyond 'working memory') processes were cut.

To put the above discussion in proper context I remind that I consider that 'memory' properly speaking is about having the (seeming) feeling of cognitive consciousness about past experiences in a way that can be rendered by abstract expressions (for example in speech by language). In order for this to happen one has to be able to conceptualize experience, this will enable to relate new experience to past experience and so to say reawaken those neural reaction patterns that correlate the new experience with the past experiences. Kandel has correctly drawn attention to this when he discusses 'spatial memory' and his insight that "spatial memory requires conscious attention" (2006: 295).

## Notes on Thought and Reason

*“I feel, therefore I am.”*

In my conception ‘feelings’ represent the underlying processes for all cognitive and intellectual activities, while ‘thinking’ merely represents a perceived aspect of feelings. I maintain that fundamentally ‘thinking’ (‘thoughts’) can only be seen to correspond to feelings that have been processed further to the level of conceptualization and of which we have become partly conscious of, but so only on the surface.

We should recognize that thinking only represents the conscious part of all the cognitive feelings that affect us at any given time. When thinking we are conscious only of the feelings that have caught our attention, of which we are aware. And even so, only on a superficial level, for we can be vaguely conscious of a feeling even before we have been able to fully consciously conceptualize it. Thus for me thinking signifies such cognitive mental processes where concepts are applied (consciously and unconsciously) to cognitive feelings. To understand this we have to recognize how fleeting the borderline between the conscious and unconscious processes is: the unconscious and conscious processes are constantly blurred within each other. All kinds of consciousness, cognitive as well as non-cognitive, are continuously mixed with other processes of feeling - consciousness shifts by non-perceptible nuances from process to process leading to barely perceptible sparks in the web of consciousness. Perhaps we should also allow that a first stage of thinking involves the emergence of mental images; these mental images may in themselves already involve conceptual abstractions, but on a higher stage of thinking neural processes that correspond to verbal concepts merge with the images and the other conceptual abstractions. Following this logic, I would then suggest that thinking, as all organic activity, also consists of various process stages. (In this connection I refer to my discussion of verbalizers and visualizers in reference to Bartlett in chapter *Mental Processing*). – The connection between thinking and feeling, or thinking representing a development of feeling, was already understood by Lewes who criticized his contemporary psychologists for, at least implicitly denying thinking to be related to feeling (1879b: 84).<sup>6</sup> Before Lewes, Lamarck had recognized the unity of feeling and thinking maintaining that “to think is to feel morally”

(“In the case of all creatures endowed with intelligence, we must therefore say: to think is to feel morally, or to have consciousness of one's ideas and thoughts, and also of one's existence,” Lamarck 1809 in Huth's 2006: 373).

When considering these issues of mental processing, we should not speak about ‘thoughts’ but rather of ‘thinking’, which distinction helps to keep in mind the process character of what is going on. This process means that we activate (inclusively of all else) the ‘memory’ of processing of all past stimuli, including past stimuli in form of language practices. Thus, thinking, is applying the concepts and other observations of language practices (and other social practices) to the biological process of feeling. The following quote from Damasio – and a partial criticism of it - serves to illustrate what I here have in mind: “It is often said that thought is made of much more than images, that it is made also of words and arbitrary symbols. But what that statement misses is the fact that both words and arbitrary symbols are based on topographically organized representation and can become images. Most of the words we use in our inner speech, before speaking or writing a sentence, exist as auditory or visual images in our consciousness” (2000: 106). This is an insightful statement, especially if we first acknowledge that ‘thoughts’ are reflections of processes of feeling, and that the images represent a primary product of cognitive feelings on which words are applied. We could also say that ‘images’ express ‘feelings’ and by the engagement of words (the corresponding verbal neural processing patterns) ‘thoughts’ are produced from images (but again, I am not suggesting a rigid delimitation between images, verbal concepts and thoughts). We also need to note that it is, of course, not correct to postulate that ‘words’ and ‘images’ would *exist* in the body, for they do not *exist* anywhere. Instead the neural system can be said to contain dispositions (based on the genetic inheritance and past experience) that give rise to certain neural reaction patterns which a present processing of feelings unleash. It is doubly wrong to speak about words *existing in consciousness*. ‘Consciousness’ is not a location of any kind, where anything can be said to exist. ‘Consciousness’ can at best be considered as the awareness of a perception of an existence of something, and this is fundamentally different from the existence itself.

As famous as Descartes is for his “I think, therefore I am,” few know that he, in fact, meant “I feel, therefore I am,” for Descartes had defined ‘thinking’ as being the same as ‘feeling.’ This is what Descartes, in fact, had said: “Finally, I am the same who feels, that is to say, who perce-

ives certain things, as by the organs of sense, since in truth I see light, I hear noise, I feel heat. But it will be said that these phenomena are false and that I am dreaming. Let it be so; still it is at least quite certain that it seems to me that I see light, that I hear noise, and that I feel heat. That cannot be false; properly speaking it is what is in me called feeling, and used in this precise sense that is no other thing than thinking” (1997: 143); and similarly: “By the word thought I understand all that of which we are conscious as operating in us. And that is why not alone understanding, willing, imagining, but also feeling are here the same thing as thought” (1997: 279); and: “What thought is... By the word thought I understand all that of which we are conscious as operating in us. And that is why not alone understanding, willing, imagining, but also feeling are here the same thing as thought” (1997: 279).<sup>7</sup> Descartes conception, when properly understood without the historic burden, therefore corresponds very much to the one I am advocating. The decisive issue which prevented Descartes from formulating these ideas fully correctly was that he had not formed any conception of social practices, that is, he was unable to recognize the role of the immaterial social practices (language) as affecting thinking and feeling, and it was to fill this gap that he posited the ‘soul’ (see corresponding discussion in chapter *Mental Processing*).

Bennett and Hacker criticize Descartes for this idea of conceiving of ‘thinking’ in terms of a general awareness (consciousness); using a somewhat different translation than that from which I quoted above, they write: “Descartes understood thought as including everything which we are aware of as happening within us, in so far as we have awareness of it. Hence *thinking* is to be identified here not merely with understanding, willing, imagining, but also with sensory awareness” (2003: 26). The authors don’t like the idea and conclude that: “The identification of the mental with consciousness remains with us to this day, and casts a long shadow over neuroscientific reflection.” But here the error is with Bennett and Hacker: they have misunderstood Descartes precisely because they are misled by the modern use of the concept ‘consciousness.’ Descartes did not use ‘consciousness’ in its modern day perverted metaphysical meaning, rather he used it in the same way that I propose it to be used: simply to signify *awareness*. Here Descartes is, in fact, merely advocating the idea of unity of feeling, and stressing that thinking represents aspects of cognitive processes that he joins in one. This again is very similar to my conception presented on

these pages. Thus, contrary to the opinion of Bennett and Hacker, Descartes threw light on the correct path for neuroscientists to follow. Other authors are to be blamed for misunderstanding him and perverting consciousness. Janice Thomas in her article '*Does Descartes Deny Consciousness to Animals?*' (2006) gives a very insightful account of how and in which contexts Descartes, in fact, used the concept 'consciousness'. It follows, that he cannot be said to have used the concept 'consciousness' at all in the sense that 20<sup>th</sup> century philosophers use it, instead Thomas's account clearly supports my view on of how he used it. I note from Thomas's article that the misconceived ideas of 'consciousness' anyway are ultimately connected with how philosophers try to explain the processes of 'thinking,' that is, notwithstanding all the lofty discussion of 'consciousness' the philosophers at the end of the analysis have in mind the question of what 'thinking' is, and to which extent it is an exclusive domain of humans. The question boils down to whether Descartes denied or not that animals can think. I will not here venture into the scholarly research of what Descartes actually said or not, and instead I want to propose my solution to the dilemma of whether we should consider that animals can think or not. In this chapter I maintain that 'thinking' is to be considered as a cognitively conscious activity were we apply 'words' and other ideas from social practices to cognitive feelings, of which mental images represent the most developed part. 'Thinking' is then, by this definition, an activity were mental images are, so to say, manipulated by words. Thus 'thinking' is a synthesis of both mental images and words. In this connection we should remember what I told in chapter *Mental Processing* about Bartlett's ideas to consider that some humans are more visualizers (i.e. they think more images) and that some are more verbalizers (i.e. they think more in words), but whatever the case, all humans anyway always think both in images and in terms of words. But, other animals, naturally, think only in images, for they do not have the ability to speak and to develop language and other social practices. Now, it is a matter of taste how we want to call the animal mental processes of thinking in images versus the human mental processes of thinking both in images and words. Perhaps for sake of philosophical clarity we would refer by the term 'thinking' to the human mental processes and refer to the animal mental processes by another concept, for example, 'animal cognition'. This is a case of point in illustrating how difficult it is to make rigid conceptual delimitations, for clearly there is a continuum of processes between 'animal cognition' and 'human thinking'; the main feature of the conti-

num is the gradual development of symbolic cognition or conceptualization.

‘Thought’ as it is here defined represents an expression, an internal expression (here I refer to these ideas in the singular, although I think that the plural would connote the reality more properly). A ‘thought’ is an expression of some of the reflections of mental processes to the extent we become consciously aware of them. By reference to how I define mental processes and ‘consciousness,’ I stress that thoughts are merely fleeting reflections of the mental processes, ‘thoughts’ as such do not correspond to anything material, thoughts represent reflections of the combination of a potential infinite variance of mental processes. I therefore concur with Descartes in defining thoughts through the idea of immateriality (see e.g. 1997: 341ff). But, I have to stress that the process of thinking is, of course, material. It seems to me that philosophers have traditionally not been able to make this distinction between the materiality of the processes versus the immateriality of the results. This confusion is also evident even from how Wittgenstein discusses the issue as evidenced by the passage quoted in note.<sup>8</sup> - We shall note that not the process is immaterial, but the reflections we make of them.

The processes of thinking may conditionally be said to exist, but the results of the processes, the thoughts, cannot be said to exist (or having existed), as they only represent reflections of the processes (see discussion in chapter *Mental Processing* in regards to the immateriality of thoughts, and chapter *Processes and Concepts* for a discussion about the “existence of processes”). The ideas which we retain at the end of the process of thinking are not in any way definite, they are not the thinking themselves, but the perceptual interpretations we are left with. It is this interpretation that comes out as an expression of the thoughts on the surface of feelings. But it is not - and cannot be the thought itself - because there was no one thought at any instance of the process: it is the interpretation of that cognitive process of feeling, which we may call thinking. ‘Thoughts’ may also be seen as immaterial reflections of biological processing of stimuli from social practices (including language), which through the phenomena of remembering are continuously reenacted in the body and thus brought up to mental processing in thinking. According to this idea the organism reinterprets past experience anew and anew in infinite variances. The fact that the social practices are reenacted in the body gives them a surrogate existence.

Eventually ‘thoughts’ may lead to expressions in speech. This is done by applying the learned concepts from the social practices of language to thoughts (I note that I have earlier said that ‘thoughts’ themselves are produced by merging verbal concepts with cognitive feelings – in the present case words are applied, so to say, a second time to express the thoughts thus produced). But speech expressions do not represent a unique outlet for thoughts: speech expressions are always embedded in a complex system of bodily expressions, which I refer to as verbal behavior (see chapter *Speech and Language*). Simultaneously with speech other bodily expressions corresponding to the underlying feelings occur. Speech expressions are made in imitation of words and linguistic patterns experienced in language practices; they are chosen (to the extent they are *consciously chosen*) so as to render the interpretation of the feelings being processed. I have discussed these ideas in many sections of this book and will therefore not repeat them here. In this context it is, however, important to keep in mind that the expressions of speech do not correspond to anything material either, they merely correspond to creatively imitated symbolic expressions of social practices. Naturally there is always a material carrier of the expressions, at least sound waves and heat and humidity when a word is uttered (or ink on a paper, or digital signs on a screen), but this material carrier of the expression is not yet the expression. The expression is the attempted (including: involuntarily attempted) tentative meaning in the context, and this does not have an existence at any point. (I refer the reader back to the chapter *Speech and Language* for a more detailed discussion of these considerations).

When we understand ‘thinking’ and ‘thoughts’ through this kind of paradigm, then we should also understand that thoughts always correspond to interpretations, not to facts, nor to knowledge.

The distinction between ‘feeling’ and ‘thinking’ is already difficult to make as it has been shown, the more so the distinction between ‘thinking’ and the other words for cognitive processes such as ‘logic,’ ‘reason,’ ‘rationalization,’ ‘decision making,’ ‘imagination’ etc. In fact, I claim that these distinctions cannot be made by the means of natural sciences, and that we should rather conceive of them as various perceptions that we form on the aspects of cognitive activities and behavior, all which should biologically be defined in terms of ‘feelings,’ ‘cognitive feelings,’ and ‘thinking.’ The various concepts can possibly not correspond to any specific biological processes. Thus the analysis of these concepts is not a scientific but an aesthetic endeavor, for example,

in the way Johnson-Laird does it in his *The Computer and the Mind* (Johnson-Laird 1998) and *How We Reason* (Johnson-Laird 2006).

Guided by the wronged idea of ‘consciousness’ most philosophers consider that people remain fully in control of their thinking and operate it as a “faculty of reason.” The employment of this metaphysical faculty would then supposedly yield objective and infallible knowledge of the world and the cosmos. But in my conception we would do better to reserve the word ‘to reason’ merely to denote a concentrated and conscious effort to contemplate on a given subject while trying to make use of all our life experience, for, as Locke said, “all reasoning is search, and casting about, and requires pains and application” (1694 Vol. I: 19). We could also see ‘reason’ as representing the end point of processes of feeling and thinking. ‘Reasoning’ should then be considered as the conscious judgment of the processes of feeling and thinking which in themselves remain largely unconscious. ‘Reasoning’ is thus the conscious finishing of the process, a kind of judgment which closes the loop and ends the processes. But this process is even better captured by the concept ‘rationalization.’ Thus we could conceive of ‘reason’ representing our aesthetic judgments of personal subjective motives and those of others, and of ‘rationalization’ representing the biological activity of closing the loop, of ending a process of thinking. At some point each more or less healthy person ends the process by assigning a concept, or a set of concepts, to thinking and satisfies himself (consciously or unconsciously) that he has completed the process. (Hereby it seems that persons with psychological pathologies experience problems with the closing of these “thinking loops.”). Because thinking, as all organic processes fundamentally corresponds to interpretation then there is, of course, not any specific point where the processes necessarily would have to stop. An interpretation can in principle go on infinitely – one interpretation can always replace another (Wittgenstein). Thus it is, as if, the human organism had been formed with an evolutionary defect that conduces healthy persons more or less arbitrarily to close the interpretative loop at the point when a feeling of satisfaction is reached. Sometimes we even close the loop while remaining consciously dissatisfied with the interpretations we have reached. Thus we could conceive of this ‘rationalization’ - the biological propensity to close the interpretive circuits - as a sort of a genetically encoded biological debility which paradoxically yields survival value.

It is as if the process of rationalization would end in a rearrangement of concepts that form, as it were, the executive reports of the mental processes. This while we all the same remain unconscious about most of the neural processes that have accumulated to yield the report. The reasons we chose are based on feelings which we vaguely interpret, not knowing really what makes us choose the explanations or decisions which we take to be manifestation of rationality. It is as Pascal said: *The heart has its reasons which reason does not know*; or like Lewes: *Cognition has here its impulse in desire, and judgment is the satisfaction of the impulse* (Lewes 1879b: 101). In this sense 'reasoning' and 'rationalization' amounts to explaining one's actions to oneself.

## Emotions

For a proper understanding of feelings, it is helpful to determine the relation between 'feelings' and 'emotions.' This entails a review of so-called 'emotion theory.' According to the received paradigm of emotion theory the conceptual scientists consider that human beings have a genetically inherited repertoire of so-called 'emotions.' These emotions are – no surprise – referred to as if they were species of sorts, being treated as thingly entities with their proper being, fixed in number, and each occurring in a repeatable fashion as performances that once triggered unroll in the same genetically determined fashion. - James had already identified this problem saying: "The trouble with the emotions in psychology is that they are regarded too much as absolutely individual things. So long as they are set down as so many eternal and sacred psychic entities, like the old immutable species in natural history" (1957 Vol. II: 449).

In their attempts to identify the "separate emotions" and the nature of "each one of them" the scholars proceed simply by picking from the vocabulary of everyday language those words which they consider to represent the most primordial reaction patterns of emotive behavior, and declare the chosen words as the 'emotions.' Thus that is basically an aesthetic endeavor, but the conceptual scholars firmly believe that these linguistic concepts must somehow correspond to real biological processes, and therefore they study the concepts instead of the real underlying biological processes. Emotion theory provides ample data on the conceptual fallacy according to which scientists postulate the existence of separate entities by classifying complex phenomena according to one or another conspicuous aspect which they single out among all

the other potentially infinite variances of aspects (Compare with Lewes saying: “we classify phenomena by their leading characters...” in 1879b: 312). This is how they have arrived to singling out such emotions as: ‘acceptance,’ ‘anger,’ ‘anticipation,’ ‘disgust,’ ‘joy,’ ‘fear,’ ‘sadness,’ ‘surprise’ (Plutchik).

I have already expressed my idea to think of the combined effect of all mental processes as ‘feeling’ (‘feelings’). This was motivated by my conception that all cognitive activity (behavior) is ultimately anchored in the system of correlating environmental conditions (stimuli) to how they affect the body (parts of it) and consequently the whole homeostasis, from which feelings of higher and higher cognitive value (complexity) are developed all the way up to conscious cognition. ‘Feelings’ thus represent the joint reactions of all the bodily processes, neural and somatic, their cumulative result at any given moment. From this follows my conception that ‘feelings’ correspond to the primary phenomena, whereas ‘emotion’ should be considered merely as socially influenced perceptions we form of complex behavior, which behavior in turn represents manifestations of the underlying feelings which are in a constant flux. Thus, feelings correspond to the overall effect of neural processes and emotive behavior represents reflection of those processes (emotions are behaviors rooted in feelings). Thus we cannot validly juxtapose feelings with emotions. Any kind of behavior, from intensive behavior called emotions to “ordinary” behavior, represents expressions of feelings; in humans these expressions are reaction patterns unleashed in infinite variances. It is the mental processing called feeling that give rise to the reaction patterns, sometimes unfolding in a stereotyped form giving rise to the perception that an emotion is being played out. - The complexity of the real phenomena that emotion theory refers to is well illustrated by this passage from William James work: “Were we to go through the list of emotions which have been named by men, and study their organic manifestations, we should but ring the changes of the elements which these three typical cases involve. Rigidity of this muscle, relaxation of that, constriction of arteries here, dilatation there, breathing of this sort or that, pulse to slowing or quickening, this gland secreting and that one dry, etc. We should, moreover, find that our descriptions had no absolute truth... The internal shadings of emotional feeling, moreover, merge endlessly into each other” (1957 Vol. II: 447ff).

It is hereby important to note that in human beings this behavior is the result of a multitude of feelings that are the result of mental

processes that occur both unconsciously and consciously. At any given moment some of the underlying mental processes affect the behavior more than others; thus, 'emotions' do not correspond to any one given behavioral pattern, but to the feelings that are in a constant flux (in behavior that we identify as emotive behavior these fluctuations are especially marked). Certain salient behavioral reaction patterns that the feelings unleash lead people to postulate that a certain kind of emotion is being played out. But the underlying feelings constantly unleash various reaction patterns (expressions) of which the salient features form just a visible peak. There must be a constant feedback loop between the underlying feelings and the reaction patterns, and therefore, in turn, the feelings constantly change, and constantly give rise to new reactions. But the lower the level of mental evolution of an animal, the less developed are the feedback loops, and the more stereotyped and genetically determined are the reaction patterns. It is in consideration of these ideas that we identify the fundamental error of the emotion theorists, for they predicate that what is the case with lower animals must be the same for humans. They thus fail to understand that the plasticity of human cognitive mental processes is precisely what sets humans apart from the evolutionary lower level animals. The processes of human cognitive feelings and especially of cognitive consciousness is what allows humans to continuously redirect (consciously and unconsciously) the reaction patterns in infinite variances; therefore there is never a one genetically determined reaction pattern but many competing reaction patterns (both genetically determined and socially influenced). Hereby I am disposed to think that there, indeed, are genetically determined reaction patterns that correspond to certain feelings, but the complexity of the human mental processing and the plasticity of the reaction management yields each show of emotion for each person in any situation to be a unique act of behavior – albeit displaying salient features typical to the species and typical to the individual. Any one reaction pattern is always embedded in, and affected by, other reaction patterns.

These considerations are connected with my proposal to see all biological, and consequently all social, as manifestations of the paradigm of expressions and interpretations. According to this idea expressions are always inevitable – we express our feelings (thoughts) in one way or another, conspicuously or not. Only on a higher level of cognitive consciousness there enters an element of choice as how to conduct some aspects of the expression. When I say that expressions are inevitable, I also mean that all past organic experience (social experience being part

of it) through the whole history of the human organism affects the expression, when one piece of new stimulus is mentally processed then the expression it takes is affected by how the reaction patterns have been formed in the past, the new stimulus leading to a new reaction but the reaction being based on the old patterns, while the processing of the new stimulus slightly changes the reaction patterns. The reaction patterns are always to some degree plastic, and only more or less remain under conscious control. – In this connection what I want to stress is that all feelings always represent processes that relate the present to the past; this because all stimuli that have previously entered the body (i.e. become the object of mental processing) bears on the present.

We should understand that what are perceived as ‘emotions’ are phenomena that in infinite variances reflect the, in turn, infinite variances of underlying feelings. This seems to be an especially contentious issue as most contemporary scholars define ‘emotions’ as some peculiar occurrences in the body that are considered to precede ‘feelings.’ Here I need to stress that I am not claiming that there is any correct choice between the words ‘feeling’ or ‘emotion’ (for we can never find any thingly kind of correspondence between the concepts and the underlying physical/organic processes). One can never prove what would be the “correct usage.” Instead I merely maintain that in order to avoid confusion, and make scientific progress, I propose that we use the terms in this suggested way.

A special feature of the misconceived emotion theory is the idea that an emotion occurs when the outward signs of the behavior are more intense than they would be in “ordinary behavior,” and when the corresponding expressions are more conspicuous. This is why the lists of ‘emotions’ feature words like *anger*, *disgust*, *joy*, *fear*, *sadness*, *surprise*, the very essence of which are to describe intense feelings which naturally manifest conspicuous expressions. But what this means is, in fact, that the scholars have simply postulated that behavior of certain intensity is to be called an emotion. They also ignore the fact that for various reasons some people more than others control the display of their feelings. Not least because of the fact that culturally induced norms (social practices) determine to a great extent the emotive reactions. A person that has learned to control his reaction patterns may well undergo the same feelings of great intensity even when conspicuous expressions are not manifest. For example, a person may well be very angry without displaying it in a conspicuous way, and in that case the behavior would

not correspond to the academic conceptions of emotion. We are also reminded that the same underlying feelings are displayed differently by various reaction patterns by different subjects (compare with Ekman 2007: 231: we “each experience the same *emotions*, but we all experience them differently”; this would be even more clear, if Ekman had said: we each experience the same *feelings*, but we all experience them differently). These differences depend on the life experience of the person, and most importantly on the social practices he has taken part of (social practices corresponding to a common heritage of a geographically adjacent population; social practices of various social strata, etc.). Thus, the anger of two persons may take quite different forms, precisely as may the anger of one person in different situations; and whereas one expresses visible anger another may express joy (Ekman: “Just as some people enjoy sadness, others can enjoy anger,” 2007: 125; see note<sup>10</sup> for other references to Ekman’s work which I render in support of my notion of these issues). By these considerations we should note that ‘emotions’ are socially influenced in two ways: the person who undergoes the feelings is in the process influenced by the social practices he has accommodated; and the observer reads into the behavior some ‘emotions’ as he has learned to do so as influenced by the social practices he takes part of.

We experience (and observe) various ‘emotions’ - more correctly, an infinite variance of feelings - depending on what we are cognitively conscious of at any given moment, but beyond the threshold of consciousness we continue to process a range of conflicting feelings, although to a large degree affected in this by the symbolic expressions that we consciously unleash. In this connection we are reminded of what was said above, that we in a state of ‘cognitive consciousness’ all the time apply socially derived verbal concepts to the mental processes: we thus apply the concepts of social practices and language to our feelings. It is as if we projected our interpretations of the social practices to the biological processes, and thus provoke in ourselves certain patterns of socially determined standardized behavior. Under intense emotive behavior, we go through a wide array of conflicting feelings, for example, a slap on the face from a lover may in rapid succession cause the sensations of surprise, happiness, anger, fear, disgust, and sadness; and correspondingly we undergo bodily reactions that are in equal degree conflicting.<sup>9</sup> In the academic emotion theory all these variations are disregarded so that in the theory all aspects of emotive behavior are reduced to the correspondence to one of the emotion concepts based on

similar rationalizations as the everyday observer makes. In fact, the subject who undergoes these emotions also rationalizes his emotive experience in the same way and labels the experience to correspond with one of the linguistic concepts by which emotions are generally referred to. It is my understanding that an important part of the mental processes corresponding to these feelings is about trying to match the conflicting feelings with the linguistic concepts. Therefore we should recognize that there is a feedback loop between the linguistic concepts and the biological feelings. - Dwelling on this we may appreciate how important it is that the social practices of a community are such that they encourage to analyze emotions to their “constituent parts” (metaphorically speaking) in order to liberate the feelings from the straitjacket of linguistic concepts.

In summary, in my conception ‘feelings’ correspond to the primary phenomena, whereas ‘emotion’ should be considered merely as socially influenced perceptions we form of complex behavior, which behavior in turn represents manifestations of the underlying feelings which are in a constant flux; what we call an ‘emotion’ does not represent a higher or lower form of organic processing on the Lamarckian continuum; an ‘emotion’ does not correspond to anything independent from the biological processes of sensation, homeostasis and feeling. An ‘emotion’ is the perception that we form on some conspicuous reaction patterns present in observed behavior while simultaneously ignoring the complexity of the underlying feelings. An ‘emotion’ is thus best to be conceived of as mental processes that give rise to conspicuous bodily reactions (expressions) connected with a socially determined linguistic name to stand for the simplified perceptions we form of the complexity of manifested behavior based on the underlying complex and fluctuating feelings.

When we realize this, we understand that we cannot postulate that one perceived kind of behavior corresponds to a certain ‘emotion,’ instead we shall just recognize that humans display as reactions to feelings a potentially infinite variance of externally observable reactions (expressions) varying in correspondence to the intensity (and other features) of the underlying feelings. – The distinction between emotive behavior and “normal” behavior corresponds only to perceived differences in the intensity and other salient features of the behavior as we have learned to connect them with our standardized perceptions. But in reality we cannot draw any kind of a line between behavior which is to be

qualified as an emotion and other kind of behavior. It follows that there is nothing that could possibly be scientifically identified as an emotion relative to other behavior.

## The Carousel of Emotions

These fallacies of emotion theory has led various authors to try to identify a fixed number of emotions as constituting the so-called “basic emotions,” or “primary emotions” as they are sometimes called in order to differentiate them from the other “species” of more complex emotions referred to as ‘secondary’ or “mixed emotions.” These complex emotions are supposedly formed as a blend of a few of the “basic emotions.” That emotion theory is not about biological processes but rather about advancing competing aesthetic conceptions is evident from the fact that the scholars have not even been able to agree on the list of “basic emotions.” LeDoux tells (1998: 112) that, for example, Sylvain Tomkins advocated the existence of eight basic emotions: *surprise, interest, joy, rage, fear, disgust, shame, and anguish*. These concepts, Tomkins claimed, represent innate, separately distinguishable patterned responses that are controlled by hardwired brain systems. Paul Ekman produced a competing list of six basic emotions corresponding to facial expressions that he regarded as universal: *surprise, happiness, anger, fear, disgust, and sadness*. - Ekman, however, seem to have later made a radical turnaround in his view on the nature of emotions leaving behind the conceptual method in favor of recognizing the infinite variances of the biological processes, I refer to note<sup>10</sup> for a further discussion of this issue. Johnson-Laird and Oatley approached the issue by looking at the kinds of words we have for talking about emotions and came up with a list of five “emotions” closely matching Ekman’s six but to the astonishment of the initiated they did not admit *surprise* in their list. In a more frugal attempt Jaaak Panksepp proposed only four basic emotional response patterns: panic, rage, expectancy, and fear.

Ortony and Turner (1990) have reviewed all the various claims scholars have put forward in respect to which are to be considered as the “basic emotions.” Their analysis showed a huge discrepancy in the lists of basic emotions from one scholar to the other. For example, Arnold was told to have maintained that these concepts constituted the “basic emotions”: anger, aversion, courage, dejection, desire, despair, fear, hate, hope, love, sadness. This whereas Tomkins gave this competing list: anger, interest, contempt, disgust, distress, fear, joy, shame, sur-

prise. Gray for his part restricted the “basic emotions” to consist of rage and terror, anxiety, joy. Watson, in turn, gave out these three concepts as the “basic emotions”: fear, love, rage. Oatley’s and Johnson-Laird’s competing claims amounted to anger, disgust, anxiety, happiness, sadness; (etc.). The comparison of these competing claims aimed at showing the unsustainability of the conceptual method of emotion theory by pointing out the wide discrepancy in the claims. The very fact that the scholars could not even nearly agree on the list of basic emotions proved in itself that there are none.

At some point the emotion theorists had understood that their approach aimed at identifying the few “basic emotions” was too restrictive, but instead of going all the way to the realization that human feelings and the expression of them occurred in infinite variances these savants settled for only a minor readjustment of the theories. They now postulated that in addition to the *basic* ones there were emotions that resulted from “blends or mixes of the more basic ones” (LeDoux 1998: 113). LeDoux tells that Izard, for example, describes *anxiety* as the combination of *fear* and two additional emotions, which can be either *guilt*, *interest*, *shame*, *anger*, or *distress*. LeDoux concludes that to his taste Plutchik had one of the better developed theories of emotion mixes having come up with the ingenious idea to depict emotions on a circle on the analogy of the color wheel. Plutchik purported to show how mixing of the elementary emotions produce complex (secondary) emotions. Keeping with the alchemy Plutchik referred to these blends by the concept *dyads*, with further degradations into first-order and second-order dyads. For example, *love* was supposed to be a first-order dyad resulting from the blending of the “adjacent” basic emotions *joy* and *acceptance*, whereas *guilt* was to be seen as a second-order dyad involving *joy* and *fear*, which were separated by *acceptance* (LeDoux 1998: 112).

Arnold also embraced the alchemic idea of “mixed state emotions,” telling that it was “necessary to recognize that most emotions were actually mixed states made up of more primary emotions, in the same sense as colors can be considered to result from mixtures of just a few primary colors” (Arnold 1970: 9).

To illustrate how widely accepted the method of linguistic alchemy is in emotion theory I will also refer to Bennett and Hacker. These authors identified, in addition to the more traditional emotions, such emotions as *humility*, *respect*, *admiration*, *contempt* and *gratitude*. The peculiarity of these emotions, they say, is in that they “involve little, if

any, emotional perturbation or disturbance” (2003: 205). In a way Bennett and Hacker are on right track, although due to the conceptual fallacy they fail to draw the final conclusions. They should have understood more profoundly that we can indeed take any noun that refers to human behavior and postulate that it corresponds to “an emotion,” but doing so the correct conclusion to be drawn is that there are in reality no such biological processes that correspond to these words and that these words only stand for socially induced perceptions on complex behavior based on an infinite variances of feelings and expressions.

Neither has Damasio been able to overcome the conceptual fallacy in emotion theory, although he is original in having reversed the terminology referring to a *variety of feelings* whereas the others speak about a *variety of emotions* (this as such is, of course, a very welcomed approach, unfortunately, though, Damasio is not consequent with maintaining this distinction). Thus for Damasio “Happiness, Sadness, Anger, Fear, and Disgust” (capital letters Damasio’s) represent the “first variety of feelings” (2000: 149). The “second variety of feelings,” in his conception, is based on emotions that “are subtle variations of the five mentioned above: euphoria and ecstasy are variations of happiness; melancholy and wistfulness are variations of sadness; panic and shyness are variations of fear.” Damasio’s error is rooted in his failure to see that feelings do not come in different varieties and that we should rather reserve the concept ‘feeling’ to refer to the organic processes which on the Lamarckian continuum follow in complexity and sophistication on the organic processes of homeostasis – ‘feeling’ being the state of the homeostasis, where neural processing leading to cognition has emerged. A peculiar nuance of this error is the postulation that ‘emotions’ preceded ‘feelings’ in evolution, or as Damasio puts it: “We have emotions first and feelings after because evolution came up with emotions first and feelings later” (2003: 30; similarly Damasio says: “it is feelings that are mostly shadows of the external manner of emotions,” 2003: 29). – I remind that in my conception ‘feelings’ always represent the cognitive mental processing that together with certain stereotyped reaction patterns leads to the perception that an ‘emotion’ is under way. Thus, for sure, ‘emotions’ are based on feelings and not the other way around. (By conceiving of feelings in this way there is also no need to postulate, as Damasio does, a special category of “background feelings” that would not “originate in emotions,” as he has all other ‘feelings’ doing 2000: 143). – LeDoux shares the idea that feelings and emotions would be fundamentally different phenomena, and also assigns priority to the

former. He says that “I believe that feelings can only occur when a survival system is present in a brain that also has the capacity for consciousness” and “to the extent that consciousness is a recent (in evolutionary time) development, feelings came after responses in the emotional chicken-and-egg problem” (1998: 125). This clearly illustrates how LeDoux fails to understand that ‘emotions’ can intelligibly only be considered as a combination of feelings (interpretations) and responses (expressions).

Against this background it is encouraging to notice that there have been some attempts to break the spell of this conceptual fallacy. Most importantly we have Ekman’s above referred transition from classical emotion theory towards the modern view which I advocate. A good initial insight to the real nature of emotion perceptions was presented by Lazarus, Averill and Opton in their essay *Towards a Cognitive Theory of Emotion* (Arnold 1970: 207ff). The authors correctly pointed out that “emotions can best be conceptualized as complex response syndromes.” They also –as lone voices then - and until now – recognized that in addition to the biological processes there were “cultural and cognitive aspects” to emotive behavior and perceptions of such. The authors even pointed out the thingly fallacy by alerting against perceiving emotions on the analogy of things, saying: “Emotions have been notoriously difficult to define, partially because theorists have assumed that there must be some characteristic unique to emotions which sets them apart from other psychological phenomena. Perhaps we have learned too well the grammar-school injunction that a noun refers to a person, place, or thing. Research, however, has failed to reveal the ‘thing’ to which the noun ‘emotion’ refers.” - In another essay Richard Lazarus cautions that we must avoid taking the emotion words such as *love, pride, happiness*, and so forth “too literally” and beware of unconditionally assigning them a positive meaning, and correspondingly take too literally “*anger, anxiety, guilt* and so forth” and take them to be negative emotions. Basically he wants to “point out that each emotional experience to which we give a common label can readily differ, sometimes even substantially, from the prototypical concept of what an emotion is all about” (Lazarus *Relational Meaning and Discrete Emotions*, in Scherer, Schorr and Johnstone 2001: 65).

Andrew Ortony, whose survey of emotion concepts was referred to above, is another author who has reached remarkable insight into what I consider as the modern conception of emotions, i.e. emotive behavior,

as evidenced by his work with Clore and Collins *The Cognitive Structure of Emotions* (Ortony, Clore and Collins 1994) and with Turner *What's basic about basic emotions* (as referenced by LeDoux 1998). Ortony et al. want to proceed as I do with a deconstruction of the emotion concepts telling that "emotions have many facets. They involve feelings and experience, they involve physiology and behavior, and they involve cognitions and conceptualization." In their view research should compare different kind of behavior referred to as 'emotions' in order to establish "what distinguishes one emotion from another" and explicitly reject "a theory of emotion words" (this, as it was showed above, is what Ekman did in his reversion of classical emotion theory). Correspondingly they say: "Our own view is that the search for and postulation of basic emotions is not a profitable approach. One of our many reasons for saying this is that there seems to be no objective way to decide which theorist's set of basic emotions might be the right one" (1994: 7).

LeDoux does not approve of the ideas put forward by Ortony and Turner, and criticizes them for an attempt to 'overrule the hypothesis that emotions are biologically determined in favor of the view that they would be psychologically determined' (1998: 120). Interestingly, though, in his criticism of their views he actually, though unwillingly, provides a very good summary of the real essence of emotions, as evidenced by this quote:

"For Ortony and Turner, emotion involves higher cognitive processes (appraisals) that organize the various responses that are appropriate to the situation faced by the organism. They accept that component responses can be biologically determined, but place emotion itself in the world of psychological rather than biological determinism. Fear, in their view, is not a biological package that is unwrapped by danger. It is a psychologically constructed set of responses and experiences that are tailored to the particular dangerous situation. There are no emotional responses, there are just responses, and these are put together on the spot when appraisals are made – the particular set of responses that occurs depends on the particular appraisal that occurs. As a result, the number of different emotions is limited only by the number of different appraisals that one can make. And because certain appraisals occur frequently and are often talked about by people, they are easily and reliably labeled with precise terms in most languages and this make them seem basic" (1998: 119).

LeDoux seems to advocate the idea that basic emotions would be innate after all. But that is an error based on the failure to distinguish between the evolutionary precedents of the human genetic build and the present state of the plasticity of the human ability for mental processing. By this I mean that in the course of evolution with increased ability to mental processing and cognition (i.e. to feel and cognitively feel) reaction patterns that have originally unfolded as purely physical reaction patterns have genetically become more complex and susceptible to conscious and unconscious cognitive manipulation. With the emergence of this ability to consciously redirect the mental processes of cognitive feelings we have that point in evolution where the physical (or physiological) reaction patterns together with the underlying feelings may be postulated as producing emotive behavior. But it would be wrong to postulate – even at this point – that the responses would correspond to “specific emotions” because as soon as there is a cognitive element in the processes, then there is also a choice, and when there is a choice then the reaction patterns cannot anymore be postulated to unfold in an identical fashion. Again we are reminded of the Lamarckian evolutionary continuum, a continuum on which we conceive of infinite variances of shifts in complexity and sophistication of the processes. The processes that affect human feelings cover potentially – and all at once - all the nuances on the continuum. We should also understand that the tendency to unleash one type of a response pattern would always be contradicted by all the other infinite variances of reaction patterns that our feelings give rise to. This is why it is wrong to say that humans would possess some kind of innate emotions, but we are correct to maintain that evolutionary vestiges influence our complex reaction patterns.

All human actions (expressions, behavior) are thus subject to three sorts of influences: (i) the genetic framework and the neural reaction patterns rooted in it; (ii) past life experience that has modified the genetically established anatomy; and (iii) the cognitive ability to unconsciously and consciously amend the processes to the demands of the present circumstances. The genetic framework sets the general conditions for possible reactions but the past life experience changes constantly the reaction patterns within the framework. The more developed the system of mental processing in an organism, the bigger is the range of the variations in the response patterns. All emotive reactions are, thus, like any reactions, always unique, sometimes just strikingly simi-

lar in some of their conspicuous aspects. – In fact, even the utterance of a word, any word, can be compared with this description of emotional reactions. An utterance of a word amounts to a reaction pattern resulting from similar kind of mental processing as the complex reaction patterns referred to as ‘emotions’ – both types of reaction patterns amount to an expression for interpretation of feelings. A word represents a similar reaction pattern, as those that are postulated as primordial emotions. Therefore a word, a phrase, could well be conceived of as a ‘mini-emotion’ to stress the similarity with the grand emotions discussed here above. Both types of reaction patterns amount to an expression for interpretation of feelings. A word clearly represents a learned response pattern triggered by the mental processing that yields certain feelings to which the person has become accustomed to affix certain words to. Nobody, excepting the Chomskyan revolutionaries, would hardly maintain that a word represents an innate reaction pattern on the analogy of what is thought of in the misconceived emotion theory. The utterance of a series of phrases for the expression of feelings does not principally differ from the unfolding of those reaction patterns that are called emotions; the difference is merely to be postulated in the higher degree of plasticity that characterizes the utterances of words as they are reactions to more sophisticated neural processes and dependent on a mental (neural) appraisal of any given situation (on a higher cognitive level). These “mini-emotions” should help to notice even more clearly than it is the case with grand emotions that the causes and responses can be infinitely varied.

It then becomes important to realize that all responses, all expressions (all “emotions”) are embedded both in the genetic endowment and the human plasticity of cognition. We should note that the human has precisely evolved in such a fashion that the flexibility to respond to a new situation (new set of stimuli) has constantly been enhanced, so that the genetically inherited behavioral patterns can be cognitively manipulated, and therefore with life experience unconscious automatic reaction patterns can be developed, which latter may yet be adjusted by conscious processes. Fundamentally this corresponds to an enhanced ability for interpreting the organism’s position in relation to the (internal and external) environment, and to express this interpretation. From the perspective of evolutionary history we can say that the human has reached a genetic endowment that enables better to match its expressions to the complexity of the environmental stimuli, as compared with the organisms on a lower evolutionary level. In an evolutionary scale the higher

levels of expressions are increasingly more and more individually, variable, and free from the constraints of the lower level innate features.

## 5 EXPRESSIONS

I have identified speech as interpretation of feelings and language as the social practice of imitating each other's verbal behavior. Language practices provide a pool of abstractions from where memories of speech and speech patterns are drawn by living human beings to be used in their speech. Fundamentally speech represents an act of expression of feelings. But words and utterances are not pronounced in a vacuum where the other parts of the body would remain motionless: in reality there are always a host of other bodily movements that accompany speech expressions. Speech always forms part of a wide range of bodily expressions which occur in connection with articulating sounds. These include facial expressions, gestures, eye gaze, body pose, etc. These are all aspects of *verbal behavior* (see chapter *Speech and Language*). Simultaneously with the uttering of a word these kinds of bodily movements occur be it in ever so small degrees; in fact they occur even when no words are actually uttered already as reflections of thinking. I would even claim that these bodily expressions occur even when one is not consciously contemplating to express anything: the body anyway reflects the underlying feelings. – We should understand that there is more to human expressions than speech, and that there are expressions without speech.

Genetically the human ability to speak has evolved as an evolutionary aspect of the genetic endowment for producing expressions and interpretations. The ability to speak is not only genetically rooted in all the lower level organic and neural processes and the organs and functions they have genetically cumulated in, rather than that the ability to speak should be seen as an aspect of those same unitary and interdependent processes, of course, this is an aspect that represents a crucial neural development of enhanced capability of cognitive consciousness. (Compare with Bruce Richman speaking about “layer upon layer of different expressive features by means of which the animals express overlapping, conflict-filled motivations and emotions,” in *How Music Fixed Nonsense into Significant Formulas*, 2000: 302).

The recognition of speech as a sort of expression among other features of expressions reminds us of how important it is to understand the basic evolutionary principle of the unity and interdependency of biological phenomena, of organs and abilities, of organic and neural processes

(see chapter *Mental Processing*). It also reminds us of the importance to keep in mind the *Lamarckian continuum* and the *evolutionary hermeneutical spiral* (see chapter *Mental Processing*) in order for us to profoundly penetrate to the real essence of speech (to acquire a correct conception about speech and language). Thus, for example, ‘memory’ represents one aspect of the phenomena of which cognition, thoughts, and ultimately speech are other aspects. There is no speech without memory, if you do not remember how a word is used or do not remember what you heard just 10 seconds ago, then you cannot properly speak. All cognitive actions (expressions and interpretations) are in essence processes of similar kind, thus, for example, ‘memory’ and present cognition differ only in the perceptions we form of them (see chapter ‘*Memory*’). In regards to speech (allowing that by ‘language’ in the quoted passage the author means ‘speech’ or the ‘ability to speak’) this has been lucidly expressed by Jean Molino saying: “Yet, language is not, any more than living organisms, a perfectly organized totality or a formal system: both are made from the pieces and fragments that evolution, bit by bit, adapted to the world, and coadapted among themselves” (*Toward an Evolutionary Theory of Music and Language*, 2000: 170).

I remind that evolution of speech should most fundamentally be seen as a product of mental evolution, or the evolution of cognition and conceptualization, and the ability to express cognitive feelings that correspond to more and more complex and sophisticated processes. The genetic endowment that enables speech has been built up through an evolutionary process by which all the component elements have evolved gradually and jointly from generation to generation in a *hermeneutical evolutionary spiral*. This means that a developed capability for neural interpretations has enabled a development of the cognitive mental processes leading to an enhanced ability for expression of feelings. This in turn has enabled the development of other organic features, organs, and the anatomy which in turn has affected the mental processes of interpretation, and so on in an evolutionary spiral up to the present. Thus speech (the ability to speak) is an evolutionary product of expressions and interpretations – as is the case with all biological processes of life.

All organic is eventually based on movement, the result of movements, movements cumulating in organic processes, eventually cumulating in the functioning of such complex animal organisms as the human being, where processes occur in infinite variances within the sys-

tem of the homeostasis, which in a healthy organism preserves all the movements in harmony. An expression is an act of movement, or the cumulative action of a host of movements (processes). When an act is undertaken by an animal that is capable of cognitive consciousness, then we call the acts of expressions *behavior*. Through evolution the movement patterns have cumulated in the present human organism to form its genetic endowment.

The ability to speak represents the present and final culmination of the organic ability for expression. I said *final culmination*, because I believe that any further development of expression will only happen in social practices, that is, without any change in the genetic endowment.

By these considerations I define 'expression' as the outcome of organic processes, the process results or the effects they cause; correspondingly we may also define 'expressions' as organic reactions (and reflections).

In this connection it becomes necessary to point out that there are both internal and external expressions. For example, 'mental images' and 'thinking' represent internal expressions which occur simultaneously with other internal reactions and may eventually lead to external reactions. Every internal reaction affects, be it ever so slightly, the external reactions, deliberately (volitionally) or not. In view of these considerations we should not consider 'thinking' and 'speech' as independent, stand-alone activities; rather we should see them both as a part of complex relations of interpretations and expressions. I have stressed these aspects in many sections through this book and kindly refer the reader back to all that, but in this connection I want to illustrate these issues with a few references to the work of McNeill. McNeill writes that "we can conceive of thought as fundamentally an inner discourse in which gestures play an intrinsic part. Each new gesture is the breaking edge of an inner discourse that we but partially express to the world"; and: "If our mode of thought is narrative ...that is, if our thought is a story that we are required to keep telling in order to think about our world at all, it is gesture that actively influence this story and carry it forward more expressively" (1995: 2). The last reference to 'gesture' should, it seems to me, be considered not as pointing to a duality between speech and gesture, but rather as an example of two of many forms of expression occurring simultaneously, each and all feeding back to the other processes and thus forming the totality of expression; and finally leading to the partly consciously intended (wished for, but so often failed) expression of thoughts. The expressions which largely

are delivered unconsciously should not be seen primarily as deliberate attempts at communication but rather as consequences of organic and neural reactions to feeling, which feelings necessary require an outlet.

The above connects with my conception of the inevitability of expressions, that is, my conception that expressions on all evolutionary levels (on all levels of cognitive and non-cognitive processes) are inevitable consequences of the underlying processes. - On a higher cognitive level an expression also occurs inevitably but here the specific form that the expression takes is not anymore in itself inevitable, neither to the "content" nor to the means of expression; for example, we may suppress speech, whereas we cannot suppress all the bodily expressions (but we may still moderate them as well). - This is further connected with my view that there always is a correlation between the input of stimuli and the output that the body and its neural system produces, that is, that all the stimuli that is received must be processed in the same proportion, and that the processing always has to end in an expression of one or another sort. I tentatively call this idea the *input-output theory*. Hereby it should not be excluded that the evolutionary cause for the development of higher mental processing is that the stimuli has not resulted in an outward expression (expressions) at an initial stage, and instead have continued running further in the mental processes. Similarly McNeill has said that gestures and speech should be recognized as being produced by a biological expressive machinery which, so to say, cannot help but produce the gestures (i.e. the gestures follow to a certain extent willingly or non-willingly from the biological processes), this while the specific gestures performed are partly culturally dependent (1995).

The above should also be compared with what McNeill has said about the relation between gestures (gesticulation) and speech (1995). His research has shown how the relation between gesticulation and speech are reflections of basically same underlying processes. By this I mean that both types of expressions are results of processing of same kind of stimuli (and same kind of feelings that the stimuli lead to). Hereby I have to note that by speaking about gestures and speech as "two kinds of expressions," I really have in mind an organic spiral where gestures and speech form part of the same organic processes only leading to different kinds of process reflections. McNeill has also shown that there is a feedback relation between the processes leading to gesture and to speech and vice versa. This is one of the instances where we

see the interdependency of all organic functions and organs: We communicate – consciously, but more so unconsciously - with all means possible, the body, so to say, engages its whole repertoire in each process of expression. This also illustrates the evolutionary trajectory of speech, one ability has created another ability which both have led to new possibilities, which in turn have created other needs (unconscious, sometimes conscious), and so on (reference is made to chapter *Evolution of Speech*).

Considering the relation between ‘speech’ and ‘gestures’ we should recognize that I am not postulating that gestures should be seen as “a part of language,” but rather stressing that ‘speech’ and ‘gestures’ both form part of the more general category ‘expressions,’ or what I refer to as ‘verbal behavior.’ In accordance with this the “unity of speech and gesture” that McNeill speaks of (in reference to Adam Kedon; 1995: 1) should be recognized as two phenomena under the ‘unity of expressions.’

It has been my aim to illustrate how all organic processes, all life, are fundamentally derived from physical movements that have become genetically encoded as movement patterns. I therefore propose to think of all organic movements fundamentally constituting expressions and interpretations; to conceive of expressions and interpretations as more and more complex movement patterns in all dimensions of the processes; this equally in the minutest conceivable dimension of an organic process and in the complex processes encompassing a potential infinite variance of movements that lead to complex interpretations and ultimately to cognitive consciousness. All these interpretative movements can also be seen as reactions to pain and pleasure.

I will try to explain the above more in detail. Thus I claim that the most basic, fundamental, feature of (organic) life is *movement*, in fact I maintain that the difference between life and non-life – that is, the organic and the physical - is that organic life is based on movement that defies the purely physical *regularities* (formerly called physical *laws*) of movement; organic life is movement against the physical tide; organic life is based on processes that produce, alter, and consume energy with the effect of *temporarily* (*temporarily*, because all living *entities* die) propelling the movement of the organism in a direction that defies the regularities of physics. - All life is movement, and all organisms consist of a series - an *infinite* series (*infinite* until death) - of movements. Thus all that takes place in an organism are processes, processes of movement. An organism consists of nothing but inorganic materials

captured in patterns of movement. This way life could be defined as *restricted movement of chemical elements*. Complex forms of life represent the coordinated movements of a large set of restricted movement patterns. We can then say that all organic life consists of processes of restricted movement patterns within a body.

Movement is produced by the living organism reacting to stimuli. Therefore we could enlarge the previous definition to say that organic life is basically a function of a number of restricted movement patterns in reaction to stimuli. Hereby the evolutionary development of organic life has become possible by the processes of alteration of the movement patterns within an organism ever so slightly and by adding new processes from generation to generation while simultaneously maintaining the evolutionary homeostasis within the organism. These alterations and additions of movement patterns correspond to actions of developing new patterns of reaction to stimuli. All evolutionary development has been (is) based on an organic ability of an organism to develop new patterns of movement in reaction to stimuli, that is, an ability to enhanced processing of different stimuli simultaneously, or the ability to develop more complex movement patterns (or processes) in dealing with various stimuli simultaneously. The processing of the stimuli consists of movements within the organism (the body) resulting in adaptation of the organism in relation to its environment.

If we accept the principles of evolution then we have to assume that all organic processes are based on a series of movement (as it was explained above) – and that all the movement patterns are essentially similar in design – in all animals from the most simple to the most complex. The complex animal is merely one which encapsulates a wider range of processes within itself – the human organism must consist of an infinite variance of processes. This signifies that the processes in higher animals differ only in complexity but not in principle; the organic architecture is always the same (the genetic code represents a prime example of this principle).

Already Descartes emphasized the principle of movement; this formed the basis of his insight into evolution and all the organic process in man. Descartes maintained that “all the variety in matter, or all the diversity of its forms, depends on motion” (1997: 320). It is worth quoting Descartes more fully on his interesting note on the essence of movements (“What movement properly speaking is”), which he explained as follows:

“But if, looking not to popular usage, but to the truth of the matter, let us consider what ought to be understood by motion according to the truth of the thing; we may say, in order to attribute a determinate nature to it, that it is the transference of one part of matter or one body from the vicinity of those bodies that are in immediate contact with it, and which we regards as in repose, into the vicinity of others. By one body or by a part of matter I understand all that which is transported together, although it may be composed of many parts which in themselves have other motions [compare my above definition of an organism]. And I say that it is the transportation and not either the force or the action which transports, in order to show that the motion is always in the mobile thing, not in that which moves; for those two do not seem to me to be accurately enough distinguished. Further, I understand that it is a mode of the mobile thing and not a substance, just as figure is a mode of the figured thing, and repose of that which is at rest” (1997: 321; see also 1997: 325, and 1997: 365).

What I specifically want to point out is that Descartes stressed that the *motion is always in the material under movement*. This has an important bearing on the definition of organic life.

Lamarck later made the principle of movement a central piece of the evolutionary theory (1809).

Applying these same principles, Lewes later made the evolutionary connection from primordial movements all the way up to human cognition as evidenced, for example, by this quote: “Accepting the explanation of Thought and Feeling as modalities of Sensibility, we shall have no difficulty in extending this generalisation to the laws of operation and convincing ourselves that both the co-ordination of sensations and movements, and the logical combination of ideas with movements and of ideas with ideas, are effected by one and the same kind of process” (Lewes 1879a: 223). Similarly, and correctly, James maintained that the “highest centres do probably contain nothing but arrangements for representing impressions and movements, and other arrangements for coupling activity of these arrangements together” (James 1957 Vol. 1: 64). Also James: “every impression which impinges on the incoming nerves produces some discharge down the outgoing ones, whether we be aware of it or not. Using sweeping terms and ignoring exceptions, we might say that every possible feeling produces a movement, and that

the movement is a movement of the entire organism, and of each of its parts” (James 1957 Vol. 2: 372).

Having defined expressions as movements, I need to add that the same holds true for interpretations. Interpretations are functions of organic movements similarly as expressions were above defined to be so. Each movement shall even be seen as simultaneously representing both an expression and an interpretation. So, deep down, profoundly, expressions and interpretations are conceptually the same, i.e. movements; both represent reactions to stimuli. It is only the cumulative effect of the processes that allows us to qualify these as different, but even so, the cumulative processes consist of the microprocesses to which the aforesaid division applies. (This also corresponds to the old idea of British empiricist writers of considering all life processes as reflections of the binary modes of *pain and pleasure*). This, in turn, connects with the insight that there is in all biological, as well as in all social, an eternal feedback relation, feedback and feedforward relations in infinite variances on all levels. There is an infinite feedback loop between interpretation and expression on each conceivable level of organic processes.

We should think of a hierarchy of more and more refined expressions corresponding to expressions and interpretations; at some point on the Lamarckian continuum expressions and interpretations can be characterized as having a mental dimension, and further at some point a social and consciously cognitive dimension, in the meaning that the expression is at least partly executed deliberately in order to attempt to convey a feeling (an idea, opinion, argument, a wish, etc). On this continuum speech represents the point where expression is delivered by the most complex and fine-tuned body parts with the most complex neural functions, but even so speech is all the time in accordance with the principle of unity of organic processes connected and intertwined with the organic processes that had evolved on the lower stages. In speech a bigger portion of the energy involved in the expression is directed into and through the most developed brain and neural structures. Due to the evolutionary connection with the processes of cognitive consciousness as well as the partial conscious control in the present act of speech, speech occurs as a function of fine-tuned muscular contractions which enable refined expressions by less muscular effort and less energy consumption. Thus, the more fine-tuned means of expression in speech can be said to correspond to the more abstract categories of cognition that

are expressed. It is as if the means of expression were as abstract as the conceptual abstractions.

Feelings are functions of processes of interpreting the proper organism in relation to its environment. Conceptualization, that is, the processes of forming abstractions (see chapter *Feelings, Emotions and Consciousness*), then represents an enhanced organic means of these interpretive processes. Speech, in turn, is a means of expression of the cognitive feelings that concepts have enabled. According to the above presented view (and the principle of the inevitability of expression) these conceptualized feelings necessary need to find an outlet that correspond to their character. By these considerations, I mean that speech must have developed as an outlet for these feelings that could not properly be expressed by other bodily expressions (other issue, that once speech has developed there has also developed means of expressing feelings of more abstract character by other bodily processes; here we again note the principle of interdependency as expressed by the hermeneutical evolutionary spiral: not only are a higher cognitive abilities produced from the lower ones, but they in turn affect the development of the lower ones). I propose to compare this with Bartlett saying: "It is legitimate to say that all the cognitive processes which have been considered, from perceiving to thinking, are ways in which some fundamental 'effort after meaning' seeks expression" (1995: 227). Damasio also postulates, in accordance with the principle of mental evolution that "feelings are a mental expression of all other levels of homeostatic regulation" (2003: 37; strange, though, that he does not apply this insight in his discussion of 'emotions' vs. 'feelings,' where he postulates that emotions have a primacy over feelings, see chapter *Feelings, Emotions and Consciousness*).

Above I proposed to conceive of speech as the sort of expression where we maintain the highest degree of conscious control. But I need to stress that this does not mean that all speech would be a product of conscious activity. As it has been explained in this book, speech cannot be seen as a purely conscious translation of thoughts (see chapters *Speech and Language* and *Feelings, Emotions and Consciousness*). But the ability to be consciously aware of some aspects of thoughts has been the crucial influence for the development of the ability to speak (see chapter *Evolution of Speech*). This is why I would hesitate to qualify speech as a purely volitional activity, for speech is not an activity of which we remain fully in conscious control, while important aspects of it (in general) are so. Such expressions that correspond with what we

call ideas may be called cognitive expressions (based on cognitively conceptualized feelings). These cognitive expressions may occur either as volitional (intentional) or non-volitional (unintentional) expressions. We need to recognize that some types of expressions are cognitively related even when they are beyond the reach of conscious control; such expressions are, for example, blushing and getting goose bumps on the skin as a result of cognitive feelings.

An organism of lower evolutionary hierarchy expresses a reaction in response to a stimulus, the processing of which has led to an interpretation that corresponds to a physical act of cognition of the stimulus, which interpretation in turn unleashes the expression. Thus, for example, when an amoeba's movements cease in response to luminous intensity it is unleashing an expression in response to its evolutionary programmed appraisal of the stimulus, this because the intense light has been organically interpreted as a harmful source against which to protect. It is important to recognize this common primordial root in physical interpretations and expressions as the stem from which the human has genetically derived its ability for interpretations and expressions. We constantly have to bear in mind these processes of mental evolution when we study the higher levels of expressions and interpretations whether they are volitional or non-volitional.

Reflecting on these ideas it seems to me that in neuroscience the research paradigm should be amended so as to define the activity as a study of cognition instead of a study of 'consciousness' – whereas 'consciousness' (on the different levels of awareness) represents aspects of cognition. Cognition, cognitive appraisals, happens continuously whereas cognitive consciousness (the being aware of being aware) comes and goes. An important, and perhaps decisive, feature of cognition is *conceptualization* (see chapter *Feelings, Emotions and Consciousness*). Thus the biological method of studying *cognition* and *conceptualization* should replace the conceptual method of studying 'consciousness.'

## 6 INTERPRETATIONS

A central theme of this book is the proposal to view all organisms in an evolutionary sense as perpetual self-adjusting interpretive devices. Paraphrasing Descartes we could say that a living organism is *a thing that interprets*. When we say *a thing that interprets* instead of *a thing that thinks*, as Descartes primarily put it (1997: 143), then we, as it were, assign the human its proper role on the evolutionary continuum along other biological organisms, for I would, modeling on the *perpetuum mobile*, like to think of the first cell from which all life has developed as *a perpetual interpreter*.

The organic process model which I have presented in this book illustrates how all life processes are fundamentally about a living organism processing stimuli, and how correspondingly each organic reaction is an expression to the process of interpreting environmental stimuli. In the previous chapter, *Expressions*, I explained how organic movements constitute *expressions and interpretations* in all dimensions of organic processes, starting from the minutest conceivable dimension of an organic process all the way to complex processes of human cognitive interpretation (here *interpretation* in the conventional meaning of the word). All these organic movements encompass a potentially infinite variance of movements of expressions and interpretations, or organic reaction patterns. At the most fundamental level we can see these interpretative movements as reactions to pain and pleasure. The processes of interpretation then form part of the homeostatic system in all its manifestations.

We could introduce the term organic interpretation to differentiate the fundamental interpretive reaction patterns from the human cognitive activity called interpretation, but even so we should recognize them as basically same kind of phenomena situated on the same Lamarckian continuum going from the purely organic non-cognitive processes to complex cognitive interpretations. I shall use the term 'interpretation' to refer to both organic interpretation and the human cognitive activity as it will always be clear from the context in what meaning I use the word. And yet again, we have to recognize that cognitive conscious interpretation is not a process independent from the non-cognitive organic processes. We must acknowledge that each moment of human cognitively conscious interpretation consists of processes that are based on

processes that represent non-cognitive evolutionary antecedents; which have both served to create the higher level cognitive processes and which at any given moment in the present interact with them. In fact, it is only for presentation purposes and due to the limitations that received language practices confine us into that I am compelled to speak about these in terms of separate processes. Properly speaking these various processes leading to cognitive interpretation are in no way more separable than each drop of water in a waterfall could possibly be conceived separately from the water streaming up to a precipice.

I do note that the idea 'to express' and 'expression' is conceptually much easier to describe in organic terms – as I have done in the previous chapter – than the corresponding terms of 'to interpret' and 'interpretation.' First of all 'interpretation' sounds so much more anthropomorphical; secondly, it is relatively easy to understand that an expression corresponds to movement, but that interpretations correspond to the same is admittedly more difficult to grasp (for me the word intuitively tends to convey the idea of a movement backwards, or a folding movement). In this connection I have to point out another conceptual difficulty of the theory, one that I already discussed in the previous chapter in connection with expressions. This, that deep down, profoundly, expressions and interpretations are even conceptually the same movements. It is only the cumulative effect of the processes that allows us to postulate these as different types of processes.

The idea of interpretation suits very well within the framework of the organic process model according to which all is in a constant flux. Nothing in life is standing still; all life is a function of continuous organic processes. The concept interpretation in itself carries the idea of a flux. A cognitive interpretation is a reflection of the idea we have formed in exploring something we were previously unfamiliar, or less familiar, with. But an interpretation never yields absolute knowledge of an object (phenomenon), rather the interpretation merely allows us to get a tentative grasp of it. There is no limit to how well we may interpret the same object in the future given that we learn from life experience. As Wittgenstein said, *an interpretation is the substitution of one expression with another one* (*Philosophical Investigations*, art. 201).

Most importantly we should understand that interpretations are always reflections of processes in flux. The conception of interpretation should therefore serve to demolish the reigning scientific worldview based in the belief in *certainty* (the possibility to discover absolute

truths about things and phenomena). We do not possess, and cannot possess, any biological means for reaching certainty. All our social practices, language, and all our methods and the devices we have constructed, and which we may possibly hope to contrive in the future, cannot change that, for at the end of the analysis even all the data that we can retrieve through the devices are subject to the same human biological interpretative processes – and even the very devices and measurements are only reflections of the human ability to express and interpret. We cannot acquire knowledge, but only interpretations. As Nietzsche said: “facts are precisely what there is not, only interpretations” (Nietzsche 1968, art. 481)

This can be illustrated by looking at Edelman’s rhetoric question: “What can a brain-based epistemology contribute to the picture of how we acquire knowledge?” (2006: 54). Considering what was said above, we should start with recognizing the very question as misconceived, for we do not *acquire knowledge*, rather we *make interpretations*. We can only interpret the world (including ourselves), thus we do not gain properly speaking knowledge of the world but only make interpretations. – But curiously enough Edelman is right when he later affirms that “the brain was not designed for knowledge” (2006: 54), because indeed the brain evolved not for knowledge but for interpretations. Knowledge is a static, deterministic, and thingly concept, conveying an idea that something objective and forever true could be detected by the brain (“by the brain,” as they say). This distinction is not generally comprehended instead people take their own beliefs, their interpretations of the world to correspond to knowledge of objective facts, ‘knowledge’ understood as ‘knowing as a fact.’ And instead the word ‘interpretation’ is merely reserved for the, as it seems, few instances where the subject for one or another reason considers that he has not yet gained certainty as to the essence of the observed. This assumption that knowledge could possibly be discovered forms the whole foundation of science. The problem is especially aggravated in social sciences, because contrary to the natural science where there at least is a material object with mass and energy (thing), in social sciences there is none. Therefore the statements of social science cannot even potentially be anchored in any form of objective reality, they will remain the objects of perpetual interpretations in competition without any means to scientifically validate the objectivity of various observers (compare with Locke, who identified the same problem in regards to what he called “moral words” which “having no settled objects in nature, from whence

their ideas are taken, as from their original, are apt to be very confused," 1694 Vol. II: 77).

The above connects with how Damasio explains the fact why human beings perceive the main elements of the natural environment largely similarly, he said: "we are so biologically similar among ourselves, however, that we construct similar neural patterns of the same thing" (2003: 200). But here another important consideration shall be taken into account, namely that Damasio's proposition holds true only in relation to how we perceive the natural environment, the environment of things and physical and chemical reactions, but it is not so in relation to how we perceive language and other social practices. This because the notions of language and social practices have not been (and will not be) through the process of evolution mapped in our neural reaction patterns, therefore there is no predictability (beyond what is affected by shared social experience) as to how different people will react to a given set of stimuli stemming from social practices. The more concrete an object (a thing) and the closer it is on view, the more we can concur in how we describe and perceive the object. The closer a perceived feature is to a concrete, tangible, entity the narrower is the range of differences in human interpretations, and therefore it seems that something can be deemed as more objectively true. But we should note that words do not represent anything concrete at all, they are totally immaterial, therefore the range of interpreting words and their combinations is so wide that there is absolutely no way of objectively deeming a correct interpretation of a word. Here we are faced with a total biological plasticity and left to be governed only by our historic social conventions, social practices which in themselves are nothing but expressions and interpretations. Therefore what little there was left of objectivity is all gone when the question is about interpersonal communication, social interaction. We all experience the complexity of social reality differently, we all feel social reality differently and there is no means whatsoever to communicate one's own view (feeling) of social reality in an objective manner, we only have subjective statements to be put against other subjective statements, none of which is ever understood by anybody else the same way that the subject wanted to be understood by his expressions.

Both in the evolutionary dimension and the dimension of the life of an individual organism, and even in the dimension of each act of behavior (to the extent we can identify what constitutes an act) the interpret-

ative mechanism can be said to strive towards perfection in so far as interpretation affects the expressions which in turn affect the interpretations and so on in eternal feedback processes of infinite variances. One act of interpretation leads to an expression, which potentially leads to a new and more effective interpretation, and so on ad infinitum. Evolutionary progress (i.e. progress in terms of the ability for increased cognitive awareness) has been driven by an increased ability to match the complexity of interpretations to the complexity of the external environment, the stimuli it provides. The development of the ability to cognitively feel and become conscious of the feelings represent evolutionary advancements in the overall ability to interpret.

Perhaps the best way to really grasp the evolutionary process of interpretation is to consider how vision has developed in the human organism. In addition to the below remarks on this topic I refer the reader to the corresponding discussion in the chapter *Mental Processing*. ‘Vision’ provides us with an example of how all is totally a question of interpretation. What is clear by now is that vision is not a function similar to filming and the eyes are not to be compared with cameras that perform direct conversion of signals, rather vision is a result of complex neural interpretative systems. David Lindberg’s *Theories of Vision From Al-Kindi to Kepler* (Lindberg 1976) provides interesting reading in this context; the author takes us through the history of knowledge into vision, showing which were the misconceptions and what was the process to clear them until finally it was understood by Kepler that behind the visible eye a complex mechanism of cerebral interpretation is at work. Lindberg tells how the scholars were earlier “operating under the implicit assumption that the image or species in the eye is seen rather than interpreted” (1976: 203). Having understood the optical part of vision Kepler left the rest to be determined by future generations of scholars concluding that: “Vision occurs in the spirits and through this impression of species on the spirit. However, this impression is not optical but physical and mysterious” (1976: 204).

Similarly as the key to understanding vision was to understand that it basically is a question of interpretation, the key to understanding all cognitive processes, cognitive behavior, of a human being – and indeed all organic life – constitutes in understanding that *all is interpretation*.

Perhaps the best general understanding of the essence and primacy of interpretation over all other human processes was provided by Wilhelm Dilthey in his philosophy grounded in the principle of *hermeneutics*, the basic paradigm which I understand as a circle of interpreta-

tions, where one interpretation serves as the basis for a further enhanced interpretation. His major work *Introduction to the Human Sciences* (1989) is compelling reading and provides a lot of philosophical insight, although it remains somehow lacking of the final penetration to the essence of interpretation and fails in building an all encompassing paradigm.

## Qualia Mania

I will dwell here below somewhat at length on the absurd (even by the standards of modern philosophy) philosophical conundrum of qualia in order to illustrate the problems philosophers experience in grasping the conception of interpretation. I take the ideas of qualia to represent the antithesis of what we should understand under interpretation.

Because scientists even of our day cannot fully cope with the idea that a human being in reality is the genetic product of millions and millions of years of development, they continue fumbling for a metaphysical explanation for the human condition of life. To fill the vacuum created by the refusal to understand that all biological organisms interact with their environment through processes of expression and interpretation, scientists have invented the metaphysical concept qualia (sing. quale). With qualia they strive to explain the supposed “qualitative feel of consciousness” (Searle 1997: 8) or “qualitative character of experience.”

The cure against qualia starts with recognizing that all cognition is the product of organic and neural processes that yield interpretations. All stimuli which an organism can detect cause movements, or a series of movements in the organism. In more complex organisms these movements cumulate to what I call mental processing (which fundamentally consists of a complex series of sophisticated movements). Each stage of the process gives a joint outcome, a reflection of the processes. This reflection may, for example, consist in seeing a red flower, but hereby nothing from the flower entered the organism, no bit of its redness. All our perceptions are based on the same principles as *seeing* (vision) and, for example, *remembering*; all representing reflections of a present stage of mental processing, that is, of movement patterns. Hereby, we should remember that these movement patterns are grounded in our genetic heritage which biases the processes to yield certain types of perceptions (this was discussed above in reference to

Damasio saying “we are so biologically similar...”). This is why all healthy humans form to a large degree similar perceptions from direct processing of natural stimuli (i.e. what we can see, hear, feel by touch, smell, taste, or otherwise sense of chemical and physical occurrences, light, heat and humidity, pressure, time, etc.).

The qualia fallacy is best illustrated by reference to the American philosopher John Searle. Searle has assigned qualia a central role in his philosophical repertoire. Searle defines qualia as “a special qualitative feel to each type of conscious state.” Hereby he claims that there is an alleged problem of “how to fit these subjective feelings into our overall view of the world as consisting of objective reality” (Searle 1997: 8). This is the legend of the so-called subjectivity problem which I discuss in chapter *Feelings, Emotions and Consciousness*.

But Searle is not alone; many of the most eminent contemporary neurophilosophers adhere to this idea. Thus, for example, Koch asks: “How do what philosophers call ‘qualia,’ the redness of red and the painfulness of pain, arise from the concentered actions of nerve cells, glial cells and their associated molecules? Can qualia be explained by what we now know of modern science, or is some quite different kind of explanation needed?” (2004: xiii). He tells that qualia correspond to “these sensory qualities, the building blocks of conscious experience.” Further he asserts that it is his aim to resolve “the puzzle” of “how a physical system can have qualia? (2004: 2).

Crick, in turn, considers that qualia are “the properties of a thing” that somehow mysteriously enter consciousness. For him what waits to be discovered are “the neural correlates of seeing red” (1995: 9). It is especially disturbing that these neurophilosophers keep referring to colors as their choice examples on this conundrum; this considering the facts that by the theory of photoreceptors of the retina of the eye it has been sufficiently well explained how we interpret colors.

Edelman and Tononi assert that they were able to tackle the problem, which according to them had seemed insurmountable for Charles Sherrington and Bertrand Russell, namely the problem “how qualia arise from certain kinds of neural activity” (2001: 158). They were to provide a solution (or “at least an intuitive understanding”) to the qualia conundrum, which they describe in terms of “why the physical, objectively describable fact that a certain neuron is firing correspond to a conscious sensation, to a subjective feeling, to a quale? And why to that particular quale and not to another one” (we should understand that the sensation is not caused by the firing of a “certain neuron,” but is rather an out-

come of complex processes). For them “the perception of red, blue, and other colors” represent the archetypes of qualia (which position they seem to share with all the other masters of qualia). In a later book Edelman’s color choice is green, telling that “qualia are, for example, the greenness of green and warmness of warmth” (2006: 14).

Even Damasio is slightly contaminated by this philosophical flu, which prompts him to postulate that solving certain neurobiological problems “encompasses, of necessity, addressing the philosophical issue of qualia.” He tells that “qualia are the simple sensory qualities to be found in blueness of the sky or the tone of sound produced by a cello” (1999: 9).

Qualia, however, is not something that Searle or his contemporary peers invented, on the contrary the basic idea is so old that already the philosopher William of Ockham, famous for “Occam’s razor,” attacked this same silly idea already in the 13<sup>th</sup> century. In his *Theories of Vision From Al-Kindi to Kepler* Lindberg accounts for how Occam countered this fallacy. This is how Lindberg explained it:

“Does intuitive [and abstractive] cognition require species [*species* is the name by which the idea of qualia was earlier referred to]. Is there, in short, a mediating instrument between the object (whether sensible or intelligible) and the knowing mind? Ockham’s answer is that there is not. Intuitive cognition requires nothing except the intellect and the thing known, and abstractive cognition requires, in addition to perfect intuitive cognition, only a habitus. The point of Ockham’s teaching, then, is that both the senses and the intellect have direct, unmediated apprehension of their objects, and this direct apprehension provides the grounds for certitude and a defense against the possibility of skepticism...Moreover, there is no experiential evidence of species, which are posited solely to explain our awareness of the object” (1976: 141).

A few centuries later Descartes also criticized the qualia theories of his time and the widespread habit of his contemporaries to invent all sorts of theoretical constructs to explain perception such as “first matter, substantial forms, and all the great array of qualities which many are in the habit of assuming.” Descartes correctly concluded that all these theories were more difficult to understand than “all the things which we profess to explain by their means” (1997: 332).

Perceiving a red flower is not an activity independent of all other stimuli that the organism is processing at the same time, but it seems that the qualia-minded scientists do not recognize this and therefore posit a *ceteris paribus* condition for searching for the neural correlates that correspond to the qualia of the "redness of the red." Such a study could at best reveal which sensory cells feed to which neural groups and which brain regions would be more activated than others when one or another perception is formed. This would not be a study of the "neuronal coordinates" that correspond to any qualia, but a study of the complicated process of creating an interpretation of a given type of stimuli in the background of all other mental processes.

When scientists will understand that all process of life essentially correspond to expressions and interpretations as a function of organic movements (mental processes), then they will not need to search for a metaphysical explanation such as that of qualia. The notion 'qualia' belongs to the thingly world view of conceptual science, where conceptually posited *things* stand in for the real processes. It is to satisfy the cravings of their thingly language of conceptual science that scientists feel the urge to postulate a thing of one or another sort to stand for all the living phenomena they observe.

There are elements of an even more basic language game in the qualia conundrum, this is the tautology of speaking of the 'blueness of blue,' 'redness of red' etc. In this language game the moves are performed by changing the grammatical category of the adjective to that of a noun and then repeating the original adjective after the newly formed derivative nominal, yielding the 'blueness of blue.' We may solve the entire riddle just by pointing out that the tautology is nonsensical: the 'blueness of blue' is simply the 'blue.' And by doing so we strip 'qualia' of its sexiest element – now instead of talking of the 'redness of red' we are left with just bluntly stating 'red.' And what would then be the point of inquiring into such an unsensual word as that! There is no philosophy to be made out of just 'red.'

We see blue or red or green only because we have the biological propensity to perceive certain wavelengths of light reflected or emitted from an object as particular colors; this as a result of genetically determined mental processing of neural signals in response to light waves captured by the cone photoreceptors of the eye. A red flower does not emit red light, rather, it simply absorbs all the frequencies of visible light shining on it except for a group of frequencies that are by humans perceived as red, and these are the ones that are reflected. A flower is

perceived to be red only because the human eye can distinguish between different wavelengths that lead to an interpretation that *red is being seen*. Thus color represents a perception constructed by mental interpretive processes (visual processing) and is not a property of objects as such – nor is it a property of the neural system. This being so the qualiamongers would have to postulate not the ‘blueness of blue’ but the ‘X wavelengthness of blue’ and find the neuronal correlates for the wavelengths, but this is already being done in real science without much philosophical ado.

In order to further undermine the qualia perversion, we have to challenge the way all these respected scientists treat colors as if they were some entities of which one can speak of in an exact manner, as if there were some objectively identifiable color ‘blue’ that meant the same for each person in each situation, or as if this ‘blue’ always corresponded to the same wavelengths. This when it should be clear to anybody with normal life experience that ‘blue’ is just a concept that represents an approximation for all the color perceptions we have learned to fit under this general label. In reality we perceive various frequencies of wavelengths of light to which we loosely apply the general concept ‘blue’, but this we do only as long as we do not have to be precise about it. If we want to have our walls painted, we will certainly not order them painted in ‘blue,’ but we rather specify the needed color by choosing from samples. Professionals that work with colors, such as designers, in fact have a wealth of different names for the different colors that are grouped together under ‘blue’. One Internet site listed 39 different colors in the group ‘blue’, ranging from ‘Air Force Blue’ to ‘Yale Blue’, with ‘Indigo’, ‘Prussian Blue’, ‘Royal Blue’ and ‘Electric Blue’ somewhere between the poles. Thus a qualiamonger would have to correct his habits and be more precise in his definitions – after all he is a conceptual scientist – and then instead of the ‘blueness of blue’ he should be perplexed over the ‘airforceblueness of blue,’ but then again he would risk being challenged by another one who would claim that the correct quale at hand according to his school was the ‘yaleblueness of blue’ – and just think how this would complicate the search for the neuronal correlates. And this is how it is in reality, people can rarely agree on how a particular color should be perceived, not merely shades of colors but even the applicability of basic color concepts is disputed.

Although ‘the redness of red’ and ‘blueness of blue’ are the typical examples of what qualia are supposed to be, Bennett and Hacker point

out in their well-conceived criticism of qualia that this misconceived idea has by the enthusiasts been extended to signify the ‘qualitative character’ of all conscious experience (2003: 271). As I already suggested above, Searle serves as a perfect example for this particular fallacy maintaining that “there is a special qualitative feel to each type of conscious state” (1997: 8). Edelman and Tononi agrees with Searle’s identification of qualia with “conscious experience.” They also tell that “each differentiable conscious experience represents a different quale” (2001: 157). If the above with ‘redness of red’ didn’t sound nonsensical enough, then this should do it, these authors tell that “each differentiable conscious experience represents a different quale, whether it is primarily a sensation, an image, a thought, or even a mood and whether, in retrospect, it appears simple or composite.” Thus the authors speak, for example, about the “painfulness of pain” (201: 158) - as if all pain felt the same (when in fact all our cognition is a function of pain and pleasure in one or another form). They also pose the rather odd question “why does red feel like anything at all” (2001: 158). – We may tell them in reply that this is because all our cognition is based on feelings; all we are conscious of is something we feel. Further we may remind them that ‘red’ to begin with only represents a perceptual abstraction; and since we have a body interpreting we have a bodily reaction to each interpretation (i.e. to each feeling). But this is not a reaction to a property of the original stimuli (the more it is not a note to a grammatical category), but it is a complex bodily reaction to the situation of which the mental processing of the wavelengths causing the perception ‘red’ forms a part.

Let’s really consider what these savants claim. They claim that each moment of life of a living human being can be divided into units (or ‘states’ as they call the units). This corresponds to the old ideas of *atomism*, according to which the mental universe is composed of simple indivisible minute particles. And each of these units are said to correspond to one or another quale. - This is a thingly idea par excellence! Even our lives are not anymore considered as a grand processes made up of a lot of sub-processes, rather our lives are seen as a patchwork clipped together by thingly units that they call qualia. It is as if these savants had set themselves the task to identify each of these units so as to be in the position to publish a catalogue of possible human qualia. In this connection it is remarkable to note that Edelman in an earlier book *Neural Darwinism* (Edelman 1987), written more than a decade prior to his joint work with Tononi, himself ridiculed a similar idea telling that

“many introspectionists were psychological atomists; not unlike some present-day neuropsychologists, they postulated that consciousness was made up of elementary parts that could be catalogued,” adding: “never mind that the American school came up with more than 40,000 sensations and the German school with just 12,000” (1987: 5). If Edelman does not denounce this old criticism whereas he would be holding on to qualia, then it can only mean that Edelman thinks that the amount of possible qualia is so great that he does not even dream of compiling a catalogue of all them. No wonder he considers the problem of qualia as “the most daunting problem of consciousness” (Edelman-Tononi 2001: 157).

What surprises is that after all the talk of qualia Edelman all of a sudden asserts that “Consciousness is not a thing, it is a process”; he even seems to imply that the same goes for qualia (2006: 41). Edelman should have drawn more final conclusions from that insight.

At the end of the analysis these savants in refusing to think in terms of processes have postulated thingly entities, like qualia, where they should instead speak of mental processing and feelings. Searle even goes so far as to explicitly stress with great emphasis that *qualia exists* in its own right - as if it were an entity that possibly could *exist*. And as if to further emphasize this perversion he even declares that these metaphysical ‘qualia’ represent the same “entities” as the legendary ‘consciousness,’ to quote:

“*Consciousness* and *qualia* are simply coextensive terms. However, because Bennett and Hacker deny the existence of qualia, I am going to use the term in this text to emphasize the point of disagreement. When I say conscious states exist, I mean qualia exist” (Bennett, Dennett, Hacker, Searle 2007: 98).

How Searle arrives to postulate that consciousness and qualia are the same is more than I care to study, instead I refer the reader to my deconstruction of the metaphysical ‘consciousness’ in chapter *Feelings, Emotions and Consciousness*. But in this connection I need to point out that consciousness means the awareness of one or another kind of a bodily sensation or process. Even if one would believe in these small thingly qualia that crowd the body and its brain, then one would still have to admit that there is clearly a category gap between ‘consciousness’ (a fleeting moment of awareness, awareness of something that ex-

ists or of phenomena which pass as processes) and ‘qualia’ (posited thingly entities that are said to exist in their own right), for even in that kind of a theory ‘consciousness’ should mean that awareness of the ‘qualia.’ - When we grasp the organic process model and the paradigm of expressions and interpretations, then we will be able to understand the real biological processes behind cognitive consciousness. We will then recognize how all consciousness (as well as all *unconsciousness*) merely corresponds to reflections of the ongoing processes, which never can be postulated to correspond to any static states that could be said to *exist*. Then we shall also understand that there cannot possibly *exist* any neuronal correlates that could possibly correspond to such non-existent states. In living biology there are no states (see discussion of ‘mental and brain states’ in chapter *Mental Processing*).

The subjectivity fallacy, which we already encountered in connection with the deconstruction of ‘consciousness’ has, of course, been dragged into the qualia speculation as well. Now the savants claim that by exchanging ‘consciousness’ for ‘qualia’ this “subjectivity problem” would somehow be more manageable. For example, Searle tells that “because of their subjective, qualitative character, these states are sometimes called ‘qualia’” (Bennett, Dennett, Hacker, Searle 2007: 98). At least Edelman and Tononi seem to agree with Searle on this (2001: 15). This is how Searle puts it: “There is a special qualitative feel to each type of conscious state, and we are not in agreement about how to fit these subjective feelings into our overall view of the world as consisting of objective reality. Such states and events are sometimes called *qualia*” (Searle 1997: 8). – What catches the eye here is how fundamentally wrong Searle is in his premises speaking about “objective reality”. Why does he think that reality would be objective? This is one more manifestation of the fact that he does not understand that the human being, as any living organism, is actually merely interpreting its environment; the human is a thing that interprets, and interpretations are never objective, they are subjective par excellence.

The human has developed through evolution so that its abilities to interpret the environment have constantly (in an evolutionary sense) been enhanced, leading at the final evolutionary stage to the ability of processing cognitive feelings of which the human may become conscious. In the course of evolutionary development certain ways of recognizing nature have through genetic endowment become innate features, so that a human recognizes wavelengths of light as certain colors, while some wavelengths or sounds remain beyond the scope of what the

human can detect and process. A human has genetically been endowed with the capacity to recognize a particular kind of surface as a hard one and another as soft; some temperatures as cold, some as warm; some sounds as loud, some as silent, and some not at all; some tastes as pleasant some as unpleasant (although here we see very clearly also how social experience can lead to different interpretations). Other animals perceive these same phenomena differently based on their genetic evolutionary heritage, and we cannot say which animal is right or wrong. The fact is that nature consist fundamentally of physical and chemical processes in infinite variances, and only a hypothetical organism (an ideal Chomskyan interpreter) would perceive life objectively at the level of these process as opposed to the impressions that we in reality gain as external observers on the surface of the processes; but even so, this hypothetical objectivity would not be worth anything, for all that is of use (has a meaning) for an organism is what it may subjectively perceive (interpret) in the processes of relating itself to the environment. Such hypotheses have no role in science and belong only to fairy tales, we therefore have to conclude that there is no objective reality. But this is not the same as saying that there would not be any reality at all, as some philosophers of old maintained. There is a reality, but this reality cannot be objectively perceived, it always remains subjective, it represents a function of the interpretive process.

## Mirror Neurons and Interpretation

Contrary to the misconceived speculation on ‘qualia,’ there has in the last decade or so emerged some very interesting findings about the activities of so-called “mirror neurons,” which in my view serve to further illustrate the interpretation paradigm. The topic has become known through the research and scientific articles by Giacomo Rizzolatti and a number of his colleagues (e.g. the articles I will refer to here below). According to Kandel, Rizzolatti can be put down as the discoverer of the ‘mirror neurons’ in monkeys and Vilayanur Ramachandran can be credited for having found evidence of such in the human brain (Kandel 2006: 425).

Rizzolatti and his team originally discovered that a set of neurons in the ventral premotor cortex of the macaque monkey respond both when the monkey performs a particular goal-oriented action, and when it observes another individual performing a similar action

(Gallese, Keysers, Rizzolatti 2004). Other studies have proven that the basically same observations apply to humans even to a greater extent, the human system ‘resonating’ in response to a wider and more subtle range of observed stimuli. The key conclusion that the scholars wanted to highlight was that the mere observation of an action leads to the activation of part of the same motor circuits that are activated when the monkey or human subject perform the action itself. From this the research team wanted to draw the conclusion that the observer “understands the action because he knows its outcomes when he does it.” Thus “action understanding” would not depend on the activation of “visual representations” and “their interpretation by the central conceptual system”; and instead what would be enough is this “penetration of visual information into the experiential (‘first person’) motor knowledge of the observer.” Hereby the authors argue, that this is a mechanism that allows “direct experiential grasp of the mind of others” through “direct simulation through the mirror mechanism” without recourse to “conceptual reasoning.”

For my part, I find this research on the “mirror neurons” highly interesting proving on a very detailed level how the mechanism of interpretation works. Kandel had singled out that Rizzolatti’s findings provided insight into ‘imitation,’ ‘identification,’ ‘empathy,’ and ‘mime vocalization.’ I concur with that, but would also point out that the findings provide insight into ‘imagination,’ ‘learning,’ ‘remembering,’ etc., as well. This issue serves as a prime example for showing the unity and interdependency of organic phenomena (the principle which I have stressed through this book) and the fallacy of postulating, in ignorance of said principle, that our conceptual vocabulary could somehow correspond to the real underlying biological processes. I have told that the mental processes as such cannot be divided so as to correspond to the various perceptions we form of them or the aspects of behavior they give rise to. Neural processes can only be divided by the complexity and sophistication of the processes, as I have explained it with the *Lamarckian continuum* and the principle of the essential unity and interdependency of organic phenomena (see chapter *Mental Processing*). In chapter *Memory* I rendered the idea by saying that at the highest peak of complexity and sophistication of mental processes we have the processes which lead to *cognitive consciousness*. When we are in a state of cognitive consciousness then we *experience, perceive, learn, remember, will, appraise, imagine, reason, believe*, etc.; but there is no fundamental differences in the mental processes (nor in the brain regions

they involve) that all these cognitive phenomena reflect; we merely perceive the activities differently; the same processes viewed from different points of view are perceived as different kinds of phenomena. – In my view the concept interpretation and its dyad, expression, is what most fundamentally is explained by these findings of Rizzolatti and his colleagues. Human cognition, as well as that of monkeys, must be seen as a holistic enterprise, and therefore these “mirror neurons” should be seen as details that highlight a part of the complexity of the cognitive processes of interpretation, but not as depicting how a certain form of hypothetical act of cognition would occur (I will return to these considerations shortly below).

Rizzolatti et al., tell how the “mirror neuron” mechanism provides a system of simulating the experience on oneself. I shall note that I have identified such cognitive simulating as being the fundamental mechanism of all cognition. Thus, for example, in chapter *Mental Processing* I said that mental images are movements mapped against the previous experience noting that we could therefore conceive of the evolutionary origin of images as kind of simulations of how a situation under the given conditions would be enacted against prior experience. In my interpretation, then, all cognitive activity, and the behavior it reflects, is anchored in the system of correlating environmental conditions (stimuli) to how they affect the body (parts of it) and consequently the whole homeostasis as reflected in feelings. In this connection reference is also made to what was said about somatic processes and somatic markers in the chapter *Mental Processing*. This inasmuch that when an organism conceptualizes experience then each experience is being related to how the environmental stimuli fit the well-being of the body through their effects on the relevant bodily parts. A further aspect of this kind of simulation is manifest in the processes of conceptualization. In the relevant brain systems various cognitive perceptions are simultaneously processed and lead to conceptualization of new experience in the background of old by, as it were, creating ‘concepts’ by comparing new experience to past experience, and then assigning the new experience a proper relation in regards to past experience. This is similar to the idea which Damasio expresses like this: “The association between a certain mental image and the surrogate of a body state would have been acquired by repeatedly associating the image of given entities or situations with the images of freshly enacted body states” (2000: 156).

It follows that in my conception, as I have rendered it in this book, the interpretive capabilities of the human have developed so that the human organism inherently deals with all stimuli so as to try to establish how a stimulus (or set of stimuli) affects (would affect) his well-being (through its effect on the homeostasis or a part of the organism). Thus, I take these experiments fundamentally to show how the system of neural interpretation works in regards to these kinds of stimuli. The action is interpreted by simulating the action in the own brain. But we should not think that these “mirror neurons” represent a remarkable subsystem that has its special way of functioning, rather we should consider that by these “mirror neurons” the fundamental mechanism of interpretation has been shown in reference to a separately identified phenomenon. The conclusion should be that all interpretation, and thus all cognitive activity are based on similar systems of neural interpretation, even when scholars have not been able to identify the operations so conspicuously. This would be fully in keeping with the evolutionary principles and the principles of unity and interdependency of organic phenomena.

The above considerations are connected with the *ceteris paribus*-fallacy that is so common in science, that is, the tendency to consider a research phenomenon as a phenomenon rigidly delimited from other adjacent phenomena. Most directly in this connection this has led the research team to postulate, as I reported above, that the mechanism of “mirror neurons” allows a “direct experiential grasp of the mind of others” without recourse to “conceptual reasoning.” Before addressing the main issue in this connection, I want to point out, that this mechanism does, of course, not allow any more direct grasp of “the mind of others,” than anything else. For certainly the research team has not invented any new mechanism that would allow for that to happen, on the contrary, they have shown how we by observation interpret the actions of others in our own “minds,” that is, how we form ideas of other person’s actions. The fact that we have this new bright insight into how the interpretive mechanism works, does not signify that we would have any more access to how another one thinks (“to his mind”). The authors said: “The observed action or emotions are ‘simulated’ and thereby understood” (Gallese, Keysers, Rizzolatti 2004). In another article by Rizzolatti with Arbib, the authors explain what is meant by ‘understanding’: the “capacity that individuals have to recognize that another individual is performing an action, to differentiate the observed action from other actions, and to use this information to act appropriately” (Rizzo-

latti, Arbib 1998). However, in keeping with my paradigm, I must stress that we do better to stick with the concept 'interpreting,' inasmuch as the concept 'understanding' connotes the authors' idea that a definite insight on something has been reached. - The experiments show that similar actions in brains happen to some degree, which must be taken to prove, or show the mechanism of, something we have always known. But the mistake is to draw too far reaching conclusions of the findings, precisely in line with the *ceteris paribus*-fallacy. These considerations bring us back to the main consideration I wanted to bring up namely, the idea that the "mirror neuron" mechanism would bring about cognitive ideas ("grasp of the mind of others") *without* involvement of "conceptual reasoning." Contrary to these ideas, I consider that the mirror neuron-mechanism illustrates one aspect of the process of what the authors call "conceptual reasoning," and what I would prefer to refer to as the mental processes of cognition involving conceptual (perceptual) abstractions. Cognition is a holistic enterprise. Any processes of cognition are formed by the effects of cognitive feelings that in turn are formed by adding the effects of mental processing of all stimuli that the organism has detected (and the processes that the stimuli awaken). I thus maintain that the "mirror neuron" mechanism simply forms part of the total processes of cognition and are correlated with the conceptual mechanism; there must be connecting links here, which the scholars have not considered or identified in connection with the experiments. This can, in fact, be illustrated by considering another article of Rizzolatti, Gallese, and Keyser together with Wicker, Plailly and Royet (Wicker et al., 2003). This article renders the research findings on how we experience disgust by direct experience of things that evoke disgust in us and how the same neurons recruited for that experience are activated when we observe reactions of disgust in others. The scholars have shown that "observing an emotion activates the neural representation of that emotion" or "observing someone else's facial expression of disgust automatically retrieves a neural representation of disgust." But the studies have not considered the effects of how conceptualized experience affects the emotive reactions. The authors put forward as their background assumption that: "In a natural environment, food poisoning is a substantial threat. When an individual sees a conspecific looking disgusted after tasting some food, he or she automatically infers that the food is bad and should not be eaten." Thus the reaction of disgust in the conspecific would automatically lead to reaction of disgust in the ob-

server. But, I maintain, that this is so only to the extent that the observer does not possess conceptual experience as to the underlying phenomena, that is, as long as the observer does not know any better. Let us consider cases of differences in national cuisines, or the cuisines of different social strata. Some people feel disgusted already at the thought of eating oysters, snails or the tongue of a cow, while some regard them as supreme delicacies. Now, if the one who enjoys these products would observe them being served to someone who abhors them, then the disgust that the latter would manifest would certainly not cause any disgust in the former; perhaps he would instead find the situation amusing. Or think of the reactions of a person coming from a culture where dogs are eaten for food. If such a person would be the host for a foreigner who would show disgust when offered to eat dog meat, the reaction would most probably not be that of similar disgust, but perhaps disgust at the behavior of the guest, or perhaps anger. Same types of dissimilarities between reactions of disgust versus pleasure can also be traced to all kinds of combinations of sexual coupling. – My point is to stress that the mechanism of mirror neurons is, of course, connected with that of the general mechanism of conceptualization.

Although I have brought up a few critical considerations as to the paradigm suggestions that we were presented with, I want to stress that I find the ideas of great value for illustrating the neural interpretive mechanism. In another article Rizzolatti, with Arbib (1998), building on the mirror neuron mechanism provides valuable insight into the questions of evolution of speech; I have dealt with those issues in chapter *Speech Evolution*.



## 7 MEMORY

*"I am my experience - I am what my body has gone through, as long as I am."*

### Summary of Main Ideas Concerning 'Memory'

I will here briefly introduce the main ideas that I present in respect of 'memory' in the present and the next chapter (*Kandel's Search for the Neural Correlates for the Concept 'Memory'*).

Summarizing the below I would define 'memory' as follows:

'Memory' is the conscious effect (perception, reflections) that the processing of present stimuli causes when the stimuli bears semblance to something experienced earlier and therefore unleash neural reaction patterns which were formed based on the earlier experience. The previous neural processing always predisposes the processing of similar stimuli in line with previous reaction patterns. Fundamentally this is a question about the organism relating new experience to past experience in mental processes that reawake those neural reaction patterns that correlate the new experience with the past experiences. This corresponds to how all cognition, as all neural processes in general, is about the human interpreting its position in relation to the present environment; this interpretation occurs by way of relating the present to the past, which is how all neural processes function. Thus 'memory,' as all being, is always about orienting oneself in space and time as a function of the human organism positioning itself in relation to the environment based on the neural patterns established by past experience. These processes from moment to moment lead up to the level of conscious cognition where a similarity between new and old processes causes the cerebral system to yield the perception of 'memory,' that is, of remembering, in form of mental images and verbal concepts, an interpretation of which can be expressed in speech.

'Memory' is the conscious reflections of neural processing of stimuli according to predisposed processing patterns.

The very essence of 'memory,' that is of *remembering*, is the processes of relating present experience to past experience, which is done by way of the organism reactivating mental processing patterns re-

lating to past experience without the original object (i.e. the original stimuli) being present.

'Memories' are the cognitive reflections we consciously perceive as results of processing present environmental stimuli in the background of all our life experience, as encoded in our neural processing patterns; these perceptions are formed by way of present interpretation of stimuli reawakening the past neural reaction patterns. Thus 'memory' (remembering) is a certain kind of perception we form on the conscious outcome (reflections) of the mental processes corresponding to the feeling of revisiting something that has been experienced before or which is connected with earlier experiences.

'Memory' corresponds to the conscious feeling that results from the organism going through similar mental processes that it went through at an earlier stage (the stage when the now remembered experience first took place). A stimulus or a set of stimuli causes a similar reaction pattern to occur in all the mental processes (neural reaction patterns) relevant to the stimuli in case. Similar movement patterns occur as those that went on earlier, and all these movement patterns cumulate in feelings and mental representations (reflections) that yield similar mental images and reactions to the images as was the case earlier – and this similarity between the present and earlier movement patterns and the reflections and mental images they yield are the 'memory.' - One movement, or a set of movement patterns, unleashes another movement or patterns of movements, which are always based on previous organic experience, that is, on neural patterns formed by previous processes. 'Memory' is thus the result of new stimuli being processed following neural patterns to which the brain and the neural system were predisposed from previous experience.

'Memory' (remembering) represents an organic predisposition based on previous experience (as encoded in neural reaction patterns) to react in a certain way under certain conditions (which, is the fundament for all organic processes). Similarly we could say that 'memory' is about associating the movement patterns caused by new stimuli with earlier movement patterns, which produces the reflections we perceive as 'memory.' More specifically when speaking about the perception 'memory' we shall mean the effects of which we become conscious of when the processing of new stimuli bear semblance to something experienced earlier and thus get processed in a similar fashion as those corresponding to earlier experience. The previous processing always pre-

disposes the processing of new stimuli in line with previous reaction patterns - certain stimuli unleash similar neural reaction patterns as those set by past mental processing. Sometimes those neural processes of interpretation trigger processes that yield in the human (and other animals that have the ability to consciously feel) a conscious feeling as expressed in mental images and verbal concepts of remembering the past; this when the person is in the state of cognitive consciousness. In order for this to happen the organism has to be able to conceptualize experience, which enables the organism to relate new experience to past experience and so to say reawaken those neural reaction patterns that correlate the new experience with the past experiences. It is the consciousness of the results, or reflections, of such processes that yield the sensation of remembering ('memory'). But where there is no such sensation the same underlying mental processes may still be underway. 'Memory' is thus an aspect of organic processes, processes that always form part of a unity of organic processes, which fundamentally are processes of feeling. 'Memory' and 'feelings' therefore fundamentally correspond to the same organic and neural processes.

There are no neural reaction patterns and no such phenomena of cognition that would specially correspond to something that could be separately identified as 'memory.' It is only when the neural processes following the Lamarckian continuum cumulate in the highest levels of mental processes of which an individual may become cognitively conscious that we may postulate that the corresponding phenomena are about 'memory.' This because the difference between 'memory' and other neural processes is fundamentally only about the cognitive consciousness which enable the perceptions of conceptualized experience. Thus I maintain that we may properly by 'memory' merely refer to those reflections of the mental processes of which we are cognitively conscious. Therefore we may properly speak about 'memory' only in reference to the phenomena when an individual has the feeling of cognitive consciousness about past experiences in a way that can be rendered by abstract expressions in speech and other means of (predominantly) volitional expression. In order for this to happen the individual has to be able to conceptualize experience. This also means that I maintain that it is not correct to refer by 'memory' to such acts of behavior that we cannot neurally conceptualize and that are such that can be expressed in motor acts without involvement of speech (or other means of deliberate symbolic performance).

We have to recognize that all mental processes correspond to memory, or better to put it vice versa, no mental processes are specifically about 'memory.' It is for the conscious cognitive aspects of these organic processes that we should bestow the concept 'memory.' In the processes of cognition, each perception involves the features we refer to by 'memory.' The difficulty here lies in the way scientists define their 'memory' – they should not seek for 'memory' in all the various levels of mental processing, and instead they should understand that the processes as such are the same, and 'memory' is only the conscious feeling of a recollection of a past experience or some phenomena relating to various past experiences. - All higher order cognitive mental processes are fundamentally similar in nature and these in turn are constantly connected with the lower level processes (the *hermeneutical evolutionary spiral*). The difference is only in our perceptions. Various brain centers process the stimuli in slightly different manners, but this should not be taken to mean that the unity of the processes were broken or that the principle was not valid, for all cognitive processes more or less involve all the brain regions in the integrity of the reentrant processes. All the differences that neuroscientists will possibly be able to detect in these processes can merely correspond to ever more fine-tuned nuances pertaining to an increasing complexity and sophistication of the processes in the fundamental unity and interdependency of all the neural processes.

This feeling of cognitive consciousness is perceived in form of mental images and verbal concepts. In a human being mental images and verbal concepts interact in the processes of thinking and the joint effect of this interaction is perceived as 'memories.' Those animals that have the organic ability to be in a state of cognitive consciousness perceive 'memories' in form of mental images.

I maintain that we should properly by the concept 'memory' merely refer to the reflections of these kinds of processes of cognitive consciousness that yield the sensation of *remembering* past events (or ideas corresponding to past events). Thus I propose that we restrict the use of the concept 'memory' to those phenomena of human cognition to which we may refer to as processes of 'remembering' and the corresponding phenomena of mental processing of mental images in those of the higher animals that are capable of cognitive consciousness of mental images.

We now see that ‘memories’ are not a collection of snapshots, mental clips or tokens that one has collected and which would exist stored in the recesses of the brain, rather language and other social practices (in form of environmental stimuli) give rise to what we perceive as ‘memories’ as a result of interpreting the present.

According to this notion, we shall not refer to ‘memory’ by the various concepts, ‘explicit,’ ‘implicit’ etc., and instead it is sufficient that we merely refer to the phenomena by the concept ‘memory.’ But if we necessary want to modify the concept ‘memory’ with another word, then I would propose to say ‘cognitive memory’ instead of ‘explicit memory.’ All speech ultimately corresponds to an expression of conceptualized experience, which then always involves that what we properly should call ‘memory’; by qualifying ‘memory’ as ‘cognitive memory’ we would stress this is about the human ability to remember that what can be expressed in words or perceived as mental images.

I thus consider that ‘memory’ properly speaking is about having the feeling of cognitive consciousness about past experiences in a way that can be rendered in speech (or as attempts by other means of symbolic expression), or perceived as mental images.

## About ‘Memory’

There is no such thing as ‘memory,’ and there are no such neural processes and no such phenomena of cognition that would correspond to something that could possibly be separately identified as ‘memory.’ Instead ‘memory’ merely represents reflections of the mental processes of which we are cognitively conscious of, which same mental processes may from another point of view be perceived differently. Thus, for example, what we call ‘memory,’ or more properly ‘remembering,’ corresponds from another point of view to what we call ‘learning’ (see discussion of ‘learning’ in chapters *A Review of Chomsky’s Verbal Behavior* and *Kandel’s Search for the Neural Correlates of the Concept ‘Memory’*). Yet from another point of view ‘memory’ corresponds to what we call ‘imitation’ (see about the correlation between ‘imitation’ and ‘remembering’ in *A Review of Chomsky’s Verbal Behavior*). Furthermore, for example, ‘*imagination*’ also fundamentally corresponds to the same kind of phenomena as *remembering*; the difference is that when we speak of ‘imagination’ we mean the toying with past experience directed towards hypothetical scenarios in the future (compare with Edelman and Tononi: “If our view of memory is correct, in higher

organisms every act of memory is, to some degree, an act of imagination. Biological memory is thus creative and not strictly replicative"; Edelman, Tononi 2001: 101). 'Memory' even corresponds to the same processes that we may call 'experience in the present' (see below discussion). – These perceived differences are not functions of separate mental processes rather they are founded in the way how the reflections of these processes (behavior) are perceived based on the attitude (frame of mind) of the observer.

Thus the mental processes as such cannot be divided so as to correspond to the various perceptions we form of them or the aspects of behavior they give rise to. Neural processes can only be divided by the complexity and sophistication of the processes, as I have explained it with the *Lamarckian continuum* and the principle of the *essential unity and interdependency of organic phenomena* (see chapter *Mental Processing*). At the highest peak of complexity and sophistication of mental processes we have the processes which lead to *cognitive consciousness*. When we are in a state of cognitive consciousness then we *experience, perceive, learn, remember, will, appraise, imagine, reason, believe*, etc.; but there is no difference in the mental processes (nor in the brain regions they involve) that all these cognitive phenomena reflect; we merely perceive the activities differently; the same processes viewed from another point of view correspond to other kind of phenomena. – Similarly Bartlett has said: "Remembering is not a completely independent function, entirely distinct from perceiving, imaging, or even from constructive thinking, but it has intimate relations with them all" (1995: 12); and "in passing from perceiving and imaging to remembering we do not enter a field of new psychological problems" (1995: 45). I note that Bartlett is not so categorical as I am in declaring them the *same*, but at any rate we concur in the judgment that the different concepts cannot be said to refer to fundamentally different phenomena.

I argue that it is preferable to speak about 'remembering' than 'memory,' but I will not refrain from using the word 'memory' when it according to our linguistic conventions will fit a context, but anyway I ask the reader to always keep in mind that the real processes in fact represent *remembering*. It is necessary to notice that the nominal form 'memory' a priori directs the study of the corresponding phenomena in the wrong direction. The noun 'memory' induces the observer to search for static thingly entities from which this bigger entity – as it is con-

ceived – ‘memory’ is constructed. The nominal form is precisely what has induced Kandel to think that there necessary are some entities in form of ‘information’ that are ‘stored’ in the ‘memory location’ he is searching for. Instead the verbal form ‘remembering’ immediately alerts the observer to the fact that we are dealing with processes and not static concepts, this will then help to switch from the conceptual method to the process method, as I have presented it in this book (see chapter *Processes and Concepts*, and the *organic process model* in chapter *Mental Processing*). - I note that Bartlett had also made a deliberate choice in employing the concept ‘remembering’ instead of ‘memory.’<sup>1</sup>

I have, especially in chapter *Processes and Concepts*, discussed how scientists are predisposed to give in their research priority to the received concepts instead of the organic processes that these concepts should serve to describe. By this *conceptual method* scientists are led to search for the organic correlates to the postulated concepts. Memory theory serves as a case in point; here scientists proceed from the idea that they necessary have to find ‘memory’ in lower forms of life and lower level neural processes; this, instead of understanding that only the perceptions we form of higher level cognitive processes may properly be referred to as ‘memory,’ as it is explained in this chapter. In my opinion Eric Kandel’s ‘memory theory’ illustrates this fallacy particularly well and therefore I have included in next chapter, *Kandel’s Search for the Neural Correlates of the Concept ‘Memory,’* a discussion of this fallacy together with a discussion of some other aspects of memory theory. The basic problem is that instead of understanding the unity and interdependency of all organic processes scientists, like Kandel, declare having spotted ‘memory’ here and there in the recesses of the brain or dispersed somewhere in the neural systems, even of a snail. Hereby I am not denying the utility of assigning concepts to correspond to our ideas or the perceptions we form of various mental phenomena, that is, the various aspects of them. But I want to reveal the fallacy of subsequently taking the concepts to represent a true reality. When we acknowledge the conceptual fallacy, then we will be able to recognize that the alleged separate nature of what in reality are aspects of the same phenomena is merely an illusion brought about by the bewitchment of our thinking by the *language of things*. At this point of bifurcation of language and reality scientists have in memory theory chosen the wrong path, instead of questioning their concepts scientists have stubbornly stayed with them while ignoring the underlying reality of the processes. Thus scientists should not postulate that the antecedent neural processes already form

‘memory,’ instead they should say, that by the evolutionary sophistication of the neural processes certain mental process patterns have developed so as to produce the higher order cognitive phenomena that include the perceptions we may call ‘memory.’ – We have to turn the investigation around: We shall not attempt to conduct a biological study by searching for a hypothetical correspondence between linguistic concepts and biological processes rather we must investigate the real neural processes and relate the results to our present understanding of the phenomena they give rise to. This approach will yield a redefinition of the concepts instead of trying to stretch the linguistic concepts to cover the terra incognita of cognition.

‘Memory’ (remembering) is a certain kind of perception we form on the conscious outcome of the mental processes corresponding to the feeling of revisiting something that has been experienced before. Thus ‘memory’ is an aspect of organic processes, processes that always are aspects of a unity of organic processes, which fundamentally are feelings. ‘Memory’ and ‘feelings’ fundamentally correspond to the same organic and neural processes. By this definition the object of study are feelings, and the task is to identify what causes the perception that ‘memory feelings’ form a domain of their own. We could ask “Is there anything specific about *remembering* as opposed to just *feeling*? I reply in the negative and maintain that ‘memories’ i.e. cognitive consciousness of perceptions on past experience are merely experienced differently than other cognitive feelings.

All cognition, as all behavior, is rooted in life experience as it is continuously encoded in neural reaction patterns. All cognition happens in the present and all present cognition is based on processing present stimuli in the background of the neural reaction patterns formed by past neural processes (this way the residue effect of past stimuli is involved in the present processing). This idea has also been expressed by Donald Hebb who has said that “the chief mechanism of learning and memory is simply the strengthening of the connections, the synapses, between brain cells” wherefore “the repetition of a fact or experience will reanimate the same set of neurons and the links between them will get stronger, and thus more easily be recalled as a set” (Hilts 1996: 108). This also corresponds to how I see that all cognition, as all neural processes in general, is about the human interpreting its position in relation to the present environment; this interpretation occurs by way of relating the present to the past, which is how all neural processes func-

tion. Thus 'memory,' as all being, is always about orienting oneself in space and time as a function of the human organism positioning itself in relation to the environment based on the neural patterns established by past experience

We, then, have to recognize that all mental processes correspond to memory, or better to put it vice versa, no mental processes are specifically about memory. This being the case, we then have to consider what is there in our various perceptions that makes us conceive of some phenomena in terms of 'memory,' or remembering.

'Memory' (*remembering*) represents an organic predisposition based on previous experience (as encoded in neural reaction patterns) to react in a certain way under certain conditions (which, keeping with what was said above, is the fundament for all organic processes). Similarly we could say that 'memory' is about associating the movement patterns caused by new stimuli with earlier movement patterns, which produces the reflections we perceive as 'memory.' More specifically when speaking about the perception 'memory' we shall mean the effects of which we become conscious of when the processing of new stimuli bear semblance to something experienced earlier and thus get processed in a similar fashion as those corresponding to earlier experience. The previous processing always predisposes the processing of new stimuli in line with previous reaction patterns - certain stimuli unleash similar neural reaction patterns as those set by past mental processing (it is another issue that we cannot trace the effects of a certain stimulus as it is always connected with simultaneous processing of other stimuli). Sometimes those neural processes of interpretation trigger processes that yield in the human (and other animals that have the ability to consciously feel) a conscious feeling as expressed in mental images and verbal concepts of remembering the past; this when the person is in the state of cognitive consciousness. In order for this to happen the organism has to be able to conceptualize experience, which enables the organism to relate new experience to past experience and so to say reawaken those neural reaction patterns that correlate the new experience with the past experiences. It is the consciousness of the results, or reflections, of such processes that yield the sensation of remembering ('memory'). But where there is no such sensation the same underlying mental processes may still be underway.

'Memory' corresponds to the conscious feeling that results from the organism going through similar mental processes that it went through at an earlier stage (the stage when the now remembered experience first

took place). A stimulus or a set of stimuli causes a similar reaction pattern to occur in all the mental processes (neural reaction patterns) relevant to the stimuli in case. Similar movement patterns are undertaken as those that went on earlier, and all these movement patterns cumulate in feelings and mental representations (reflections) that yield similar mental images and reactions to the images as was the case earlier – and this similarity between the present and earlier movement patterns and the reflections and mental images they yield are the ‘memory.’ - One movement, or a set of movement patterns, unleashes another movement or patterns of movements, which are always based on previous organic experience, that is, on organic patterns formed by previous processes. ‘Memory’ is thus the result of new stimuli being processed following neural patterns to which the brain and the neural system were predisposed from previous experience.

I discuss in the next chapter, *Kandel’s Search for the Neural Correlates of the concept ‘Memory*, the ideas that relate to the concepts ‘explicit and implicit memory,’ ‘conscious and unconscious memory,’ ‘declarative and non-declarative memory,’ respectively. That discussion will show that when we speak of the human phenomena that we refer to with the concept ‘memory,’ then the real distinction to be made is that between ‘cognitive processes’ versus ‘non-cognitive processes.’ By ‘memory’ we may only refer to such cognitive phenomena that we can be cognitively conscious of, which ultimately means that we can, at least potentially, express the corresponding phenomena (the mental images we perceive, mental reflections, ideas) in words. In that connection I also point out that while the condition is that we can express the ideas in words there is also the condition that we, on the other hand, cannot express these ideas by (exclusively) motor acts, that is, I have shown that the complexity of those cognitive phenomena (ideas) to which we shall refer by the concept ‘memory’ are so complex that there is no way of expressing them with other bodily means (motor acts) than words (or by attempts to other means of deliberate symbolic performance). I thus suggest that we may properly refer by ‘memory’ only to such phenomena that we can be cognitively conscious of and which we may express in words but not (exclusively) by other bodily means (excepting the attempts to express the ideas by means of other bodily symbolic acts of performance), or which we may perceive in form of mental images. According to this notion, we shall not refer to ‘memory’ by the various concepts, ‘explicit,’ ‘implicit’ etc., and instead it is sufficient that we

merely refer to the phenomena by the concept 'memory.' But if we necessary want to modify the concept 'memory' with another word, then I would propose to say 'cognitive memory' instead of 'explicit memory.' The concept 'implicit memory,' in turn, could after our deconstruction in terms of process theory be said to correspond to 'an adjustment of neural processing patterns in reflection of organic experience,' which refer it back to all organic phenomena, where it belong, instead of confusingly taking that to be one 'sort of memory.' - All speech ultimately corresponds to an expression of conceptualized experience, which then always involves that what we properly should call 'memory'; 'cognitive memory,' then, represents the human ability to remember that what can be expressed in words or perceived as mental images. - I explain the idea of there being mental phenomena that can be expressed in words but cannot be expressed by other bodily means by pointing to how *conceptualization* (see chapters *Mental Processing* and *Feelings, Emotions and Consciousness*), the processing of conceptualized experience, involves so many diverse 'neural maps' of the whole organism in relation to an abstractly conceptualized environment corresponding to a given situation that no expressive behavior by means of motor actions could possibly correspond to them. Thus I consider that this complexity has lead to the emergence of conceptual expressions, and eventually to speech, as an outlet for the corresponding feelings and the urge to express in words that what cannot possibly be expressed by motor acts. In line with the above I would therefore state that the real distinction we are dealing with is that of 'cognitive processes' versus 'non-cognitive processes,' that is, the issues that have to do with conceptualization of experience (re. *conceptualization* see chapters *Mental Processing* and *Feelings, Emotions and Consciousness*).

I thus consider that 'memory' properly speaking is about having the feeling of cognitive consciousness about past experiences in a way that can be rendered by speech (or as attempts by other means of symbolic expression), or perceived as mental images.

In reference to what was said above about the fundamental constitutional insight that all cognition and all mental processes are about an organism relating itself to its environment, I note that the capacity to be cognitively conscious has evolved as a mechanism to manipulate the mental processing so as to more flexibly redirect the present mental processes towards a search of response patterns that correspond to previous experiences. Thus a capacity to 'form memories' has evolved from this adaptive function by, as it were, replaying past experience so

as to identify what in the present corresponds to previous experience. The reflections of these recreations are both consciously and unconsciously being weighed against various reaction patterns that the organism might undertake considering what had followed in the past from the various reactions then undertaken; thus 'memory' is about playing out a scenario that illustrate the present against the past (to the degree it has been encoded in the reaction patterns). – On a neural level 'memory' is about associating the movement patterns caused by new stimuli with earlier movement patterns (on this level there is no difference between 'memory' and other 'neural processes').

In my *All is Art* (Hellevig 2007) I identified that untangling the mystery of 'memory' would bring a lot of insight into the human being and his interactions with the world, and this would serve to prove my idea of interpretation of feelings. I very much feel that I have succeeded in this endeavor and that all the ideas that I hear present in relation to 'memory' serve as essential background facts to explain why speech is interpretation of feelings. – In *All is Art* I hypothesized like this:

"I think that discovering 'memory' - finding out what it is all about, how it functions - would be the most rewarding piece of information about human cognition: what is the biological memory, or rather the biological processes that occur in storing and producing memory? - Could it be that there is no storage - that the word 'storage' is just a leftover from the thingly language? Could it be that memory is just the avant-garde of the same processes that produce evolutionary adjustments, that the organism just has a way of reacting to sensory impulses, so that each time a new impulse comes it is compared with the previous impulses, and that this biological comparison would immediately, and continuously push the body to produce images, perceptions, which in the imagination of a person come out as memories. And perhaps language, because of the added level of abstraction, causes certain kind of processes to be activated or dominant. In this hypothesis even memory would to a great extent be outsourced in social practices, in language. - We need to keep in mind that ultimately all cognition is based on interpretation of perceptions which are always more or less fallible."

I have through this present work replied to the questions I raised, and I consider that my research has proven that I was right in all these hypotheses. – When I said that 'memory' is 'outsourced in social practices,

in language,' I mean the fact that all our memory ideas are the results of new mental processing as functions of reacting to environmental stimuli, and to a very large degree that stimuli consist of social practices and their traces.

## **"Memory Storage"**

Above I have accounted for what I see as the major fallacies of memory theory, the fallacies which I dispel by pointing out that we should by 'memory' properly mean the ideas which I expressed under the conception 'cognitive memory.' These fallacies, in turn, are rooted very much in the linguistic fallacy to speak about 'memory' as a thingly entity which may exist *stored* somewhere in the brain. According to the popular conception 'memory' is to be considered as an organism's mental ability to store, retain and recall information. We speak about 'having memories', 'recall of memories', 'retention of memories.' And as 'memories' are thus solidified by the language of things as some sort of entities, it is only natural that people expect them to exist somewhere. Unfortunately this popular misconception corresponds to the opinions held by the most eminent professors in neuroscience. Thus, for example, the acclaimed professor Eric Kandel asserts that "memory" is "the ability to acquire and store information" (2006: 9). This idea has led Kandel to postulate that what must be studied is how "memories" are "stored in the brain." – To take another example, Johnson-Laird has identified the place of memory storage in the mythological location he calls "mind" saying that "words are stored in our mind with links between them" (2006: 3).

It is extraordinary that the neuroscientists have not advanced a bit beyond these lay conceptions in their paradigm statements of 'memory.' This although the criticism of the idea that memories would be some kind of thingly entities that could possibly be stored in the recesses of the brain goes back to at least to the 18<sup>th</sup> century. Lewes already ironized about the way how some of the leading scholars of his days considered the faculty of memory to be some kind of a "chamber of images, a spiritual picture-gallery" that preserves "all the scenes and events that have passed before the senses"; in the picture-gallery "no impression is ever lost; it may fade into twilight, or vanish in the darkness, but it keeps its place in the picture-gallery, and will be visible every time the closed shutters are reopened" (Lewes 1879b: 54). In this connection Lewes pointed out that the idea of memory storage "is ob-

viously no explanation, but a metaphorical restatement of the fact observed,” this wisdom applies directly also as criticism against the way our contemporary neuroscientists employ the idea of ‘memory storage.’ As long as they involve ‘storage’ in their paradigm statements, we may be assured that they have not grasped the essence of ‘memory’ and instead they only metaphorically restate the problem they have not come to terms with.

Already Locke denounced the idea of memory storage, telling that one tends to think of ‘memory’ as if it were a “storehouse of our ideas.” He warned against taking this metaphor for real and correctly pointed out that “our ideas” are “nothing but actual perceptions in the mind, which cease to be anything; when there is no perception of them,” further Locke continues:

“this laying up of our ideas in the repository of the memory signifies no more but this,—that the mind has a power in many cases to revive perceptions which it has once had, with this additional perception annexed to them, that *it has had them before*. And in this sense it is that our ideas are said to be in our memories, when indeed they are actually nowhere;—but only there is an ability in the mind when it will to revive them again, and as it were paint them anew on itself, though some with more, some with less difficulty; some more lively, and others more obscurely (1694 Vol. I: 80).

It is thus truly a mystery that our contemporary neuroscientists still adhere to the storage myth considering that they have even had the possibility to actually look in to the fine recesses of the brain and verify that no bits of ‘memory’ or traces of storages were to be found anywhere. As the locations of ‘memory storage’ have not been detected, scientists of late have anyway tried to readjust their conceptual toolbox to reflect these findings. Being utterly unable to let go of the beloved idea of storage even when no such location was detected they now tell that “memories are stored in a dispersed fashion” and that “complex memories” are pulled together from the various kinds of “dispersed memories.” Thus Damasio, for example, tells how images are not stored as facsimile pictures of things, or events, or words, or sentences, but that there would be some kind of a distributed storage of memories in “dispositional form”, where “dispositions are records which are dormant and implicit rather than active and explicit, as images are” (1999: 160). This

is not a convincing advancement for all that changed is that now what is said to be stored are the various sorts of “records” such as “records of the sensory aspects of the object, such as the color, shape, or sound” and “records of the motor adjustments that necessarily accompanied the gathering of the sensory signals” (1999:160; see also: 1999: 221; Koch likes the idea of “distributed memory” because for him it has the obvious utilitarian value of enabling storage of “more data,” 2004: 32). – This fallacy to conceive of such a dispersed storage system follows the technological advancements that have enabled scientists to identify in specific brain regions neural reaction patterns in reflection of some of the aspects of the cognitive perceptions that amount to the total perception of a given idea. Thus Damasio has been able to identify that in certain brain regions neural reaction patterns are revived (as reactions to a given stimulus) so as to lead to the perceptions of color, shape, sound, etc. in relation to an object. But he should note that the color, shape or sound was not stored there either, rather the same reflections were merely produced by the reawakening of similar neural reaction patterns. – What are dispersed are the mental processes and their reaction patterns.

## **Other Conceptual Fallacies and the Unity and Interdependency of Phenomena**

In addition to the major conceptual fallacies of memory theory discussed above I shall here briefly comment on the minor ones. One of these is connected with the concept ‘information’ which the neuroscientists anthropomorphically postulate to be stored and transferred in the brain and its cells. – I maintain that we can intelligibly use the concept ‘information’ only as denoting the data and ideas consciously formulated by a human being and communicated to other human beings (see *Kandel’s Search for the Neural Correlates of the concept ‘Memory’*)

Closely connected with the concept ‘information’ we have the concept ‘knowledge.’ Similarly as the case was with ‘information’ we can only postulate that an animal with sufficient cognitive capacities can have ‘knowledge’ of one or another issue. The proper use of the concept ‘knowledge’ thus entails that the entity that supposedly possesses ‘knowledge’ has the ability to cognitively conceptualize experience. Thus, for example, we may not postulate that a snail (and even less the separate neural processes of a snail) possess knowledge of any kind. However, in my conception it is preferable to avoid the concept ‘know-

ledge' altogether in a scientific discourse and rather to conceive of the corresponding issues in terms of 'interpretation,' as it has been stressed in many sections of this book. (I further refer to various sections of this book in regards to the notion 'knowledge').

The misuse of 'knowledge' in turn is connected with the misuse of the concepts 'learning' and 'remembering.' One aspect of the fallacy is naturally the same anthropomorphic use to which the neuroscientists have put the concepts, postulating that snails and even individual cells 'learn' and 'remember.' I maintain that we may validly employ these concepts only in reference to the cognitive capacities of human beings. The other aspect of the fallacy is the above discussed separation between the concepts 'learning' and 'remembering', as if they were different things of sorts, while in reality, we would not be able to biologically identify any differences between the processes that pertain to the one or the other concept. (Reference is made to other sections of this book for further discussion on the concepts 'learning' and 'remembering').

In fact the concepts 'learning' and 'remembering' cannot even be biologically separated from the concept 'experiencing.' We should recognize that *remembering*, *learning*, and *experiencing* would all be best subsumed under the concept *experiencing*, for in reality what all these concepts refer to is the reaction (through organic processes) of a human (or another cognitively conscious animal) to a complex set of stimuli that are experienced. When this experience undergoes certain kinds of sophisticated mental processes then they may lead to cognitive feelings which the human can (at least tentatively) conceptualize and subsequently (at least tentatively) express. Recognizing this correspondence helps to understand that one can have an experience similar to an earlier experience and call it *remembering* in the case when one consciously recognizes (or thinks to have recognized) something to have been experienced (i.e. learnt or "known") already in the past, and conversely call it *learning* when there is no antecedent fact or event which one identifies as an earlier experience to which the new experience could be assigned. But, nevertheless, it is in both cases a question of new *experience*, of new stimuli, leading to the unleashing of similar organic reaction patterns as past stimuli had activated (and which as a result had altered the previous reaction patterns).

I have already reminded the reader that direct vision – seeing something directly with open eyes - is as much a result of mental processing

as perceiving “in memory” mental images pulled together from the neural patterns created by processing stimuli that has been experienced in the past (chapter *Mental Processing*). In both cases we are experiencing in the present; ‘memories’ are also experienced in the present, but in these (cognitive) memory processes we tend to block the entrance of new stimuli so that the neural patterns of old stimuli have more scope to develop.

Any present act of experience involves ‘memory’ inasmuch we approach each new moment of life with all the neural patterns that have been set by past experience. When the mental processes in the present through the accumulation of circumstances are crucially similar in character then the conscious experience of the outcome (reflections) of the processes seems like a ‘memory’ instead of a new unique experience, which it, in fact, always is. Only the similarity of the conscious perception of the reflections of the mental processes leads a human to perceive that he is *remembering the past* as opposed to merely *perceiving the present*. - Interestingly Lamarck already drew attention to this fact saying: “If the individual becomes conscious of some of these ideas when the object is not present, he is said to be thinking of that object...; but if the object is present he is then said to observe it and examine it” (1809, in Huth’s 2006: 387). - Similarly Romanes and Spencer: “The fact that perception is thus everywhere and indissolubly bound up with memory, is an important fact to be clear about; for when memory becomes so habitual as to be virtually automatic or unconscious, we are apt to lose sight of the connection between it and perception. Thus, as Mr. Spencer observes, we do not speak of remembering that the sun shines; yet we speak of perceiving that the sun shines” (Romanes in reference to Spencer, 1886: 129).

It follows that ‘memory’ is the enactment of a series of response patterns that are always unique - if only ever so slightly altered - which at the end produces the ‘memory response’ which represents the perception that something was remembered as opposed to experienced in the present. Traditionally our scientists have, due to the small differences in how we perceive these types of processes, postulated that direct perception and remembering would correspond to processes of essentially different nature. A small dissimilarity has been accentuated on the expense of all the similarities and a wide gap has been postulated between essentially the same phenomena.

Just as direct visual perception and perceiving an image ‘in memory’ are basically the same kinds of processes, so are *remembering* and *feel-*

ing. I have proposed to consider 'feelings' as the general effects on the homeostatic system that mental processes cumulate into (see chapter *Mental Processing and Feelings, Emotions and Consciousness*). These mental processes with increased complexity cumulate to *cognitive feelings*. Our 'memories' or remembering are manifestations of such cognitive feelings, but precisely in the same way all that we experience (and perceive to experience) in relation to the present are similarly reflections of cognitive feelings.

Following the above ideas we also note that it is not warranted to separate between 'memory' and 'consciousness.' When we consider the phenomena called 'memory' and those called 'consciousness' through the paradigm of the organic process model, when we consider the reality behind the concepts, then we recognize that both these concepts correspond to the same organic and mental processes. The concepts even represent the same misconceptions. For both 'memory' and 'consciousness' have been taken to depict the phenomena of being aware of one's thoughts, or what I have identified as cognitive consciousness, yet as I have already shown 'consciousness' should be considered as awareness of various organic phenomena on a continuum from awareness of simple sensations to cognitive consciousness; similarly what is called 'memory' should be seen along this same continuum, so that all the phenomena which we properly call phenomena of consciousness should equally be thought of as phenomena of memory. At the peak of the continuum when one speaks of 'consciousness' one usually means the act of being aware of the present, while 'memory' is reserved for speaking about the act of being aware of the past (i.e. past experience).

As a summary of above I want to stress that there is no separate organic phenomena that could possibly be pinpointed down as being 'memory' (*remembering*), *learning*, *imitation* etc., rather 'memory' is a perception on all the same organic phenomena that consists of mental processing of stimuli and constitute feelings, cognitive feelings, and consciousness on the continuum of organic processes. 'Memory' (*remembering*) is a certain kind of perception we form on the conscious outcome of the process when the feelings yield a sensation of us having experienced something before (or the feeling that what we perceive is based on previous experience). By this definition the real object of memory research is cognitive feelings. In accordance with the organic process model 'memory' (*remembering*) is to be seen as mental processes of an organism interpreting its environment (external and in-

ternal). It is for the conscious cognitive aspects of these organic processes that we should bestow the concept 'memory.' In the processes of cognition, each perception involves the ideas we refer to by 'memory.' The difficulty here lies in the way scientists define their 'memory' – they should not seek for 'memory' in all the various levels of mental processing, and instead they should understand that the processes as such are the same, and 'memory' is only the conscious feeling of a recollection of a past experience or some phenomena relating to various past experiences.

In keeping with the principle of the unity and interdependency of all mental processes and the conception of 'memory' that has been presented above, we understand that it would be wrong to postulate that there in the brain would be special areas that are devoted to memory processing (compare Eichenbaum and Cohen 2004: 4). As there are no, and cannot be any, mental processes that specifically correspond to our linguistic conception 'memory', then there cannot be any specific 'processing centers for memory' either. But, unfortunately neuroscientists, like LeDoux, speak about the existence of "multiple memory systems in the brain" which are said each to be "devoted to different memory functions" (1998: 180). The perceptions we experience as 'memory' cannot be postulated to originate in separate organic subsystem rather they represent perceived aspects of all mental processes. All higher order cognitive mental processes are fundamentally similar in nature and these in turn are constantly connected with the lower level processes (the *hermeneutical evolutionary spiral*). The difference is only in our perceptions. Various brain centers process the stimuli in slightly different manners, but this should not be taken to mean that the unity of the processes were broken or that the principle was not valid, for all cognitive processes more or less involve all the brain regions in the integrity of the reentrant processes. All the differences that neuroscientists will possibly be able to detect in these processes can merely correspond to ever more fine-tuned nuances pertaining to an increasing complexity and sophistication of the processes in the fundamental unity and interdependency of all the neural processes.

A good illustration of the unity of the organic processes, and at the same time, a failure to see that unity and interdependency, is provided by Damasio's analysis of phenomena he calls 'emotions' (see, e.g., Damasio 1999: 280). The description he gives of the 'activity patterns' leading to 'emotions' correspond exactly to what could scientifically be also said about 'memory.' Damasio should notice that what he shows to

be the emergence of ‘emotion’ correspond to the same phenomena as those that lead to the perception of ‘memory’ - only *his perceptions* on them differ (for other examples of this dilemma see also Damasio 1999: 69; 2003: 137; 2000: 102). – Curiously enough, Damasio anyway acknowledges the unity of the phenomena – although he does it, as it were, unconsciously. This is evident when Damasio - without seemingly noticing it - makes a conceptual break in his discussion of ‘emotions’ by all of a sudden (and without explaining the change) going over to discuss the issues in terms of ‘memory.’ This occurs, for example, when he tells how the “brain forms memories in a highly distributed manner” taking “the memory of a hammer” as an example” (1999: 220). In one of the above referenced sections “Aunt Maggie” was similarly distributed across the brain, but that time in terms of ‘emotion.’ – Interestingly enough LeDoux also at one point recognizes the unity of the cognitive processes, saying: “Given that emotional and cognitive processing both largely occur unconsciously, it is possible that emotional processing are the same, or, as it is usually said, that emotion is just a kind of cognition” (1998: 68).

## Memory Traces

My conception of ‘memory’ as a product (reflections) of mental processing of stimuli according to predisposed processing patterns corresponds to the idea of ‘memory traces’ that was widespread in the 19<sup>th</sup> century. For example Lewes held this idea maintaining that the “organism has traces of its past excitations” the re-excitation which yields memory (1879: 54 – 56)<sup>2</sup>.

The idea of ‘memory traces’ should in this explanation be taken to mean the predisposition of the neural system to process stimuli along neural reaction patterns that correspond to antecedent processing of similar stimuli. Having stood for a largely correct view of what ‘memory’ in essence is, this metaphor of ‘traces’ anyway became quite controversial and was eventually replaced by the return to the age-old ‘storage’ metaphor. The controversy was, of course, rooted in the weaknesses of our thingly language and shows how difficult, if not impossible, it is to convey a metaphoric idea of a process, because most all people are anyway predisposed to think of these issues in terms of thingly concepts. Thus, the scholars that had tried to explain the process character of ‘memory’ through the ‘traces’ metaphor were soon forced

to defend their ideas against the detrimental idea of ‘memory storage.’ This because the critics had started to take the idea of ‘traces’ to mean that each experience causes a solid channel to be built in the nervous system and whenever the organism meets something that it has experienced before, the stimuli is launched through the *exactly* same channel that would yield the *exactly* same result. With striking language Lewes tried to explain both the fallacy and the original idea like this: “To say that [the traces] still continue to exist in the mind is not more rational than to say that melodies continue to exist in the musical instrument after the sonorous vibrations have ceased, or that the complicated and fluent movements of a fencer continue to exist after he has laid aside the foils. By again striking the notes in the same order of succession each melody may be reproduced: by again taking up the foil the fencer may once more go through the former graceful movements; and so by stimulating the Sensorium again its reactions may be reproduced” (1879b: 54). Similarly Bartlett explained that ‘memory traces’ were not some sort of “fixed and changeless traces” (1995: xviii; 1995: 197). After explaining the correct conception Bartlett concluded that it “now becomes possible to see that, though we may still talk of traces there is no reason in the world for regarding these as made complete at one moment, stored up somewhere, and then re-excited at some much later moment” (1995: 211).

William James was one of those who could not come to grips with the idea of memory traces, but his confused discussion of the idea anyway serves to illustrate the problem and what should be the correct conceptions of ‘memory’ and ‘consciousness.’ He explicitly criticized the idea of ‘memory traces’, which is particularly strange considering that he had even understood that these ‘traces’ should be regarded as mere ‘predispositions’ (1957 Vol. II: 655). James even quotes a large passage from the work of one of his contemporaries, one Dr. Maudsley, which well illustrates the correct idea while James lets it serve as an anti-example of what he considers the wrong conception (1957 Vol. I: 655). Reading James’s quote on Maudsley today we may surely settle the controversy in Maudsley’s favor. It seems that James failure to grasp the idea was connected with his fallacious ideas in regards to the concept ‘consciousness’ (see chapter *Feelings, Emotions and Consciousness*). This is what James quoted Maudsley to have said:

“When an idea which we have once had is excited again, there is a reproduction of the same nervous current, with the conscious addition that

it is a reproduction – it is the same idea *plus* the consciousness that it is the same. The question then suggests itself, What is the physical condition of this consciousness? What is the modification of the anatomical substrata of fibres and cells, or of their physiological activity, which is the occasion of this plus element in the reproduced idea? It may be supposed that the first activity did leave behind it, when it subsided, some after effect, some modification of the nerve element, whereby the nerve-circuit was disposed to fall again readily into the same action; such disposition appearing in consciousness as *recognition* or memory. Memory, is in fact, the conscious phase of this psychological disposition when it becomes active or discharges its functions on the recurrence of the particular mental experience.”

But led by his erroneous conception of ‘consciousness,’ James concludes that “the slightest reflection will convince anyone that there is no conceivable ground for supposing that with mere re-excitation of [something] there should rise the ‘conscious addition’ that it is a re-excitation.” The problem here is that James – although lucid at moments – did not manage to recognize that ‘consciousness’ represent merely the apex of mental processing, that is, he did not recognize that the same “mere re-excitations” that happen on the lower levels of the processes are also reflected on the higher cognitive levels and that therefore no “conscious addition” needs to be separately postulated, instead the “conscious addition” is only a continuation of the “re-excitation” by which cognitive feelings similar to the earlier once are produced. But these feelings would obviously not be the exact same ones, and could not possibly be that, for each moment of mental processing is unique and each new instance of mental processing changes the reaction patterns ever so slightly; and each new process also reactivates adjacent reaction patterns that affect the present outcome.

But when James in another connection discusses the processing of stimuli that leads to what he calls ‘emotions’ he effectively repeats the same idea that Maudsley had professed (and which I embrace as well). But this time he does it in a purely biological discussion where he did not involve the metaphysical ‘consciousness’ (1957 V.II: 473). This is how James explains the processing of stimuli in this connection:

“An object falls on a sense-organ, affects a cortical part, and is perceived. ...Quick as a flash, the reflex currents pass down through *their*

*preordained channels* [italics supplied], alter the condition of muscle, skin, and viscus; and these alterations, perceived, like the original object, in as many portions of the cortex, combine with it in consciousness and transform it from an object-simply-apprehended into an object-emotionally-felt. No new principles have to be invoked, nothing postulated beyond the ordinary reflex circuits, and the local centres admitted in one shape or another by all to exist.”

James’s dilemma here – it needs to be emphasized – is connected with the fact that he had not fully understood the unity and interdependency of organic processes and mental processing; this prevented him from understanding that what is ‘emotion’ is also ‘memory.’

Thus the critics of the idea of ‘memory traces’ claimed that what had been asserted was that some “fixed and changeless traces” were stored in one place or another. But this criticism did not prevent the following generations to embrace an even more perverted version of the storage theory, the affirmation that what were stored were ‘memories’ themselves. This idea corresponds to the contemporary paradigm in memory theory. However, while the storage idea represents the contemporary philosophical paradigm of memory theory, the research data and experiments as such clearly confirm the original idea of memory traces. Thus, for example, contemporary neuroscientists speak about ‘dispositional representations’, ‘firing patterns’ and ‘synaptic strengths’ which all, in fact, only represent modern research data on how the traces are formed.

For example, Damasio is de facto explaining the same ideas that were earlier referred to as memory traces when he speaks about “a dispositional representation” being “a dormant firing potentiality which comes to life when neurons fire, with a particular pattern”; adding that the “firing patterns result from strengthening or weakening of synapses, and that, in turn, results from functional changes occurring at microscopic level within the fiber branches of neurons (axons and dendrites)” (2000: 103). - Compared with what Lewes and his contemporaries asserted Damasio’s statement would represent a linguistic modification brought about by the results of technological improvements that have allowed neuroscientists to gain more details about the neurobiological processes. We shall note, however, that hereby the description of how the corresponding mental processes result in perceptions has not advanced a bit. Let’s, for example, compare Damasio’s statement with the below quote from Romanes, which will show how Romanes already in 1886 was

able to explain all the essential features of the mental processes leading up to 'memory' long before the vocabulary of synaptic transmissions was invented. Romanes said:

"The most fundamental principle of mental operation is that of memory, for this is the *conditio sine que non* of all mental life. But memory on its obverse side, or the side of physiology, can only mean that a nervous discharge, having once taken place along a certain route, leaves behind it a molecular discharge, more or less permanent, such that when another discharge afterwards proceed along the same route, it finds, as it were, the footprints of its predecessor. And this, as we have seen, is no more that we find to be the case with ganglionic action in general. Even long before movements involving muscular co-ordination have been repeated with sufficient frequency to become consolidated into one organized and indissoluble act, they become, in virtue of the principle which I have termed the principle of use, more and more easy to repeat; in all but in the absence of a mental constituent the nerve-centre concerned remembers the previous occurrence of its own discharges; these discharges have left behind them an *impress* upon the structure of the ganglion just the same in kind as that which, when it has taken place in the structure of the cerebral hemisphere, we recognize on its obverse side as an *impress* on memory. The analogy is much too close to be attributed to accident, for it extends into all details. Thus, a ganglion may forget its previous activity if too long an interval is allowed to elapse between the repetition of its activity" (1886: 35).

Further Romanes explains the idea like this:

"There can be no doubt that in the complex structure of the cerebral hemispheres one nervous arc (i.e. fibres, cells, and fibres) is connected with another nervous arc, and this with another almost ad infinitum; and there can be equally little doubt that process of thought are accompanied by nervous discharges taking place, now in this arc, and now in that one, according as the group of nerve-cells in each arc is excited to discharge its influence by receiving a discharge from some of the other nerve-arcs with which it is united. Again, we have seen, it is practically certain that the more frequently a nervous discharge takes place through a given group of nervous arcs, the more easy will it be for subsequent discharges. And now a very little reflection will show that in this physi-

ological principle we no doubt have the objective side of the psychological principle of the association of ideas. For it may be granted that a series of discharges taking place through the same group of nervous arcs will always be attended with the occurrence of the same series of ideas; and it may be further granted that the previous passage of a series of discharges through any group of nervous arcs, by making the route more permeable, will have effect of making subsequent discharges pursue the same course when started from the same origin" (1886: 37).

Interestingly, there is evidence that the true nature of 'memory' as reflections of neural processing of sensory stimuli was known at least as early as in the 18th century. Charles Bonnet (1720 – 1793) already expressed lucid insight into the true nature of 'memory.' In reference to Whitaker's and Turgeon's *Charles Bonnet's Neuropsychology* (2007), I will briefly render the main points of Bonnet's theory to the extent they bear on our topic. Bonnet proceeded from the idea that all knowledge originates in sensations, which are caused by movements in nerve fibers induced by external and internal stimuli that cause impressions on the nerve fibers. By 'impressions' Bonnet meant changes in their molecular structure and constitutive elements (phenomena of which we have gained more precise interpretations and now refer to as neurochemistry). By the changes in the molecular structure the nerve fibers acquire the capacity to produce new sensations, feelings, ideas etc. Bonnet also noted, especially in relation to memory theory, that there is clear communication between fibers so that each fiber may communicate with another fiber, calling the bundles of nerve fibers "pieces of a chain." According to Bonnet it was the "communication or the propagation of movements" that resulted in the phenomena of cognition and memory, the nature of the sensations (feelings) depending on the number of fibers moved and on the ability of their basic elements to be moved. He said that "it is infinitely small forces that, because of their gathering contribute to produce a Sensation at a particular level of intensity" (precisely as it is now understood in neurochemistry). The changes in the structure and constitutive elements of the nerve fibers cause the nerve fibers to acquire new "dispositions" or "determinations" (compare with Damasio's conception of 'dispositions,' above). He also postulated that the brain preserves something of the impressions, which perfectly fits the modern theory of brain maps. He thought of these dispositions as kind of 'traces' but "not the sort of trace that it is possible to make on solid matter," that is, he distinguished his idea from the perverted form

of the idea by which memory traces were seen as “impressions on a wax-like brain.” In Bonnet’s view the ‘memory trace’ did not bear any direct resemblance to the original object. According to Whitaker and Turgeon, Bonnet seems to have understood that “the movements in fibers are some sort of a neural code.” - We shall only wonder how from these premises the neuroscientific knowledge of our modern times, notwithstanding all the technological advances, has degenerated back to the idea that ‘memory’ consists of some stored data or images!

## Contemporary Ideas of Memory Traces

To my mind, of our contemporary scientists Edelman and Tononi provide the best account of the neural processes that yield ‘memory.’ They expressly reject the idea that ‘memory’ would correspond to ‘storage of information’ (2001: 93). In their conception ‘memory’ is “a reflection of how the brain has changed its dynamics in ways that allows the repetition of a performance” (2001: 95). Very similarly to the concept ‘memory traces’ Edelman and Tononi speak about “neural response patterns” yielding ‘memory’ (2001: 98). The authors explain the idea in contemporary language like this:

“In a complex brain, memory results from the [neural activity] that occurs between ongoing, distributed neural activity and various signals coming from the world, the body, and the brain itself. The synaptic alterations that ensue affect the future responses of the individual brain to similar or different signals. These changes are reflected in the ability to repeat a mental or physical act after some time despite a changing context, for example, in ‘recalling’ an image” (2001: 95).

Perhaps the same idea is even more clearly illustrated by this proposition: “Such synaptic changes over large portions of a global mapping provide the basis for memory, but memory in global mappings is not a store of fixed or coded attributes to be called up and assembled in a replicative fashion as in a computer. Instead, memory results from a process of continual recategorization, which, by its nature, must be procedural and involves continual motor activity leading to the ability to repeat a performance” (2001: 97). - Quite correctly Edelman and Tononi relate the discussion to the ideas of “perceptual categorization and control of movement” (2001: 95), that is, the main principle of organic

life, as I have explained it in this book, in accordance with which all organic functions are a result of an organism positioning itself in relation to its environment. The authors tell that perceptual categorization and control of movement is a function of the mental processes in a structure called ‘a global mapping.’ A global mapping is told to relate “an animal’s movement and changing sensory input to the action of the hippocampus, basal ganglia, and cerebellum as they connect to the cerebral cortex.” Linking various arrangements of brain anatomy a global mapping is “a dynamic structure containing multiple reentrant local maps (both motor and sensory) that interact with nonmapped regions, such as those of the brain stem, basal ganglia, hippocampus, and parts of the cerebellum.” Importantly the authors add that the “activity of global mapping reflects the fact that perception generally depends on and leads to action.”

Damasio discusses some mental processes in similarly terms as Edelman and Tononi was above shown to do, when he tells that the “appearance of an image in recall results from the reconstruction of a transient pattern (metaphorically, a map) in early sensory cortices” (2000: 105). He tells that “the trigger for the reconstruction is the activation of dispositional representations elsewhere in the brain, as in the association cortex” and that the “same type of mapped activation occurs in motor cortices and is the basis for movement.” He also connects perceptions with movements telling that the “dispositional representations on the basis of which movements occur are located in premotor cortices” and that “they activate both movements and internal images of body movement.” – Unfortunately, though, Damasio evokes the idea of ‘memory storage’ by affirming that those “dispositional representations contain records for the imageable knowledge” (2000: 105); some are even said to “contain records of rules and strategies with which we operate on those images.”

## **Present Stimuli vs. Past Stimuli**

To complete this presentation of my conception of ‘memory’ as the conscious reflections of neural processing of stimuli according to predisposed processing patterns, I need to say a few more words about the role of the immediate (present) stimuli versus stimuli relating to past experience. When the immediate stimuli activate the predisposed processing patterns the processes immediately lead to other processes, the function of which is to match the processes activated by the present

stimuli with process patterns corresponding to earlier experience. Corresponding with this idea Edelman tells that “synaptic strengthening and weakening enhances the reengagement of some of the original circuits” even when the original stimulus is not present; this is done by “stimulation, within the brain of a subject, of reentrant circuits to yield an image or thought of the object upon memory recall” (2006: 32).

The very essence of remembering is the processes of relating present experience to past experience, which is done by way of the organism reactivating mental processing patterns relating to past experience without the original object (i.e. the original stimuli) being present. These processes enable remembering, and all the other organic processes, of which the phenomenon of remembering is an aspect. In fact, this is the very condition of organic life. The process must be such that each stimulus that is identified by our *sensory receptors* (the totality of all the bodily parts that can be said to receive impulses from the external) enters a process where its effect or potential effect on the organism is weighed against all the previous life experience to the extent that the life experience has left a trace in the organism in form of previous neural patterns (this *experience* is the predisposition to treat a similar stimulus in accordance with the neural processing patterns thus developed). A new stimulus reawakes similar reaction patterns, but the processing of the similar stimuli does not have to go through all the same bodily feedback loops as relevant higher-order brain processes are triggered, as it were, by means of short-cuts in the systems of mental processing (compare with Damasio’s “as-if loops” (2000: 157). The more conspicuous the earlier experience of similar processing, the faster the corresponding reaction patterns are identified. In this sense ‘memory’ could be seen as an automatic activation of neural responses. (I remind that this is the same explanation that scientists traditionally give to how ‘emotions’ come about). Each neural process affects in some way all the other neural processes, thus each lived moment has affected a present moment.

As the organism continuously processes stimuli in infinite variances, there are some features of the totality of the processing system which assigns, so to say, a comparative value to the effect produced by any identified stimulus. This comparative value is a function of the strength and the intensity of the stimulus, and perhaps also its uniqueness and other parameters. Somehow this must lead to some stimuli being rejected from further processing while the effects of other stimuli are car-

ried to higher levels of processing. Those stimuli effects that are processed further will inevitably be matched to previous processes; we could metaphorically say that they are 'fitted and tried' to previous reaction patterns, and it is this that at the end of the analysis leads to the reflection that a 'memory' is recalled.



## 8 KANDEL'S SEARCH FOR THE NEURAL CORRELATES OF THE CONCEPT 'MEMORY'

The conclusions Eric Kandel drew from his memory research as presented in his *In Search of Memory* (2006) serves us with an archetypical illustration of the wrongheaded conceptual method of science (*In Search of Memory*, 2006). Kandel's fundamental error was to portray the concepts by which we describe complex human behavior backwards to elementary neural processes. By this preposterous method Kandel arrived to the extraordinary claim that some of the neural processes of the *Aplysia* snail would correspond to 'memory.' Kandel misses the point that higher order mental activities such as consciousness and human memory represent functions of the complexity of the processes and the processing organs, and is not primarily, as he thinks, a function of the biochemical recipe. The biochemistry of human cognitive processes is obviously based on the common principles, but the biochemistry of the motoric neural processes of a snail does not explain why human beings have the ability to consciously remember. These phenomena have common roots already at the level of the genetic code, but neither would a study of the genetic code reveal how human 'memory' is produced. By 'memory' we may validly only refer to such experience which we can become cognitively conscious of and potentially express in words or perceive as mental images.

Kandel starts and concludes his research armed with a conceptual arsenal that he deploys on biological phenomena. The linguistic concepts figure so prominently in his paradigm that he is unfortunately not able to draw significant scientific conclusions from the, as such, interesting research data. He set out to search for the biological correlates for the concept 'memory' and at the end of his experiments he considers having accomplished just that. But what he, in fact, did was to postulate that the perceptions he had formed on certain nuances of complex neural processes would amount to 'memory,' this instead of understanding the fundamental unity and interdependency of all organic processes. Had he only understood that, then he would have recognized that 'memory' is just a word for a perception - a socially governed perception - which humans form of certain aspects of observed behavior; had he only understood that, then he would have recognized that none of the neural processes he declares to be 'memory' amounted to 'memory' in

themselves, and that all the same neural processes which occur in the processes he declares 'memory' also occur in all other aspects of neural behavior.

Laboring under this conceptual method Kandel must tacitly believe that there is such a thing as 'memory,' and therefore he in essence postulates that the concept 'memory' from our everyday language must represent a fundamental wisdom to which ordinary people have arrived intuitively before scientist ever started to study the phenomenon. He has clearly accepted the idea that there must exist such a thing as 'memory,' and all he had to do is to find out how it is produced and where exactly it is located (2006: 134). – This is like hunting for a lost legendary treasure, the reality of the legend never being put in doubt. According to this logic the people that introduced the concept 'memory' would already have known the final outcome of the biological reality that Kandel and his colleagues set out to discover. But what reasons do we have for expecting that the word 'memory' would possibly correspond to any kind of natural reality? A much smarter scientific approach would have been to start with doubting the premises: 'Maybe there is no 'memory'?'; and then to find out to what these underlying phenomena and processes in reality correspond to. This reminds me of Descartes saying: "A man who makes it his aim to raise his knowledge above the common should be ashamed to derive the occasion for doubting from the forms of speech invented by the vulgar" (1997: 146).

Already in the foreword to *In Search of Memory* Kandel declares his conceptual method telling that his goal was to understand "the human mind in biological terms" (2006: xi). As I have shown (chapter *Mind*) 'mind' cannot be explained by the biology of the brain and the nervous system, because 'mind' itself is a product of the nervous system interacting with the environment, with social practices; 'mind' is a social construction. There is no such biological organ or complex of tissues or neural or cerebral circuits which possibly could be identified as the 'mind.' 'Mind' represents the perceptions we form of our own and other people's ideas and cognitive behavior. 'Mind' is thus the result of human mental processing of stimuli (interpretation), and especially of processing the stimuli that we experience in form of social practices (most notably language). 'Mind' is the result of cognitive activity, the output of organic processes, but not the organ which processes, and not the processes themselves.

## Unity and Interdependency of Neural Phenomena

The very idea 'to understand mind' in biological terms amounts to a conceptual illusion. But this conceptual illusion has become the driving paradigm of Kandel's science, for he does not a bit doubt the existence of this hypothetical 'mind' no less than he doubts that of 'memory' and the adjacent concepts. He says: "We want to understand the biological nature of perception, learning, memory, thought, consciousness, and the limits of free will" (2006; xi). But the problem is that none of these impressive concepts of neurophilosophy correspond to anything biological, that is, they do not correspond to anything that possibly could be identified and postulated as separately constituent of those concepts. Instead they are all perceptions that we form of the various aspects of the unified and interdependent processes.

In *Principles of Neural Sciences*, which Kandel co-edited with Schwartz and Jessell (2000), the authors go so far with the conceptual method as to declare: "Learning is the process by which we acquire knowledge about the world, while memory is the process, by which that knowledge is encoded, stored, and later retrieved" (2000: 1227). This is a telling example of much that is wrong in neurophilosophy. Certainly we cannot validly postulate such a distinction between 'learning' and 'memory.' This distinction corresponds to an aesthetic conception, not a biological one. These concepts merely represent two opposite perceptions which we may form of one and the same process (compare with discussion of these issues in the previous chapter *Memory*). On one side, we may say that somebody learns if the person can repeat what was told. But, on the other side, if he can repeat it, then it is already an act of memory. Learning and memory are two sides of the same coin, two perceptions on the same act. And this is so in the minutest biological processes: supposing that we could validly depict by the concepts 'learn' and 'memory' non-cognitive neural processes, then each finest aspect of the processes would equally comprise both 'learning' and 'memory.' When in the corresponding neural processes a synapse permits a neuron to pass an electrical or chemical signal to another neuron, then that synapse does not correspond to neither 'learning' nor 'memory,' it is the effect of the synapse (in combination with many other synapses and other biochemical reactions) that can give rise to both perceptual phenomena.

Anyhow through a curious twist of understanding Kandel arrives at the unity of phenomena, however, overwhelmed by his conceptual pa-

radigm, he explains this unity in terms of the concept ‘memory’ – all processes of life represent to Kandel one or another sort of ‘memory.’ We have seen from the chapter *Memory* that what Kandel in fact describes is not ‘memory’ but neural processes, mental processing (which in certain combinations in human beings may produce the perceptions of ‘memory’). Guided by his misconceived idea of ‘memory,’ Kandel qualifies each separate section of neural processes and their outcomes as ‘memory’ of one or another sort. For him all animal organic processes represent some kind of manifestations of the concept ‘memory’ and therefore he assigns a memory-linked concept to all organic and neural processes. He is predisposed to do so because he is a memory scientist who views all neural phenomena from point of view of memory concepts.

## Explicit and Implicit Memory

Kandel’s two main ‘sorts of memory’ are ‘explicit’ and ‘implicit memory,’ where ‘explicit memory’ corresponds to what people ordinarily mean by *memory*, that is, the consciousness of a perception that some ideas or events (or conclusions drawn from the events) are remembered. In Kandel’s conception ‘implicit memory’ then covers more or less all the other neural processes; this with the exception of those neural processes that do not qualify as ‘learning,’ and thus form the pariah of neural processes, which do not merit the honorary denomination of ‘memory.’ Kandel involves ‘learning’ in the search of memory insofar as he thinks that all that is “stored in memory” must have first been “learned.” But it follows from Kandel’s presentation that he considers that not all neural processes amount to ‘learning,’ and correspondingly do not lead to “memories.” Kandel thus postulates two basic sorts of neural processes, those that are of the kind he calls ‘learning’ and those that do not qualify, i.e. the processes of ‘non-learning.’ From the discussion of his experiments with the marine snail, *Aplysia*, it follows that the processes of ‘non-learning’ correspond to those processes that in the *Aplysia* would naturally take place versus those processes that are induced by Kandel’s experimental interferences. We shall note that as Kandel claims that his experimental interference using the methods of classical behaviorism (‘habituation’, ‘sensitization’ and ‘classical conditioning’; 2006: 205) induces the snail to *learn*, then Kandel must himself be engaged in the extraordinary activity of *teaching* the snail. It

then follows that whatever the tricks that Kandel manages to teach the snail to do correspond to 'memory,' as opposed to what the snail did not "learn" from Kandel (or "learn" from its own experience, to the effect that some experience would induce it to change its habits). Kandel even speaks about 'neurons/synapses that participate in learning' vs. 'neurons/synapses that do not participate in learning' (2006: 205). - We should note that it is nonsensical to maintain that by changing the molecular flow of neural processes of a snail, the snail would learn something, for otherwise we could say that by redirecting the flow of a river, the river has learnt a new pattern of flowing.

Thus Kandel has painted a tripartite division of neural processes into 1) 'non-learning' (those mental processes that are disqualified from being considered as 'memory'), 2) 'implicit memory' and 3) 'explicit memory' (the two latter corresponding to 'learning').

### **Short-Term, Working, and Long-Term Memory**

There is another major dichotomy under which Kandel labors namely, that of 'short-term memory' vs. 'long-term memory.' In his narrative 'learning' corresponds primarily to 'short-term memory,' which eventually, if persistent, as Kandel thinks, may become converted into 'long-term memory.' (For references to this issue here and in other sections of this chapter I refer in general to Kandel 2006; the page references are properly listed in that book index under the 'short-term memory'; see e.g. p. 189). We shall see below that this idea amounts to a fundamental misconception, for what Kandel claims to be the mechanism for change from 'short-term memory' to 'long-term memory' in regards to the neural processes of the *Aplysia* snail is, in fact, just the mechanism by which neural reaction patterns, in general, are reinforced (that is the processes of 'potentiation'). This confusion becomes especially embarrassing when we note that Kandel constantly blends the research data pertaining to these different phenomena so that he refers to the processes of 'short-term and long-term memory' when he speaks of 'long-term potentiation' and vice versa.

It is especially Kandel's concept of 'short-term memory' that creates the problem. What he conceives of as 'short-memory' are such 'memories' that, according to him, live only for a short-term or have not yet been converted into 'long-term memories.' But this is not how the term is in general employed by neurophilosophers, who by 'short-term memory' mean the activity that in broad terms is also referred to as 'working

memory', that is, the process of conscious thinking involving abstract concepts (the activities that I refer to as 'cognitive consciousness,' see chapter *Feelings, Emotions, and Consciousness*).

In this connection I need to point out that there seems to be a quite widespread idea among neuroscientists that 'working memory' and 'short-term memory' should not be regarded as synonymous concepts. Thus, for example, in an Internet encyclopedia (Wikipedia) 'short-term memory' and 'working memory' are defined as somewhat differentiated concepts. There 'working memory' is defined as "the executive and attentional aspect of short-term memory involved in the interim integration, processing, disposal, and retrieval of information." The reference to 'short-term memory' in turn says: "Short-term memory (sometimes referred to as "primary memory" or "active memory") refers to the capacity for holding a small amount of information in mind in an active, readily available state for a short period of time." According to the cited article the "duration of short-term memory (when rehearsal or active maintenance is prevented) is believed to be in the order of seconds." Estimates of short-term memory capacity limits are said to "vary from about 4 to about 9 items, depending upon the experimental design used to estimate capacity." – The same source tells that "Long-term memory is memory that can last as little as a few days or as long as decades. It differs structurally and functionally from working memory or short-term memory, which ostensibly stores items for only around 18 seconds." (We note that this is already longer than the period which Kandel indicates, as per below, but this article, for some peculiar reason also fails to speak about the possibility of 'memories' existing for the life time of the human being).

I do not find this distinction between 'short-term' and 'working memory' compelling, rather the very attempt to postulate such a distinction serves once more to illustrate the fallacies of the conceptual method. Fittingly, even the above quoted source itself explains 'working memory' as "a theoretical construct within cognitive psychology and neuroscience," adding: "it is said that theories exist both regarding the theoretical structure of working memory and the role of specific parts of the brain involved in working memory." We are thus dealing with two theoretical entities of which one is postulated as an aspect of the other. But this is (almost) as we should understand these processes; although to be more precise we have to say is that they are *aspects of similar* and closely intertwined *processes*. I need to stress that it does not make any

sense to try to postulate a conceptual distinction between such phenomena of which the details are still to such a large extent unknown. Whatever the manner in which one wants to treat these two concepts it should be clear that they refer, at the very least, to very similar processes, and notwithstanding the disputed nuances they are both processes that are completely of a different character than the 'short-term memory' that Kandel had "identified" in the marine snail.

According to the correct understanding the difference is not in potentiation, but in the nature of the processes and the brain regions where they mainly run. It is beyond my competence to try to argue which cerebral parts are more or less active and what character those activities would take in these processes. I will therefore refrain from arguing on those matters in any detail; however, what I feel quite confident to point out is that the question here is about complex reentrant neural processing of stimuli that occurs in those parts of the brain where experience is *conceptualized* (see chapters *Mental Processing* and *Feelings, Emotions and Consciousness*). I believe that 'short-term memory' is best conceived of as those processes that run conceptual abstractions, hereby those process reactivate and interact with the processes that correspond to the earlier conceptualized life experience; the earlier conceptualized experience is thus utilized in the 'short-term memory' processes in order to relate new experience to earlier experience, that is, to conceptualize experience by matching the new feelings to the conceptual maps of the past. – An important conclusion that we should draw from the previous is that so-called 'long-term memory' (i.e. previously conceptualized life experience) forms the material for 'short-term memory' in the activity of interpreting the present. Thus 'short-term' to 'long-term memory' cannot be conceived of as a one-way process of production of 'long-term memory' from the material of 'short-term memory,' but rather we should correctly conceive of 'short-term memory' as the executive center for processing present experience in the background of past experience. And hereby I consider that we do better to use the concept 'working memory' for this purpose.

Concluding the above in somewhat different terms – in correspondence with the organic process model - I propose to recognize by 'working ('short-term) memory' those cognitive processes that form the system which enable the simultaneous surface-level active mental processing, in the most highly developed executive circuits, of different kinds of experience, present and past, simultaneously (or quasi-simultaneously). - By 'surface level processes' I mean those processes

that are 'in or near, the level of mental processes that yield conscious reflections.' I postulate that there are various reentrant circuits that elaborate the stimuli on different levels of sophistication at any given time, and that those that are in the system called 'working memory' are those that are most intensively and most sophisticatedly processed. Hereby I think that the processes that properly are called 'working memory' are the process that form the machinery of creating 'concepts' by comparing new experience to past experience, and then assigning the new experience a proper relation in regards to past experience.

The way I conceive of these phenomena corresponds to LeDoux's treatment of the subject (LeDoux 2003: 175-177). While sharing the misconceived notion that there is a slight semantic difference between 'short-term' and 'working memory,' LeDoux nevertheless concludes that they are very similar in meaning. LeDoux tells that 'working memory' refers to the brain systems that allow different information to be kept in mind simultaneously, or quasi-simultaneously, allowing "the system to compare what it is seeing or hearing now to what it saw or heard a moment ago." He further explains: "the workspace [in working memory] can hold on to and interrelate information of different types from different specialized systems (the way something looks, and smells can be associated with its location in external space and with its name). This ability to integrate information across systems allows for abstract representation of objects and events." He then correlates 'working memory' with 'long-term memory' saying that "working memory is not a pure product of the here and now. It also depends on what we know and what kinds of experiences we've had in the past. In other words, it depends on long-term memory", i.e. he is saying that the experience in 'working memory' is processed in the background of the evolving life experience.

With the above we have established what is the proper usage of the concepts 'short-term', 'working' and 'long-term memory' – and it follows that by 'long-term memory' we should properly refer to such cognitive life experience that has been conceptualized as opposed to the neural processes that have not lead to any such 'conceptualized memory' at all (I remind that by 'memory' we may intelligibly refer only to such experience which we can cognitively mentally process and potentially express in words or perceive as mental images). By 'short-term memory,' on the other hand, we should properly only refer to the system which is also called 'working memory'. Thus 'short-term' and

'long-term memory' should not be used as concepts that serve to show the degree of 'potentiation', which is the use Kandel has put to them into<sup>1</sup>. Correspondingly when Kandel speaks about the snail exhibiting 'short-term memory' he breaches – as it was shown above – with the general use of the concept, by which the other scholars denote operations of the intelligence (i.e. higher-order cognitive abilities). He should understand that what he refers to as 'long-term memory' processes of the snail correspond purely to the long-term potentiation of *new* reaction patterns.

Here we should also note how there is no difference between 'memory' and other mental processes of which we are conscious of; rather to the extent that the processes of cognitive consciousness refer to past experience then we perceive the reflections of the processes as 'memories,' and when no salient feature of our present experience refers to the past, then we consider that we are merely experiencing the presents. Yet more fundamentally we should understand that we perceive new experience always in the background of the past experience; the past sets the interpretive background for perception in the present, and the present experience thus only supplies the mental processes with new aspects. (This idea has been discussed more in detail in the previous chapter *Memory*).

But with 'long-term memory' we should also refer to cognitive activity; to those neural processes that correspond to activity that first has been experienced through cognitive consciousness, and of which we through the reactivation by one or another stimulus may gain a conscious perception of in the present, that is, experiencing in the present a perception which we have earlier experienced in the past. Thus, in fact, 'long-term memory' is what we properly mean by *memory* (that what we remember from the past), while 'short-term memory' refers to the reflections of those cerebral processes of which we are conscious of at any given moment, and under which consciousness we experience the 'long-term memories' (and form new memories).

Against this background we should take a look at Kandel's highly peculiar ideas about the duration of the *existence* of memories. Kandel tells that "long-term memory" *exists* "days to weeks" whereas 'short-term' *exists* "minutes to hours" (2006: 441). What strikes first is the intriguing limitation of the life-time of long-term memories to "weeks" – this although Kandel in the same book reminisces of his proper childhood. I have not detected in his work any third category of concepts by which he would possibly define such memory perceptions last-

ing potentially all life. Secondly we again note the misconceived idea that these ‘memories’ would *exist*, that is, the thingly fallacy to think that such perceptual abstraction could possibly have the capacity to exist, when they merely are the perceptions we gain when new stimuli are processed in accordance with the neural reaction patterns which have been established by past processing (see chapter *Memory*). In this connection the closest we come to something that can possibly exist are processes, but here again we shall note that scientifically it is quite doubtful even to speak about the *existence* of processes (see chapter *Processes and Concepts*). If we accept the above ideas about the nature of ‘working/short-term memory’ then we may consider that those processes may continuously run for a certain duration, and thus we may conditionally postulate that ‘memories,’ or experience, exist in ‘working (short-term) memory’ for a given time. But ‘long-term memories’ certainly do not exist for any duration of time (except as part of the short-term processes, when a stimulus has reactivated similar neural reaction processes). This misconception is connected with the fallacy of conceiving ‘memories’ as *stored*. ‘Memories’ are no things, they do not have any kind of thingly-material existence, therefore they are not, and cannot be, stored in anyway, anywhere. Instead at any given time new life experience may cause the neural system to activate such processes that seemingly recreate the earlier experience, this as long as the neural processes have retained the plasticity to react to new stimuli in such a way that when they trigger the reaction patterns formed by earlier experience they give rise to similar perceptions as the ones earlier experienced. In this way we could conceive of “long-term” memories lasting forever, as long as the body and its brain are healthy.

## Kandel’s Conceptual Minefield

As we saw already from above discussion, Kandel like any conceptualist experiences great difficulties in keeping track of his definitions and prior usages which leads to major contradictions in his narrative. His very definition of ‘memory’ serves as a telling example of this. Kandel at one point defines memory as “the ability to acquire and store information as simple as the routine details of daily life and as complex as abstract knowledge of geography or algebra” (2006: 9). – This although Kandel all through his work has treated ‘memory’ as an existent entity which is stored in one or another location of the body (2006), it now

becomes 'an ability.' To define 'memory' as an ability in itself *goes in the right direction*, but it is not an ability *to acquire and to store*, but an ability *to remember*. An *ability* can certainly not be postulated to exist, or undertake one or another activity, such as, for example, the mentioned 'storing.' If we speak of an ability, then somebody (an organism) has to be endowed with this ability; and the one who stores (if anything is stored) is not the ability but the one who possesses the ability. An ability is the result, the outcome of the interactions of various organs and organic processes. To be more precise we should say that 'memory' is a *perceived ability*. *Perceived*, because if it is an ability, then the ability and the results of this ability can only be perceived as something within a given conceptual framework. The corresponding organs and organic processes are in operation all the time and they all participate in the maintenance of all life functions of a given organism – only when one sets out to conceptually perceive the reflections of some of the life functions as something given, something separate, then one postulates a certain ability. – I noted above that the explanation through the notion 'ability' *goes in the right direction*, but it is not anyway quite correct, for strictly speaking the ability is what enables the process which cause memory perceptions, but 'memory' itself is not the ability rather the reflections of the mental processes that this ability has enabled.

This brings us back to the issue of 'memory storage.' 'Memories' are not stored for any time anywhere, instead the perceptions of memories are neurally produced as long as the neural processes are such that they have the plasticity to react to new stimuli in such a way that when they trigger the established neural reaction patterns they give rise to similar perceptions as the ones earlier experienced. 'Memories' are the result of new neural processes running in a similar way as earlier ones, and thus leading to similar cognitive reflections. 'Memories' are therefore not stored for any duration, not minutes, not hours, not days, not ten years, not for life; instead they are recreated each time similar neural processes occur, and they may occur anytime, for any reason.

Laboring under the misconception that 'memory' amounts to acquisition and storage of information, Kandel naturally proceeds with trying to establish the location of the storage, for which purpose Kandel chose the *Aplysia* snail. Kandel considered the *Aplysia* an ideal candidate for this endeavor, it being an "animal with a simple reflex that could be modified by learning" (2006: 145). He postulated that in such a simple animal "implicit memory for habituation, sensitization, and classical conditioning can be stored within the reflex pathways themselves"

(2006: 132). The idea was that upon discovering the site of storage he would show “how short term memory is converted to long term” (2006: 192). This would then, supposedly, allow to “penetrate the molecular biology of a mental process, to know exactly what molecules are responsible for short-term memory” (2006: 221) This, Kandel postulated, would be possible if he and his team would be able to “determine exactly where along this neural pathway the synaptic changes associated with short-term memory are localized” (2006: 221).

As we saw from above Kandel’s conceptual method – as any conceptual method – is also permeated by the anthropomorphist fallacy, the tendency to attribute human-like intellect and cognitive behavior to each and every animal organism. The very idea that a snail can *learn*, possess *memories*, and acquire *knowledge* is a manifestation of this. The idea that ‘memories’ are *stored* is another manifestation of this fallacy.

All these concepts can be validly used only in reference to animals on a higher evolutionary scale, to such animals which are endowed with a capacity for cognitive consciousness, and which are capable of volitional behavior and expression based on cognitively conscious mental operations. The concept ‘memory’ should be reserved to depict the higher mental processes that results in cognitive feelings of which the animal may become conscious of in form of thoughts.

Kandel’s abuse of the concept ‘information’ mirrors that of ‘storage.’ It is nonsensical to postulate, as Kandel does, *information* to mean anything else than the ideas communicated between human beings in conscious interaction (e.g. 2006: 9). Kandel and the neurophilosophers are naturally not alone in thus abusing the ‘concept’ information,’ the same misconception is widespread in genetics, but so much worse for genetics. Only human beings as complete cognitive entities have the ability to acquire and store information, for example, by participating in conferences and reading books, or by making notes on a paper and filing the notes, or by entering data in a computer. – It is not *information* that passes on from cell to cell or within the nucleotides of DNA, rather what are transmitted are chemical materials and electric impulses. Thus the question is not about passing of information but about organic interaction between various neural processes (when the processes match then there is a reaction and process results, when the processes do not match there is no reaction or an adverse reaction leading to the deterioration of the organism). It is the accumulated effect of all these processes that leads to the various reaction patterns of the or-

ganism (or that govern how the organism reacts). And it is the cumulated result of these reaction patterns, all these mental processes, that lead to cognitive consciousness of perceptions that people call memories. At no point in these reaction patterns was any "information exchanged" or "memories stored." The 'information' metaphor is, of course, a striking one for describing biochemical interactions in terms of "as it were exchange of information." This makes it easy to understand why biologists are in the habit of using it, but the real task of natural sciences is precisely to penetrate deeper into reality, beyond the metaphors of language; therefore in order to proceed to the next level of scientific understanding the scientists will have to let go of the information metaphor, and describe the real organic processes (which necessary will mean the acceptance of the *organic process model* that I have presented in this book).

## More on Explicit and Implicit Memory

As I already pointed out Kandel divides all organic procedures so as to correspond to either one of his two main 'kinds of memory,' the *explicit* and the *implicit* memory, or to the residue of organic processes which according to him are devoid of any memory (the above mentioned 'non-learning'). Kandel's *explicit memory* corresponds to what ordinary people mean with the word *memory*, that is, the conscious perception that some events (or conclusions drawn from the events) are remembered. His *implicit memory* then covers more or less all the other neural processes in all animal organisms (except for the "non-learning" processes that were discarded). This dichotomy is also said to correspond to that of 'conscious memory' and 'unconscious memory,' or alternatively to 'declarative' and 'procedural memory' (Kandel 2006: 132).

Kandel discusses 'explicit' and 'implicit memory' in reference to Brenda Milner's research on the patient H.M. (reference especially made to 2006: 127 – 134; see also Hilts 1966). Milner postulated that H.M. had retained what she called 'short-term memory' but that he had *lost* 'long-term memory'; or as Kandel says, H.M. was found to lack the "ability to convert short-term memory into long-term memory" as "he forgot events shortly after they happened." H.M. had retained the ability to keep in 'short-term memory' something he was told or shown, for example, "a multidigit number or a visual image" but just a few minutes later he could not any longer remember that information. Kandel in-

forms that H.M. was also shown to have “perfectly good long-term memory for events that had occurred before his surgery” (in this context Kandel seems to mean by ‘long-term memory’ the type of ‘memory’ he calls ‘explicit memory,’ which both concepts should be taken to refer to the same phenomena as we in ordinary language call ‘memory’). I should add that from the relevant literature I draw the conclusion that H.M. had maintained intact the regular life functions, such as eating, walking, sleeping, etc. (that is, all the functions Kandel refers to as ‘non-learning’).

It later occurred to Milner that H.M., in fact, had not totally lost what she called ‘long-term memory,’ for he was found to be able to repeat and improve on some skills involving physical activity such as “to trace the outline of a star in a mirror.” Kandel tells that H.M. was able to perform this task and improve his skills in it on par with normal people who had not suffered such brain damage. But while he could do it, and better and better so for every day, he could still not remember actually having performed the task. Following Milner, Kandel takes this to mean that H.M. had retained the ability to form what they call ‘implicit memory’ while he had lost the ability to form ‘explicit memory.’

I want to use this case to illustrate how helpless these concepts, in this case ‘explicit’ and ‘implicit memory,’ are in guiding our understanding of the underlying processes. The way the authors use the concepts fails to point to any real difference in the underlying biological processes. As I noted above, Kandel wanted to equate this dichotomy with that of ‘conscious’ and ‘unconscious.’ But when claiming so, he does not consider his own evidence, for we shall remember that he had said that in both cases H.M. did not remember the events: neither did he remember those events that Kandel referred to as pertaining to ‘explicit memory’ (‘conscious’) nor those that he had referred to as ‘implicit memory’ (‘unconscious’). We therefore see that ‘consciousness’ is not what separates these issues. And from this follows that we have falsified the idea of equating ‘explicit/implicit’ with ‘conscious/unconscious.’

Some articles in the Wikipedia define the terms respectively like this: “Explicit memory - the conscious, intentional recollection of previous experiences and information... such as remembering the time of an appointment or recollecting an event from years ago”; “Implicit memory...memory in which previous experiences aid in the performance of a task without conscious awareness of these previous experiences...memory that allows people to remember how to tie their shoes

or ride a bicycle without consciously thinking about these activities.” As an example of the difference between these “forms of memory” it is said that “remembering a specific driving lesson is an example of explicit memory, while improving your driving skills during the lesson is an example of implicit memory.” – We see from the above, that the authors have identified two main points of postulated differences: one is the already discarded conscious/unconscious dichotomy; and the other is the idea that ‘explicit’ refers to *conceptual abstractions* and ‘implicit’ to something we could call *motor skills*. (I note that the dichotomy was not expressed in these terms and that it is rather I who propose it as a conclusion of weighing the various propositions in this regards). Thus when we exclude the ‘conscious/unconscious’ dichotomy we are left with the distinction defined in terms of *conceptual abstractions* versus *motor skills*.

In addition to the above considerations, I shall add that Kandel also defines ‘explicit memory’ as that what “can be expressed in words” (2006: 437). This points to the same kind of distinction that I had made in regards to ‘conceptual abstractions’ and ‘motor skills.’ But to demarcate these phenomena through Kandel’s idea of ‘what can be expressed in words’ is not quite appropriate, for ‘implicit memory,’ of the kind Kandel speaks about, for example, in relation to tracing a star, can also be expressed in words - a person can verbally describe what he is doing when tracing a star (H.M. could not do it, but a “normal” person could do it). Therefore, here again, the question should be turned around - it is ‘explicit memory’ that is to be defined in the negative. It is ‘explicit memory’ that *cannot be expressed by performance of motor acts but have to be expressed in words*. You can tell by words both how you trace a star and what time of the day an event occurred (i.e. both so-called ‘implicit memory’ and ‘explicit memory’ can be told in words); and you can demonstrate by physical motor acts how you trace a start (‘implicit memory’), but you cannot by physical motor acts demonstrate what time of the day an event occurred. Thus one can both trace a star manually and express an interpretation of the process in words, but one cannot express the concept of ‘time’ and other abstract concepts such as, for example, ‘law,’ ‘justice’ and ‘democracy’ manually (by motor acts). For that matter, one cannot express the concept ‘lunch’ manually either, nor can one express the concept ‘star’ by motor acts (one may, however, try to put on a performance whereby by social clues an interlocutor would guess what one is trying to express, but that is not the same as expressing the concept). But one can both eat a lunch manually

and draw a star manually. Thus these issues you can only express in words after they first have been conceptualized through cognitive feelings. All speech ultimately corresponds to an expression of conceptualized experience. After we have understood the essence of these phenomena like this, we should further realize that the distinction to be made was not between ‘explicit memory’ and other “forms of memory,” but rather ‘memory’ and ‘other neural processes.’ The real distinction we are dealing with is that of ‘cognitive processes’ versus ‘non-cognitive processes,’ that is, the issues that have to do with conceptualization of experience (re. *conceptualization* see chapters *Mental Processing* and *Feelings, Emotions and Consciousness*). Keeping with this insight we do not need any attributes to modify ‘memory’: in this conception there is only one ‘memory,’ which is ‘that what can be expressed in words,’ or perceived as mental images. But if we necessary want to modify ‘memory’ with another word, then I would propose to say ‘cognitive memory’ instead of ‘explicit memory.’ The concept ‘implicit memory,’ in turn, could after our deconstruction in terms of process theory be said to correspond to ‘an adjustment of neural processing patterns in reflection of organic experience.’

The fatality of the conceptual method is further illustrated by what Kandel tells about the different types of memory he has detected in mice. According to Kandel ‘the memory deficit in impaired mice occurs just in explicit memory.’ This is a quite extraordinary statement keeping in mind that Kandel had defined ‘explicit memory’ as ‘what can be expressed in words’ - and we know that, cartoons aside, mice are not known to express anything in words. However, I think that the idea of ‘cognitive memory’ would fit in here; for in the case of the mice, it would point to how their ability for spatial recognition (compare, e.g. 2006: 199) is an antecedent to human ‘cognitive memory.’

This discussion of Kandel’s misconceived distinction between ‘explicit’ and ‘implicit memory’ serves to illustrate the real essence of the neural processes in question, as well as the only intelligible use of the concept ‘memory.’ – Quite simply, what we can remember is what we possibly can express in words, that is, express in concepts (verbal concepts that refer to mental concepts), or perceive as mental images. Thus if we want to make a distinction with so-called ‘memory’ and other mental processes, then the demarcation of these two spheres of mental processes has to be drawn there where we start to express concepts in speech (see *conceptualization*).

## Long-Term Potentiation

Above I pointed out that Kandel confuses between, on one hand, the ideas of 'short-term vs. long-term memory,' and, on the other hand, 'long-term potentiation.' I shall here discuss this issue more in detail. Thus according to Kandel 'short-term memories' are such 'memories' that exist only for a short time, or which have not yet become converted into 'long-term memories.' But, as it was shown above, we should by 'short-term memory' not refer to the life time of a memory, but to the processing of memory in cerebral processes by which we become conscious of the 'long-term memories,' that is, to the process of 'working memory.' The processes of 'working memory' occur only in human beings (and other animals that have the ability for cognitive consciousness). Those processes, which Kandel, in reference to the marine snail, *Aplysia*, describes as conversion of 'short-term memory' to 'long-term memory' are, when properly understood, the process by which neural reaction patterns, in general, are reinforced. This reinforcement, potentiation, of neural processes corresponds to the principle of use and disuse (Lamarck). Repetition and duration of the neural processes affect the relative strength of the neural reaction patterns (the relative strengths of the synapses and other neural processes), and thus make them more rigid, in the sense that the organism becomes more predisposed to perform the corresponding reaction patterns given similar stimuli (Lamarck explained that if persistent enough and common to the population the cellular effects of long-term potentiation become genetically encoded). Curiously, Donald Hebb, under whom Milner had studied, had precisely offered this kind of correct conception of 'memory' According to Hilts (1996: 108) Hebb said that "the chief mechanism of learning and memory is simply the strengthening of the connections, the synapses, between brain cells. Thus the repetition of a fact or experience will reanimate the same set of neurons and the links between them will get stronger, and thus more easily be recalled as a set."

I have already proposed to conceive of so-called 'long-term memory' and 'explicit memory' as of what we would regularly refer to as 'memory' in everyday language, that is, by 'long-term explicit memory' we should simply refer to human *memory* as it is understood in our ordinary language practices. It seems that the concept 'long-term memory' has entered the narratives of neuroscience merely as a term by which to differentiate the corresponding phenomena from those that the neuroscientists call 'short-term memory.' But as I have argued 'short-

term memory' does not represent any special kind of memory, but rather the conscious processing of 'memories' in the systems of 'working memory,' therefore it is not correct to juxtapose 'short-term memory' with 'long-term memory.' In doing so one is not comparing like phenomena. It seems thus that the only motivation for introducing the concept 'long-term memory' has been to get a word for referring to the ideas that did not fall under the concept 'short-term memory'; in this way 'long-term memory' became a lump term that has been developed as an antonym to 'short-term memory' without any independent significance. But subsequently the epithets 'short' and 'long' have created the impression that we would here be dealing with same kinds of phenomena, which only were to be distinguished by their duration. This is one more example of how linguistic problems create philosophical problems. To remedy the problem it would be better to entirely drop the concept 'short-term memory' and only refer to those processes by 'working memory,' and correspondingly to drop the concept 'long-term memory' and refer to the corresponding phenomena only by 'memory,' to the extent they refer to cognitive activities.

With Kandel the general confusion between 'short-term' and 'long-term memory' has led to a new confusion, which is a direct consequence of the previous, namely that of confusing 'long-term potentiation' with 'long-term memory.' Kandel himself defines 'long-term potentiation' quite correctly as: "The process by which activity in one neuron causes an enhancement of the strength of the synaptic connection with its target. Long-term potentiation is a persistent increase (lasting hours to days) in the synaptic response of a postsynaptic neuron following repeated simulation of the presynaptic neuron" (2006: 445). This leads him to say that "long-term memory requires the synthesis of new protein, indicating that the mechanisms for memory storage are likely to be quite similar in all animals...long-term memory in *Aplysia* endures because sensory neurons grow new axon terminals that strengthen their synaptic connection with motor neurons" (2006: 259). The error in these definitions and the whole paradigm is to use the ideas of 'long-term potentiation' and 'long-term memory' synonymously. With his experiments on the snail Kandel showed the process of 'long-term potentiation' (hereby I do not see any reason to speak about 'long-term potentiation' as opposed to simply 'potentiation,' for, there are no neural processes that would display this difference). He showed how some reaction patterns are reinforced, but reinforcement is not yet 'memory,'

all neural processes are subject to reinforcements (to the degree they are plastic), and the biological question is basically only about the strength of the reinforcement. Thus 'long-term potentiation' corresponds to those biochemical processes that affect the strength and endurance of the synaptic connections and other interactions within and between cells; they consist of the chemical reactions that affect the relative strengths of synapses and the neural patterns they lead to. Absolutely all organic processes undergo continuously changes in reaction patterns. When the stimuli and the other conditions of the environment are constant (or fairly constant – at least in relation to a set of subprocesses), then by repetition the cellular connections and interactions become stronger and more stable, that is, their 'potentiation' increases; possibly they may become potentiated for the long-term, giving that all other conditions remain stable.

'Long-term potentiation,' thus, is what explains the rigidity of the reaction patterns and correspondingly the 'strength of memory.' Therefore we see that Kandel did, in fact, not assert anything about the relation between 'short-term memory' and 'long-term memory', rather he merely proved the obvious fact that "enduring changes in the strength of synaptic connections are the cellular mechanisms" that affect – not the "underlying learning and short-term memory" as Kandel claims (2006: 204) - but *the reaction patterns by which an organism processes stimuli based on the predisposition set by previous processing patterns.*

It is also necessary to recognize that it is not the synaptic strengths in particular neuronal synapses in a *ceteris paribus* sample that gives rise to these neural phenomena, rather the complexity of synapses and their relative strength along all the neural process circuits and the nature of the stimuli being processed is what is decisive. In this connection we also have to bear in mind that one and the same synaptic connection may participate in the processing of various stimuli at different moments. This means that the processes of potentiation only form part of the overall neural interactions which ultimately give rise to 'memory.'

Thus I maintain that Kandel is wrong in trying to explain the essence of 'memory' through the ideas of (long-term) potentiation of synaptic connections as these processes are inherent to all neural processes and not specific to 'memory.'

Speaking about the role of 'potentiation' we also have to remember that 'memories' - e.g. a memory of an event that occurred some 20 years earlier - is not a thingly entity which would represent an absolute reproduction of the earlier event (e.g. on the analogy of a film). The ex-

actly same ideas and images that were experienced at the original moment of the event are not experienced when remembering that experience. Instead of that, some outstanding features of the original event are more or less reproduced and perceived blended with all other life experience (including life experience subsequent to the original “remembered event”). We see from this that ‘memory’ (or more correctly ‘remembering’) is not a question about a rerun of a stored item but rather about the joint effects of various reaction patterns. This consideration shows that – in addition to the potentiation, reinforcement, of the reaction patterns caused by repetition - there must be other aspects that influence these processes. We may assume that, for example, such aspects as the uniqueness of experience must play a significant role (i.e. how much a particular experience differs from other experiences in some striking features. I reckon that similar considerations as those which Lewes was referred to have held in regards to the relation between conscious and unconscious experience are of relevance in this connection as well; see chapter *Feelings, Emotions and Consciousness*). This must be connected with the very essence of conceptualization and processing of conceptual experience. These processes are characterized by their plasticity as compared with the less complex mental processes. Potentiation, reinforcement, by repetition must be the outstanding feature of the latter. Maybe it will one day be proven that instead less potentiation of the same type is the key to higher-level cognitive processes; the solution could well be found in the plasticity of the processes and the conceptual maps on which they are founded. – I think that plasticity (flexibility) must be a key feature of cognition, and of the special aspect of it, thinking; this being what characterizes the human species as compared with the evolutionary less advanced animals. If our ideas would be subject to rigid long-term potentiation, then we would all only have fixed ideas (and to note, it seems so that with old age the ideas grow more fixed).

## The Fatality of the Reductionist Approach

There is no doubt about the fact that Kandel has gathered a wealth of scientific data in his quest to identify the exact location for “memory storage.” But what strikes as very curious is that this wealth of experimental data did nothing to prevent Kandel from holding on to medieval ideas of granting the concepts of memory theory a real existence, as if

they would possibly correspond to biological reality, as if one could possibly detect those concepts alive in the body. Thus Kandel failed in the most important, he failed to understand the true nature of 'memory,' indeed that there is no such thing as 'memory' – and he failed to understand that this non-entity is not stored and cannot possibly be stored anywhere – and he failed to understand that there are no bits of information in the cells that would possibly add up to this 'memory.'

Against this background of intellectual failure we have to regard with certain bemusement this bold and self-laudatory statement by which he defines his own and his colleagues' legacy: "When intellectual historians look back on the last two decades of the twentieth century, they are likely to comment on the surprising fact that the most valuable insights into human mind to emerge during this period did not come from the disciplines traditionally concerned with mind – from philosophy, psychology, or psychoanalysis. Instead, they came from a merger of these disciplines with the biology of brain" (Kandel 2006: xii). – In view of the discussion of these subjects in the present book, I predict that this proposition will certainly be subject to serious revision. Kandel tells that after discovering the structure of DNA "imbued with new knowledge and confidence biology... turned its attention to understanding the biological nature of the human mind" (2006: xii). Kandel should start with understanding, as I have shown in this book, that 'mind' is not a biological entity, so it can possibly not be studied in biological terms (see chapter *Mind*). There cannot be, as Kandel claims, "a molecular biology of cognition" anymore than there can be a molecular biology of driving a car (2006: 8). But there can be a molecular biology of the *brain*.

Kandel's error is firmly rooted in the paradigm choice he professes, that is, the reductionism of which he is so proud of (2006). – Reductionism is the principle in accordance with which scientists are supposed to analyze an object into the minutest details possible and then based on the infinitesimally small nuances of new data thus retrieved draw overwhelming scientific conclusions on all the phenomena which ever so slightly may possibly have a connection to the object in question. According to this paradigm the reductionist feels that the study of a synapse, an enzyme, or one or another drop of biochemistry earns him a license to speculate on everything on earth and beyond the skies – and this license is all too willingly extended to him by his reductionist peers and the folks at the media hungry for thingly sensations. – Another ardent reductionist, Francis Crick tells that by the "reductionist approach"

a complex biological “system can be explained by the behavior of its parts and their interactions with each others” (1995: 7); this when in reality it can be explained only in terms of its interactions with the environment.

The reductionist idea go hand in hand with so-called “scientific method,” the requirement from which it follows that only such data that may be subjected to repeatable laboratory-like experiments are accepted in the scientific discourse, while all the rest we know is deemed “unscientific speculation.” Originally the scientific method was conceived as an anti-speculation method, but through a curious twist of events it became the license to speculate. Whereas of old speculative scientists had based on general experience speculated about things too small or too far away for them to touch or see, now the reductionist took the liberty to speculate about general matters based on their laboratory findings on the minutest aspects of materia. – Hereby it is needless to point out that the very experiments often serve only as window dressing for the speculation that the reductionist has set out to demonstrate.

The reductionist armed with every new bit of thingly evidence he has amassed loves to jump to bold and far-reaching conclusions - every novel aspect he may retrieve from the infinite variances of possible aspects to be perceived gives him immense confidence to proclaim this or that new eternal wisdom. And with the remarkable technological progress we have witnessed under the last 50 years there have been plenty of new aspects to hang out as the “proof for the new ultimate truths.”

The problem is that the reductionist lacks - and actively ignores - a genuine understanding of the complexity of life. The reductionist is a technocrat who has been overwhelmed by the knowledge of his close peers while ignoring the history of science, that is, the history of philosophy. For example, it becomes clear that Kandel has not studied philosophy any much further than Freud and Kant, the names of which figure often in superficial references in his book. But where are the references to all the others? Apparently the work of, for example, Bonnet, Condillac, Lamarck, Lewes, Romanes and Spencer are not known to him. Any of these gentlemen - living two to three centuries before Kandel - could have told him that ‘memory’ is not a thing and explained to him the real essence of memory – indeed they have documented that in their books.

Had Kandel studied Lamarck and the evolutionary theory, then he would not have postulated that he found 'memory' in the unintelligent movement patterns of the snail *Aplysia*; then Kandel would not have proclaimed that "behavior can be controlled at the level of individual nerve cells" (Kandel, Schwartz, Jessell 2000: xxxv).

Curiously enough the reductionist fallacy was widespread already in Lamarck's time, enough so that Lamarck made of the condemnation of this fallacy one of his main philosophical points, and conversely explained how the opposite approach was the only one to yield real scientific data. The condemnation of reductionism and the embracement of the opposite approach was what enabled Lamarck to formulate the first and lasting evolutionary theory on which Darwin was fifty years later to build his fame. It therefore sounds as if Lamarck were instructing Kandel when he says:

"Now I propose to show that, from want of sufficient study of nature's order in her productions and of the remarkable progress that occurs in complexity of organisation, naturalists have made altogether fruitless attempts to trace in certain classes, both of animals and plants, organs and faculties which could not possibly be there./ We must then first determine the point in the natural order, say of animals, at which some organ [or function like 'memory'] began to exist, in order to save ourselves from seeking that organ ['memory'] in much earlier points of the order. Otherwise science would be retarded by our hypothetically referring to parts with which we are little acquainted, faculties which they could not have" (1809: 265).

I would term Lamarck's method the *holistic-hermeneutical method*. Such a holistic-hermeneutical method entails obtaining and considering all the relevant research data pertaining to the subject of study. These data are then to be compared with all the rest that is known to a philosophically educated man, all the way from closely related phenomena up to his general life experience. Neither the details nor the whole can be understood without cross-reference to one and the other; this implies that the real scientist labors according to the principles of the *hermeneutic circle*. The scientist has to picture himself as a part of a process of perpetual interpretation from generation to generation, which – if correctly performed – yields new and more valid understanding of the whole, and therefore also of the details.

In the holistic-hermeneutical method, which represents, the only correct scientific method, “every element of our experience has to be included in a coherent system of general ideas,” as Whitehead had put it according to Ilya Prigogine (1997: 29). According to this method, we always have to consider the detailed data derived from direct observations and experiments with all of our life experience, which naturally includes that of all humanity through history. We should not allow, as it is done by the reductionists, that all our life experience is overthrown by the sensational perceptions we form of one or another novel experiment and instead we should try to incorporate the experimental results to the body of our life experience; we should, on one hand, consider how the test results affect all that we have known from before; and, on the other hand, we should judge the test results with all our life experience; this life experience should set the limits to which conclusions can be drawn from the tests. Would we follow this method, then we would not postulate that a snail can learn and remember, or that language displays a “deep structure” and other thingly characteristics. Thus our life experience should allow us to assign the details their proper place and value in the general paradigm considering the facts and the relationships between them in their entirety against the accumulated broad scientific experience. In this method there is a continuous feedback-feedforward relation between the details and the holistic reality.

Lamarck described this method most lucidly in the preface to his *Zoological Philosophy* where he accounts for how he arrived to formulate the evolutionary theory. Lamarck wrote:

“After the organisation of man had been so well studied, as was the case, it was a mistake to examine that organisation for the purposes of an enquiry into the causes of life, of physical and moral sensitiveness, and, in short, of the lofty functions which he possesses. It was first necessary to try to acquire knowledge of the organisation of the other animals. It was necessary to consider the differences which exist among them in this respect, as well as the relationships which are found between their special functions and the organisation with which they are endowed. / These different objects should have been compared with one another and with what is known of man. An examination should have been made of the progression which is disclosed in the complexity of organisation from the simplest animal up to man, where it is the most complex and perfect. The progression should also have been

noted in the successive acquisition of the different special organs, and consequently of as many new functions as of new organs obtained" (1809: 10).

It was only this holistic-hermeneutical method that could yield the complex insight that all life and all life functions of the human have evolved from simple primordial forms of life. Similarly Kandel and his colleagues should have related the data received from the study of the snail to what is known about all other organisms culminating in the broadest knowledge of the human being. They should have looked for similarities and dissimilarities, and then they would have noticed that the similarities are in movements, movement patterns, neural processing, and the dissimilarities are in the complexity of the processes. This way they could possibly have understood that it was not the snail that possessed 'memory,' but that human 'memory' is a function of more complex movement patterns, processes, that in their rudiment are displayed already in the nervous system of a snail.

The reductionists fallacy has in its extremes led to Crick's astonishing hypothesis that 'You,' your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules" (1995: 3). This is the ultimate expression of the erroneous reductionist idea that human behavior would be a sum of some atomistic particles of behavior. The reader should especially note how this eminent scientist postulates that molecular reaction patterns represent 'behavior.' This is the linguistic fallacy that leads him to postulate that human behavior amounts to a mathematical sum of the molecular behavior. Only cognitively conscious animals can be said to 'behave,' cells and molecules *react* or *express*. In other words, the word 'behavior' may validly be reserved solely to depict the outward manifested activity of an animal with higher mental capacities, for otherwise one is led to think, as Crick and Kandel were, that cells behave similarly and on equal footing with entire human beings, whose behavior is directed by cognitive consciousness. Behavior represents the joint result of all the organic processes in their totality and, and quite contrary to what Crick claims, no more can behavior be reduced to the individual cells and molecules than the motion of a car could possibly be reduced to the molecules of the material of which a car or its fuel is made.

We should note that the *reaction patterns of neurons and biochemical components* (Crick's "behavior") are set in motion and influenced

by other neurons; which are influenced by neural reaction patterns in the entire neural system; which are influenced by the whole organic system of homeostasis; which is a function of the animal positioning itself in relation to its environment. In the human (and other evolutionary higher animals) all that, in turn, is affected by deliberate cognitive actions (actions undertaken under cognitive consciousness). Thus to a big extent the ‘behavior’ of neurons are forced upon them by such actions that can be ascribed only to the organism as a whole, due to locomotion undertaken for one or another reason/cause. We should realize that every act of locomotion, and unconscious and conscious mental activity, unleashes a cascade of neuronal activity which affects all cellular and molecular processes. All that in totality corresponds to human behavior, and none of it in particular.

Following the logic of the reductionists the role of the most revered specialists in any field of knowledge should be awarded to the computer technicians, those who know from which bits and bolts a computer is built. For after all, all important human data is processed by computers, and according to the reductionists all that matters is the knowledge of the detailed mechanism, chemistry or anatomy of a thing. And the computer must certainly be considered as the most important *thing* for science, then whoever knows the technicalities of a computer machinery should be valued as the best specialist in any field of science; so if we were to believe the reductionist. We could also compare the neuroscientists’ claims on the exclusivity of their trade with that of road engineers. The idea that neuroscientists by analyzing the biochemistry of neural processes become the authorities on human behavior is similar to saying that the road engineer who knows the chemical content of asphalt and techniques of road construction would be the main authority to pronounce on issues pertaining to logistics and the organization of traffic routes; he should be the one we turn to in order to find out why it is that certain products and passengers are delivered on one road in a particular vehicle, where and why.

To conclude, it is wrong to claim, as Kandel does, that this “science of the mind” has allowed us “to explore on the molecular level such mental processes as how we think, feel, learn, and remember” (2006: 8) For certainly we do not think, feel, learn nor remember on a molecular level anymore than a car rolls on the molecular level of asphalt. Thinking, feeling, etc. are processes which result from the complex interaction of the body with the brain in relation to the environment which

– the more – is very much a function of social practices. The data from neurobiology can – and does – serve us with important considerations that psychologists and philosophers should compare with all the rest that is known in regards to human behavior, and vice versa, and only the joint conclusions of all the observations, biological and behavioral, should merit the epithet ‘science.’ Not genes, not brain anatomy, not synapses, explain anything about human behavior in individual cases, they may only serve to explain the plasticity and complexity of the neural processes that accounts for the diversity in infinite variances of actual human behavior. Most importantly the biological facts serve to motivate why at the end of the analysis it is the environmental stimuli that in the overwhelming majority of cases (expecting a few details) are decisive for all behavior. What the biological data also shows is that we can never predict how the environment will affect – or has affected – behavior, but we may draw lessons from the joint observations and so, little by little hope for progress in mental health. Behavior cannot be explained by matter, because behavior is a product of matter interacting with the environment, with social practices, which are immaterial products of imitation.



## Notes

### A Biological Philosophy, Volume I:

### The Case Against Noam Chomsky

#### 1 Speech and Language

1. Cook and Newson refer to Chomsky's work in general, and in particular to his *Some notes on economy of derivation and representation*, in R. Freidin (ed.) *Principles and Parameters in Comparative Grammar*, 1991, MIT Press.

2. I need to note that having recognized this problem of the thingly language, I am constantly contemplating where in my own texts to adjust the thingly language towards the ideal of the language of feelings and often I notice that the present language practices do not provide me with any choice than using the thingly patterns as evidenced by my choice of the phrase "use of words." I have told that words do not exist and that they are no things, then of course, we cannot *use them*, but in an attempt to convey my ideas I still am to a great extent a hostage of the prevailing language practices. This particular fallacy of speaking of 'use of words' has been lucidly pointed out by Skinner; I refer the reader to the chapter *A Review of Chomsky's Verbal Behavior* where I have quoted Skinner on this issue.

3. Lieberman in *Human Language and Our Reptilian Brain* told how it was shown that the same biological features that we refer to as syntax are in no way exclusively restricted to language but to all human activity, and animal activity as well, he says: "language presents in a most striking form the integrative functions of syntactic coordination" and that "temporal integration is not found exclusively in language" rather it is present "the coordination of leg movements in insects, the song of birds, the control of trotting and pacing a gaited horse, the rat running the maze" (2002: 87). Similarly Jean Molino in *Toward an Evolutionary Theory of Music and Language* notes that "that syntax, as a combination and linking of sequences, is also present in music" (2000: 172). Walter Freeman wrote in *A Neurobiological Role of Music in Social Bonding*, how music "involves not just the auditory system but the somatosensory and motor systems as well, reflecting its strong associations with dance, the rhythmic tapping, stepping, clapping, and chanting that accompany and indeed produce music" (2000: 412).

Molino pointed out how not only speech and music but all coordinated human acts are based on the organic ability for rhythmic expression which is illustrated by the following quote: "Among the neural modules responsible for this activity, it would be necessary to give a central place to one or more rhythmic modules, which come into play in behaviors such as throwing and constructing and using tools. The neurophysiologist William H. Calving (1990) proposed that the preparation and organization of

throwing movements is the source of a type of general syntax, the capacity to combine elementary sequences freely, a capacity that would come into play in language as much as in behavior....These modules would thus have major importance in the construction of speech rhythms and, in particular, syllable formation, the central point of phonetic articulation. In a general sense, this mastery of rhythm is the only imaginable route of access for the temporal organization of all activities: it is in this way that rhythmic modules are at the foundation of all types of syntactic constructions" (Molino 2000: 173).

Similarly to Molino Patel tells how both speech and music are rhythmic in their essence explaining that rhythm should be understood as "the systematic patterning of sound in terms of timing, accent, and grouping" where "both speech and music are characterized by systematic, temporal, accentual, and phrasal patterning" (Patel 2008: 96; 2008: 176).

His research lead Patel to conclude that "language" (i.e. speech) is largely based on learned "sonic and structural patterns" (Patel 2008: 358). – In the following quote Patel explains the meaning and biological function of what he calls 'temporal anticipation' telling that in consideration to "other cognitive abilities, one might sensibly ask if the periodic expectancies of beat-based processing are simply a by-product of the brain's ability to do generic temporal anticipation, in other words, to gauge when exactly an event of interest is going to occur based on the timing of events in the immediate past. Human brains are adept at generic temporal anticipation. For example, each time we catch a ball or walk down a crowded sidewalk, we engage in this kind of temporal anticipation (e.g. in order to move a hand to the right position to catch the ball, or to step out of the way of an oncoming pedestrian before impact)" (Patel 2008: 403). Patel also pointed out the possibility that "beat perception skills precede motor synchronization abilities" (Patel 2008: 404).

4. Maybe somebody wants to say that I have here omitted one stage, the stage of the interpreter mentally interpreting the utterance and then expressing it. If so, I would object to this objection on two grounds; firstly, this is only pushing deeper down the same question, and there, deeper down, the same occurs without an audible expression, the interpretation that is a function of the mental processes is essentially a similar process of interpreting by way of assigning to the phenomena a corresponding expression; secondly, we are here dealing with speech utterances, i.e. I am accounting for how interpretations are rendered in speech, and there they always take the form of an audible expression.

5. Here some examples of how Wittgenstein used the concept 'grammar':

"Essence is expressed by grammar" (Philosophical Investigations art. 371)

"I can know what someone else is thinking, not what I am thinking. It is correct to say

'I know what you are thinking', and wrong to say 'I know what I am thinking.' (A whole cloud of philosophy condensed into a drop of grammar.)" (Philosophical Investigations, p.189).

"One might say "Thinking is an incorporeal process", however, if one were using this to distinguish the grammar of the word "think" from that of, say, the word "eat" (Philosophical Investigations art. 339).

"The analysis oscillates between natural science and grammar" (Philosophical Investigations art. 392).

"Grammar tells what kind of object anything is. (Theology as grammar (Philosophical Investigations art. 373)

"If formation of concepts can be explained by facts of nature, should we not be interested, not in grammar, but rather in that in nature which is the basis of grammar? — Our interest certainly includes the correspondence between concepts and very general facts of nature.... But our interest does not fall back upon these possible causes of the formation of concepts; we are not doing natural science; nor yet natural history — since we can also invent fictitious natural history for our purposes" (Philosophical Investigations p. 195).

6. Samples taken from [www.librarius.com](http://www.librarius.com)

## 2 Evolution of Speech (the Ability to Speak)

1. Molino stress that the key organic ability for development of speech and learning a language (i.e. the linguistic practices of a community) is what we refer to as *imitation*. (Molino 2000: 173)

## 4 A Review of Chomsky's Verbal Behavior

1. Cook and Newson refer to Chomsky's work in general, and in particular to his *Some notes on economy of derivation and representation*, in R. Freidin (ed.) *Principles and Parameters in Comparative Grammar*, 1991, MIT Press.- See also e.g. Chomsky: 1986: 3).

2. In another example of how this speculation is motivated Chomsky has said that "We can simply understand all this talk of the mind as talk at an appropriate level of abstraction about properties of some physical systems in the brain" (quoted in Botha 1991: 105 in reference to Chomsky's *The Generative Enterprise. A Discussion with R. Huybregts and H. van Riemsdijk* of 1982).

3. Neil Smith tells, in the Foreword to Chomsky's *New Horizons in the Study of Language and Mind*, that Chomsky's view of language brings it "into the domain of psychology, and ultimately biology" this as "human language is a 'biological object.' This is why Smith maintains that "language should be analysed by the methodology of the natural sciences" (2007a: vii).

4. A nice derangement of epitaphs: some comments on Davidson and Hacking in E. Lepore, (ed.) *Truth and Interpretation*. Oxford

5. Tomasello, who is one of the few authors who have clearly dismissed Chomsky's speculation, concludes with me in having identified that Chomsky entertains "an inappropriate view of grammar." Tomasello argues that "grammatical constructions are not the output of abstract computational formulae, as generative grammar takes them to be" (Joseph, Love and Taylor 2009: 185).

6. Reluctantly – knowing that Wittgenstein does not deserve the parallel – I could compare the Early and the Late Chomsky with the Early and Late Wittgenstein. Wittgenstein had in his early career (Tractatus) developed an unsuccessful and mechanistic theory of philosophy (although rich in interesting propositions), and then spent the rest of his life refuting it, a work which culminated in the superb posthumously published *Philosophical Investigations*. Contrary to that of Chomsky, the work of Wittgenstein was from beginning to end an honest empirical attempt to deal with reality and culminated in a meaningful and lasting work for the benefit of generations and generations to come (Hellevig 2006).

7. I may motivate my qualification of the changes in Chomsky's theories as a total refutation of his old ones and therefore a capitulation also by references to Botha 1991, in particular pages 41; 89; 90; and 102. The fact that Chomsky has abandoned grammar is also confirmed by Joseph, Love and Taylor in *Landmarks II* where they report that "Chomskyan generative linguistics has come to the position that grammar and syntax do not exist" (Joseph, Love, Taylor, 2009: 118).

8. In an attempt to protect his speculation against criticism Chomsky habitually rounds off his statements so as to give the impression that he has not said anything definite. Consider, for example, these propositions:

"This is, of course, a program, and it is far from a finished product, The conclusions tentatively reached are unlikely to stand in their present form; and, needless to say, one can have no certainty the whole approach is on the right track" (2007a: 8).

"Needless to say, these remarks are schematic and selective, and benefit from hindsight" (1995: 3)

"The P&P model is in part a bold speculation rather than a specific hypothesis" (1995)  
 "the tentative character of any conclusions" on the theory (1965: v)

"I should like to reiterate that this can be only a highly tentative proposal" (1965: vi).

"Whether these limitations are intrinsic, or whether a deeper analysis can succeed in unraveling some of these difficulties, remains an open question" (p. 192) Chomsky, N. (1965).

9. Chomsky is very serious about this language-acquisition device and although at one point it was set off as a hypothetical one, it comes complete with instructions of use. The device endows the child with the following functions: (i) "a technique for

representing input signals” [normally we would refer to this as the auditory system, the ear and the corresponding neural system]; (ii) “a way of representing structural information about these signals” [these are in general science known as neural processes]; (iii) “some initial delimitation of a class of possible hypotheses about language structure”; (iv) “a method for determining what each such hypothesis implies with respect to each sentence”; (v) “a method for selecting one of the (presumably, infinitely many) hypotheses that are allowed by (iii) and are compatible with the given linguistic data” (1965: 30).

These theoretical conditions, we are told, correspond to another set of conditions as follows (1965: 31):

- (i) “a universal phonetic theory that defines the notion ‘possible sentence’”
- (ii) “a definition of ‘structural description’”
- (iii) “a definition of ‘generative grammar’”
- (iv) “a method for determining the structural description of a sentence, given a grammar”
- (v) “a way of evaluating alternative proposed grammars”

Chomsky then converts these conditions into a more algebraic form and with these conditions in place he wants us to believe that the “language-acquisition device” sets out to scan for “primary linguistic material.” Chomsky tells that the “language-acquisition device...must search through the set of possible hypotheses  $G_1, G_2, \dots$  which are available to it by virtue of condition (iii – *see above definition of conditions*), and must select grammars that are compatible with the primary linguistic data represented by (i - *above*) and (ii -*above*)...” (1965: 32).

In scanning the environment this intricate device is then said to detect signals that form the “primary linguistic data,” hereby this “primary linguistic data” is said to “consist of a finite number of information about sentences” (1965: 31) and of “signals classified as sentences and nonsentences” (1965: 32). Further Chomsky tells that this device has been programmed to process the signals so as to determine which signals correspond to “properly formed sentences” and which are “classed as nonsentences” (1965: 31). Contrary to the general line of his theory Chomsky then tells that the classification of the rejected sentences as “nonsentences” occurs “as a result of correction of the learner’s attempts on the part of the linguistic community” (1965: 32). Here Chomsky has all of sudden allowed for some empirical reality to visit the theory. But Chomsky quickly recovers from this strike of reality and tells that this anyway only means that “what is maintained, presumably, is that the child has an innate theory of potential structural descriptions that is sufficiently rich and fully developed so that he is able to determine, from a real situation in which a real signal occurs, which structural description may be appropriate to the signal...” (1965: 32). – In this connection it is also worth noting the “signals” Chomsky speaks about above. What are these signals but environmental stimuli? But as we remember from the discussion further above one of Chomsky’s main points was that “language” was supposedly independent from such stimuli (the “stimulus-free argument”).

Chomsky summarizes the discussion by claiming that a proper “theory of linguistic structure...attributes tacit knowledge” of “linguistic universals to the child.” This would supposedly mean that “the child approaches the data with the presumption that

they are drawn from a language of a certain antecedently well-defined type.” This in turn would pose the little child with the problem of how to “determine which of the (humanly) possible languages is that of the community in which he is placed.” We are told that “language learning would be impossible unless this were the case” (1965: 27).

## Notes

### A Biological Philosophy, Volume II:

### Mental Processing

#### 1 Mind

1. Lewes tells that the social aspects influencing the biological condition of the human being was first understood by Auguste Comte, but only tentatively so as Lewes explains: "The credit of this conception is due to Auguste Comte. Others before him had of course recognised the fact that social conditions greatly influenced mental evolution; the fact was transparent, but no one had seized its full significance. Nor do I think that even Comte saw more than its general range. His abstention from analysis and detailed investigation kept him from specifying the mode of operation of the social factor; and his "cerebral theory," so unsatisfactory in its method, and so fantastic in its anatomy, could not supply what he left unspecified" (1879a: 6). – Comte's ideas as to this account can be compared with Lewes's far superior insight into these issues, as evidenced by these extended quotes of the ideas which were expressed above: "Psychology investigates the Human Mind, not an individual's thoughts and feelings; and has to consider it as the product of the Human Organism not only in relation to the Cosmos, but also in relation to Society. For man is distinctively a social being; his animal impulses are profoundly modified by social influences, and his higher faculties are evolved through social needs. By this recognition of the social factor as the complement to the biological factor, this recognition of the Mind as an expression of organic and social conditions, the first step is taken towards the constitution of our science" (1879a: 13). - "Mind as a subject is the logical conception of the qualities grouped in a class; if we translate it into a physiological conception, and seek the agent of which all the phenomena are the actions, we get the organism... Thus, and thus only, is it permissible in a scientific treatise to speak of Soul or Mind, as substance or subject. Our search for the conditions and pre-conditions of the phenomena is therefore solely directed to the organism in relation to the external world and to the social world" (1879a: 13).

2. The same passage quoted in full: "Psychology investigates the Human Mind, not an individual's thoughts and feelings; and has to consider it as the product of the Human Organism not only in relation to the Cosmos, but also in relation to Society. For man is distinctively a social being; his animal impulses are profoundly modified by social influences, and his higher faculties are evolved through social needs. By this recognition of the social factor as the complement to the biological factor, this recognition of the Mind as an expression of organic and social conditions, the first step is taken towards the constitution of our science" (1879a: 5).

3. Compare with Lewes: "The abstraction Mind, once extricated from the concrete facts of Sentience, is by logical necessity immaterial, simple, one; for it is a symbol

like Virtue, Cause, Number, &c. As a symbol, it has concrete realities for its significates; but this does not suffice for those who, having personified the abstraction, accept it as a *res completa*, which may be studied apart from its significates. Not only has this mistake been committed with respect to the individual mind – which has in consequence been studied apart from the organism – but also, though less frequently, with regard to the General Mind, which has been detached from the individuals, not merely as an abstraction, but as a *res completa*; and thus the World-process has been assigned to a Soul of the World” (1879a: 162).

4. In continuation of this criticism of Reid’s conception, Reid is referred to having among other things said that the ‘mind’ corresponds to “one internal principle” and that “we are taught by nature to attribute” consciousness of thoughts to this “one internal principle” and that it is “this principle of thought we call the mind or soul of a man.” (We note that even this criticized position of Reid is more intelligent than those of the contemporary neurophilosophers inasmuch as Reid does not postulate that ‘mind’ would be an entity of any kind or equate it with the brain). – To this Lewes retorts asking whether we really are taught this “by Nature, or not rather by speculative philosophers?” Lewes continues with the deconstruction of Reid’s proposition like this: “The natural teaching of observation and induction discloses no trace of an internal principle. From among the various operations of the organism which are classed as vital, a particular group is detached and named mental. To personify the one class as an internal principle, Life, and the other also as an internal principle, Mind, and then to assign all the observed operations *not* to the organism which is known to be in action, but to those principles which are imagined, is not the teaching of Nature but of the Schools. *That* which thinks, reasons, wills, is the organism; precisely as *that* which indicates time by movement of hands on the dial-plate is the clock mechanism, not an internal principle; although we may, if we will, personify the actions of the mechanism and call this the source of all that is observed in the clock.”

## 2 Processes and Concepts

1. Compare with Lewes: “Not only do we project outside of us the various sensations derived through the surface, and thus regard them as qualities of external things rather than as affections of the sentient organism (*they are both*), but we also follow this objective tendency with our emotions and thoughts: we believe that things are good or bad, dangerous or seductive: we believe that our thoughts come and go, cross the mind, bewilder it, like moving objects: nay, we objectify the Mind itself, and call it ours, as we call the body ours” (Lewes 1879b: 120). – Also compare with Lamarck who said: “man cannot form any true idea, except of objects or things in the likeness of objects,” (1809: 389). – Bartlett talks about “a visual method of recall” inevitable biasing “towards the concrete” (Bartlett 1995: 172).

2. Although Mill was not quite successful in his discussions of things and non-things he made in this connection some interesting and largely correct observations in regards to the essence of ‘feelings’ which is evidenced by these quotes: “A Feeling and a State of Consciousness are, in the language of philosophy, equivalent expressions, everything is a feeling of which the mind is conscious, everything which it feels, or, in

other words which forms part of its own sentient existence”; “Feeling, in the proper sense of the term, is a genus, of which Sensation, Emotion, and Thought, are subordinate species.” (1843: 54)

3. Compare with Patel who says: “the ‘particles’ of speech and music are not physical entities like a chemical base: They are psychological entities derived from a mental framework” (2008: 11).

4. Willhelm Dilthey wanted to teach his contemporaries the hermeneutical method of expressions and interpretations. He explicitly alerted against conceiving of social sciences on the analogy to the natural sciences. He had an initial understanding of the thingly fallacy inasmuch as he cautioned against interpreting “aspects of social phenomena as qualities or aspects of matter.” He maintained that “in the social sphere” there must be “a distinction of an entirely different kind from those obtaining among the particular spheres of the laws of matter, where mathematics, physics, chemistry, and physiology exhibit a relationship of subordination which is developed with progressively tighter consistency” (Dilthey 1989: 64).

5. The examples are taken from an article in the Wikipedia on Innatism

### 3 Mental Processing

1. It might be interesting to compare Wittgenstein’s *picture theory* with this film metaphor. Wittgenstein had in his early career been toying with an idea that has been called the *picture theory of meaning* or *picture theory of language* (Wittgenstein *Tractatus* and Wittgenstein’s *Notebooks*). According to the theory language was said to mirror reality. Wittgenstein argued in his notebooks of 1914–16 that language is first and foremost a representational system. He said that with language we “make to ourselves pictures of facts” (*Notebooks* 2.1) and that the picture is thus “a model of reality” (*Notebooks* 2.14). Pictures then were said to stand for facts of reality and words correspond to them. Accordingly a sentence was supposed to be meaningful only if the words were so arranged as to correspond to a possible fact in the world. Wittgenstein later abandoned the picture theory in favor of a more nuanced and largely correct idea which he illustrated with the conception of *language games*. I argue that Wittgenstein’s picture theory was unsustainable from the very beginning precisely because of the fact that nothing in life can possibly correspond with a picture, which cannot but represent a standstill – and a standstill corresponds only to death. A metaphor of a film as opposed to that of a picture would certainly have aided Wittgenstein to sooner grasp the reality he was trying to describe. A film theory of meaning and language – indeed a film theory of life – would convey the eternal flux of life and would thus help in. When the picture theory is replaced with the film theory we replace things with processes.

2. Compare Lewes: “A neural process may be regarded either as a physiological process of molecular change in the nervous system, or as a psychological process of sentient change; but in reality it is always one process in a complex of related changes; *its physiological or its psychological character necessarily results from its*

*relation to those changes which precede and those which accompany it. We isolate it by an artifice*" (Lewes 1879b: 149)

3. The etymology of the word 'mind' is derived from concepts that in Old English (gemynd) and Old German (gimunt; *minne*) meant 'memory', and in Latin (ment-, mens) meant 'mind' in more or less the same sense that we use it today. In Greek (menos) meant spirit; there even seems to be an older Indo-European root of \*men- and matih meaning 'to think, remember' and 'thought' (Merriam-Webster and [www.etymonline.com](http://www.etymonline.com)). 'Mental' is further derived from the Latin 'of the mind' or 'relating to the mind'.

4. Although, strictly speaking Descartes did not claim that the 'soul' enters through the pineal gland, rather he said that the pineal gland is the location where "the soul exercises its functions immediately" or "more particularly" than in other places of the body (being also the place where it has its "principal seat"). He explicitly stressed that "the soul is joined to the whole body." - Considering Descartes' otherwise lucid insight, by the means available at his time, to the functioning of a living organism, I must admit that I remain perplexed about the detailed speculation of the relation between the soul and this gland and their interactions with the rest of the body.

5. Similarly Damasio tells how higher cognitive functions such as "decision-making strategies" have their roots (obviously, as everything else) in the symbolic representation of "somatic states" or what he calls "as if" symbols (2000: 184)

6. "A chief signature of Feeling is that known as Localisation. Each sensation has its own *place* in both the objective and the subjective spheres, on the sensitive *surface* and in the *system* of Experience. We localise its origin, both as regards the part of the sensitive surface which is stimulated, and the portion of the external medium which is the stimulus. We localise the sensation of one particular pain in a tooth, of another pain in a toe; and so on. But it is by a slow process of acquisition that we are enabled thus to localise sensations. At first there is only the difference of feelings: the infant feels the prick of a pin differently from that of a burn, the prick or burn on the foot is different from one on the cheek; each feeling has its signature but has not its localisation. This is an observably gradual acquirement" (Lewes 1879b: 353 - 359).

Lewes continues by telling how the human child from infancy on gradually connects various independently localised somatic sensations into one sense of the self:

"...the signatures of sensations mark some out from others, and as each is localised the objective world emerges in Consciousness. One group of sensations comes to be localised in the Visual field; another in the field of Touch; another in that of Taste; and so on. There is one large division which forms the mental picture of Self, and another that of Not-self. Slowly a general image of the Body as a whole is formed out of the particular localisations, and the infant no longer treats its toes as objects apart from itself, but as objects connected by feelings with all other feelings. Every feeling not thus localised in connection with other feelings, but only localised as the causes of particular feelings, is projected outwards and made to take its place in the general picture of the Object-World, the world of Not-self."

Another passage from Lewes is very illustrative of the ideas that I have discussed above and also shows how much was known already in the 19<sup>th</sup> century only to be buried under the burden of the “scientific method”, behaviorism and the “cognitive revolution.” Lewes said:

“We can all localise a sensation in the viscera, though vaguely. Only anatomists have more than a misty vision of the probable place of origin of a visceral stimulation or of its stimulus. Yet the various visceral stimulations have their signatures, and these play an important part in our Experience, little as we may be able to formulate them in Knowledge. For example, the feelings of anxiety and terror which arise from certain disturbances of the heart, have the same qualities as those which have arisen in the presence of actual difficulty and danger, but because the patient cannot localise them in the objective world, cannot assign their stimulus, they excite his imagination to invent causes of danger which are unseen. A vast amount of delusion and hallucination noticed in the sane and the insane has its origin in the visceral stimulations” (Lewes 1879b: 356).

Lewes continues: “The external senses are more definite in their localisations; and of these the Eye has the widest range and most delicate discrimination. If a feather falls upon your hand unseen it will be unfelt, but felt if seen. The tactile impression is of course the same in both cases, but in the first case it is an impression which is not localised, not discriminated from other simultaneous surface impressions; in the second case the feeling of sight directs attention to the impression on the skin, and attention means consciousness...It is because we cannot see our internal organs, nor touch them, nor clearly discriminate their movements, that we fail to localise their sensations otherwise than approximatively. This is peculiarly the case with the massive and diffusive feelings called desires and emotions. They are therefore detached from the objective world, which is constituted by visible and tangible qualities. They seem peculiarly subjective, personal” (Lewes 1879b: 356).

7. “Our natural way of thinking about these coarser emotions is that the mental perception of some fact excites the mental affection called the emotion, and that this latter state of mind gives rise to the bodily expression. My theory, on the contrary, is that the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur is the emotion. Common-sense says, we lose our fortune, are sorry and weep, we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry or fearful, as the case may be. Without the bodily states following on the perception the latter would be purely cognitive in form, pale, colorless, destitute of emotional warmth. We might then see the bear, and judge it best to run, receive the insult and deem it right to strike, but we should not feel afraid or angry” (James 1957 Vol. 2: 449).

## 4 Feelings, Emotions and Consciousness

1. Source: [www.biology-online.org](http://www.biology-online.org)

2. Lewes said, for example: “By classing the phenomena of Intelligence under the general head of Feeling we restore the unity of psychical phenomena while recognizing their diversity; the facts designated by the terms Sense, Intelligence, and Volition are taken as simply different modes of manifestation of the same sentient organism, in each of which there is the Triple Process of Stimulation, Grouping, and Motor-impulse. Considered separately as Modes, these are indeed so diverse that it is not wonderful men should have taken them for different agents” (Lewes 1879b: 390).

3. Lewes: “by the term Feeling, most readers will understand something more than the activity of the organism, which we call Sentience; they will understand by it what is usually termed Consciousness. Not only so, but they will also doubt whether Feeling is the proper term for the whole activity of the sentient organism, inasmuch as there is, on the one hand, the activity which is unfelt, being unconscious; on the other, there is the activity of Thought” (1879b: 3).

4. Apparently criticized for his use of the term ‘conscious states,’ Searle decided to reformulate the idea in *Neuroscience and Philosophy* (Bennett, Dennett, Hacker and Searle 2007: 98) where he tells that he will use “*states* to cover states, processes, events, etc.,” but this reformulation alone does not improve on his ideas. However, were Searle to reflect on the fact that we indeed are really dealing exclusively with processes, then we could possibly hope for him to realize the necessity for a real paradigm shift.

5. Compare with Lewes: “Note especially this fact: all the phenomena recognisable in the sensory sphere are recognisable in the motor sphere. What is true of the passive side of Sentience is true of the active side. If we find over and above the intermingling currents of particular feelings a general and persistent *stream of Consciousness*, which forms a central Personality, we find in like manner, over and above the various muscular sensibilities, a general and persistent muscular energy, according to which our body feels light or heavy, vigorous or weakly; and this general sensibility has also its “centre of gravity,” by which our movements are incessantly regulated. Again, we find both in the motor and sensory spheres the gradations of conscious, subconscious, and unconscious. In both there are sympathies, habits, disorderly combinations, and hallucinations. Each sensation rouses its escort of nascent sensations, each movement its escort of nascent contractions; each sensation thus gets associated with others, each movement is accompanied by others” (1879b: 338).

6. Another interesting idea of Lewes’s connected with what was said above: “But while thinking is really a Mode of Sentience, a particular form of the general activity named Feeling, common usage has decided that Thinking should be the antithesis to Feeling. This usage we must respect. It may be respected without ambiguity if we understand that when Thinking is classed with Feeling it is in virtue of the *process* or

function common to both; when classed in antithesis to Feeling, it is in virtue of the *products* of the operations” (1879b: 10).

7. In order to show that this is what Descartes, in fact, meant, I will give a few more quotes from the same series: “But what am I? A thing that thinks. What is a thing which thinks? It is a thing which doubts, understands, [conceives], affirms, denies, wills, refuses, which also imagines and feels” (1997: 143); “I am a thing that thinks, that is to say, that doubts, affirms, denies, that knows a few things, that is ignorant of many [that loves, that hates], that wills, that desires, that also imagines and perceives; for as I remarked before, although the things which I perceive and imagine are perhaps nothing at all apart from me and in themselves, I am nevertheless assured that these modes of thought that I call perceptions and imaginations, inasmuch only as they are modes of thought, certainly reside [and are met with] in me (1997: 147)”; “I should at the same time investigate the nature of sense perception, and that I should see if from the ideas which I apprehend by this mode of thought, which I call feeling, I cannot derive some certain proof of the existence of corporeal objects” (1997: 178).

8. “Thinking is an incorporeal process which lends life and sense to speaking, and which it would be possible to detach from speaking, rather as the Devil took the shadow of Schlemiehl from the ground. – But how not an incorporeal process”? Am I acquainted with incorporeal processes, then, only thinking is not one of them? No: I called the expression “an incorporeal process” to my aid in my embarrassment when I was trying to explain the meaning of the word ‘thinking in a primitive way.’ “One might say “Thinking is an incorporeal process”, however, if one were using this to distinguish the grammar of the word “think” from that of, say, the word “eat”. Only that makes the difference between the meanings look too slight. (It is like saying: numerals are actual, and numbers non-actual, objects.). An unsuitable type of expression is a sure means of remaining in a state of confusion. It as it were bars the way out” (Philosophical Investigations, art. 339).

9. Compare with LeDoux who writes that “emotional states are dynamic” telling that “fear can turn into anger or disgust or relief as an emotional episode unfolds, and it is possible that visceral feedback contributes to these emotional changes over time” (1998: 293).

10. In *Emotions Revealed* (Ekman 2007) says: “While my best-known work is on the universal elements in emotion, I am now examining the exact opposite, how each individual emotional experience is unique. Individual differences were present in my study of universals, as they are in virtually any study of emotion, but because the evidence for universals was so strong, the individual differences could be set aside” (p. 231). Through analysis of “thousands of photographs” Ekman observed “how subtle changes occur in expression”; this led him to draw conclusions which convinced him that “even a very subtle change seems to affect the appearance of the entire face” (p. 101). In addition to recognizing the infinite variances in expression Ekman noticed (quoted already above) that we “each experience the same emotions, but we all experience them differently” (p. 231), and correspondingly: “Just as some people enjoy sadness, others can enjoy anger” (p. 125). By these considerations Ekman has in effect falsified the linguistic alchemy of traditional emotion theory. What we, then, are left

with is the recognition that facial expressions represent expressions of feelings in infinite variances.

## 7 Memory

1. In the introduction to Bartlett's *Remembering* Walter Kintsch stresses that Bartlett's choice of the verb form was a deliberate scientific paradigm shift. Kintsch wrote: "Ebbinghaus focused on memory as an object of study; Bartlett was interested in the act of remembering" (Bartlett 1995, from *Introduction* by Walter Kintsch). - Compare also Bartlett "I have written a book preoccupied, in the main, with problems of remembering and its individual and social determination. But I have never regarded memory as a faculty, as a reaction narrowed and ringed round, containing all its peculiarities and all their explanations within themselves. I have regarded it rather as one achievement in the line of the ceaseless struggle to master and enjoy a world full of variety and rapid change" (Bartlett 1995: 314).

2. This idea was expressed as part of a passage that I want to quote more in full: "What calls for explanation is the contradiction of a continued persistence in consciousness when the persisting states are unconscious, and the capability these states have of suddenly, after many years, again starting into consciousness. In what sense can we admit this persistence? The conscious states disappear; the feelings as feelings no more exist after the subsidence of their excitation than the last year's roses exist. But something remains. The organism has traces of its past excitations, and their re-excitation is easy. This is not only true of conscious experiences, it is true of experiences which at the time were unconscious.) (1879b: 54)

## 8 Kandel's Search for the Neural Coordinates of the Concept 'Memory'

1. Interestingly, however, in another book, *Principles of Neural Sciences*, (Kandel, Schwartz, Jessell 2000) the concepts 'short-term' and 'long-term memory' are rendered in the generally accepted way. For example, among the scattered data in the magnum opus the authors tell: "the prefrontal association area is specifically concerned with the sequencing of behaviors over time. Two of its functions are short-term "working" memory and planning. Thus, the prefrontal association area is engaged in tasks that require delay between a stimulus and a behavioral response or that depend heavily upon recent experience for completion" (2000: 356).

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