

Principles of New Science

Dialogue in the stream of life

Edda Weigand



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by Edda Weigand

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*For Jakob and Gabriel
in the hope of a humane future*

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Prologue

We are observing the birth of science that is no longer limited to idealized and simplified situations but reflects the complexity of the real world.
(Prigogine 1997)

Studies of science and philosophy are on the rise. Can we be content with the multiplicity and variability of approaches presented? Science seems to be in crisis. We have gone ‘beyond certainty’, but the question of the essence of science is not really posed, far from being settled. The question does not call for revising details of science as it is practiced nowadays. The question shakes the fundamentals of traditional science. Traditional science aimed at achieving certainty. Recognizing that life goes beyond certainty, we have to think about the fundamentals of science again. What can ‘*science beyond certainty*’ mean? Changing the fundamentals will create ‘New Science’. In contrast to nearly all scientific studies so far, the focus of *New Science* cannot be on ‘scientific *method*’, on how science is assumed to work but has first to come to grips with the *object* ‘science’. How can there be an adequate method without having clarified the object?

‘Science beyond certainty’ means ‘science of complexity’, or science without restrictions by method. I often remember André Martinet who, already long ago (1975), emphasized that method must not damage the object. Complexity is more than the sum of parts. There is also another premise that cannot be overlooked. Human beings are at the centre, or in Russell’s phrasing (1948): ‘Man is at the centre’. *New Science* cannot be created by the addition of models but by finding out how humans proceed in tackling the vicissitudes of life. Following the direction indicated by these premises, New Science takes the step from artificial concepts to human abilities based on the nature of the species. Human nature as *dialogic individuals* becomes manifest in what Wittgenstein might have called ‘dialogue in the stream of life’. The ‘stream of life’ is not added to ‘dialogue’, but dialogue is ‘embedded’ in the stream of life and can best illustrate the ‘non-equilibrium’ architecture of complexity (Prigogine 1987).

It is fascinating and encouraging to see that natural and human sciences appear to be converging in the issue of finding out the structure of complexity and meeting the challenge of the unity of science (Wilson 1999). Great progress has been made in the natural sciences by opening up the ‘black box’ of our brain. Human nature is, in the end, determined by the co-evolution of biology and cul-

ture. The step we have to take in creating New Science is the step from the method to the object, from rule-governed patterns to non-equilibrium structures. This is also the step from verification by tests (Feynman 1998) to verification by human nature, from traditional science to science of complexity.

I am aware of the fact that working out the guidelines of *New Science* poses a huge challenge. I have to miss out aspects which might be of interest to other scholars and hope to be excused by saying: 'Where wood is chopped, splinters must fall'. The complex may not ultimately be intelligible. I can only elaborate some basic structures and hope for advances by future studies. The nuts and bolts of New Science I am outlining propose a single model for all the fields so far dealt with separately in various models. In the end, New Science will provide a new understanding of life and the universe from the perspective of human capabilities and limits.

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Franz and I liked to discuss our views on dialogue as action not only in the period when we agreed on a rule-governed concept but also when I changed my view from competence to *competence-in-performance*. Together with Sorin Stati (Bologna), we were united in the idea of language-as-dialogue which led us to found IADA, the International Association of Dialogue Analysis. Addressing dialogue from the point of view of performance even led me to cross the boundary of the humanities and to envision the concept of New Science which unites natural and human sciences.

I am also grateful to many others I was lucky to meet on various occasions, during the IADA conferences but also outside in discussions with scholars of pragmatics, to mention in particular Istvan Kecskes (Albany). Both of us share some basic ideas, mainly that the key to the otherwise unstructured field of language use is dialogue. I also remember František Daneš (Prague) and his open-minded attitude in various linguistic issues, and Gabriella Valera (Trieste) who was standing up for the right to dialogue. I would also like to thank the young scientists who contacted me from all over the world. Their refreshing ideas confirm that the time of closed patterns has passed.

Other scholars I am much indebted to are natural scientists. Unfortunately I never met them personally, but their ideas confirm what I have arrived at by general reasoning. I am only mentioning Edward O. Wilson, Ilya Prigogine, Paul Nurse and Richard P. Feynman. Consilience seems possible although the way to achieve it is tricky and demands effort and commitment.

I am also thankful to Mike Pincombe (Erlangen) who as native speaker refined my English phrasing. Moreover, I am grateful to Răzvan Săftoiu who over years helped me in editorial questions. I would also like to extend a cordial thank you to Isja Conen and the John Benjamins Publishing Company for useful advice in the production process. Last but not least, I would like to thank Luigi for his stimulating remarks on central issues.

Introduction

From the simple to the complex

New Science aims at opening up the complexity of human action and behaviour in performance. But what is complex, and what is simple? Complexity is not measurable as a whole or describable by rules. Science of the simple, as it has been practiced for centuries, did not dare to address complexity directly. The complex whole comprises the *animate and the inanimate*. Thinking about the whole is evoked by the innate human desire of '*finding things out*' (Feynman 2001), which is the source of science. Anything we can think about the whole is human thought and goes as far as human abilities allow. There is no other way to bring light into the complex than accepting that human beings are at the centre. Their destiny is not guessing or speculating. Their destiny is tackling the vicissitudes of life, finding a way through the *non-equilibrium of the world they are 'embedded' in*. They are purposeful beings, and they are by nature competent to adapt to ever changing conditions of performance.

In the past, science aimed at searching for certainty, finding out 'truth', shying away from complexity. *Life is however no certain thing*. Trying to find out who we are and how we behave inevitably confronts us with complexity. Life is no rule-governed pattern. In order to find out how we succeed in tackling the vicissitudes of life, we have to ask what lies beyond patterns. We can no longer reduce science to the methods of abstraction and reduction if our scientific interest is directed towards the complexity of life. The structure of complexity represents a *new hierarchy* starting from the complex whole and deriving the components by specialisation. Integration is the name of the game.

New Science or *science of complexity* aims at describing and explaining how human beings can find their way through what might seem the chaos of life (Prigogine 1997). This goal circumscribes the object of New Science and requires a new methodology. *Complexity is at the very outset. Methodology is to be derived from the complex object*. The methodology of science cannot only rely on assumptions, methodology needs to be *verified*. We might think about ourselves and observe how we adapt to new situations, and we can verify our assumptions by results of *sociobiology* (Wilson 1975). In the end, it is our *brain* which determines the way we take. Everything is dependent on the *nature of the human species* which is a *double nature* or, as Wilson (2013, 54) calls it, a 'chimera': human beings

are *dialogic individuals*, individual and social at the same time. How we act and behave is not only determined by our genes but by the coevolution of genes and culture (Lumsden and Wilson 2005). Sociobiology comprises both biology and culture. “Purposeful behaviour is one of life’s defining features”, as Nurse (2020, 120f.) states, “but it is only possible if living systems operate as a whole”. Finding out how human beings proceed to settle the issues of complexity means to start from *purpose*, from human beliefs and desires, and to take account of all the variables involved in performance.

At the centre there are human beings, everything depends on their nature. Human beings as purposeful beings want to know who they are, what their role is in the world. In the past, scientists avoided addressing the complex as such. They addressed it by cutting it into pieces, to the simple that could be described by rule-governed patterns. In the back of their minds they knew this could not be the proper way of finding out the structure of complexity. It took some time before their interest in rules and logic changed and they faced life as complex phenomenon.

As I just stated, science starts with the human interest in ‘finding things out’. It is this scientific interest which combines the different disciplines and which can create the unity of New Science or *consilience*. Dialogue as dialogic action and behaviour ‘*in the stream of life*’ (Wittgenstein 1981/1967) goes beyond the traditional definition of linguistics as discipline of language and demonstrates that *language is not separable* but integrated in the interplay of human abilities.

Nonetheless, the cult of the simple still thrives vigorously, clutching on to empirical data or taking flight to logical reasoning or even speculations. There are various competing approaches which are either restricted to the empirical surface or stick to *rule-governed models of the past*, structural and generative. Central concepts of the past, such as the *sign*, have to be questioned when we take the step from competence to performance. Artificial Intelligence in particular poses the question of complexity when addressing ‘complex systems networks’ and aims to create new mathematical and computational methods (Mitchell 2009). We might think of new mathematics as softening mathematical rigour. However, it is not new methods which will elucidate the complex, but first of all human beings and the question of how they act and behave in performance. Assumptions in this field can no longer be based on refining methodology and even inventing new mathematics, but, first of all, *need to be verified by human nature. The structure we are looking for is, to a great deal, pre-given by our nature.*

Science has made great progress. Our brain is no longer a black box. Science demands more than testing what we can observe, as is sometimes claimed in natural science. The contrary — ‘*anything goes*’—can just as little claim to settle the issue but rather seems to be the last possibility when arguments for choice are missing. Science is not ‘*a garden of a 1000 flowers*’ where you can pick out the

flower you like most. After decades of rationality and rules we are becoming aware that this cannot be all there is to it. The complex is not built out of the simple, nor a dice game which leaves the explanation to some higher power or to speculation and fantasy. *The complex whole is of another order.* It is not chaos though it might seem so at first glance. It is the *order of a non-equilibrium system of the world with human beings at the centre.* There are no parts which could be separated and added together. The whole consists of components which are derived from it by specialisation in a new hierarchy.

Life is performance, adapting to changes, living with uncertainty. Beside expectancies, uncertainty and chance play a crucial role. Life is not a simple game of Lego but something like a *melody*. A melody is more than the addition of notes. The whole arises from the composition of notes that form the melody. The notes are not separate parts but integrated components of the melody. *The aim of this book* is to throw light onto the composition of the melody by introducing a new type of science. To some degree, it develops further the sketch I gave in my book *Dialogue: The Mixed Game* (2010), but it looks beyond the view of the Mixed Game by uniting all pertinent components in one science of the whole and verifying this 'order' of complexity by human nature and the conditions of the environment.

Part I poses the fundamental question: *What is science?* Most approaches presume to be scientific approaches without clarifying the concept of science. Orthodox science can be considered to be a method which aims to achieve certainty or even truth. Thinking about this crucial premise should astound us. How can an object be grasped by method? In contrast to such a fallacy, genuine science is defined by scientific interest related to an object, and it is the object that determines the method. The question 'what is science' implies the question 'what is philosophy', again a question which is often not touched upon in the literature. Instead, it is presumed that everyone knows what science is and what philosophy is. There is another concept which is seemingly taken to be well-known, the concept of 'theory'. Clarifying the questions of science and philosophy also leads us to clarifying the term 'theory'.

Before introducing the basic principles of New Science or science of the complex, in **Part II** we look back at *science of the simple* based on rules, mainly of logic and fixed patterns. The term 'simple' is not meant in its literal meaning. I call it simple because it is a type of science shying away from addressing genuine complexity which is more than being complicated. Science of the simple, including so-called 'modern' linguistics of the 20th century, introduces artificial concepts, such as the *sign*, and describes complex phenomena by abstraction and reduction. It is, to some degree, orthodox science because it keeps to methods of the simple, including modifying the 'sign', even after crossing the limits of artificial mod-

els and trying to address performance. Among such methods are the *addition of models* and of simple parts which do not exist as separable parts in performance, or *classification*, an old structural method. In addition, *new concepts* are invented which are only of restricted value, for instance, ‘relevance’ or ‘metaphor’. On the other hand, there is a counter move to the focus on data, an approach which is not really simple due to the immense amount of data to be collected which, in the end, restrict language use to empirical data.

Part III addresses *the change to New Science* which does not mean an ‘emergent’ change but, according to Prigogine (1987), the ‘clear-cut distinction’ between classical science and science of complexity. It is the change from science of rule-governed patterns to science of complexity which puts human beings’ *competence-in-performance* at the centre, or in other words: from an approach starting with method to an approach trying to describe the object. The complex whole is the starting point from which the method is derived. Human beings, by their ‘competence-in-performance’, are capable to adapt to ever-changing conditions of a world in non-equilibrium. Human beings are ‘embedded’ in this world. Verifying how they tackle the vicissitudes of life aims at a theory of ‘consilience’ (Wilson 1999) which unites insights of human and natural sciences, starting from the nature of the species and introducing principles of probability to meet conditions of non-equilibrium. Illuminating in this respect are insights by Nurse (2020) about life defined by purpose and Simon’s exposition of the ‘architecture of complexity’ (1962). The *nature of the species* and the *state of non-equilibrium* determine the whole. According to Nurse, *purpose* is the decisive category for the nature of the species. It is also the category on which meaning rests. Human beings are – like any animate being – purposeful beings. Moreover, they are *dialogic individuals*.

Part IV derives meaning and all its components from these key elements to form the *universal structure of meaning*. Human competence-in-performance is an ability that correlates meaning and means in performance. It is an ability by which humans individually choose the means dependent on the actual conditions. Due to the complex interplay of all components, the means cannot be the starting point. *Meaning decides on the means*. Purpose, in general, characterizes meaning as *action*. Human beings’ double nature, dialogic individuals, basically affects action. There is not only one unified purpose, but an *initiative and a reactive purpose*. The relation between both is determined by the meaning of the initiative purpose, and both interact to achieve the purpose of *coming to some mutual understanding*. Interaction presupposes *adaptation* to the conditions of the world. Human beings, by their competence-in-performance, are capable of comprehending all pertinent variables ‘in the stream of life’, which also include *reference* to objects, animate and inanimate, and *predication*. Moreover, due to the

co-evolution of biology and culture, further meaning components are integrated, among them *persuasion* and *morality*, *evaluation* and *emotion*.

Part V addresses the crucial issue of how the complex whole of meaning can be internally structured. The structure cannot be addition of various types. The structure starts from complexity and derives the components by specialisation. Specialisation presupposes that the complex whole is nearly 'decomposable' (Simon 1962). Meaning as a whole and meaning of the components rest on purpose. The structure of meaning results from deriving the components step by step from the complex purpose of coming to an understanding with each other and opens up a *New Hierarchy*. The appropriate *method is specialising* applied by human beings' competence-in-performance. Specialising can only 'nearly' be accomplished because the complex whole is not precisely delimitable.

First of all, the various dialogic speech act types are specialised in a complete *dialogic speech act typology*. The other components of meaning, like *interests*, *reference* and *predication*, are also specialised to sub-components, depending on purpose. In addition, what is known as *division of labour* does not result from different environments and knowledge but from what has become necessary by an increasingly demanding purpose. The environment and knowledge are, of course, included but the key feature is purpose which becomes ever more sophisticated due to societal developments. In this way, fields such as business, the law, politics, and, in general, the different academic disciplines arise from specialised purposes.

Part VI, finally, addresses the most difficult question of what might be a 'grammar' of performance. *Insights of recent research in natural science* can illuminate the process. There is no 'grammar' of performance in the sense as the term 'grammar' has been understood in classical linguistics. Performance represents a world of *non-equivalence* (Prigogine 1987), which requires human beings to adapt to the actual action conditions. Adaptation proceeds in a *zigzag journey* (Wilson, e.g., 1999, 47), following the crucial premise of '*integration is the name of the game*'. The question is: Can there be a '*grammar*' of adaptation? Conditions of individuality are included in a world of non-equilibrium. Prigogine defines non-equilibrium by the co-presence of deterministic and stochastic phenomena. This is precisely the point that characterizes a 'grammar' of performance, which has so far been ignored in science of the simple. Complexity cannot be restricted to fixed types. The 'grammar' of performance I am going to introduce in Part VI does not exclude so-called 'exceptions'. Authentic examples can demonstrate fundamentals of the procedure.

Part VII looks beyond one-phase interaction and faces complex multi-phase games which need to address their purpose by a sequence of sub-purposes. In this way, complex games evolve, for instance, by the division of labour in the emer-

gence of institutions and disciplines. This process is illustrated by an example which necessitates the mediation of an expert.

Part VIII sums up the principles of New Science developed in the book and opens our eyes to the pending challenges of future work. On the whole, these are the nuts and bolts of a global theory of human action and behaviour ‘in the stream of life’ that reflect the complexity of the real world.

In an **epilogue** we pose the crucial question of the relation between ‘is’ and ‘ought’. To my mind, the message of dialogue is to protect humanity in a world of non-equilibrium. The species of human beings as dialogic individuals should aim to remain a humane species and acknowledge everybody’s ‘right to dialogue’.

PART I

What is science?

‘What is science?’ This is the great question. In the literature, you can find various answers, if you find an answer at all. Mostly a piece of work is introduced as scientific without clarifying the concept. For me, Feynman’s phrase of *‘the pleasure of finding things out’* has always been illuminating and inspiring. It goes to the heart of the matter even if — or because — it remains general, even vague: what are ‘the things’ we are trying to find out, how do we want to ‘find them out’? The phrase circumscribes the whole of science by pointing to the object, ‘the thing’, and the method of ‘finding out’. It also points to the scientific interest, ‘the pleasure’ which might induce scientists to go about their work. ‘Finding things out’ should, according to natural science, proceed by conducting experiments and then testing the results. To my mind, however, there is a gap between the ‘pleasure’ of finding things out and the demands of testing. Testing reduces the complex to the simple.

Science has not always been the same. ‘Complexity’ was not always ‘the thing’ scientists wanted to find out. Science aimed at *certainty*. However certainty is not a feature of life, it is a feature of specific methods. Traditional science, in particular logical empiricism, highlighted specific methods, logic, pure rationality and data. Logical empiricism was meant to be a philosophical movement which considered philosophy to be part of the scientific enterprise (Creath 2022). Philosophy and science have never been clearly separated since antiquity when philosophy started with philosophy of nature. Philosophers have been scientists as well, to remember only Heraclitus. Meanwhile there is even a ‘philosophy of science’ (Okasha 2016).

The traditional goal of science and philosophy has been searching for truth. Ever new concepts, more disciplines had to be taken into account as soon as the view widened from truth-conditions of an artificial world to performance. The *belief in certainty came to an end*. The ‘thing’ could no longer be reduced and abstracted from life. The scientific interest changed *from the simple to the complex* (Gell-Mann 1994). We dared to look beyond the limits of rule-governed patterns and to address the complex whole. Crucial progress has been made in neuroscience by opening up the ‘black box’ of the brain.

The problem of how to bridge the gap between the artificial simple and the complex of performance requires us to observe how we address the vicissitudes of life and to derive from it the key to opening up complexity. The gap between competence and performance cannot be bridged at the level of existing models. It

is bridged by an extraordinary ability of human beings which I called *competence-in-performance* (Weigand, e.g., 2010, 230). ‘Man is at the centre’ of all our thought and science (Russell 1948).

I am going to capture this *paradigm change from the simple to the complex* by focusing on the following issues (see also Weigand 2023):

- The scientific method
- Object and purpose of science
- Science and philosophy
- Science and theory

1. The scientific method

If we look at the literature and try to find out the *state of the art*, we get the impression that science is *equated with the scientific method*. As long as the focus was on certainty, the method should elaborate ‘truth’. Scientific methods were therefore considered to be rules of logic or pure rationality. But what is truth? Can there be an absolute truth? Absolute truths might exist in a world of logic as projected in position papers of the American Association for the Advance of Science (AAAS 1990, xii):

Although all sorts of imagination and thought may be used in coming up with hypotheses and theories, sooner or later scientific arguments must conform to the principles of logical reasoning.

I have always wondered how we could imagine our world as a world of logic. Even language has been considered to be a logical matter. Sometimes *truth* is related to *facts*. But what are facts? We are told that facts are what is the case. But this can only relate to what can be empirically identified or measured. Facts consist of measurable empirical data. Can we speak of truth if data are measured correctly or if an object is correctly called by a word of language? If the rule that seemingly defines truth is established from the very beginning, truth does not matter.

There are a few examples which are difficult to decide regarding truth, for instance, Wittgenstein’s example of an object, a hand, we see in front of us (1972, 9e). Is it true that there is a hand? All variables outside of empirical data, meaning and mind, are excluded as well as the speaker who refers to the ‘fact’. What about news which inform about alleged facts? Speaking of truth as facts in the case of correct measurement is mistaken. Facts as constellation of empirical data can be right or wrong but not true. If the rules of mathematics or logic are correctly applied, can this be truth? In this case truth would only be an artificial concept, defined in the system from the very beginning.

In performance truth is a complex matter that only exists as the speaker's claim to truth. In any case it depends on the minds of human beings and their evaluation, which is different for each individual. The sophists already knew that they could phrase anything as seeming truth. So let us stop this pointless discussion on a scientific method that guarantees certainty and take a more concrete look at what scientific arguments can mean which "must conform to the principles of logical reasoning".

According to mainstream science, as outlined by AAAS (1990), *Gauch* distinguishes in his book on "Scientific Method in Brief" between "general principles of scientific method that are applicable across all of the sciences" and "specialised techniques confined to a given discipline" (Gauch 2012, xiii). His focus is on the method, the general principles of scientific method, which are listed as if they were independent of the object:

These general methodological principles involve deductive and inductive logic, probability, parsimony, and hypothesis testing as much as science's presuppositions, limitations, and bold claims of rationality and truth. The implicit contrast is with specialised techniques confined to a given discipline, such as DNA sequencing in biology.

The methods are obviously restricted to formal, rational methods, as is characteristic for classical science (Weigand 2021a). The object does not seem to matter much. It is somehow equated with discipline. The general principles are conceived of as being relevant for the various disciplines. What is quite astonishing is 'this book's message' (p.xvii): "Scientific method is the gateway into science and technology." We are confronted with the view that the 'scientific method' precedes the 'object' which it is supposed to investigate.

The inconsistency of such assumptions is increased when Gauch (p.7), according to AAAS, places science within the liberal arts tradition. Time seems to stand still for science; we are back in antiquity, or more precisely, back in the humanities. How can the liberal arts tradition be conciliated with science? Gauch constructs a mix of science and humanities by terms, such as 'humanities-rich and humanities-poor sciences', and even mixes philosophy and science in a discipline science-philosophy. In the end he describes his book as philosophical book. Perhaps such breaks can be acknowledged in a discipline such as agriculture where Gauch comes from. He puts some emphasis on learning without reflecting on the sense of such learning of formal rules which are not correlated to specific objects.

In contrast to Gauch, *Zimring* in his book on science (2019), at least, poses the proper questions: "What science is and how it really works". However, he deals with science in the framework of methodology. Fortunately, contrary to Gauch, he accepts that science evolves over time (pp.8, 353). Nonetheless he holds the view

that the specific method of science is considered to be objective. It is a 'method of practice'. But can practice be science? Physicians, like Zimring, obviously need to know what they are doing, the method of practice, and they have to teach 'students of science at the graduate level'. I am wondering what 'students of science' means. Is there a discipline of 'science' detached from a concrete discipline such as medicine? Zimring's thesis is that "the process in which science is done" is 'learning by doing and by observing the doings of others'. This view is understandable from the position of the author as "an academic professional physician" (p.2). In the field of academic medicine there are "the ones who know 'how to do the thing'" but "they are amateurs in the formal analysis of what science is". What does 'formal' analysis of science mean? We do not get an answer. We might consider an example from academic medicine, cancer. There are physicists who know what to do as soon as cancer is diagnosed as a specific type of tumour. They know the 'method of practice' but do not know the nature of the phenomenon. To some degree, Zimring mixes the method of practice with the concept of 'science' which "is often presented and perceived as a logical and orderly process that makes steady progress in understanding nature" (p.9). In his brief overview of the history of science, he states that "there is a lack of agreement about what precisely the method entails" and that there are different disciplinary areas which require different methods (p.7).

It seems that the method remains within the limits of an empirical practice such as testability and experiments and does not touch the purpose of science at all. The answer is that "a scientific fact is nothing more than that which has stood up to rigorous testing thus far by the scientific methodologies currently available" (p.9). Can we be satisfied with reducing science to empirical practice, and could practice provide *empirical evidence*?

So on the whole Zimring poses interesting questions but leaves them without an answer. He asks for 'the scientific claims' and how much confidence we should put in them. Scientific claims, for him, mean scientific reasoning, restricted to formal reasoning, and aim at holistic coherence in thinking, at a 'unified framework' (p.4) of scientific entities. These are only concepts. How can 'holistic coherence' be achieved by formal methods? What at all are 'scientific entities'? Zimring presents the image of 'the forest and the trees together'. Can this metaphor explain anything? In the end, Zimring joins the many scholars who 'have tackled the question over the years and yet there is not a clear and unequivocal answer' (p.3f.).

Nor can Weinberg (2016) give us a clear answer. Daringly, he identifies 'the discovery of modern science' with 'explaining the world' but does not present an approach for this challenge, only attempts at explaining the world.

Obviously *we have arrived at the end of certainty in classical science*. The issue, to my mind, seems to be that, on the one hand, we are aware of it but, on the other hand, keep sticking to formal methods to achieve ‘holistic coherence’. This issue reminds me of *Kuhn’s* well-known book “The structure of scientific revolutions” (Kuhn 1962/2012). Among Kuhn’s criteria for an approach to be considered as scientific revolution are the following:

- The new paradigm explains better the observations.
- It offers a model closer to the objective, external reality.
- It is incommensurate with the old paradigm.

Observations seem to be the starting point. However, not every object of research can be observed. How could ‘the end of certainty’ be observed? It is a cognitive problem. At the bottom of Kuhn’s criteria, we again find the premise of an ‘objective, external reality’. However, what is ‘reality’, what is ‘objective’? This type of world is hypothesized in classical science but does not exist in performance. A ‘revolution’, a ‘paradigm change’ would indeed be necessary but it cannot be achieved by gradual modification of past models. Kuhn does not search for a new method but remains caught by methodological criteria taken from the ivory tower of science, from a world of ‘reality and truth’.

In this respect, research in *Artificial Intelligence* is interesting to take note of. In principle, AI is based on rule-governed patterns, but is proceeding step by step towards complexity, by opening up the object to ‘anything’ (Weigand 2019; 2023) and by addressing complexity in a field of ‘complex systems networks’, which ranges from the brain to bank networks and urban scaling (Mitchell 2009). The complex, even if so termed, is not addressed as the complex whole but reduced to the method by searching for a calculus of complexity.

Such great questions about science and a paradigm change invite *philosophers of science* to join the discussion. McIntyre introduced an interesting feature in his book on “The scientific attitude” (2019), which can be interpreted as the missing component of *scientific interest*. The interest is related to human beings who are at the centre of science. There is no science as such independent of the object. Any science starts from human interest and is directed towards a goal. In this sense ‘the scientific attitude’ can be considered as an essential component of science. McIntyre however fails to integrate it into the whole of science by deviating to ‘denial, fraud and pseudoscience’ in a mix of science and philosophy.

Admittedly, the question of science is a difficult question which unfortunately tends to become a question of simply ‘talking about’, not of getting to the heart of the problem. One of the main problems of the attempts to grasp science is that the ‘scientific method’ is considered to be directed to some ‘empirical evidence’ which could be demonstrated by *tests*. However, what about an object that is not empir-

ical? The *focus on empirical evidence* excludes objects that consist of integration and interaction of components, empirical and cognitive. It can therefore only be a benchmark for traditional science, not for science of complexity. *Complexity* is structure, not chaos or addition; nor is it the structure of the simple restricted to empirical structure.

For a long time, achieving *knowledge* seemed to be the purpose of science (e.g., Russell 1948). However, what is *knowledge*? Even if Popper (1959) called his method ‘the empirical method based on rules’, mainly logical rules, he arrives at the end of his book at admitting: we do not know, we guess. Astonishingly, *natural scientists* also consider science in the end as *guesswork*. Even Feynman (2001), who brilliantly declared the ‘pleasure of science’ to be ‘finding things out’, emphasized, on the other hand, that the result in the end is guesswork. I agree, to some extent, with Popper and Feynman because human cognition is limited to human reach and might not be capable of really grasping the universe. However, I do not think that scientists should be content with guessing.

2. Object and purpose of science

Science is more than the method. Can there be an independent method at all? There is, for instance, logic taken as independent system and purported to be capable of describing language or verifying how it works (Weigand 2021a). Logic can take this purpose only by destroying natural language. But this does not seem to be a problem, neither for logical empiricism nor for other types of logic (Jaszczolt 2018).

There is *no autonomous method. It is the object that determines the method.* The object changed due to the change of scientific interest from rule-governed patterns to the question of *what is beyond*. Searching for rule-governed patterns means that science is identified with the method, a method that claimed to achieve certainty and truth. But what truth? The truth of an artificial system achieved by some truth-conditional semantics? Or the truth which underlies so-called *empirical evidence*? *Data* can only be considered to give evidence in case of an empirical phenomenon but, in principle, truth lies in the eye of the perceiver. *Observation* depends on interest and needs to be backed by theory. The dependence of the method on the object has been ignored in logic and empiricism as well. Valuable as corpus linguistic methods are, they cannot decide about a complex object. We cannot trust the text, contrary to what Sinclair 1994) has proclaimed. The complex object cannot be reduced to empirical methods.

After our interest in competence rules changed to what really happens in performance, science can no longer be identified with the method. Scientists have

some responsibility for society and cannot only work in systems which have almost no social effect. *Science is defined by the object and its purpose.* The method is derived from it. Science is a *human activity with the purpose of 'finding things out'*, as Feynman has called it. The issue is what the 'thing' is and how we can find out how it works.

Scientists of natural sciences surprisingly introduced the term 'dialogue'. Prigogine (1997, 153), for instance, points to the object of science by *calling science 'dialogue' between mankind and nature*. In this phrase, the term 'dialogue' can only be understood metaphorically. We are not directly in dialogue with nature. Dialogue is dialogue among human beings, within mankind, about an object, called 'nature'. I think Prigogine means 'finding out what nature tells us'.

David Bohm (1996) also uses the term 'dialogue' referring to 'wholeness and the implicated order'. However his concept of dialogue remains in the vague. To my mind, he uses the catchword 'dialogue' to grasp the mystery of reality. With Prigogine we have arrived at 'the end of certainty', which meant a state of non-equilibrium or 'chaos' for him (Prigogine 1987; 1997). The purpose of science is 'finding out the rules of chaos'. However, can we consider the world to be chaos? It might seem to be chaos, but only at first glance. *The world is complex, not chaos.* Complexity has a structure, the structure of a new hierarchy (Simon 1962).

There is a tendency to equate science with *knowledge*, practicing science with augmenting knowledge. Knowledge certainly is a crucial component, but it is not science. Knowledge is dead matter which can be collected in encyclopaedia. Science creates knowledge but knowledge is not something ready for eternity. The collection of knowledge has to be thought and rethought according to progress made in science.

There is no autonomous science. Science does not aim at the ontology of things. There is no independent *ontology in performance*. *Absolute truth is an illusion.* The search for ontology remains at the *level of concepts*. *What things are decides the purpose they are used for* (Wittgenstein 1958). The purpose of science derives from human needs. Finding things out is, to my mind, related to the inborn need of getting to know or of curiosity. In this sense, the purpose of science is finding things out as they are, which means as they can be *verified in the hierarchy of the complex whole*. By this criterion of verification, science is *different from hermeneutics*. The hermeneutic purpose of *interpreting* remains within the individual mind of the interpreter. Feynman's phrase of 'the pleasure of finding things out' contains *the whole*: there is the *object*, 'the thing', and the *method* of 'finding out', and the *scientific interest*, the pleasure, which starts the process.

The question remains: what is the 'thing', we want to find out, the *object of science in conditions of non-equilibrium*? The question of the method will be derived from the object. Can we assume that everything is in reach of human cognition?

The complex, in the end, will not be testable by formal criteria. Physicists, including Feynman, may take the *mathematical formula* as benchmark and apply ‘tests’ to check whether new experiences fit the formula. However, this presupposes that the formula already reaches what is ‘beyond rules.’ Facing the end of certainty, non-equilibrium, however, requires us to *start from meaning*. Formulas and the criterion ‘testable’ will not suffice. *In New Science the object is the complexity of our life, of the animate and inanimate.* The *purpose* is opening up complexity in the various areas of our life. How can this be done? New *methods* cannot simply be invented or arbitrarily used. They have to fit the ‘thing’ to be found out. In the end they need to comply with the *sociobiology of human existence*.

Complexity is related to the whole, ‘the meaning of it all’ (Feynman 1998). The whole, the architecture of complexity, cannot be addressed directly. It needs to be opened up as complex hierarchy with components derived from it. Accepting that science in general is a human activity, all sciences are human sciences, the natural sciences as well as the human sciences. The question of *consilience*, the unity of science, can only be tackled by tracing all items back to human nature and culture. Any hypothesis we make in science should, in principle, be *verifiable by nature and the co-evolution with culture in conditions of the environment*. This is the criterion which can replace ‘testable’.

The sciences, natural and human, are connected by the human desire of getting to know ‘the meaning of it all’ (Feynman 1998; Wilson 2015). As already mentioned in the Introduction, science has made great progress in understanding the living world, by elaborating the source and the *components of life*. “*Purposeful behaviour* is one of life’s defining features”, as Nurse (2020, 120f.) states, “but it is only possible if *living systems operate as a whole*”. In any case, the *distinction between the animate and the inanimate* and the definition of the animate by purpose is crucial for science. It is the distinction between science of the universe and science of human affairs, between natural science and human science. *Social sciences* pose the problem of whether they really represent science. In case they relate to human beings, they can be considered as a component of the human sciences. In case they relate to the inanimate field, for instance, statistics, they may be considered as a tool which may shed light on additional variables, for instance, frequency.

Natural sciences have made great progress, including opening up the firewall of our brain. We can no longer excuse ourselves by calling our brain a black box. We have become aware of complexity in and around us, and we are capable of addressing complexity. Tests can be of help to check what might seem to be results. But science is not a series of tests. *At the centre of everything, there is the human being*. Taking this insight seriously will change the whole. Fortunately, *sociobiology* has provided valuable insights into human nature, which we can use

as *verification* (Wilson 1975). Anything we do and think is determined by human nature and how it is affected by the surroundings. Our *epigenetic code* describes the coevolution of nature and culture (e.g., Lumsden and Wilson 2005).

3. Science and philosophy

Science is different from philosophy. I think we can take this as widely accepted even if we are confronted with approaches that do not bother about the difference and do not mark their approach as scientific or philosophic (Weigand 2021a and b; 2023). So let us pose the question explicitly: *What is science? What is philosophy? Can there be a mix?* In the section above we elaborated *criteria for science*, among them:

- Science has an object and a purpose. Science is a purposeful human activity. Science of complexity aims at opening up the complexity which surrounds us and of which we are a component.
- The so-called scientific method is to be derived from the object.
- A scientific theory and its assumptions need to be verified.
- For science of complexity, verification can, in the end, only mean verified by human nature in co-evolution with culture.
- Human nature is a double nature: social-dialogic and individual. Verification therefore means verification by sociobiology. The genetic evolution of human nature is dependent on epigenetic rules relating to circumstances, social and natural.

Let us apply these *criteria to philosophy* and ask for its object, purpose, method, and verification. If you ask philosophers what the *object and purpose of philosophy is*, you will not get a clear answer. Philosophy takes the right to talk and decide about everything. Philosophy can have any object, from philosophy of dialogue to philosophy of science. We can distinguish two directions: on the one hand, philosophy claims to *control science*, to take a position over and above science, and this in every field of the humanities and natural sciences. In this sense, Midgley (2018) claims that philosophy can connect all the different scientific approaches but does not tell us how this could happen. According to Okasha (2016, 10), “the principal task of philosophy of science is to analyse the methods of enquiry used in the sciences”. Does science need philosophy for control? There is no clear result presented by philosophy, what we get is retelling science or simply ‘storytelling’, which, according to Chomsky (2016, 40), “proceeds without even spelling out the essential nature of the phenotype”.

Storytelling also amounts to what I would like to call ‘pop philosophy’ by modifying the phrase ‘pop genetics’ applied by the philosopher Scruton (2017, 18). Scruton refers with this phrase to science, especially, sociobiology, and even claims that Wilson (1978) uses ‘the language of common sense while at the same time he cancels the presuppositions on which common-sense terms depend for their meaning’. This is again a way of storytelling without any scientific understanding. Calling Wilson’s way of making conclusions a ‘trick’ only manifests Scruton’s attitude of attack against Wilson.

The other direction *equates philosophy with ethics* (e.g., Arnett and Cooren 2018). It takes morality as object, for instance, ‘dialogic ethics’ which is an important scientific object but if dealt with in philosophy it should also be called ‘philosophy of dialogic ethics’. Philosophy considers morality as a matter of fact, without taking note of the difference between science and philosophy (e.g., Bencherki and Sénac 2023; Weigand 2023). Unfortunately the concept of dialogic ethics led to some conclusions which *contradict science*. This could happen by misunderstanding philosophy as science. Dialogic ethics is taken as general concept of dialogue, which restricts dialogue to ethics and contradicts the scientific premise that communication is always dialogic. Two different objects are created: ‘communication’ versus ‘dialogue as dialogic ethics’ by erroneously purporting philosophy to be science.

Although *neither the object nor the method* of philosophy is clarified, the question for the *purpose* is raised, for instance, by Midgley (2018): “What is philosophy for?” Her claim that ‘philosophy can connect all the different approaches in science’ only demonstrates the philosophical level which, from the very beginning, purports to be over and above science. Such premises about the role of philosophy may be understood when looking back at the past and ignoring the change of our insights brought about by neuroscience.

This introduces the next criterion: *verification*. In a field of ‘anything goes’ (Feyerabend 1987), there cannot be any verification. Nothing is expressed explicitly, neither the object nor the method nor the purpose. Philosophers purport to deal with truth and ‘facts’ by means of methods which range from logic and truth to speculation. Concepts are arbitrarily introduced by some flight to *meta-philosophy* (e.g., Sarasin 2009; Latour 2007). In order to clarify the conceptual confusion we have to go to *the heart of the problem*. There is a ‘philosophical theorem’ (Kuhn (1962/2012, 206), which, to my mind, very well grasps the scope of science as opposed to philosophy: ‘is does not imply *ought*’. Unfortunately it seems to be a widespread feature of philosophical articles to purportedly express opinions about ‘ought’ as if they were facts. I dealt with this issue in recent publications, for instance, (Weigand 2023). The basic question is: what is ‘is’, and what is ‘ought’? ‘Is’ cannot imply ‘ought’. ‘Is’ and ‘ought’ are not only words, they are actions which

express how we think about life. On the one hand, we express what we believe to be true, on the other hand, we modify our belief of ‘is’ to what we think ‘ought to be’. Both types of actions are representative speech acts which can be derived in a dialogic typology of speech acts (Weigand 2010 and below Part V). Representative speech acts are constituted by a claim to truth which is specialised towards various subtypes (Weigand 2010, 172). I am focusing here only on the specialisation of the modal claim as illustrated in the following figure:

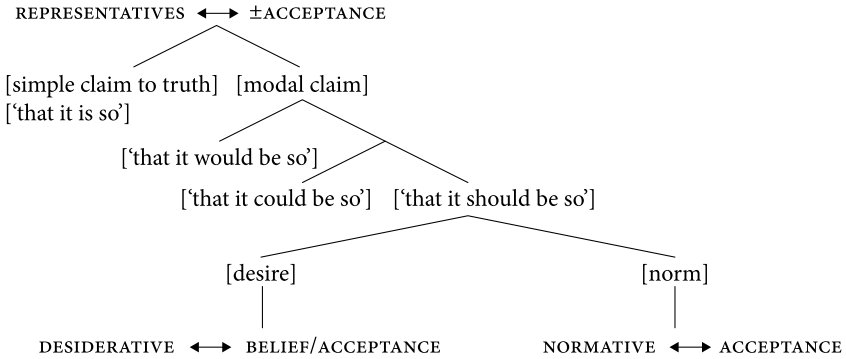


Figure 1. Specialising the modal claim to truth

To some extent, this derivation of speech act types complies with the basic principle of the architecture of complexity: we start from the complex whole, in this case from all representatives, and derive subtypes by specialisation. According to human beings’ dialogic nature, every speech act is dialogically directed, as initiative or reactive speech act. As can be seen in the figure above, the modal claim of ‘it should be so’ can relate to a desire or to *moral norms*. The latter is at the heart of philosophy.

Science, to my mind, describes the world, the animate as well as inanimate, by *descriptive* rules and should attempt to verify them. Philosophy describes how life should be by *normative* rules. Norms are either set by institutions or ethical systems. Scientific assumptions can be verified by human nature and conditions of life. Philosophers line up assumptions without feeling responsible for justifying them. ‘Accepting that anything goes’ or flying into metaphors only means we do not know. *Morality*, for instance, in the sense of *dialogic care*, as referred to by Bencherki and Sénac (2023), seems to be a reasonable goal that can support humanity. Morality in this sense could even be taken as scientific criterion if it is in favour of *survival needs* in evolution. Survival cannot only be selfish but needs to be based on group survival (Wilson 2015).

For any approach, be it in science or philosophy, reason or conclusiveness of thought is decisive. But what is reason? Reason, to my mind, is different from logic. Reason means finding out the rationality of performance, which in the end is the reasonable interplay of manifold variables (Weigand 2014; see also Simon 1983). The *purpose of science* is to describe the possibilities of interaction dependent on the circumstances; the *purpose of philosophy* is to give guidance on finding our way through the maze of life. The difference between ‘is’ and ‘ought’ should however be clearly expressed. Philosophers rarely fulfil this commitment. They are used to *mixing their view about ‘is’ with their view about ‘ought’* expressing both by simple statements about ‘is’ (e.g., Bencherki and Sénac 2023).

For describing and explaining ‘is’, science does not need philosophy. Science can *describe* value-dependent alternatives and their dependence on the environment, the animate and the inanimate. *Describing is different from recommending and different from norms*. In language use, we give advice and *recommendations* in order to help our fellow beings to decide in difficult issues of their life, not in order to set up *norms*. To give an example: We may recommend our friends in daily talk during days of drought:

(1) *We should be more economical with the use of water.*

I think we should distinguish between two ways of expressing ‘ought’: the everyday *normative use of recommendations*, as in the example above, and *official institutional norms*, which are claims to action and behaviour with collective declarative validity. Whereas everyday recommendations are made due to individual evaluation, institutional norms are set by the institution and relate to its purpose and role in society.

Evaluation poses the *question of where values come from*. Can we consider the ability of evaluating to be an inborn ability? To my mind, we cannot perceive or observe without taking a position. What we see, lies, at least in part, in our eyes as beholders. Evaluation *belongs to the inborn features of the human species* (see epigenetic rules below, Part III 2). Group membership and defending the group against rival groups belongs to human nature and culture.

Tracing human action and behaviour back to human nature also leads to another question closely related to the value-ladenness of dialogue: Which consequences are implied in describing human beings as dialogic individuals? Does ‘is’, in this case, imply ‘ought’ or the *right to dialogue*? The question is what the right to dialogue means. How far can this right go in certain societies? How far is it culturally shaped or even restricted? Values do not represent facts nor can they be considered universal norms. They are fundamentally dependent on culture and society.

Philosophy should help human beings when they have to decide about how to settle the issues of life. It may claim to act according to some values on the basis of *philosophical norms*. Philosophy can be more than storytelling (Chomsky 2016, 40) and should aim at arguing for the conditions of a better life. *Science* is called upon to describe the possibilities of action in the stream of life. Comparing the alternatives and selecting one which seems appropriate relies on the inborn human ability of evaluation. Science and philosophy should cooperate and share their insights to help human beings tackle the vicissitudes of non-equilibrium conditions.

The *philosophical object* is justifying the norm on which the claim to action and behaviour is made. This object can require a method of argumentation. We can argue for beliefs and also for specific action, for the claim to truth and for the claim to volition. The issue is where to take arguments from. Arguing for and against certain positions is done in discussions. *Discussions* are therefore the most suitable game for philosophers, as can be seen in discussion rounds, for instance, organized by Richard David Precht in Germany, or Chomsky (1994) on the issue of a new world order. Complexity can be illuminated by such philosophical discussions to help human beings orientate themselves.

Arguments can be taken from the past, *from history*, including the history of philosophy. They can also be put forth claiming warrant simply by reference to alleged 'authorities' without going to the point of the issue. Unfortunately, we are very often confronted with this technique of storytelling which is also used to strengthen the community. For instance, you have to belong to Latour's circle in order to understand the concepts he is using. The authoritative reference to Latour suffices, which, in the end, means you can arbitrarily put forth your opinion as you like (Latour 2007, 23):

The task of defining and ordering the social should be left to the authors themselves, not taken up by the analyst. This is why, to regain some sense of order, the best solution is to trace connections *between* the controversies themselves rather than try to decide how to settle any given controversy. The search for order, rigor, and pattern is by no means abandoned. It is simply relocated one step further into abstraction so that actors are allowed to unfold their own differing cosmos, no matter how counter-intuitive they appear.

What Latour claims to be his free decision is in the field of religion faith (e.g., Wilson 2015, 151).

Arguments can also be constructed by reference to *moral values*, for instance, to concepts such as 'care' (Bencherki and Sénac 2023) or 'harmony' (Bohm 2004). The meaning of concepts however should first be elucidated. If you, for instance, argue for peace, what does this mean? Can peace be achieved by weapons? Moral

values do not per se represent facts. Moral concepts, single words, have to be put in dialogic use if you want to use them as arguments.

Describing the world as it should be cannot be the answer to scientific issues. The aim of philosophy is to find out reasonable rules for action and behaviour in a humane society. They might be justified only for the individual philosopher. Even if I assume that comparing and evaluating in general is an inborn human ability, deciding for a certain value is another matter which requires specific justification by biology and culture if it is to be considered a value in science. In this sense, *verification* represents the essential difference between science and philosophy.

The difficult question of how to deal with evaluative speech acts in science is at the core of such deliberations. Dialogic interaction in performance is carried out by a sequence of speech acts issued by individual human beings, dependent on actual action conditions. It is no pattern which sets the order nor a garden of a thousand flowers. It is the individual human being who decides which alternative to take in conditions of non-equilibrium. Science has to describe the alternatives and the variables on which they depend. Individual selection and decision is made by the individual human being, a philosopher, a scientist or any human being.

4. Science and theory

It is not only the term ‘science’ but also the term ‘theory’ which is mostly used as if everybody knows what it means. If an explanation is given, it mostly refers to specific fields, such as in Kenneth Angielczyk’s blog (2017) ‘What do we mean by theory in science?’ which explains the term in natural sciences:

a theory is a carefully thought-out explanation for observations of the natural world that has been constructed using the scientific method, and which brings together many facts and hypotheses. The term hypothesis is good to define in this discussion as well: a hypothesis is an idea that we can test with further scientific observations. (March 10, 2017)

Such a definition at least tries to explain the term ‘theory’ in connection with other terms, ‘scientific method’, ‘facts’ and ‘hypotheses’. All of them are related to observations as we can see in Angielczyk’s blog on “What do we mean by facts?” (February 16, 2017):

A fact is an indisputable observation of a natural or social phenomenon. We can see it directly and show it to others.

A hypothesis is an idea that we can test with further observations. We set out to gather evidence to see if our hypothesis is supported.

For the author, a specialist in paleomammalogy, these terms might be useful to explain observations. But what about complex phenomena where observation of empirical data is only a component? In science of complexity we might also deal with facts but in a very restricted sense. Science of complexity denies that there is an absolute truth, but 'facts' as indisputable phenomena would presuppose such truth. 'Fact' is a word of everyday language and means something that allegedly cannot be discussed, that is 'indisputable'. However, it cannot be restricted to observation. *Facts* are phenomena of systems, either constructed by human beings or pre-given by nature. They might, for instance, give a name to a technically difficult object, e.g., a machine, or relate to something about nature. In any case 'facts' are components of our understanding of the complex whole. The term 'hypothesis' is related to the method of testing. The complex, however, cannot be tested.

Unfortunately very often these terms are used without explanation. We might assume that they mean 'something above the empirical surface'. Can this be science? The term 'theory' might be opposed to 'practice' and can in this sense be used in various ways ranging from purported explanation to speculation. Do we really have to separate theory and practice? Practice is performance. The theory of New Science describes action games of performance, i.e. practice. I agree with Hymes (1972, 269) in this issue:

It is not that there exists a body of linguistic theory that practical research can turn to and has only to apply. It is rather that work motivated by practical needs may help build the theory that we need.

Using the term 'theory' might also take on a derogatory tone in the sense of '*just a theory*', pointing to problems of practice. Theory as underlying theoretical explanation is usually related to rule-governed patterns of explanation, i.e. the core of science of the simple, and leaves multiple practice in the background. As soon as our interest is directed to performance, we have to expand the range of science and start from scratch.

The most important point of this issue is the question about our scientific interest. As soon as our interest is no longer in certainty and establishing artificial systems that are constructed to achieve certainty, we are facing the complexity of all, of life and the universe. If our interest is in science of complexity, in finding out the structure of complexity, *we must not fall back into reduction and abstraction but start from the complex whole.*

The complex whole is our object. The object determines the method. If the object is complex, the method of rule-governed patterns will fail to grasp it. The claim that a theory has predictive power is also heavily restricted if related to a theory of performance. Our purpose is finding out the structure of complex-

ity. How can we succeed? The main resources are our capacity of *reasoning and observation*. *The relation between interest, object and method constitutes the basis of a theory*. The relation cannot simply be fixed as we like but is *predetermined by human nature*. Human nature has evolved in relation to society and culture as described by sociobiology (Lumsden and Wilson 2005; Wilson 2004; Weigand 2007).

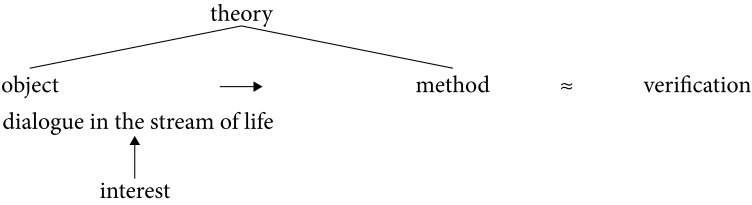


Figure 2. Constitutive components of a theory of New Science

Theory is not the same as science. Science consists of various theories which may relate to various components of the whole but as well to the structure of the complex whole. Human beings are at the core of science, the natural and the human sciences. It is their interest in ‘finding things out’ which combines the components of the whole and aims at *consilience* (Wilson 1999). To my mind, consilience is more than the unity of knowledge. Can there be unity at all at the level of knowledge? Unity is created by the human being at the centre. Consilience means the unity of science based on human beings’ interest. The purpose of science is not storing knowledge in libraries. The purpose is finding out the deeper connections of the components of life.

Consilience is created by the *integration* of the components which can, at least in part, be verified by neurobiology (Weigand 2002) and the co-evolution of biology and culture. Integration also enters the *staircase model of the different disciplines* developed by Gell-Mann (1994, 111f.):

- ↑ psychology, linguistics, etc.
- ↑
- ↑ biology
- ↑ chemistry
- ↑ physics

Figure 3. Staircase model

At first sight, listing different disciplines on a ladder might seem as an attempt to distinguish different levels but it should be read as listing of different *integrated*

dimensions, or as Gell-Mann put it: "... while the various sciences do occupy different levels, they form part of a single connected structure", or in Nurse's words (2020, 120f.), 'living systems operate as a whole'. What might seem to be different compounds of knowledge gathered in the various disciplines, is in the end gained by specialising the purpose of 'finding things out'. The 'single connected structure' cannot be a structure of 'emergent order' of concepts such as CAUSE within one and the same physics (Ellis 2005). We have to acknowledge that there is a 'clearcut distinction' between what was considered to be the 'underlying simple level' in the classical perspective, underlying even in complex systems, and the 'far reaching reconceptualization of science that is going on', to cite Prigogine (1987). It is hard to believe, but Prigogine's insights are simply ignored by Ellis.

Performance means 'diversification and instabilities in a pluralistic world in which we find deterministic as well as stochastic phenomena' (Prigogine 1987, 97). It is this *world of non-equilibrium* that is the *object of a theory in New Science*. The question is where non-equilibrium first appears in the staircase model. According to Prigogine and Gell-Mann it is included in physics from the beginning. It would then be the source of the change from the non-animate to the animate biological world, *from a physics of particles to New Science based on purpose of the human*.

A theory of New Science *comprises natural and human science*. The *aim of this book* cannot be a detailed description of both. I will focus on the role of human beings who are central for any thinking about science. This means the *focus is on human nature and the conditions of non-equilibrium which determine human action and behaviour*. So far, the use of language has been considered to be the feature that distinguishes the human. As we will see, this feature *cannot be isolated but is integrated* with other abilities in the complex whole of *'dialogue in the stream of life' or science beyond certainty*.

PART II

Looking back

Science of the simple

The 'simple' obviously contrasts with the 'complex'. Gell-Mann (1994) used these concepts in the title of his book *The quark and the jaguar. Adventures in the simple and the complex*, and considered the fundamental basic laws of nature to be 'the simple', and the multiple adaptive systems in the diversity of the natural world to be 'the complex'. In this sense, the 'simple' means the underlying structure of complexity, related to quarks, which appears in performance in multiple faces, for instance, the jaguar. However, the relation between an underlying simple level and the multiplicity of phenomena in performance remained unclear.

The view of New Science is different. There is no deterministic level of the simple which contrasts with complex phenomena. *Performance is complex and cannot be traced back to an abstract simple. New Science or science of complexity demands to start with the object, the complex whole, and to elaborate its structure. Science of the simple, on the contrary, means starting with method and trying to construct the complex out of the simple, mostly keeping to rule-governed patterns.*

According to Prigogine (1987), we have to make *a clear-cut distinction* between classical science, which is science based on 'some underlying simple level, even in complex systems', and the 'far reaching reconceptualization of science in a pluralistic world of non-equivalence in which we find deterministic as well as stochastic phenomena'. Such a clear-cut division is also manifest in the human sciences by what has been called the '*pragmatic turn*' *from competence to performance* when scientists dared to look beyond abstract patterns. In performance, we are confronted with another object, an object that cannot be derived from the simple. Science of the simple constructed 'language competence' as an artificial concept by methods which are meant to achieve *certainty or truth*. *Scientists shied away* from addressing the complex object directly and tried to approach it by *abstraction and reduction*, and other invented methods.

Even in physics we are confronted with various theories of complexity of the universe. Instead of accepting that understanding the universe lies beyond the reach of human abilities, the focus is still laid on observation, on the one hand, and some new mathematical methods (Midgley 2018; Mitchell 2009), on the other. I have always wondered how physicists can predict the discovery of the key of everything in the near future (Hawking 1995), ignoring the limits of human cognition (also Chomsky 2016, xiii).

Opening up our brain, at least to some extent, by neurobiology, we have become capable of verifying our assumptions by human nature and the conditions of performance. *Placing human beings at the centre* throws new light on everything. The focus is on the human brain, its reach and limits. Fortunately, biology, neuro- and sociobiology, brought us considerably further in understanding the meaning of human existence (Wilson 2015) by including the co-evolution of biology and culture. We no longer need to take the flight into artificial constructions or speculations. Our interest in *finding things out can be considered as an inborn human interest*. We are capable of addressing complexity, the complexity not only in physics but also the complexity of human abilities, in a world of non-equilibrium. *Beside cognition and perception, language use* turns out to be a fundamental human ability. *Linguistics* in the narrow sense of research on language became expanded to linguistics in the broad sense of research on language use as a component of human action and behaviour. This, of course, means recasting and redefining the concept of *discipline* in New Science, as being integrated with other disciplines from the very beginning.

Before the interest of scientists was indeed related to the actual use of language, a long way had to be gone from starting with abstract 'language competence' and simplified situations, and reaching out to the complex of human action and behaviour in performance. Some scientists are still on this track, focusing on an isolated object language that does not exist in performance. The attempts at bridging the gap between language and language use are multiple. They cannot be successful as long as they remain at the level of models. I will start with the concept 'language' as it was dealt with in linguistics of the simple and outline how different linguistic schools tried to tackle the turning point to language-in-use.

1. Abstraction and reduction: Competence and the system of signs

Abstraction and reduction to the simple seemed to be the only scientific method capable of grasping the complex object. Even physics has been called "the ultimate reductionist subject" (Ellis 2005, 49), despite the wide-spread insight into the end of certainty. The history of linguistics is another clear example of the dominance of *rule-governed patterns*. Modern linguistics starts with this methodology which led de Saussure to define language as *a system of signs*.

The central pattern of the sign as correlation between meaning and expression is still vigorous today although the entity of the sign has been extended to phrases and events (Harris 1996) and recently to '*constructions*' which also include the relation to use (see below). The direct correlation between an empirical expression and its meaning is crucial. The linguistics of the sign dominated various periods of

modern linguistics. Science is equated with the method of rule-governed rationalism and logic. The order of a system of signs seemed to exist on its own. Only later, in generativism, the speaker has been introduced as ideal speaker who knows the rules. I always wondered how we could justify certain generative rules. The simple answer was: ‘we are the speakers, mother language speakers, who know the rules.’ *The competence of the ideal speaker* decides which structures are right and which are wrong, but beyond the structure there is no real speaker.

Ferdinand de Saussure knew very well that a proper theory of language means addressing language in the stream of life, however he drew back from addressing the complexity that opened up when looking beyond the sentence. He wanted to develop a methodology without exceptions, *different from philology* as it was practiced in the century before. In this intent he founded modern linguistics by creating an artificial concept of language as a system of signs. The method was *reduction* of the multiple variability of empirical items and *abstraction* to a rule-governed system. Philological precision of details and exceptions was replaced by rules of an artificial system. In *structuralism*, two types of method prevailed: first, *segmentation of speech*, for instance, of phones and morphs, and second, *classification*, related to meaning, to phonemes and morphemes. Meaning is restricted to an artificial system with only an abstract relation to use. For instance, classifying inflectional endings as imperative does not tell us much about the meaning of this category in use.

Chomsky’s generative concept of language introduced the *competence* of an ideal speaker who produces sentences in a dynamic process. The concept of sign has not really been problematized. In order to remain within a rule-governed framework, the ‘labyrinth’ of *performance* has been excluded. The generative system starts from an abstract item S and derives the *generative hierarchy* from it by *division and addition*: S, the sentence, is divided into parts, and the parts can be added together to return to S. The generative hierarchy also includes the addition of *deep structure* for tackling syntactic problems which cannot be tackled at surface structure. Chomsky (2016, 23) keeps to the view of ‘language as an instrument of thought’, and conceives of science as ‘reduction of complex visibles to simple invisibles’, finding out the underlying invisibles in deep structure.

Even if the inclusion of a speaker can be considered as a step forward, the sentence still represents an artificial syntactic category. The ‘system of signs’ means *signs put into a rule-governed system of syntax*. The principal question of whether language can be built from *syntax* at all is not tackled. In the end, it is *mathematical rules* which are supposed to underlie language. This is, of course, a view similar to the assumption that language can be described by *logic*, an assumption that, to a great deal, dominated language philosophy (Weigand 2021a).

In structuralism and in generative grammar, the *object* language has been equated with *method*. I have always wondered how such a methodological view could gain dominance in science, although I myself started research within such rule-governed patterns. Methods cannot simply be put in place, they depend on the object and the scientific interest or the purpose of research. Whereas since antiquity the purpose has been directed towards certainty and truth, we finally have arrived at the *end of certainty* (Prigogine 1997; Toulmin 2001), and the purpose became finding out what lies *beyond*.

2. The challenge of performance

Gradually the interest in artificial systems weakened and the question of the role of language in life became more and more vivid. It had become clear: an abstract language does not exist. The question was: what is language-in-use? (Weigand 2021a, 544). In the stream of life language means action, individuality and chance, not according to rules but adapting to complexity (Weigand 2015). The problem is: what lies beyond the pattern? *How can competence and performance be combined?* I am surprised by the strength of other minds who rest in certainty and push uncertainty away into vague areas.

The issue of complexity has already been recognized in classical science but addressed by reduction and abstraction, arguing like de Saussure that it is too difficult to address complexity directly. With the *pragmatic turn* the scientific interest changed from language to *language-in-use* which seemed to be chaos. The big question was: what does language use mean? Obviously, language use means *another object* that cannot be addressed by starting from isolated language. Language use implies multiplicity, variability, and, in principle, the problem of *distinguishing permitted utterances from nonsense*.

Fortunately science did not stop with guesswork but engaged in finding out basic structures of language-in-use. *The gap between competence and performance is, in principle, not solvable at the level of models* but calls for rethinking the whole procedure of theorizing about what happens in language use (see also Weigand 2021a). Language-in-use does not only mean the *pragmatic turn* but requires us to take the step from pragmatics to dialogue and to accept the *dialogic turn* which gives structure to language use by the new concept of *language-as-dialogue* (Weigand 2003; Weigand and Kecskes 2018).

I cannot go into detail but in order to prepare the change to New Science, I will focus on a few points which demonstrate how science of the simple tries to tackle the challenge.

2.1 Modifying the sign

Science of the simple or science of rule-governed competence is dominated by the concept of the sign. The first impact to adapt the model to language use aimed at *modifying the sign*. There are, to my mind, mainly two models which demonstrate this attempt: Harris's model of 'Signs, language and communication', and the model of constructionism.

Harris's model (1996) is a model which is based on the sign but changes the meaning of sign in order to combine it with his idea of integrationism. Integration of the means is, admittedly, a feature of performance but it is not signs which are integrated. Harris therefore extends the term 'sign' to include 'events', a procedure that lacks scientific justification and consistency. The result is a 'theory myth' (Weigand 2018b). Nonetheless, his reputation leads a circle of scholars to ignore the incoherence of the approach. In this vein, Pablé (2018) attacks the school of the Mixed Game Model (Weigand 2010) and intends to create an own school of integrationists. The term 'theory myth' alludes to Harris's (1981) phrase of 'the language myth' which he used in order to refer to linguistics outside of 'integrationism'.

The model of *constructionism* recently has spread out to some trend in mainstream linguistics. This development is hard to believe because it is nothing more than an extension of the structural concept of sign, which includes not only the abstract concept of language but also speech. The consistency of de Saussure's model however gets lost. By including speech, constructionists may claim that construction grammar becomes a 'usage' model, but language use means much more than speech. The model consists of highly diverse approaches built upon the definition of construction as "form-meaning pairs at various levels of abstraction and complexity" (Ungerer and Hartmann 2023). The level of action is not included even if constructionists like Herbst and Hoffmann (2024) claim to 'develop a systematic model for showing how constructionists combine to form actual utterances'. How can 'constructions' be considered as basic units of language which connect different levels of abstraction with complexity? Such assertions are nothing more than storytelling, even more so because they request us to switch off reason. Form-meaning pairs are constructed without clarifying meaning. Meaning-in-use, dialogic action, is not taken into consideration at all. Meaning is considered to arise from classification of surface items in a maze of methods without any justification. The resulting concept of language is, of necessity, a methodological construction neglecting any consistency.

Wiltshko (2024) also uses the term 'construction', but in quite another way which, to my mind, goes beyond any reasonable use. We have to leave science to find some meaning for a title such as "Emotions do not enter grammar because they are constructed (by grammar)".

2.2 Addition of models

First attempts at bridging the gap between competence and performance mainly applied the simple method of addition at the level of models. In this way models of linguistics and communication, of *text and context*, are added and the principal difference of these fields, their incompatibility, is ignored. Complexity does not arise from addition of different models. Complexity has an own structure and requires a new type of science from the beginning. Keeping to methods of the simple is, from the very outset, a dead-end.

Models which try to settle the issue by addition are models which take for granted that language represents a code and that the problem is to find the bridge from the code to use. *Keith Allan* (2020a) is a clear example of this procedure. His article on 'Linguistics and communication' already indicates in the title that he starts from two separate fields, language system and communication, which, according to him, interact. He presents his view of 'language as a vehicle of communication' but cannot really demonstrate their interaction. 'Theories of language' are reduced to theories that 'model an abstract entity' (p.296). Communication is described in the old way of 'transmitting' a message from the sender to the receiver. The message is expressed by the language code. Such an artificial view of language and communication seems necessary for applying the method of addition. No comment on language as action is made, instead language is still conceived of as Cartesian "technique for revealing one's thoughts and perceptions to others" (p.296).

There are various models in linguistics which try to settle the issue by the addition of a code and some cognitive part of use, sometimes called 'cognitive linguistics'. The issue is to explain 'what is meant' by 'what is said', or to retrace pragmatics to semantics. What Allan calls 'the interaction of the code with use', though without really dealing with it, is also referred to as '*interface*' of *semantics and pragmatics*, again without clarifying the concept of 'interface'. What is pragmatics? According to *Leech* (1983), it would require to 'complement logical semantics with non-conventional pragmatics', which is a matter without sense. I am baffled how far linguists' minds can go astray in constructing models in the ivory tower of science. How could models be added which are incompatible from the outset? *Recanati* (2010) even gives a name to it with the title of his book on "Truth-conditional pragmatics". 'What is said' by the code and 'what is meant' in use has also been addressed by addition of logic and pragmatics, for instance, in the model of pragma-dialectics by *van Eemeren* (2018; see also Weigand 2006a), or by constructing a multi-level approach by *Levinson* (2000). Levinson simply adds what is 'conversationally implicated' to the coded meaning, part of which is truth-conditional semantics. Presenting 'different points of view' (Turner 1999) does

not help us understand the issue. Neither *Kecskes' intercultural point of view* (e.g., 2019) gets beyond the limit of adding the pragmatics of the actual context to the semantics of linguistic signs.

The issue at stake is the issue of a grammar which aims to correlate expression and meaning. However what expression and meaning are cannot simply be set by method but is dependent on the object. A grammar of language use cannot be built from a grammar of language as a code. It is sad to relate how linguists keep closing their eyes and ears to insights clearly formulated long ago, for instance, by *Asa Kasher* (1989, 79), a philosopher known for his preference for logical and generative approaches. He told us that truth-conditional semantics is “incompatible with basic facts of language use”.

These linguistic approaches aside, there is another well-known philosophical model by *Grice* (1975) on the issue of how to connect ‘what is said’ and ‘what is meant’. In his approach on “Logic and Conversation”, he adds the logic of the coded meaning and inferences or implicatures of use. Can the issue of performance which includes individuality and chance be dealt with by the addition of implicatures? Inferences occur and are important in language use, but they do not represent an addition to the code. Grice constructs a strange mix of scientifically incompatible parts: the code describing ‘is’ is combined with philosophical recommendations of ‘ought’. Grice’s general principle of cooperation is a trivial concept which adds nothing new to the concept of communication. It can be taken for granted that human beings as social individuals will not turn away if they are addressed by someone else. As an idealistic concept of ‘ought’, communication, according to Grice, should aim at cooperation corresponding to his specialised maxims such as “Avoid ambiguity” or “Be orderly” (p. 46), which are clearly philosophical recommendations. Where can we find such idealistic principles in everyday or institutional performance? Inferences are considered to be the missing link between what is said and what is meant; but can they be shaped as ideal maxims?

Nonetheless Grice’s principle and maxims are pervasively used in a variety of approaches (e.g., *Huang* 2007). All models which try to introduce Grice’s inferences and maxims by addition to a theory of language interaction are doomed to fail as scientific models of performance. The merit of Grice’s work is that he drew our attention to the cognitive and the non-conventional. However, how they are integrated in the complex whole of language use awaits a genuine theory of complexity.

In a recent publication, *Levinson* (2025) surprisingly changes his view of ‘science’ completely, from his artificial ‘multi-level’ approach of 2000, just mentioned, to science as ‘storytelling’. He now considers social interaction as based on two systems, ‘the cultural and the biological’ (p. 5). The bridge is provided by what he calls “the interaction engine”, a term which is not intended to clarify action

but grasps “a loose assemblage of capacities and proclivities”. The whole argumentation remains without verification. Nonetheless, Levinson calls it a ‘big ideas’ book, ‘thoroughly grounded’ (p.xiii). It is explicitly presented as ‘a story, central in the human story’ (p.xii) and even in terms of ‘speculations’ (pp.149, 154).

2.3 Classification

The method of classification is another way of trying to come to grips with pragmatics. By the pragmatic turn, the field was opened to language use but it was unclear what ‘language use’ meant. Mey (2001, 208ff.) introduced the term *pragmeme* and defined it as what results from Searle’s speech act put into context. Language use is however quite another matter than putting abstract single speech acts into context. Context is integrated in the game, not added to language. The structuralist method of classification seemed to offer a simple solution by applying the term ‘pragmeme’ as classification to any item of discourse purportedly taken as pragmatic unit. In this way, pragmatics returns to structuralism and adds pragmemes aside to phonemes and morphemes. Whereas this technique fits structuralistic principles, it is totally at odds in pragmatics. The complex of language use cannot be classified. By categorising units of discourse as ‘pragmemes’, it is declared to explain ‘pragmatics’, but the alleged ‘explanation’ is nothing more than a circular definition of pragmatics as a ‘set of pragmemes’.

To some degree, we might also consider the ‘*construction*’ (see above) as a unit resulting from classification. The criterion of classifying an empirical item as construction, in this case, seems to be the correlation with meaning, which, however, is not genuine meaning but the result of what is achieved by classifying a form-meaning pair. Whereas the sign, as introduced by de Saussure, is clearly defined by segmentation, the construction, similar to the pragmeme, extends form to some unit of discourse.

2.4 Invention of new concepts

When you do not have a solution, invent one. This seems to be sometimes the practice in pragmatics. Incoherent practices based on methods of the past, like addition of models of the simple or structural principles like classification, are set aside and new concepts invented which seem to promise solution. Verschueren’s concept of the pragmatic ‘*perspective*’ (1987), which comes close to ‘anything goes’, is an example insofar as it can encompass everything but explain nothing. Another prominent concept which also covers the whole field of pragmatics is ‘*relevance*’, introduced by Sperber and Wilson (1986). In its original version,

‘relevance’ seems to be something like a principle of economy — as already proposed decades ago by Zipf (1949) — which guides the exchange of information by observing that maximum effect is achieved at minimal cost. The trivial statement that “communicated information comes with a guarantee of relevance” is offered as a “fundamental idea” (p.vii). Nonetheless it becomes highlighted as ‘the pragmatic law’ by Piattelli Palmarini (1995).

There are various other concepts which have been invented to settle the issue of language use. In part, they are based on trivial observations, such as that a theory needs to be a ‘grounded’ theory (Craig and Tracy 2020), or that dialogue establishes a *relation*. We might see everything in ‘relation’ with everything else but setting up a relation depends on human beings. Another concept which simply gives a name to trivial observations is ‘*emergence*’. Like ‘relation’, ‘emergence’ is a vague term which can be attributed to performance without giving any explication.

In part, new concepts relate to the method how dialogue and communication proceed. I always wondered how it can be grasped as ‘*ventriloquism*’ (Cooren, e.g., 2020). Although it sometimes may happen that ‘we put our words into the mouth of others’, generalizing this view for any communication is due to speculation and lacks any justification. Human beings are deprived of their capability of purposeful action and become *instruments* like material objects (Weigand 2023). The field of science is left, and the meaning of dialogue is emptied to the concept ‘ventriloquism’ of the French philosopher Derrida (e.g., 1967/1978).

All these approaches on the basis of inventing new concepts and perspectives do not seem to care about the arbitrariness of their assumptions. There is no view of the complex whole nor of verifying new concepts. Science is taken as a garden of flowers where everybody can pick the flower they like.

2.5 The focus on data

Data have become ever more important in research on pragmatics. They are simply there for the observer as empirical items. But what are they really? The focus on data results from the shift of interest from artificial patterns to performance, which is mostly addressed as speech. Data are alleged to have meaning. However, the concept of meaning is left in the dark. This shift of competence in rule-governed patterns to items of performance characterizes various approaches, among them the most widespread approaches of *corpus linguistics*, *conversation analysis*, *sociology*, or *analyses of particular items such as particles*. The crux of all these approaches is that they try to *identify meaning by starting from empirical items*. However, what is allegedly identified as meaning, depends on the model, as can be clearly seen by constructionist analyses. In principle, there is no direct

access to meaning in performance starting from the means. Means are applied by the individual speaker in dependence of a world in non-equilibrium.

Corpus linguistics, for instance, tries to define language by a huge amount of data, the more the better (Weigand 2009b). In this way, language is restricted to empirical items occurring in texts or discourse. Sinclair's *manifest 'trust the text'* is applied to rather complicated constructions of text and lexical items and cannot be related to other concepts of text (Sinclair 1998; Weigand 1998). I always wondered how we could imagine dialogic performance solely by textual elements. The core of performance is *not text* as an independent object but human *action* which includes other human abilities beyond the use of verbal data. The question is not frequency of data and permanently expanding corpora but *what can be accepted as permissible extensions* of the means (Chomsky 2016, 40). This is a difficult issue that cannot be addressed without considering data as components of the whole.

Conversation analysis, also, confronts us with the same crux. The original approach comes from sociology. Sacks, Schegloff, and Jefferson (1978) limited analysis to the authentic level of speech and led to the unit of *turn taking* which sometimes erroneously is taken as sequence of action. Turn taking is a formal feature of organizing conversation by a sequence of turns, which are, by definition, meaningless moves. I have always wondered about the sense of requiring a precise system of transcription for any empirical means. Transcription codes only fix one moment of an event in flow, like a snapshot, but the relevance of that moment for the meaning of the event as a whole is still an open question. Focusing only on empirical means excludes action and leads to considering language use as 'talk' or discourse. 'Talk' in interaction is the new catchword, as empty a concept as 'interaction'. Studying the way of 'talking' in special social fields, for instance, in family settings, remains at the level of opinion and individual interpreting, which may be interesting for sociology, but inevitably poses the question whether it can be science. This may also be the reason why some form of mixed conversational analysis developed which allows for partially introducing meaning (Weigand 1994a).

Discourse analysis developed from looking beyond the limit of the sentence to larger items of text, called discourse (Zellig S. Harris 1952). As soon as it became evident that neither discourse can solve the issues of pragmatics, the concept 'discourse' in the sense of text was abandoned and discourse became something of 'anything goes', a superdiscipline as van Dijk (1985) called it. Whatever happens in dialogue is moved to discourse which cancels the level of action and does not require justification by performance (Weigand 2021b).

Nonetheless, discourse is something like the anchor if there is no theoretical basis. Any item that seems interesting in speech can be picked out and analysed in discourse studies. This is, for instance, the case of *particles and interjections*. Particles attract attention insofar as they represent data which seem to open up the

door to pragmatic meaning. Calling them ‘discourse particles’ does however not solve the issue. They are ‘dialogue particles’ which contribute to dialogue meaning, not only to discourse (e.g., Kosta 2023). The basic question whether we can *track down meaning by starting from data* does not have an answer at the level of discourse.

On the whole, documenting data by *authentic dialogues* is an efficient way of demonstrating actual empirical differences but there is no direct correlation between empirical differences and meaning. The problem of bridging the gap between competence and performance cannot be settled by data. I remember the answer we gave decades ago when we were first confronted with the question of the pragmatic turn: ‘What lies beyond the sentence? – The world.’ Can the world be grasped by collecting and transcribing data? We have to make the *clear-cut distinction* between a world defined by method and the real world.

To sum up

The basic question of all the types of *science of the simple*, we addressed in Part II, is: *What is meaning in performance?* Science of the simple is a science of the method. Methods are rather arbitrarily taken, ignoring justification, and can range from ‘anything goes’ to pure rationality. Methods cannot decide upon performance. Even if Staddon (2017) points to ‘the crisis of science’, his proposal of some ‘New Behaviourism’ turns back to behaviourism before Chomsky and cannot tackle the actual issue. The solution is not found in the field of method but in an extraordinary human ability which I called *competence-in-performance* (Weigand 2018a; Guo 2024). Competence-in-performance, rooted in the human mind, bridges the gap between models of competence and models of performance. The *dialogic turn* from pragmatics to dialogue is based on competence-in-performance which requires a new type of science to be addressed.

And there is another crucial point: The basic condition of any insight into performance is Russell’s ‘Man is at the centre’. Unfortunately, this condition which is constitutive of human action and behaviour is not taken into account by science of the simple. There is no method, no object, without the human being. On the one hand, the object is either artificialised, ‘constructed’ by grammarians, and does not exist at all in performance. On the other hand, a method is established as if there is no object at all. For instance, specific features, such as ‘*materiality*’, become the focus in empirical approaches which ignore that dialogue cannot be restricted to empirical phenomena, nor can it be addressed as concept either. It can only be grasped by the human mind reaching out to the meaning of life. In the end, dialogic ‘matters’ are much more than empirical and also much more than concepts. Without action, dialogue gets lost. The groundbreaking work by Austin and Searle cannot be set aside. Philosophy, however, does not explain science. The

only verification is by human nature. Philosophy may assert that also inanimate matter acts. Inanimate matter can play a role, that is right, but only under very special conditions, as, for instance, in the example of a closed door which may mean: 'Stay outside.' This meaning is, however, not 'materialised' as action by the door, but conventionalised as action by human beings in specific cultural circumstances.

PART III

The change to New Science

1. The issue

The issue is *how to bridge the gap between competence and performance*. Methods of the simple cannot settle the problem. Complexity requires us to *start from scratch* and be guided by observation and studies in neurobiology and sociobiology. I will start with *a few examples* which illustrate essential points of the problem.

The well-known example of Brown and Yule (1983, 196) demonstrates the issue of coherence in dialogue, in this case the connection of two successive utterances from different speakers (Weigand 2021b, 477):

- (2) A There's the doorbell.
B I'm in the bath.

Whereas Brown and Yule present this example as problematic case which does not express how the two utterances are connected (also Stati 1994), it is nonetheless clear that both utterances are connected. The example demonstrates that the *verbal text alone* cannot be considered an *autonomous level*. It is not the sequence of turns which connects both utterances. Human beings *act and react* in social interaction by using all their abilities, for instance, the abilities to speak, perceive and think. The process of coming to an understanding is complex and always embedded in the environment. In our example, understanding comes about by the *integration of speaking and thinking* and being aware of the cultural conditions of life.

The next example also goes beyond the verbal level (2021b, 477) and illustrates the *integration of perceptual and verbal means* which is a matter of course in *everyday face-to-face* dialogue.

- (3) One for her. — Eve, too.

This piece of text is the verbal component of an action game which can only be understood by including what can be perceived:

A woman and a man — we assume them to be the mother and father — are walking around a lake with a little boy and a little girl — we assume them to be their children. The father cuts willow branches for the boy.

Coherence comes about by the attempt of the interlocutor to understand the utterance which is more than understanding what has actually been said. Explaining this phenomenon by the term ‘ellipsis’ (Kempson 2017, 200) does not get to the heart of the matter. It is not the context which makes obvious what is meant when ‘words not need to be said’, but human beings who use their abilities of speaking and perceiving in integration and cannot do other. What is needed to explain how they can come to an understanding is their ability of *competence-in-performance* based on the integration of their abilities of speaking, thinking and perceiving and the *internal interrelation* of the meaning of the two utterances of *action and reaction*.

In principle, it is not always a simple task for an outsider of the game to find out which features are relevant. You have to be an *insider* of the game in order to identify the pertinent perceptual and cognitive features. The meaning of the whole sequence of action and reaction results from the *Dialogic Principle proper* (Weigand 2010, 82) which, in our example, connects the initiative directive speech act by the mother and the corresponding reactive speech act of consent by the father:

DIRECTIVE ↔ CONSENT

Whereas in the example above *perceptive means* are used in integration with verbal means, they can also be *the sole carrier of meaning* as we know from simple cases of pointing or moving our head. Action can be carried out by gestures, body movements and face expressions (Weigand 2021a, 554ff.). Whereas cognitive means need an empirical carrier, perceptual means like gestures can be the carriers themselves, which have meaning or can contribute to meaning, such as nodding versus shaking your head for a positive versus negative response.

At this point, I think I should add a methodological feature which follows from the fact that perceptual and cognitive features are integrated in the game. Isolating them lacks any theoretical basis in New Science. This means that I will not generally indicate prosodic features in my examples because most of them in performance only make a difference at the moment of speaking and are not systematically correlated with meaning. The same is valid for some other empirical details which might be requested by transcription codes.

Finally I can give you an authentic example which perfectly demonstrates the complexity of everyday face-to-face dialogue and throws light on what *adaptation* means (see also Weigand 2010, 42).

(4) (in English translation)

H Don't let yourself get infected!

E Are you ill?

H Didn't you see the water? Everyone's got a hobby.

F I'd never do that when we pay so much just for the cleaning.

E Ah, now I understand. You're right. No, I won't let myself get infected.

(the original German text)

H Lassen Sie sich nicht anstecken!

E Sind Sie krank?

H Haben Sie nicht das Wasser gesehen? Jeder hat sein Hobby.

F Das würde ich nie machen, wo wir soviel bezahlen allein fürs Putzen.

E Ah, jetzt verstehe ich. Sie haben Recht. Nein, da lasse ich mich nicht anstecken.

I am quite sure that you will not understand what is going on in this action game. You may try to find some thread running through the text and arrive at an approximate partial understanding by guessing. But does guessing play an essential role in language action? Mostly we do not need to guess because we not only trust the verbal text but quite normally and unconsciously include what we know and perceive. We negotiate meaning and understanding and have to tackle problems of different understandings. In our example, the first utterance *Don't let yourself get infected!* is not immediately understood by the interlocutor, instead he/she is the victim of *misunderstanding* by relating the meaning of *get infected* to salient use. Language-in-use can accept the risk of misunderstandings because they are normally immediately repaired, as in our example.

It becomes evident that we have to go beyond the empirical level of the text and include the *cognitive and perceptual background* from which the interlocutors derive their cognitive and perceptual means of action. An observer cannot fully understand the cognitive means, associations and allusions used in the game. The crucial consequence is that the analyst should be an *insider of the game* or be in contact with insiders. Thus, in our example, H refers to a person not present in the action game without explicitly expressing it, a person who, some days ago, had spilled water on the ground when cleaning the roof of the house entrance: *Didn't you see the water?* The action game takes place near the entrance of the house. It is therefore enough for H to raise his head and to look and move his body in the direction of the entrance hall, thus alluding by perceptual means to what had happened a few days ago, as well as ironically commenting on it: *Everyone's got a hobby*. He deliberately only uses the anonymous term *everyone* and takes it for granted that the interlocutor will understand. His wife F, too, uses an anonymous phrase: *I'd never do that*, trusting that E will understand, because they are

supposed to *share knowledge* as a result of the fact that all three live in the same house. She adds a critical comment on the price they have to pay for the cleaning of the hallway. All these means together, verbal, perceptual and cognitive, are necessary for E to come to an understanding and to arrive by *practical reasoning*, and *partly by guessing*, at the right meaning of *to be infected*, namely ‘to be infected by a mania for cleaning’. There is no explicit disambiguation by verbal means.

I think the *conclusions* to be drawn from this example are evident: when looking at authentic examples in a corpus as observers, we are in the same situation as Yule (1996, 4), who observing the conversations of others cannot fully understand cases which require us to go beyond verbal means. Of primary importance is not the verbal sequence but the minds of the interlocutors. *Discourse in the sense of text cannot be all*. The key to understanding is *prescribed by human nature and the integration of its components under conditions of a world in non-equilibrium*.

Addressing this authentic example also throws some light on how we try to come through the complexity of performance. The process is *adaptation*, a difficult concept of performance (Weigand 2021b, 467). Human beings are ‘complex adaptive systems’, to take up a term introduced by Gell-Mann (1994) in his explanation of the complex from the point of physics. The core of adaptation, in my view, consists of grasping simultaneously as many variables as possible, correcting them if they turn out not to be appropriate, and proceeding step by step from salient standard cases to particular ones by including further variables. The process starts with *focusing attention* (Simon 1983), which is a crucial feature to opening up complexity by adapting to ever new variables. Uncertainty and chance have, of necessity, to be included. For Wilson (2013, 195) it is clear “that the innate properties of human nature must have evolved as adaptations”.

The examples above clearly demonstrate that it does not suffice to sketch structures by trivial empirical features, such as the opening, the middle and the closing phase of conversation. Let us now see how all the points addressed above can be taken into account in a theory of complexity.

2. Competence-in-performance or ‘the thing we want to find out’

The ‘thing we want to find out’ is how human beings succeed in tackling the vicissitudes of life. It is evident that they do not bridge the gap between competence and performance in a game of models but by their own inborn ability of *competence-in-performance*. Scientists have to accept that the world changes in time. There is no stable equilibrium of action conditions but a world in non-equilibrium. Human beings cannot press a button to achieve what they want. They have to adapt to varying conditions in order to achieve their goal.

The examples above demonstrate that the basic component in this process of *adaptation* is *purpose* which is *not only understanding* the meaning of the speaker's utterance but *coming to an understanding* among the human beings involved. Due to human beings' nature as dialogic individuals, understanding will normally not be completely achieved. The meaning of a single utterance can only be adequately understood if it is taken as a component of the dialogic sequence. *Language use means dialogic use*. The concept of *understanding* means interpretation and relates to what happens cognitively in the hearer's mind listening to the speaker's utterance. This is not dialogue yet. There is no theory of self-dialogue (Hermans 2012). Dialogue means 'uptake', to use Austin's phrase, and 'uptake' includes reaction (Weigand 2010, 79ff.). It is the *correlation between action and reaction which defines dialogue* at the level of purpose, not as formal sequence of positions or turns but as *constitutive principle* of dialogic action.

Let us now focus on this *Dialogic Principle proper* and ask more precisely which *functional difference* is implied by the distinction between an initiative and a reactive act. This is not an easy question. What constitutes the *feature of being initiative*, and what is the point of *being reactive*? It must be a functional feature of the speech act itself because, in many cases, if we heuristically isolate the speech act, for instance, an order, we know whether it can start a discourse or is used to react. Taking, for instance, the utterance *You are right*, we immediately know that it cannot be the beginning of a discourse but represents a reactive move in the sequence. Or take the utterances in our examples above. Considering *I'm in the bath* to be initiative, sounds a bit strange. The partner might ask why I said this. And the same with the utterance *Eve, too*, which clearly is reactive. Though we do not know the position of these utterances in the sequence, we immediately know in most cases whether it is initiative or reactive.

And we know even more. We can draw conclusions about the adjacent act. In case of *You are right* the preceding act will be some kind of assertion expressing a claim to truth. In case of an order we can assume that it is directed to some consent. Two essential points are thus confirmed: speech acts are dialogic acts which differ in their capacity of being initiative or reactive, and they are functionally interrelated, or in other terms: *action and reaction are different types of action which are functionally interdependent*.

They define each other mutually, the initiative action being primary. This is precisely *what makes up the Dialogic Principle proper* and what goes beyond a general principle of 'other-orientation' (Linell 2009). Yet what is precisely the core of acting initiatively versus reactively? To my mind, this *functional difference* can be explained by introducing the term 'claim': An initiative act *makes a dialogic claim* and the reactive act *fulfils this very claim*. 'Fulfilling' not only means giving a positive answer. In a general sense, it means referring to the initiative claim, also

by a negative reply or by an utterance that does not even take a position immediately but postpones the decision. What is crucial is the *internal functional relationship* between action and reaction that is created by the very claim itself which is, on the one hand, made and, on the other hand, fulfilled:

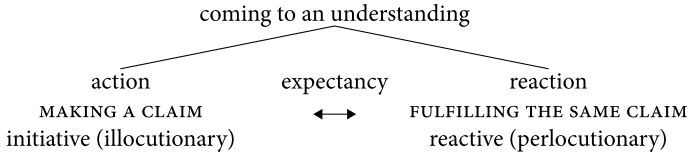


Figure 4. The dialogic principle proper

The *interrelation of action and reaction*, represented in the figure by the arrow, constitutes the basic Dialogic Principle proper. It is not a relation determined by a fixed code but emerges by *expectancy* from the functional structure of the dialogic unit of action and reaction in performance. For instance, an initiative DIRECTIVE speech act, as in the Examples (1) and (2) above, which makes a claim to volition aims at a reaction which ‘fulfils’ this claim, i.e. a CONSENT. Expectancy starts from this claim as a matter of probability introduced and to be fulfilled. In clear cases of frequent use, what we expect can even become *conventional*. Performance nonetheless is not restricted to conventionality but guided by *Principles of Probability*. Probability, in the case of language use, does not represent a factor of statistics but, in the end, is decided by insiders of the game, due to conditions of their experiences. In principle, everything is possible.

Having explained the term FULFILLING THE CLAIM by either a positive or a negative reply or by postponing the reply, there is an interesting move left which – at first glance – may seem to postpone the reply but then turns out to be something else. It is a move which is clearly *culturally shaped* and occurs, for instance, frequently in Italian language use. German speakers living in Italy when being confronted with replies such as

- (5) Ne parleremo.

might first take this utterance literally for a while. After having been repeatedly confronted with the same reply – *ne parleremo* – they slowly learn that it is intended to tell the interlocutor that the speaker does not want to go into the point. Certainly, there are phrases in German, too, such as *wir reden noch darüber/I’ll tell you tomorrow*, but these phrases can be taken literally and referred to at a later time. I therefore consider the Italian reply as a typical example of what Pinker (2007, 397) calls ‘*creative vagueness*’ or ‘*diplomacy*’ (see also Premaward-

hena 2007). The clear-cut rational choice between a positive and a negative reply is thus extended to cope with cultural conditions of non-equilibrium.

The explanatory power of the Dialogic Principle proper does not stop at the general level of action and reaction but allows us to derive step by step the individual speech acts as carriers of performance. In this way, a *dialogic speech act typology* can be *specialised* starting from basic speech act types (see below, Part V). This kind of *complex tree-structuring* by *specialising* is different from Chomsky's simple phrase structure trees which are based on division. Due to the fact that language use is dialogic use, the meaning of a single speech act results from being either *initiative* or *reactive*. For instance, the reactive utterances in the examples above are not independent utterances of a statement, but reactive utterances by the individual speaker, dependent on the initiative utterance.

Human action and behaviour *start from human nature*. Life in the animate area is, according to Nurse (2020), *defined by purpose*. Purpose defines the various action games, not the situation. The general purpose of coming to an understanding is specialised by sub-purposes, which guide the sequence of sub-phases in complex games of everyday or institutional language use, such as business, medicine, or politics. *Small talk* is also included, see above Example (4), although it has for long been considered as having no purpose. The *purpose of small talk* is respecting the other person by talking, which, to my mind, results from the nature of the species being dialogic individuals.

The term 'purpose' implies *intention*. Purposeful action is goal-oriented intentional action. Whereas purposeful actions of animals are mostly instinct-driven, human purposeful actions start from intention and decision. We are not only acting purposefully but also *behaving* in some intentional or strategic way which can also be unconscious routine and in this case seem unintentional. Nonetheless unintentional behaviour of animate beings does not make them inanimate objects and cannot lead to the nonsensical conclusion of philosophy that also inanimate objects are capable of action (Latour 2007; Cooren 2020).

New Science requires us to start from the object, the complex whole. The complex whole is dependent on human beings and therefore *not autonomous*. *Independent action is an illusion* (Wilson 2013, 288). Accepting that human beings are at the centre, the object will always be dependent on *human beings' nature*, on the reach of their abilities in an environment of *non-equilibrium*. Non-equilibrium already starts from human beings' double nature, allowing for action and behaviour in the range between selfish and social.

The *dialogic nature of the human species*, being individuals and at the same time social beings, provides the basic *constitutive dialogic principles* (Weigand 2010, 79ff.). Moreover, other inborn features are included, which either as *regulative features* regulate the position in the range of options between self-interest

and respect for the other, or as *strategic features* indicate the direction of action between solidarity and power opened up by the double nature of human beings.

As I outlined in Weigand (2021b), human beings are *purposeful, goal-oriented beings, cultural beings, persuasive and moral beings, emotional and evaluative beings*. Emotions are not fully under control by human beings as action games influenced by emotions demonstrate. Emotions can also be simulated or intentionally used but they cannot be switched off. The natural human condition of being dialogic individuals comprehends all these abilities and has changed our view of the use of language decisively. Calling it ‘pragmatic use’ is tautological. Any use is pragmatic. It is the *dialogic turn* which provides structure for language use, introducing the view of language as *language-as-dialogue* (Weigand 2003; Weigand and Kecskes 2018). Any item of speech is, from the outset, to be considered as dialogic item.

Whenever we act, we act dependent on our human nature and the culture we belong to. *Biology and culture* are the pillars of our existence. They are closely connected by *epigenetic rules* and influenced by the larger environment:

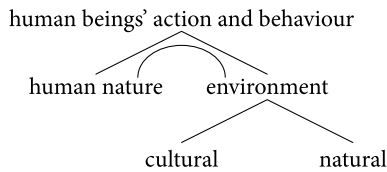


Figure 5. The integrated whole of human action and behaviour

It is not only genes which determine human abilities; it is the interaction between genes and culture or the epigenetic rules which shape human behaviour in dependence of the larger natural environment. Culture, as part of the environment, emerges from specific predispositions of the human genotype (Wilson 1999, 163; Weigand 2010, 48). *Epigenetic rules* refer to the coevolution of “genes, mind, and culture” (Lumsden and Wilson 2005) and can be summed up, according to Wilson (1999, 171), as ‘the steps circling from genes to culture and back around to genes’ as follows:

Genes prescribe epigenetic rules, which are the regularities of sensory perception and mental development that animate and channel the acquisition of culture.

Culture helps to determine which of the prescribing genes survive and multiply from one generation to the next.

Successful new genes alter the epigenetic rules of populations.

The altered epigenetic rules change the direction and effectiveness of the channels of cultural acquisition.

The focus is to be laid on the “new synthesis” of *sociobiology* (Wilson 1975), that is the synthesis of biology and sociology or of genes, mind and culture, which contradicts what has been proclaimed as “New Biology” (Lipton 2008, xxvii). On the one hand, “New Biology” is nothing new. Calling it the “new science of Epigenetics” (p.xv) and not even mentioning Wilson (1975) or Lumsden and Wilson (2005) simply ignores – deliberately or not – the fact that the term “epigenetics” has been introduced decades ago. On the other hand, explaining the term as “control over the genes” does not coincide with the original term. Lipton seems to put the whole emphasis on influences coming from the environment and to neglect the fact that the environment can take effect only if perceived and recognized by some genetic predisposition which Seligman (1970) has called “prepared learning”.

The term ‘New Biology’ seems to attract other scholars, to mention Philip Ball (2023) who describes ‘How life works’ by his guide to ‘the New Biology’, as if there have not been other presentations of ‘New Biology’ in the recent past.

We know human beings are social beings, yet they are also individuals. It is from this *double nature* that the basic motivations for human action emerge: *self-assertion* and *respect* with regard to the other human being. Even if both forces can be biased quite differently in individual human minds, they are in principle interconnected: every individual being is simultaneously the other being for their fellow beings. From the very outset, human beings have to negotiate their position with other fellow beings in dialogue.

Negotiation proceeds by the integrated use of different dialogic means, verbal, cognitive and perceptual, as *neurological experiments and observation* confirm (e.g., Damasio 2000). The integration is evident in our examples above, in the first example mainly the integration of speaking and thinking, in the second example the integration of speaking and perceiving and in the third example the integration of all three together, speaking, thinking and perceiving. It is due to human nature that there is *no simple thing at the beginning*. What might seem to be the simple, for instance, the mirror neuron, turns out to be a firing cell, matter and energy at the same time (Weigand 2002).

The epigenetic rules based on the interaction between genes and culture are decisively influenced by the environment. We live *in* – not in front of – a world which changes and requires adaptation and creativity. When evolving from small groups to large societies, human beings had to organize their needs, i.e. to form specialised groups or institutions due to the division of labour. *Human needs and purposes* come into play as the key concepts for differentiating specialised human behaviour.

The environment can be the natural, inanimate environment which exists independently of human beings, and the cultural environment as created by human beings. The complex of *culture* not only comprises observable facts like

habits and routines of everyday life but also *evaluations* that shape the image of the individual (Grein and Weigand 2007). Culture can be approached as a complex of evaluations which become in part visible in customs and can be changed, and in part are innate and unconscious as mental attitudes. These innate attitudes or ‘*culturgens*’ can hardly be changed within one generation (Lumsden and Wilson 2005, xvi; Weigand 2007).

Evaluations are rooted in human nature (Wilson 2004, 169ff.), in part due to genetic predispositions or so-called “prepared learning” (Seligman 1970) and in part due to the basic integration of human abilities. We not only perceive but also evaluate what is going on from our point of view. As human beings are social individuals, evaluation has to mediate between the interests of the group and individual interests. Depending on the environment different evaluations will be made and different human societies and cultures formed on the basis of some sort of ideology. Evaluations can also be considered to be the basis of *philosophy* which proceeds with normative rules, even without making it explicit (Bencherki and Sénac 2023).

Competence-in-performance as evolving from the ‘new synthesis of sociobiology’ is determined by the nature of the human species which includes more abilities than thought of so far, in particular, the abilities of being *persuasive and moral* beings. Separating the *disciplines* represents a methodological break which is not justified by the object. From the perspective of consilience, they are combined from the very outset. Rhetoric and ethics are integrated components. What has been called ‘new rhetoric’ by Perelman (1977) can be grasped more precisely by characterizing *persuasion as the inborn desire to be accepted*. Morality, in the same way, goes back to the double nature of human beings which induces them to decide for a position between selfish and social behaviour (Weigand 2023).

Integration is the name of the game, not only the integration of components of meaning but also of the means. How integration works is a difficult issue. We are not programmed robots. We have the choice for different procedures and decide differently. We cannot trust what is said, we need to think about probable consequences. Dialogic individuals think and perceive differently, deal with emotions differently, have different knowledge not only of the world but also of how to use language. In general, they have to deal with unlimited possibilities and ever-changing conditions of performance. Performance in a world of non-equilibrium includes *uncertainty* and chance and allows for misunderstandings (Weigand 1999). Individuals have to proceed step by step and to adapt to changing conditions. In the end they follow their expectations based on probabilities. Their knowledge and memory of the pre-events are different. In order to understand allusions, inferences and references, they often need to be *insiders* of the game.

The complex thing is, in the end, not only the role human beings play in society on earth but also their role in the universe. Human beings are not helpless when faced with infinite variables but can by their competence-in-performance cope with them by focusing attention on as many parameters as possible (Weigand 2010, 65).

3. Precursors of a theory of complexity

In the recent past, terms like complexity and adaptation have become rather popular in the literature, in the natural sciences as well as in linguistics, philosophy and psychology. Most publications deal with pieces of the complex in a mix of approaches (e.g., Peletier 2019; Agazzi 2002). Such collections aside, there are a few publications which give rise to reflection.

Kecskes's approach of applied linguistics remains an example of mixing pieces from linguistics and logic which cannot lead to a coherent view of the whole, despite some reasonable guidelines. For instance, he joins the dialogic view by interrelating the speaker's egocentric nature with the necessity of cooperation (Kecskes 2017; Weigand and Kecskes 2018). However, he focuses on learning a second language which poses a special goal and is not the same as a theory of complexity (Kecskes 2019).

There is a group of approaches which focuses on the relation of *intersubjectivity* (e.g., Zlatev 2008). A striking example in *psychology* is *Hermans's* 'self-theory' (2012). Calling it 'self-theory' does not prevent him from considering it as belonging to 'dialogic science'. However, relations are not actions yet, nor are assumptions about the 'intersubjectivity' of the individual self science yet. Dialogue goes beyond understanding within a self-theory and means dialogic action with the purpose of coming to an understanding.

There is another group focusing on the relation between linguistics and biology and going back to Maturana (e.g., 1978). Even if this is a crucial issue, it cannot be called the 'biologic shift' and dealt with from the perspective of linguistics (Kravchenko 2009, 38). Biology is a concept of the natural sciences, not something as 'biological epistemology' (Druzhinin 2025, 173). How can it be addressed from the viewpoint of linguistics or philosophy? Kravchenko (2025) considers the 'biological nature of language and its function as developmental dynamics of human organism-environment systems from the point of view of evolution', and rejects the usual approach of 'biolinguistics', propounding Chomsky's idea of language as a mental organ, for an unclear concept of biology. Their own argumentation as 'constructivist systems approach' however is not clearer either, proceeding by philosophical storytelling without justification. By the way, the term 'construc-

tivist' has nothing to do with 'constructionist' of the model of construction grammar (e.g., Ungerer and Hartmann 2023).

In linguistics, *Hundsnurscher* (e.g., 1980, 1981, 2001) put forth the groundbreaking idea of language use as dialogic use based on action and created an outstanding theory of action in the dialogic sequence. However, keeping to the restriction of rules, his theory misses conditions of performance. Even if Hundsnurscher emphasized the dialogic purpose of language use and underlined the paradigm change of language-as-dialogue (Hundsnurscher 1992), he applied Searle's monologic concept of speech act and extended it by sequential rules in his 'dialogue grammar'.

In contrast to these linguistic and cognitive approaches, there are a few approaches of other disciplines, which, to some degree, propose interesting guidelines for research on complexity, to mention first the well-known approach on dialogue by *David Bohm* (2004). Though being a physicist, he provides a *philosophical* approach on dialogue as it 'ought' to be in his opinion. His view of dialogue aims at harmony. He considers dialogue 'in a balanced view' to be a special form of communication but does not tackle the difference between philosophy and science. Such a view of dialogue pervades in philosophy but only introduces a new term 'dialogue' based on opinion without justification. Complexity is not really dealt with as a complex whole but is either restricted to the methods of experiments and testing in the natural sciences or remains in the vague domain of philosophy. The physicist and the philosopher do not come to a coherent unified view.

The difference between a philosophical and scientific approach is discussed in a controversial *debate between Midgley* (2018) and *Dawkins* (2006), called the debate 'philosophy contra neurolidday'. Even if they point to essential features they do not grasp the whole. What is missing is the shift from a view of complexity to a *theory of complexity*. Thomas Kuhn (1962) and his term 'paradigm change' would be interesting in this regard. However what he describes as 'paradigm change', with a touch of philosophy, does not really tackle the issue.

There are many other approaches of philosophy and other disciplines, for instance, psychology, which draw closer to complexity but still remain outside of a coherent theory (e.g., Kretschmar 2015). *Philosophers* do not get tired of repeating their stories on 'youtube', for instance, Blackburn (e.g., 1999) and others. They rediscover the old image of disciplines placed on a *ladder* one above the other for what they believe to be the new hierarchy (see above, Part I 4). However, putting one over the other, does not represent a new hierarchy. Moreover, this image of a ladder has been created long ago by Gell-Mann (1994) in the framework of physics, underlining the 'connected structure' of the whole. Single disciplines are presented as '*new*', for instance, as just mentioned 'new biology' (Ball 2024). However, what can 'new' mean if there has already been some 'new biol-

ogy', years ago (Lipton 2008)? Complexity cannot mean complexity different in separate disciplines. Taking account of the fact that 'man is at the centre', complexity means consilience, the unity of science of the various areas. Science is in crisis as described by Saltelli and Funtowicz (2017).

In contrast to such pseudo-complex approaches, there are a few scientists who really paved the way to a theory of complexity, mainly Herbert Simon, Edward Wilson, Paul Nurse and Ilya Prigogine. I consider *Herbert Simon's* approach (1962) to the architecture of complexity fundamental, the only approach which structures the complex whole, unfortunately without taking into account the leading role of human beings. Simon is not limited to a specific field but elaborates general guidelines which also comply with the MGM of dialogue I developed more than a decade ago (2010). The basic premise is:

The complex is more than the sum of parts.

This rather simple statement is the source of several other basic principles which form the '*new hierarchy*'. To mention only: *There are no parts at all*. The complex consists of *components* which are derived from the whole by specialisation *in a new hierarchy*. The complex whole has to be a near-autonomous unit. Whereas the traditional generative hierarchy is based on *division and addition*, the new hierarchy rests on *specialisation* of the complex whole and integration of the components.

The biologist *Edward Wilson* also shaped our view of a theory of complexity decisively. His broad studies on neurobiology and sociobiology elaborate basic insights into human nature and the meaning of our existence, into epigenetics and the integration of components, even the integration of natural and human sciences in his studies on *consilience* (1999). Though ants are his primary focus, his way of looking beyond this specific field and broadening his assumptions towards all areas of life is, to my mind, highly influential for all approaches on human actions and behaviour.

Another decisive influence was exerted by *Paul Nurse's* studies (2020) on the issue 'what is life'. His distinction between the animate and the inanimate is crucial for consilience. It allows us to define *the animate by purpose and action* and *the inanimate by materiality*.

Furthermore, *Prigogine's* distinction (1987) between classical physics and the physics of non-equilibrium after Newton has been groundbreaking for my conceptualization of a 'grammar' of performance (Part VI) as interaction of deterministic as well as stochastic phenomena.

4. Verification

Verification is a crucial component of New Science. In traditional science, it is mostly called evidence. Evidence is a term which in the past has been related to something empirical. A theory of complexity has an empirical component but the whole is not only empirical. Evidence of the structure of complexity is gained by observation and reasoning. In part it relies on trivial facts, for instance, that everything depends on the human brain or that the human being is at the centre. The insight that human thinking is limited also seems trivial to me. What we consider to be ‘certain’ is a belief, as best expressed by Wittgenstein (1972, 32e): “Mustn’t we say at every turn: I believe this with certainty”? It is not only thinking which cannot go beyond the human scope, it is also observation which will, in the end, remain within the limits of the eyes of the beholder. Nonetheless scientists should look for evidence and try to verify their assumptions.

An important turn in the process of gaining evidence has been made by neuro- and sociobiology which opened up the black box of our brain. We can no longer invent concepts, for instance, metaphors, as explication, at least not in science. Sociobiology verifies the nature of the species as double nature (Wilson 1975; Weigand, e.g., 2002 and 2023). We would not even need sociobiology. Against Dawkin’s catchword of the ‘selfish gene’ (2006), we can see it by observing ourselves: we are selfish beings and at the same time social beings, i.e. we are dialogic individuals. Sociobiology is the basis for verifying the unity of science, natural and human sciences.

Observation mainly relates to the *perceivable means* used in dialogue, i.e. to speaking and perceiving. Action is verified by *purpose*, the crucial feature that defines animate beings (Nurse 2020). *Inanimate objects* can support the purpose. However, they do not act, contrary to approaches influenced by Latour (2007) and by a certain stream of *materiality* (e.g., Ashcraft, Kuhn, and Cooren 2009), which cannot claim to be scientific approaches. We might, of course, use objects, for instance, posters to underline our purpose, or we might refer to objects, for instance, of the landscape, for instance, dried-out areas, that need action. However again, inanimate objects do not act on their own. They may be taken as a sign which indicates a certain authorship but it is the author who acts, not the object.

Contrary to observation, *sociobiology* traces human action and behaviour back to *human nature* and aims to explain how it is influenced by society (Wilson 1975). In this way, *epigenetics* demonstrates the co-evolution of genes and culture and how the components of meaning are integrated in human action and behaviour. Inborn features, apart from purpose, are *interest*, *persuasion*, *emotion*, *culture* and *morality*. *Evaluation* is also pertinent in dialogue in the stream of life. To my mind, human beings are evaluative beings. Evaluation is different in different cul-

tures and ethics. We make assumptions from our own perspective, influenced by power, ideologies and knowledge. Morality as an inborn dialogically oriented feature relates to the position we take between selfish and social interests. In this sense, morality is the object of dialogic ethics.

It is, of course, an issue on its own *how the integration of the components is shaped* and put to action in conditions of society. The issue of integration is complex in a world of non-equilibrium, and, in the end, relates to the structure of a 'grammar' of dialogue in the stream of life. This is basically the issue of 'a grammar of performance'. Searching for some 'grammatical thread' will however be doomed to fail. The issue is the integration of determinism and stochasticity (Prigogine 1987). After long-lasting efforts, I recognized that a 'grammar' of action in performance, if we want to keep to this term, proceeds in a *zigzag journey*, taking account of individuality and the end of certainty.

Verification in New Science thus relies on two crucial pillars: *purpose* for the part of meaning in the animate area (Nurse 2020), and conditions of *non-equilibrium* in a world animate beings are 'embedded in' (Prigogine 1987). It is precisely this 'embeddedness' of the animate and the inanimate which is the basis of a *theory which unites natural and human sciences*.

5. Principles of New Science

Science of complexity requires us *to start from the complex whole* and to elaborate the *New Hierarchy* which forms the structure of meaning in New Science. Contrary to traditional hierarchies which are constructed by division and addition, the New Hierarchy is based on *specialisation of integrated components which interact among each other*. Specialisation presupposes *decomposition* or departmentalisation, as Simon and Nurse call it. Consequently, the *basic premises* of a theory of complexity can be summed up as follows:

- We have to *start from the complex whole* which, in the end, is the nature of the species and the conditions of life in a world of non-equilibrium.
- The complex whole is more than the sum of parts. There are *no separable parts* at all but components derived from the whole and in mutual interaction. *We mean more than we say*.
- *Human beings are at the centre*. In principle, the complex whole should be autonomous, but full autonomy of human action and behaviour is an illusion (Wilson 2013, 288).
- The nature of the species, as animate beings, is *dominated by purpose*.

- Animate beings living in communities have a *double nature* which requires them to mediate between selfish and social purposes. Human beings are *dialogic individuals*.
- *Language-in-use is language-as-dialogue*.
- *Communication is dialogic* according to human beings' nature.
- Dialogue structures the otherwise unstructured field of language use and constitutes the *dialogic turn* from pragmatics to dialogue.
- The general purpose of dialogue is *specialised* according to various fields, basically everyday and institutional dialogue. Consequently, New Science aims at *consilience or the unity of science* in the fields so far dealt with in separate disciplines of human and natural sciences. Disciplines are not defined as fields of knowledge but as fields of specialised purposes.
- *Dialogue means action and reaction* or the *interrelation of making and 'fulfilling' a dialogic claim*. The dialogic sequence proceeds from minimal action games to extended and multiphase games, dependent on the complexity of the purpose.
- The meaning of the complex whole is structured by the *New Hierarchy* which starts from the complex whole on top and proceeds by deriving, i.e. specialising, the components.
- *Verification* is crucial in New Science. In the end, it is achieved by sociobiology based on the *coevolution* of biology and culture within conditions of a world in *non-equilibrium*. Sociobiology proceeds by anthropological observation and neurobiological research.
- This double nature of the human species determines the general purpose of dialogic interaction as '*coming to an understanding*' by sequences of *action and reaction*. 'Coming to an understanding' is not a fixed mark but a process which often remains tentative in performance. '*Understanding*', in contrast, is a component related to the interlocutor's interpretation of the speaker's utterance.
- Human beings are endowed with an extraordinary ability of *competence-in-performance* to tackle the vicissitudes and uncertainties of life by *principles of probability*, which rest on *expectation*. Human beings evaluate what they think might happen according to their knowledge and experience.
- Relying on principles of probability, human beings have to accept *errors and misunderstandings*. *Coherence* is, in the end, recognized by the *insiders* of the game.
- Competence-in-performance means *adaptation* to conditions of the environment, which might change during the game.
- *Conditions of the environment* are not only physical, for instance, living in the mountains or at sea, but also internal features of the mind due to living in

diverse cultures and societal structures. Performance means tackling conditions of a world in non-equilibrium we are 'embedded' in. Artificial principles, such as rationality, are not universal.

- Performance allows for varieties. The crucial issue is to distinguish the *permissible varieties* in the range of options from those which can be ignored. This precisely is the issue of a pluralistic world which *combines deterministic as well as stochastic phenomena*.
- *It is the meaning which determines the means not vice versa.*
- Purpose relates to *events*, traditionally called propositions, which, for the most part, consist of reference and predication through the eye of the individual beholder.
- *Integration is the name of the game*, integration of components of meaning as well as components of the means.

The universal basis of meaning

1. Basic issues

Science of complexity *starts from the object*, ‘dialogue in the stream of life’, with human beings at the centre, acting and behaving on the basis of their *dialogic competence-in-performance*. At the very outset there is *human nature* as manifested by sociobiology. However, human nature is only ‘*nearly*’ autonomous. It is, due to the co-evolution of biology and culture, ‘embedded’ in the environment. The environment is, according to modern physics (Prigogine 1987), an environment in *non-equilibrium*.

Human nature as structuring principle raises the old question of *what meaning is*. In modern linguistics, from structuralism to pragmatics, meaning and types of meaning have been constructed as *concepts* in a way to fit the artificial framework, from semantic features or universal primitives (Wierzbicka 1972) to logical concepts of use. But there is no repudiating the question of how such speculative and artificial constructions can be justified. How are, for instance, semantic features embedded in human action in performance? Can there be at all some independent meaning? According to fundamental new insights of biology into the basic question ‘What is life?’, life can be defined by purpose (Nurse 2020). For New Science, *purpose is the basis of meaning*. Purpose in the human area is dependent on human beings’ double nature as dialogic individuals, and it is specialised in a new hierarchy. Meaning, in this sense, is dialogic in all its components, starting with the dialogic claim of action and reaction. *Purpose means action*. The species of human beings is, first of all, distinguished by the complexity of their action and behaviour, of which the use of language is a component. Language use, the object of pragmatics, cannot be completely arbitrary if it is considered to aim at mutual understanding. It is structured by dialogue which constitutes the dialogic turn from pragmatics to dialogue analysis (Weigand and Kecskes 2018).

In traditional science meaning is conceived of as *knowledge*, represented at the level of concepts, created by scholarly speculation. In New Science, *purpose dominates action* which is specialised by neurobiology and conditions of performance. *Knowledge* is a component which influences human understanding and can thus influence action but the issue of purpose or meaning in dialogue cannot be dealt with hypotheses at the level of concepts. It is an *issue of action* verified by human nature.

A major factor in meaning is *perception*. Meaning needs to be experienced before it is expressed. Human beings perceive the world differently. Nonetheless, the *range of permitted differences* cannot be unlimited if dialogue aims at coming to an understanding. There is extensive literature on variation in human action and behaviour, but of questionable value. Permissible parameters of variation are due to the fact that human nature and development is not fixed along one rigid line but proceeds according to the influence of culture by epigenetic rules. The environment of non-equilibrium implies *deterministic as well as stochastic phenomena* which might be at the backdrop of the question of permitted differences.

In order to grasp *individuality* in a theory of performance, we have to account for some *common core* in order to come to some mutual understanding and not be lost in chaos. I call this core *universal*. Meaning and perception are universally based on human inborn abilities. What ‘the real world is, remains in obscurity, impenetrable to human intelligence’ (Chomsky 2016, 127). In order to be aware of something as meaning, humans must have *abilities sensitive* to pick it up as meaning and to identify differences in meaning. *Meaning, intentional and perceptual, depends on consciousness, on human beings’ ability of relating the object to the self embedded in the world.* We can understand and structure the world or the universe of meaning, the animate and the inanimate, only through the *filter of our abilities*.

Listing human general abilities and specialising them by predicative fields does not yet address the *question how they are interconnected*. They are all necessary for recognizing components of meaning. Even *emotions* serve human beings’ survival (Damasio 2000, 54; Darwin 1892). They are not superfluous; a clear example is fear: we need to have the ability of feeling fear, in order to understand what danger means. Emotions are an essential component in dialogic interaction. They can be described *universally* as inborn ability which is *individually* shaped by biological and cultural conditions of action and behaviour.

Accepting that we cannot go beyond our abilities highlights once again that any *ontological* claim for an independent world structure, i.e. for absolute *truth*, must be futile. There is no reason to suspect that we can grasp objects and ourselves without the filter of our abilities. We therefore have to pose the principal question: *can there be at all meaning independent of human beings’ mind? Is there truth as an independent concept?* For science of the simple this has not been a problem. The rule-governed pattern defines what is right. Looking out beyond its limits, so-called ‘*scientific truths*’ are simply stated (Sarasin 2009), presupposing that there is an autonomous ontology of the world which scientists and philosophers could describe. For science of complexity, the answer is clear: there is *no autonomous truth*, at least for the reach of our intelligence. In truth-oriented approaches, the concept of truth is a scholarly construction. Considering human

beings at the heart of the complex whole, there are only *claims to truth* in various degrees of certainty, to remember Wittgenstein's saying: "Mustn't we say at every turn: I *believe* this with certainty?"

This does not mean denying that there is something independent of the human being, objects, the world, the big philosophical questions about what is behind our perception and cognition. The area of the *inanimate* can be analysed by research in natural sciences. But even natural sciences are restricted to the scope of human cognition. Whereas the animate area is defined by purpose, the inanimate world seems to be determined by the relation of CAUSE AND EFFECT.

A special type of utterance, discussed by Wittgenstein (1972, 48e), might be considered as *exception*, for instance:

- (6) Can I deny that what I see in front of me is a hand?

We cannot deny it if we accept that what we see exists and can be called a 'hand'. However, what we see is, in principle, dependent on our sight ability, and how we call it is dependent on our language competence. Sometimes we do not see what our fellow beings see. I therefore tend to *deny* that such utterances express some autonomous truth.

But let us take another type of example which is expressed as seeming truth, for instance, utterances describing *war*. War can be described as a process of actions, neglecting what is in the mind of the actors. As soon as evaluations are included, which is very natural in the case of war, the issue is different. Behind evaluations there might be interests which shape everything even if not explicitly expressed. What might seem to be truth, might also be due to the interest of the speaker, not at all independent truth. An utterance like

- (7) This is a catastrophe.

reflects the evaluation of the speaker, not any truth, and should be literally expressed as

- (8) This is, to my mind, a catastrophe.

The same is the case with an utterance like the following:

- (9) This is historic, Germany has failed.

History will tell what it is. Sometimes one expresses one's view simply to make oneself important as person, as is usual in the media.

The nature of the human species as dialogic individuals creates the universal basis of meaning derived from purpose. Most of the categories are universal. They are however not entities in a fixed pattern but can vary as individually shaped components of human beings' actions and behaviour in performance. The com-

ponents trace back to human beings' double nature and the co-evolution of biology and culture which affects human beings' view of their lives. Human beings are, from the outset, *cultural beings* who perceive the world from their specific viewpoint, due to culture and the individual mind. They are embedded in and therefore affected by conditions of a world in non-equilibrium.

2. The basic structure of action

Purpose, the category that defines the animate world, implies intentional action. The general purpose traced back to human nature as dialogic individuals is 'coming to an understanding' in the community. If we start with purpose from the outset, some scholars might object that at the outset there is *cognition*, not purpose. To my mind, this is an objection from scholars who do not problematize assumptions of traditional science, mainly the generative assertion that language is used to think, which is based on a view of the human species that has fortunately been refuted by neurobiology. Recent psychological models, for instance, the model of 4E cognition, are artificially constructed to get grips of the complex, including action. However, what can we expect from models which construct the complex in a rhetorical game of 4E: embodied, embedded, enactive, extended?

On the contrary, as Nurse has verified, the animate area is defined by purpose, not by cognition. Cognition plays a role as component but is not constitutive for action. *We need not presuppose some transfer from cognition to action.* At the outset, there is *not cognition but purpose* based on mental claims which are dependent on the contingencies of performance. Instead of the honourable concept of 'truth', human beings 'search for truth' which does not yet imply that truth exists as an autonomous concept.

The claim to truth is certainly not the only claim at the bottom of action. The question is which claims are crucial. Claims can be traced back to *needs* and also to what in the literature is called *mental states*. To some extent, we are back to cognition which is not an autonomous ability but, from the outset, *purposeful cognition*. Mental states are from the very outset determined by *needs and purposes*. There is not only the *claim to truth* which goes back to a mental state of *belief* but also a *claim to volition* derived from the mental state of *desire*. Sometimes, in the literature, intention is added as mental states. In an action-oriented theory, intention is already implied by the basic category of purpose.

As little as cognition, there is a separate area of *knowledge*. Knowledge underlies every action and behaviour without being explicitly expressed. The issue of the relation between action and knowledge is tackled as soon as we leave behind the *ontological view* of traditional science. Purposeful action is constitu-

tive, knowledge is a component. Knowledge is not dead knowledge, set down in encyclopaedia and libraries, but derived from the human need to know in order to ‘find things out’.

Beside the claim to truth and the claim to volition, human beings, living in communities, need some reliability of social action. We can therefore include a claim to *validity* among the fundamental mental states underlying human action, which determine how action can be specialised in a speech act typology (Part V).

Action as dialogic action means that any action is related either initiatively to some reaction or reactively back to the initiative action. *Dialogue* therefore means the constitutive interrelation of

action ↔ reaction

which is not a structural relation of turns at the empirical surface but *defined by the interrelation of meaning* between making and fulfilling a claim (see above in more detail in Part III). For analysing individual dialogues, we cannot only apply the general categories ‘action’ and ‘reaction’ but have to *specialise* them in a *dialogic speech act typology* (see below Part V).

Of course, dialogue not only relates to minimal two-part games of action and reaction. In most cases, it is extended either by embedded sequences, for instance, asking for more details, or due to complex purposes which require to be addressed step by step in a sequence of sub-purposes in multi-phase games, as is the case in complex institutional games. *Phases are determined by (sub-)purposes*. At the structural level, each reactive speech act in the sequence can secondarily be taken as initiative and trigger off another reaction, which demonstrates the basic two-part order in the sequence (e.g., Weigand 2010, 113f.):

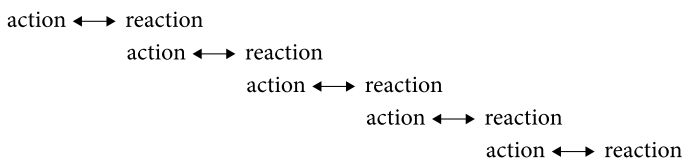


Figure 6. The two-part sequential order

Language teaching motivated some scholars to set up a basic three-part unit (Sinclair and Coulthard 1975), which even was assumed by scholars of communication, for instance, Cooren, Dion, and Balay 2023). Meaning, however, does not support such a view which cannot be verified and is solely based on classification (Weigand 2010, 114).

The category purpose implies other constitutive components of meaning. Action is not independent but, by necessity, relates to a state of affairs. We cannot

simply say: *I am stating, I am asking*, but have to add *what the purpose is about*. This component of ‘being about’ is usually called *proposition* and is subordinated to the purpose, according to Searle’s well-known formula $F(p)$. In the time before the pragmatic turn, propositions and their *major parts of reference and predication* have been at the centre of classical science and have been mostly dealt with in logical systems. Searle’s speech act theory introduced the superordinate monologic category of action function which in New Science became changed to the dialogic action function.

Finally, let us look again at the examples we discussed at the beginning of Part III. They clearly demonstrate that the *purpose is the category* which *dominates* not only the initiative action but also the reaction. Science of the simple was worried about how to explain the coherence between action and reaction. Brown and Yule’s example (Example (2), see above), for instance, has been discussed in the literature as problematic example which misses any coherence marker (Stati 1994):

A There’s the doorbell.

B I’m in the bath.

Such assessments are only right in the framework of a concept of language as a system of signs. At the same time, they demonstrate that *we have to make the step from the simple to the complex* as outlined in New Science. Language use is not a concatenation of signs but human dialogic action. Action means having a purpose and expressing it with all our abilities available, in this case basically by the integration of speaking and thinking. The example is very normal in language use: Language is purposefully used in action and reaction by human beings under the conditions of the actual action game, i.e., in our example for a directive purpose under the *condition of knowledge of the cultural background*.

3. Interests and strategies

Searle’s formula $F(p)$ misses one crucial component of language use in performance, the component of ‘interest’. *Interests dominate purpose*. Inserting this component is necessary for all the cases where the purpose of the speech act is not directly expressed but mediated by a superordinated interest. These are all the cases where we think about how to effectively pursue our purpose or goal in specific circumstances. For instance, even if the circumstances allow us to make a request, we seemingly downgrade the purpose and express it as polite inquiry because *politeness* seems to be more effective. In the case of more complex dialogues, deliberations of this kind result in strategies which can help to come to an understanding.

Whereas *interests* are components of meaning, *strategies* are cognitive components of the means. Interests, and correspondingly strategies, are clearly dialogic components. They can range from *cooperation* which, to a certain degree, accepts the position of the other, to *confrontation* which opposes it. This global strategic orientation of cooperation versus confrontation is specialised towards sub-strategies, which are used on the spot in the process of negotiation, for instance, strategies of avoiding critique or minimizing it in sequences of complaining, or a WIN/WIN strategy in business dialogues. It is revealing to compare different cultures and see how such interests cross-culturally intervene in the sequence of dialogue.

Interests affect the choice of the speech acts and the dialogic structure. They are incorporated into the basic action structure as dominant predicate:

interest [purpose (reference and predication)]

Figure 7. Interests as dominant component

The opposition of cooperation versus confrontation traces back to human beings' double nature as dialogic individuals. In the range between selfish versus social behaviour, we can take a position for or against cooperation. Focusing on selfish behaviour can lead to confrontation whereas focusing on social behaviour means cooperation. The decision is made by the individual but highly influenced by culture.

Interests dominate everything we say, hiddenly or overtly. They underlie the strategies taken which can be roughly attributed to cooperation versus confrontation. Interests influence the calculation of possible variables in the actual game. They not only influence the choice of the speech acts but also affect how the state of affair, reference and predication, is described.

4. Reference

Reference is a crucial component of meaning. In the proposition, we refer to something, animate beings, inanimate things or events, and we say something about it. The meaning components of reference and predication are not independent but dominated by purpose. Already in antiquity, philosophers knew that the *proposition* describes the state of affairs or '*what the utterance is about*'.

The problems arose with the question how referential meaning is expressed. In the literature, meaning and the means became mixed. Usually *definite reference* and *indefinite reference* are distinguished. 'Definite' means referring in a way that the 'thing' can be identified. Indefinite meaning, in contrast, means referring to

something without the possibility of identifying it. In addition, we can refer to the whole class of ‘things’ by *generic* reference.

Even if we have detailed descriptions about the means used to refer in this way, starting from logic to speech act theory, most of them are restricted in serious ways. Searle (1969, 84), for instance, addressing reference as act of the proposition, restricts his description to definite reference and arrives at senseless assertions that the definite article *the* refers definitely. I can add the humorous example *The king of France is bald* which has been seriously discussed in logic in case there is no present king in France.

In time, it became clear that referential expressions are not only determiners but include other expressions, proper names, pronouns and, in general, the way how noun phrases are built. Language comparison demonstrates the vast variety of possibilities, including how *languages without determiners* proceed. Wandruszka (1969) gives an impressive empirical overview. By the *pragmatic turn*, the subject ‘language’ changed to ‘language use’, and the possibilities yet increased. The question arose what can count as *permitted differences* (Chomsky 2016). So far, a satisfying answer is missing. It would require to recognize the combination of deterministic and stochastic phenomena in performance, instead of focusing on reference as separable part.

Posing the question of permitted differences is also the question of what or who ‘permits’ differences. Science of the simple might apply the criterion *frequency* which however contradicts the premise that science of performance accepts stochastic phenomena or *individuality*.

In a recent publication on “Referring in Language”, Fontaine, Jones, and Schönthal (2023) propose an “integrated approach”, which however only means a mix of different models ‘from discourse, cognitive, and psycholinguistic literature’, on the basis of Systemic Functional Linguistics. They call it ‘a functional grammar of referring expressions’, which however focuses exclusively on language and does not touch on the crucial integration with gestures.

For New Science, the issue is different. We must not start with the means and categorize them as observer-scientists by ‘typical’ versus ‘atypical’, but must start with meaning. The meaning of reference is a referential act by the individual speaker. The conditions of action basically depend on the difference between oral versus written dialogue. Correspondingly, reference proceeds quite specifically in face-to-face dialogues where it can rely on the integration of verbal and perceptual means, as is manifest in the example (3) described above in Part III (with a description of the situation):

One for her. — Eve, too.

This authentic example of a face-to-face dialogue demonstrates that the basic principle of '*integration is the name of the game*', in this case, means the integration of speaking and perceiving. *Integration is not pre-given by an artificial system but depends on the speaker's choice.* It is a principle of use in performance and does not mean integration in the sense of mixing different models, as applied by Fontaine, Jones, and Schönthal. Reference in the example above is definite. The *insiders* of the game know, by their *competence-in-performance*, who is meant. Science of the simple would classify this example as 'atypical', but it is totally normal in performance. Fontaine, Jones, and Schönthal call face-to-face dialogue 'spontaneous' dialogue, thus avoiding the problem and shifting the feature of face-to-face to the characteristic of '*spontaneous discourse*'. They even try to 'define spontaneous discourse' by listing referential expressions. How can the feature of 'spontaneous' be defined by listing cases, thus cancelling its characteristic?

Pragmatic approaches run into the same problem. As soon as the object of analysis becomes authentic texts, their analyses lead to confusion and chaos of the type *we do not know why it is expressed in this way* (Fox 1987; Weigand 1996). *It is the speaker and their competence-in-performance who knows why it is expressed in this way.* Requesting authentic texts for analysis can only be justified by a change from traditional science to New Science. Authentic texts result from *combining deterministic and stochastic phenomena in a world of non-equilibrium* and demonstrate what 'integration' in the end means.

5. Predication

Predication is a term used from antiquity in the general sense of 'saying something about something'. Transmitting this piece of meaning to the sentence, predication means in syntactic terms the predicate or what is predicated upon the subject. The predicate can be a single-digit relation, $P(x)$, or a multi-digit relation, $P(x,y)$, which contains other noun phrases as arguments.

As soon as the sentence changed to the *utterance* as carrier of action, *the speaker* and the purpose had to be introduced. Reference and predication became components of the proposition dominated by the action function: $F(p)$. They are no longer syntactic categories of building arguments and predicating upon them, but become *acts of the speaker*, subordinate to purpose. The question is: What does the speaker want to predicate? How does his/her purpose affect predicating? What can the speaker predicate? These questions of what 'saying something about' can mean, open up a nearly unlimited field, which is difficult to describe because the speaker's choice of the action function dominates what is said and how it is said.

In order to demonstrate the whole issue, I am starting with an example:

(10) Doris is waiting at the airport.

Taking it as sentence as in science of the simple, predicating refers to the syntactic category *is waiting*. Taking it as utterance in New Science, it is the speaker who refers to *Doris* and predicates *is waiting*. This is however not the only difference. The main difference results from the fact that an authentic utterance carries, directly or indirectly, the purpose of the utterance. In our case, it is an indirect initiative speech act the purpose of which is to be derived from the lexical meaning of *waiting*, and, of course, from the actual action conditions.

We see that the purpose dominates every component. In the actual case, we have to ask which *consequences for the structure of the lexicon* should be drawn. This question is the more crucial as it implies the question of how far AI can be a player in the game (Weigand 2019). For the structure of the lexicon, the first question is: *What is lexical meaning?* As outlined above (Part IV 1), meaning depends on consciousness, on human beings' abilities of relating the object to the self. We predicate how we see the world and what we think should be done. Ways of predicating are ways of meaning starting from human needs and abilities. *Human abilities represent a type of filter*. What we cannot perceive, empirically and cognitively, cannot represent meaning. A crucial component of meaning is lexical meaning or what we can predicate about animate or inanimate objects and events. This poses a question more or less discussed from the beginning of linguistics, to remember the generative classification of *semantic features*. Hierarchies of features, starting, for instance, from Chomsky's distinction between 'animate' and 'inanimate', have been set up as far as they were believed to be relevant to syntax. Another attempt at grasping 'the meaning of all' has been Wierzbicka's creation of 'semantic primitives' (1972), as if they were a matter of fact. However, what is needed is *not a new methodology*, but a *change in recognizing the object*.

I would propose to *derive lexical meaning from human abilities* which can be grasped by *concepts* such as cognition, perception, etc. *To my mind, human abilities open up the universe of meaning* (Weigand 2004, 9). Any ontological claim for an independent world structure is futile. It is however not so easy to grasp the abilities human beings are capable of. I am going *to start with* the following universal abilities which can be taken as predicating fields:

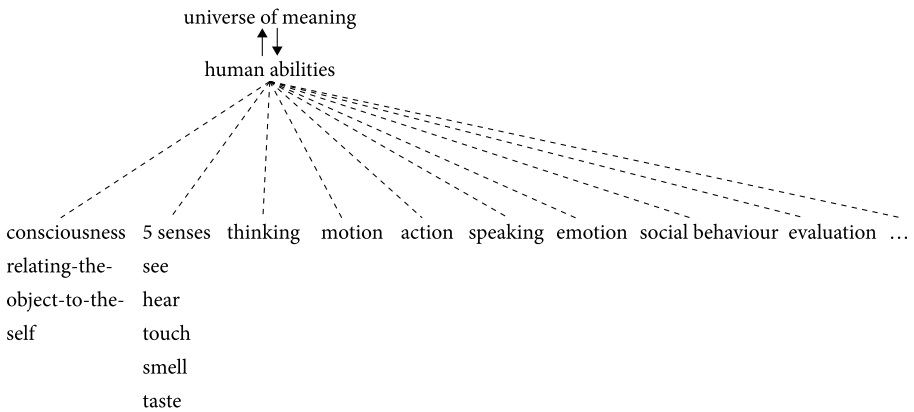


Figure 8. The universe of meaning derived from human abilities

The figure also includes *evaluation*, which is, to my mind, a crucial inborn ability. We not only perceive alternatives but at the same time evaluate them to some degree, mostly unconsciously. Structuring the universe of meaning is an endeavour that challenges science. *I can only point to crucial aspects.* So far, the universe of meaning is mostly grasped by *concepts*. The basic issue is where the concepts come from. In science of the simple, *semantic features* or primitive predicates have been constructed to describe components of meaning. What they really describe are components invented by scientists to fit an artificial theory.

New Science tries to justify the concepts by tracing them back to human nature. *Philosophy*, on the contrary, refers to what philosophers have said since antiquity to describe concepts, for instance, ‘happiness’ in a ‘network of concepts in which the concept of happiness is interwoven’ (Hacker 2021, 246ff.). Such a procedure, though not verified, can be interesting insofar as it obtains an overview of the field of happiness by quasi-synonymous or similar concepts, such as *joy* or *pleasure*. There are also descriptions, which relate the concept of ‘happiness’ to concepts of other fields, e.g., ‘richness’, ‘beauty’, despite the fact that such relations contradict the insights of neurobiology and sociobiology. Nowadays we know that ‘feeling happy’ depends on neurotransmitters, which are, in principle, independent of ‘networks of concepts’.

Such storytelling by inventing a network of concepts presupposes some ontology of concepts which does not exist in performance. Who predicates in this case? Happiness like truth does not exist as autonomous value. Handed down from the heaven of philosophy, they mean ‘feeling happy’ or ‘believing that it is true’. Justification is not given by philosophical storytelling but by the science of neurobiology and epigenetics which traces concepts back to mental states. The structure

of the universe of meaning starts from human abilities and proceeds by *specialising* basic components of meaning in a structure of New Hierarchy (Part V). The whole endeavour would require a huge, concerted effort of different disciplines.

Let us now address another essential question, the *relation between predicating and the purpose*. Example (10) above

Doris is waiting at the airport.

clearly demonstrates that predicating is an act by the speaker. Why does the speaker issue this utterance? *Meaning emerges from the whole of action game*, including an individual speaker and specific action conditions. As such it requires to be elaborated by New Science. The use of *is waiting* expresses an indirect directive speech act: ‘Could you perhaps fetch her?’ The purpose ‘fetch her’ is the dominating goal which stimulates the speaker to predicate *is waiting* and to avoid a direct directive speech act due to politeness reasons and the hope that indirect speaking is more effective. The verbal expression of the statement, directly expressed, is intended to arouse the cognitive meaning of the indirect speech act, the act that matters in performance. This becomes possible because *wait* can potentially be understood as REASON for action in specific games (Weigand 2009a, 223). *World knowledge based on human experience enters the lexicon as component of probability*:

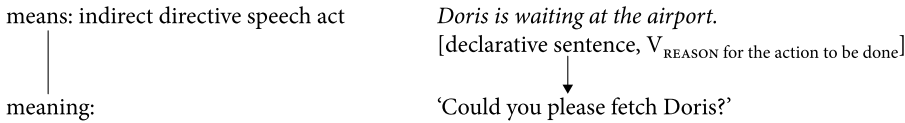


Figure 9. World knowledge and indirect speaking

If you want your partner to carry out an action, you can express it by indicating the reason for this action. New Science needs a *powerful lexicon* which has an entry for *wait* such as:

wait
 [x (is waiting)]
 reason → action

Figure 10. The lexical entry

The lexical items should note this interrelation between events of our life. This example again confirms that *integration is the name of the game*, in this case integrating pieces of predication and pieces of action. ‘*Saying*’ and ‘*meaning*’ *cannot be separated in performance*. We mean more than we say.

This is an especially interesting point because it touches upon a concept pervasively dealt with in pragmatics, the concept of *inferences*. The term has been emphasized by Grice (1975; see above Part II) and interpreted to underlie pragmatics. According to Grice, saying is connected to pragmatics by inferences. In addition, he introduced the term ‘implicature’, conventional and conversational implicatures. Whereas *New Science starts from the whole of the action game*, Grice starts from ideal principles, such as the Principle of Cooperation. Are we really totally honest people who try to express themselves with ‘clarity’ and ‘succinctness’ but have to apply a complicated system of implicatures to match the challenge of performance? Nonetheless, Grice survives in various neo-Gricean approaches (e.g., Capone 2019; Levinson 2000).

Grice’s intention-based concept of meaning and his various implicatures are intended to lead from saying to meaning, from direct to indirect meaning. They point to the role of cognitive means in communication, but do not take account of the basic premise that *the purpose of action goes beyond the conceptual level*. Cognitive means, such as applied in inferences and allusions, are intentionally used by the speakers. At the level of meaning, they represent, like reference and predication, *acts by human beings* as components of the whole game, dependent on the overall purpose. Human beings *choose* from the universe of lexical meaning what they want to say in the light of their purpose in specific circumstances. The lexical meaning of utterances is individually chosen due to the purpose of the game. The lexicon provides the alternatives for use.

Cognitive means are means applied in use, not dependent on artificial processes such as the ‘*semantics/pragmatics interface*’. What we can say about objects is not a question of semantics nor of some ‘cocktail of interlaced semantic and pragmatic components’ (Allan 2020b), but a question of what human beings want to say. *In New Science there is no semantics*. Meaning is always dialogic. In order to describe what human beings intend to predicate, we need a change in science not only a change in the methodology of classical models.

6. Co-evolution of biology and culture

Integration is the name of the game. It determines human nature from the outset by the co-evolution of ‘genes, mind, and culture’ (Lumsden and Wilson 2005), and it becomes a crucial means of human beings who, in the course of their lives, have to adapt to conditions of a world in non-equilibrium.

However, in the literature of the past it is not so much *co-evolution or integration* but separation of nature and culture, which determines description. Two extreme positions, ‘*nativists*’ versus ‘*empiricists*’, Pinker (1994) versus Sampson

(2005; 2007), initiated a debate on nature versus culture (Weigand 2007; 2010, 50). Everyone who has experienced working with scholars from foreign cultures knows that seemingly universal concepts such as rationality heavily depend on culture. Cognitive differences are deeply rooted, inherited over centuries and not easily made conscious, not to speak of being explicated or even changed.

I am aware of the fact that there is, in principle, a *divide between symbolic and dialogic theories of language*. Symbolic theories of nativists (e.g., Chomsky 2016) take cognition as their starting point in putting forth theses, claimed to be universal, such as ‘language is used for the expression of thoughts’. By contrast, dialogic theories consider communication and the purpose to come to an understanding as the driving force that caused language to evolve. This controversy between symbolic and dialogic models represents, in the end, a *controversy about the human species*. We might put it this way: Symbolists consider language to be created *in order to think* (Chomsky), whereas dialogists consider the ability of thinking as inborn from the outset. There is no need of language to create thinking, on the contrary, language has developed *because* we can think (Weinberg 2016). If we were hermits on an island we would not need language. Nor would we, as hermits, be able to reproduce and to survive as a species. Here we are at the crucial point. Human beings are epigenetically programmed as social beings who need *dialogue for reasons of survival*. Communication could also proceed in a rough-and-ready way by gestures and body movements, without language, though with serious deficits. It is therefore plausible that, by the time, language evolved from gestures, presumably initially accompanied by unstructured sounds.

Giving priority to the need for communication does not exclude the fact that language use can, in addition and subordinately, fulfil other functions, among them the function of symbolizing. But it is precisely within communication that symbols obtain their specific value. Even if generativists continue to proclaim the symbolic species, sociobiologists have long ago provided solid arguments for the conclusion “that it is no longer possible to say [...] that human behavior is symbolic behavior and symbolic behavior is human behaviour” (Wilson 2004, 26).

6.1 Persuasion

As outlined above (Part III, 2), human beings’ nature as purposeful beings includes some other components of meaning, among them the component of being *persuasive beings*. ‘Persuasion’ is the concept which is at the centre of Perelman and Olbrecht-Tyteca’s approach, called New Rhetoric (1977). However, the question what persuasion in its various faces means has not really been addressed. Burke’s view (1950, 172) that ‘*meaning is persuasion*’ baffled us in times of rule-governed linguistics but it goes to the heart of the issue. Perelman (1977), to some

degree, grasps a crucial feature by focusing on what he calls '*adherence*'. However, he still sticks to logical syllogisms and does not really offer a pragmatic model of performance.

Trying to gain adherence means *aiming at acceptance*. This is precisely the core of persuasion: trying to exert influence on the interlocutor in a way which is favourable for the speaker and raises hopes that he/she will gain acceptance. In the end, it is not up to the speaker whether they really are successful, whether their dialogue partner is indeed persuaded. In terms of speech act theory, persuasion is a perlocutionary process.

Despite many attempts to clarify and define the term, the issue still needs to be elucidated. To my mind, persuasion is based on human beings' inborn *desire to be accepted*. In this sense, human beings are persuasive beings. The consequence is that rhetoric cannot be dealt with as separate discipline but is integrated in language use. Traditionally, rhetoric has been studied as an issue of the techniques of persuasion or of special forms, figures of speech, of 'stylistics', which is a different matter.

Rhetoric as a component of New Science is based on *purposeful use* and aims at demonstrating the role of persuasion in different action games. Persuasion starts from the speaker's interest and aims at *effective use* in favour of the speaker's position. What is conceived of as effective, heavily depends on evaluation and culture. We need not construct a bridge between 'saying' and 'meaning' as claimed by Grice and scholars of science of the simple, but investigate cultural conditions of evaluation which influence the means from the outset (see below). Effective use can relate to any speech act type, directive and representative, and also explorative acts.

Persuasion in representative use means persuasion to believe, aiming at *conviction*. Conviction in the sense of being convinced of truth does not exist in performance. We can only try to persuade our partner to believe what we present with certainty, or to be more precise, what we want our partner to believe.

Human interests can, obviously, change the world. Reality is open to presentation. In this respect, *politeness* can be seen as a way of presentation reality in favour of the speaker's interest. Politeness heavily depends on cultural evaluation. It might mean 'respect', in its positive core, but it can also be used for increasing effectiveness of the speaker's purpose. In this sense, it can change to a formal routine without any positive value, even with the interest of betrayal. Politeness is not an issue of 'face-redress', as Brown and Levinson (1987, 91ff.) describe it. 'Face' may play a corollary aspect. Should we believe studies which describe the human species as an inherently aggressive species always concerned about 'face'? Politeness is not a negative phenomenon to be dealt with primarily in terms of 'avoiding

face-threatening acts'. *Politeness is a means for persuasion*. As persuasive beings we are concerned about being accepted by our dialogue partner.

Human beings, by their very nature, tend to bring their dialogue partners over to their side. This is in the end what constitutes persuasion. Whether we will be successful and can indeed persuade the dialogue partner, depends on the means and strategies we take in negotiating our purpose, or to be more precise, *we are allowed to take*. There are powerful systems, for instance, the *media*, which draw limits to our actions.

Rhetoric often poses *maxims or normative principles* of how to behave (e.g., Grice 1975). There is however no objective benchmark for what can be claimed to be norms. Norms are set by societal systems or by the individual. Like predication and reference, choosing specific rhetorical means and considering them as norms represents an *act by the speaker* dependent on the action conditions. Criteria can be individually chosen, such as *elegance of style, clearness and succinctness* (Grice), or be dependent on the goal of agencies, such as the *goal of win/win in business*. In order to be realized, these norms need to be backed by some power, if they cannot rely on acceptance by the dialogue partner.

Rhetorical means of trying to gain acceptance are various and dependent on cultural action conditions. They range between the *use of words* and the *use of strategies* (Weigand 2018c). Strategies are the correlate of interests at the level of the means. They can be collaborative and proceed by arguments or they can be confrontative and apply power. Strategies are mostly applied in games of *negotiation*, for instance, in business (Trompenaars and Hampden-Turner 2020) or jurisdiction (e.g., Le Cheng and King Kui Sin 2008).

6.2 Morality

Morality has mostly been dealt with in a separate discipline of ethics. The question is: what is morality? Morality is determined by human beings' double nature (e.g., Weigand 2018a, 23f.). Any position we take in the range between selfish and social behaviour will be an ethical position. According to *Edward Wilson* (2003, xxii), "humanity is the species forced by its basic nature to make moral choices". "Moral reasoning is not a cultural artifact invented for convenience. It is and always has been the vital glue of society" (p. 151). Wilson even speaks of evidence which exists of an instinct to behave ethically.

Morality means making moral choices. Human beings choose which position they take, the selfish, egocentric (Kecskes 2017), or the social position, or any position in between. The choice is not always deliberate and conscious but may also be determined from the beginning by the human nature. There are humans who tend to use power to support their position, and there are other humans who

feel the social necessity of helping other beings. We are here at the *core of ethics*, the *distinction between 'is' and 'ought'*. Life is not a matter of 'ought' but a matter of 'is', as described in science. Ethics does not describe and justify the description but takes the normative part of 'ought' and tells us what we should do and how we should think, mostly without any justification, in the way of philosophical storytelling. A matter of 'ought', however, needs a reason why it 'ought' to be. In philosophy, 'ought' is mostly described as normal matter of 'is' which leads to constructing concepts as philosophers want to see them, for instance, constructing dialogue as care (Bencherki and Sénac 2023; Weigand 2023).

There is a reason which justifies the inclusion of a type of 'ought' in New Science. The reason is not human biology but '*humane living and survival*'. Humane living is only possible if we, as individuals, allow for some leeway to the other we are living with. If humanity is to survive, it cannot opt for war and fighting against each other. This is the only normative rule that might be included in New Science. In this sense, human beings have to mediate between their double nature. *The self is — with a shift in perspective — the other*. On the one hand, we want to pursue our own selfish purposes and interests, but on the other hand, we are at the same time the other social being whose interests need to be respected.

Politeness, at its core, means 'the wish to respect the other human being'. Speakers necessarily have to balance their self-interest and the interests of fellow beings. Varying degrees between selfish and social behaviour are possible, dependent on cultural conventions and the individual decision by the speaker. The speaker might even completely disregard respect and use politeness exclusively in their self-interest, as Western culture is often accused of. Used like this, respect becomes an empty, manipulative concept in actual performance.

There is an approach within semiotics which goes beyond strictly thinking in terms of science of the simple and addresses the complexity of ethical behaviour, the approach of *semioethics* (Arnett 2017a). Despite remaining methodologically within restrictions of semiotics, the insight gained ground that meaning in communication is more than what results from artificial constructions. The methodology, however, mainly consists of 'talking about' the ethical positions of outstanding figures such as Emmanuel Levinas or Hannah Arendt (Arnett 2013 and 2017c). Even if Arnett underlines the tenet of ethics as a *response* (Arnett 2017b), the basic underlying question of the 'architecture of complexity' is not really dealt with. That is the point where a genuinely holistic theory has to start. Communication traces back to human nature and to dialogic interaction as the ability that makes us human beings. We should not expect answers from free creations of philosophy, for instance, by *poststructuralism*, but, rather, we should rely on our own reasoning about the preconditions of human life and seek *confirmation from sociobiological findings*.

Morality is not only a crucial issue of science but also a theme in *art and in literary texts*, which confirms that it is a central issue of human life. We might have a desire for ethical ideals, but life is performance and poses action conditions that require adaptation to real circumstances. Literary stories create utopian descriptions of a peaceful and happy life in an ideal world, for instance, James Hilton's *Lost Horizon*, but also point to the dangers hidden in the dark side of human nature, for instance, George Orwell's 1984. *The problem is to get control of opposing human interests, individual and social*. We should not accept that dialogue gets distorted. The risk is eminent as we can see in *hate comments* on Facebook and other social networks, which can degenerate to conspiracy groups. Let us hope that living together in a humane way will not remain utopia. We should feel responsible for keeping humanity alive.

What conclusions can we draw for the concept of ethics? Any species that lives in communities has to balance individual and social interests. In this sense, morality is an inborn feature of balancing human action and behaviour, a feature that can be described by regulative and executive principles (Weigand 2010). However, accepting *any* position whatsoever in the conflict of individual and social interests means considering ethics *as a value-free concept*. When establishing a *universal basis*, we might consider ethics as evolving in evolution and assume a form of ethics as *unbiased ideal* of behaviour that gives every human being the same opportunities and equal rights. *Evolution*, however, proceeds according to the *biological law of the survival of the fittest*. Setting up a *norm of civilized and humane behaviour* is a *necessary consequence of overcoming the biological law* of the survival of the fittest. We can find such norms of behaviour in literature since antiquity, for example, the *Ten Commandments* in the Old Testament, human rights in the Magna Carta, or the values of liberty, equality, and fraternity proclaimed in the French Revolution. *Contrary to such an ideal view* of 'how we should act,' norms, in performance, hang in the air, to some degree, and can be disregarded. Performance is, in the end, a matter of individuality and probability. We must pay attention so that those in positions of power, imperial power as well as financial power, will not gain the upper hand (Weigand 2018c).

6.3 Evaluation

Persuasion is deeply connected with evaluation. The nature of human beings as persuasive beings is shaped by different cultural evaluations of the relationship between the individual and the community. The specific cultural evaluation handed down through centuries can be regarded as some sort of 'culturgen' at work (Lumsden and Wilson 2005, Ixvi). Individuals can hardly free themselves completely from this cultural influence. *Evaluation* is a key point in dialogic

action. As an inborn feature, it is at the bottom of our position and determines the means we take. It can also be *normatively set in the agenda* of associations and societies. In this sense, it is decisive for the position of nations and their representatives in the case of geopolitical issues and wars.

Evaluation as an inborn feature becomes evident by the following authentic example of a child of three and a half years. Returning from a little walk with his parents he tells his grandmother:

- (11) Der Spaziergang war schön.
'The walk was nice.'

Obviously, we not only perceive but evaluate what happens very early on.

Persuasion characterizes evaluation of ourselves and of what happens between us and the other. Candidates of election campaigns tend to overestimate themselves, for instance, Obama:

- (12) I am the best candidate as I will bring change to America.

The other position is equally exaggerated to the negative, calling the opponent *the evil*, for instance:

- (13) If this is not evil, evil has no name. (Bush) (Weigand 2009d, 367)

It is interesting to see that special rhetorical phrases have evolved in this mix of persuasion and evaluation, which seem to allow for any pejorative use.

For evaluation, *comparative studies* on the interaction of biology and culture are especially elucidating. They demonstrate the *crucial influence of culture* on evaluation (e.g., Grein and Weigand 2007; Weigand 2007; Rapaille 2007). What is positive and what is negative is not fixed yet but depends on culture-specific evaluation. There seems to be a great difference between cultures of the Far East and Western cultures, as I described by different Regulative Principles in the balance of self-interest and respect (Weigand 2010, 94–96). Roughly speaking, Western cultures very much emphasize individual freedom whereas Eastern cultures evaluate the individual according to their role in the community. In Eastern cultures the group determines the value of the self, in Western cultures the reverse influence can be observed insofar as the self tries to maintain their position and to dominate others. It is this selfish drive for personal freedom that sets limits to the degree to which the other is respected in Western cultures, whereas in Eastern cultures it is the respect for the other human being that aims at reconciliation and harmony and sets limits to the individual's freedom. We have to be cautious, though, because such a rough-and-ready distinction will have to be more clearly differentiated by future studies. Human beings' nature as social individuals will inevitably imply both cooperative as well as confrontative tendencies.

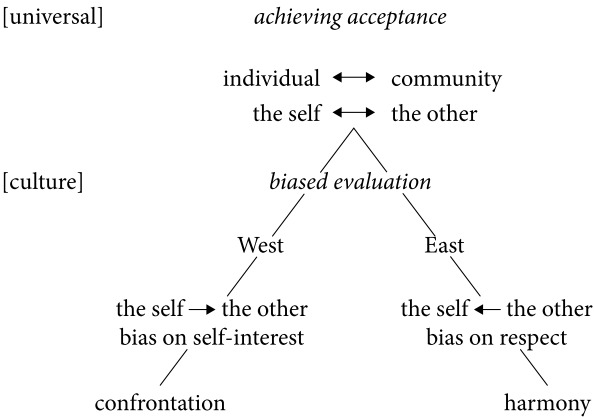


Figure 11. Balance of self-interest and respect

Comparative studies (e.g., Cho 2005; Premawardhena 2007; Grein 2007) have differentiated *subfunctions of politeness* or respect resulting from differences in cultural evaluation. If there is a bias towards the community and the individual's value is seen in its role for the community, respect includes *consideration for others, modesty, solidarity, avoiding conflicts* and *striving for harmony*. If the individual strives for personal freedom, respect will either mean *sincere consideration* or will become a *formal concept* that is functionally rather empty or masks distance and even manipulation.

East	West
modesty	reverence
solidarity	emptiness
attention	distance
avoiding conflicts	manipulation
harmony	confrontation

Figure 12. RESPECT/POLITENESS

It has however to be questioned whether such an ideal picture of selfless brotherly love is still valid for Eastern cultures in our times of rapid societal change and global influences. The distinction between the East and the West needs to be differentiated as there are certainly distinctions between different cultures of the East, for instance, between the Japanese or the Korean culture, as well as of the West. We should be very careful and ask in every individual case whether features such as solidarity, modesty, and consideration actually play a role as subfunctions of politeness. At least in Western cultures, they cannot plainly

be assigned to politeness. For Eastern cultures, the study by Cho (2005) strongly problematizes traditional views and demonstrates *that 'politeness' is often as empty as in Western cultures and means nothing other than routines or even strategic instrumentalism.*

Speech acts of compliments are another clear example of the influence of culture on evaluation:

(14) (in literal translation)

Germany Du hast abgenommen! Steht dir gut!

"You've lost weight! It suits you."

China Du bist aber dick geworden!

"You gained weight!"

Rwanda Dein Gang gleicht dem einer Kuh.

"You walk like a cow."

Cameroon Sie sind ein alter Kochtopf.

"You are an old cooking pot."

You have to know the culture-specific value system and the conventions of the utterance form if you want to make a compliment (Weigand 2007, 42ff.).

6.4 Emotion

Emotion, for long banned from the scientific agenda as a disturbing factor, has turned back in recent decades because of its importance in various respect. As an *inborn* feature it is *integrated* in human competence-in-performance from the very outset. In our post-Cartesian times, we know that there is no reason without emotion, and emotion can be balanced by reason. Eventually, neurology experimentally proved that emotion and reason do not represent separate areas but interact with each other and other human abilities (Damasio 2000; Pinker 1997, 370; Weigand 2004).

As Simon (1983, 29f.) has pointed out, emotions select particular things in our environments as the focus of our attention. In principle, having emotions is a universal feature, but it *strongly depends on culture* how emotions are expressed. The interesting point is that emotions are *not intentional*. They can however intentionally be *simulated for specific purposes*, for instance, crying to demonstrate sadness or pain. Moreover, emotions have the extraordinary feature that *they can express themselves, even against the intention of the speaker*. As physiological processes they are not totally controlled by human reason or intention. How else can we, for instance, explain blushing as an external marker of embarrassment?

Nonetheless, emotions can be regulated by reason, and the opposite is also possible, to arouse emotions by reason, even strong emotions, for instance, ‘hate’. There are, in principle, three kinds of internal biological mediation between emotion and reason:

- Emotions are kept under control by reason.
- Emotions can no longer be controlled and become dominating.
- Emotion and reason are in conflict and lead to quarrels.

Different cultures evaluate emotions differently. Members of northern cultures are often surprised how freely emotions are expressed and talked about in southern cultures, even in the media. But it is not only the difference between north and south, there seems to be also a difference between Europe and America, as can be seen by the following example of an inscription posted in public in New Orleans (Weigand 2004; see also Part VI 4.8):

(15) MIRIAM does still LOVE LARRY unconditionally.

Obviously, Americans have a different view about what is private (Weigand 2004, 18).

Among the regulative principles, there are culture-specific *Emotional Principles* which tell us how we are expected to behave (Weigand 2010, 105ff.). Emotions have recently become a favourite topic in a number of different disciplines which aim at describing more precisely principles of emotion and their rhetorical role in different cultures. We can make a bad impression and damage our position in interaction if we do not keep to them. For the culture of northern Europe, we might assume the following Principles of Emotion:

- Act rationally and hide or control emotion.
- Keep quiet, do not be provoked by the statements and emotions of your interlocutor.
- Know yourself and your own sensitivity and vulnerability. Learn to take criticism.
- Do not overreact.

Let us have a brief look at *orthodox approaches* and how they dealt with emotion (see Weigand 2004, 5ff.). There are various techniques; I will briefly deal with three of them. There is the technique of *ontological claims* for the simple. Wierzbicka (1996), for instance, constructs a semantic metalanguage, i.e. an artificial language consisting of semantic primitives such as SAY, THINK, KNOW, WANT, FEEL, GOOD, BAD, and claims ontological existence for these primitives insofar as she considers them as ‘innate human concepts’ (p.16; also Enfield and Wierzbicka

2002, 17). How can ‘concepts’ be innate? Semantic primitives of this type strongly remind me of generative semantics in the 70s: the desire for the simple seems to live for ever.

Next, there is Kövecses’ technique of *metaphorical explanation* (1990) which seems closer to performance insofar as it refers to the motive of the speaker for using a metaphorical expression. There is a special affinity between emotions and metaphors. Kövecses’ primary interest however is not to describe how emotions are expressed but how emotions are ‘talked about’ (p.3), emotions as a discourse topic, and to explain why they are talked about by means of metaphors. The question of the motive of the speaker might be interesting for creative language use. Conventional language use, however, does not follow cognitive configurations nor deep grammatical rules. Conventions are simply there; they cannot be questioned. Why they have been formed in a specific way over years in the past, is another question.

Another technique pursued, for instance, by Harré (e.g., 1986), is based on the thesis that emotions are *socially constructed*. In the light of recent neurological findings, however, the exclusive emphasis on the social construction of emotions can no longer be maintained. ‘Construction’ is also the crucial point of a recent publication by Wiltschko (2024), who however does not mention Harré. Wiltschko separates emotions and grammar and tries to develop a ‘theory of constructed emotions’. Emotions in this sense are not constructed socially but, strangely, by grammar. She introduces ‘a novel research agenda’, which is based on an absurd hypothesis she calls “emotional spine hypothesis” (p.1).

All these techniques and reference points, the linguistic, the psychological, the social and the constructionist, are techniques which highlight and even isolate a special aspect. Compared with the complex whole, we are here facing *academic imperialism* of different provenance. What we are attempting in our ‘beyond enterprise’ (Dascal 1996) of New Science becomes especially demanding. The question is *what emotions really are*. Emotions are *basically biologically determined*. They trace back to *physiological states* of mind, mostly regulated by hormones. I do not want to address the difficult question whether we might identify all physiological states of the mind with emotions. Due to epigenetical processes they can be *affected by cultural variables*. This is what co-evolution of biology and culture means.

To illustrate this basic feature by an example, let us see, by contrast, how *philosophy* considers emotions. As usual, philosophy deals with their object as *concepts* which are simply put forth and seemingly need no verification. In this way, for instance, the concept of ‘happiness’ is put forth within a network of other concepts, such as joy, pleasure, delight, without taking account of the fact that these are words of the English language (Hacker 2021, 248). The meaning of these

words cannot simply be put 1:1 with the expression in English. The basic question of the *role of concepts* in human action and behaviour does not bother philosophy. Concepts do not at all design ontological objects. They are applied and defined either as concepts within a theory or be taken as words in language use. The meaning of words is their use-in-language, which is the use in phrases, as lexical research in New Science demonstrates (e.g., Weigand 201b). There are various words to design physiological states, such as emotions, moods, drives, motivations, affect, but it is *up to physiology to clarify their meaning*. The question ‘what emotions really are’ cannot be addressed at the level of concepts but refers to the inborn human ability of ‘*having emotions*’. In this respect, much has been said by research in *sociobiology*, addressing biology in relation to sociology (Wilson 1975).

Obviously, emotions are filtered by other human abilities, and it is this filter which determines how they appear in human behaviour and action. In the end, emotions are not totally definable and can be conceived of as a component of the inexpressible.

7. To sum up: The whole structure of meaning

In this part, I comprehended the ‘meaning of it all’ Feynman (1998) in the universal structure of all meaning components which are connected in the mind of the human being at the centre. The structure is completely different from the view which the actual state of the art provides in multiple approaches. *Meaning is not a field of separate parts* thrown together but a complex whole structured by starting from human needs and purposes and including components dependent on them, as illustrated in the figure (see Figure 7):

interest [purpose (reference and predication)]

We thus leave behind us the view of various disciplines and models, which select issues and present them in a patchwork of separate fields.

New Science emphasizes that any assumption needs to be *verified*, because this is what distinguishes science from storytelling as practiced not only in philosophy but also in many approaches claiming to be science without clarifying the concept of science. There is no science without verification. What can count as verification depends on the purpose of the approach. Logical and rule-governed argumentation remain at the level of method and do not reach performance. ‘Science of it all’ means ‘science of performance’, going beyond certainty and explaining how human beings succeed in tackling the vicissitudes of life. Science of performance requires uniting natural and human sciences, as the world is not sep-

arated in an animate and inanimate world. We are living in *one* world, united by the human mind.

The 'meaning of it all' is, in the end, verified by human nature and the conditions of the environment. The nature of human beings is, according to natural science, defined by purpose. *Purposes* are selfish and social at the same time, according to human beings' double nature. They relate to events, in scientific terms 'propositions', which are not independent units. Events mainly consist of *reference and predication*. In dependence of the purpose, we refer to objects, animate and inanimate. We predicate or say something about the objects. What is really going on can, in many cases, only be understood by *insiders*.

There is one component, which dominates the choice of purpose: our *interests*. We always act and behave as individual dialogic beings with specific interests and preference. We are *persuasive* and *moral* beings, due to the *co-evolution of nature and culture*, and we are *emotional* beings, trying to get control of our emotions by reason.

Integration is the name of the game, not addition or forced connection of models, but integration of components of the complex whole, specialised in *one coherent* theory, components of meaning and of the means. Integration is not fixed, not resulting in a rule-governed pattern, but dependent on performance, including action conditions of *individuality and chance* in a world of non-equilibrium. Whereas the basic structure of meaning can be considered *universal*, *cultural differences* arise from the co-evolution of nature and culture. A theory of 'dialogue in the stream of life' will therefore consist of a universal basis and culture-specific components of meaning and the means.

PART V

Specialisation

The New Hierarchy

Having outlined the basic meaning components of the complex whole in Part IV, we are now going to deal with structuring these components more precisely. The architecture of complexity means a new structure, the New Hierarchy, which is, primarily, formed by specialisation. Usually, the concept of hierarchy is understood as resulting from division and addition. This methodological principle presupposes that the object can be divided into parts and all parts added together make up the whole, as is, for instance, the case with the hierarchy in generative grammar. The starting point is the artificial term of the sentence *S*, which is divided into parts, NPs and VPs. All these parts are artificial parts, constructed to describe an artificial object which allows for such a method. Method is however not the defining element in New Science. Method depends on the object.

The object of New Science is complexity. Before going into more detail in the field of human action and behaviour, let me point to the general structure of complexity. New Science is structured by the general principle of the new hierarchy which connects natural and human sciences, ‘the whole structural interconnection of all the sciences’ as Feynman (1964) revealingly explained. Addressing ‘things like evil, and beauty, and hope’ on the one hand, and ‘the fundamental laws’ of physics, on the other hand, he states

that the right way, of course, is to say that what we have to look at is the whole structural interconnection of the thing: and that all the sciences, and not just the sciences but all the efforts of intellectual kind, are an endeavour to see the connections of the hierarchies, to connect beauty to history, to connect history to man’s psychology, man’s psychology to the working of the brain, the brain to the neural impulse, the neural impulse to the chemistry, and so forth, up and down, both ways. And today we cannot, and it is no use making believe that we can, draw carefully a line all the way from one end of this thing to the other, because we have only just begun to see that there is the relative hierarchy.

Now let us return to our question of structuring the basic components of meaning in the field of human action and behaviour. We start from the fundamental structure of meaning which indicates the components and the relation among them (Figure 7 above):

interest [purpose (reference and predication)]

The structure does not mean addition but internal dependencies of the components on the interest-guided purpose. Trying to find ‘things out’ leads us to focus on the purpose, or on specific components which might hide the real purpose, because it is the purpose, which can open up the complex. The complex consists of components dependent on rather indeterminate variables. We cannot grasp them all at once but have to approach them by *adaptation*.

The question is: What does ‘adaptation’ mean precisely? To my mind, human nature is endowed with basic mental states which induce human beings to find out where they are and where they want to go. At the start, there is an interesting inborn feature, called ‘curiosity’ in everyday language use, and ‘*focusing attention*’ by Simon (1983). Focusing attention represents the first step and means particularising components which might be pertinent in the actual situation. Focusing attention is a crucial feature of orientation in the complex (Weigand 2010, 64–67). The core of adaptation, in my view, consists of grasping simultaneously as many variables as possible and proceeding step by step by including further variables. What is important is that the *grip on pertinent variables* presupposes some *knowledge* about what is at stake. As observer we mostly have only restricted knowledge.

‘Focusing attention’ presupposes that adaptation does not represent a trial-and-error process. To my mind, we follow some *guiding line from standard cases to particular ones*, even if not always consciously. We first focus our attention on finding out regularities, i.e. standard or normal cases, and then look for specific circumstances and proceed to more particular cases by making individual inferences. The complex is not chaos nor stable. Possibly changing any moment, it is a mix of order and disorder, of rules and chance, of generalization and individualization. Coming to terms with a world of non-equilibrium requires mediating between order and disorder by following regularities as far as they go and going beyond rules when they come to their limits (Weigand 2010, 65):

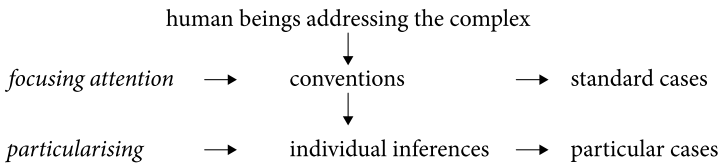


Figure 13. The process of adaptation

Trying to find out what is at stake by *proceeding from standard cases to particular cases* means structuring the complex by *specialising*. Specialising presupposes that the complex whole is *decomposable* (Simon 1962). There are simple *one-phase*

games which rather clearly indicate the purpose and need no adaptation, and complex *multi-phase games* which require negotiating and specialising the complex whole. The New Hierarchy is *not a hierarchy of knowledge*, as assumed in traditional approaches but a *hierarchy guided by purpose*. Human beings are always at the centre, and, if necessary, capable of establishing ‘compartments’ (Nurse 2020) by specialising the purpose.

There is *not only specialisation of the whole but also of the components*. Specialising does not establish fixed patterns. It is an interplay of compartments in the hierarchy of complexity, which provides *order in chaos* in distinguishing sub-purposes or speech act types, propositional events and conditions of action. The whole process can also be seen as a process of specialisation of what is at stake, of the purpose and the event the purpose relates to. Specialising the action in our highly civilised societies is not determined by situations but by *specialisation of sub-purposes* which had to be introduced by ‘division of labour’. Living and working become different activities, working is divided into special types of work which require expert knowledge and training. As a result specific organizational structures are needed which lead to the establishment of distinctive *institutions* (Weigand 2010, 66):

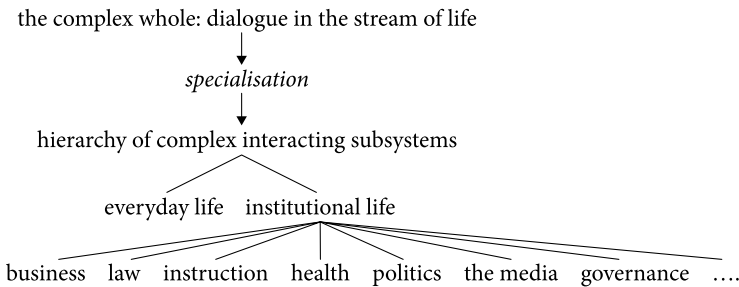


Figure 14. Specialisation of compartments by ‘division of labour’

Adaptation requires making a choice which is predesigned by our biological and cultural nature and dependent on actual occurrences. It is not any process but verified as *evolutionary adaptation* (Simon 1983). Starting from the meaning structure of the complex whole and proceeding by specialising the components resembles a *zigzag journey* in order to come to an understanding, as we will see in more detail in Part VI when addressing a ‘grammar of performance’.

1. Specialising the purpose

The term purpose comprehends the whole purpose of a game as well as the specialised purpose of components, such as speech acts. The process of specialisation is best illustrated by deriving all speech acts in a speech act typology. Purpose is the decisive concept characterizing the animate area, according to Nurse (2020). For human beings I suppose that their general purpose of ‘coming to an understanding’ derives from *mental states* which are, from the outset, dialogically directed according to human nature.

Specialising the purpose by derivation is the only way to get grip on the multiplicity of action in performance. This is also confirmed by taking a *look at the literature* on basic speech act types. You get lost in ever more divisions of categories, for instance, in approaches on exploratives (Krallmann and Stickel 1981) or directives (Hindelang 1978). I have dealt with the whole process of specialising speech acts occurring in performance in detail in my book on the Mixed Game Model, in part also in *The Routledge Handbook of Language and Dialogue* and in other publications. In particular, in Weigand (2010), I not only derived all concrete speech act types but also argued in detail about the seeming problems discussed in the literature, for instance, whether speech acts can be defined by speech act verbs. I will therefore *restrict myself* here to *outlining the basic process* by specialising the purpose and the proposition.

The dialogic nature of human beings’ actions and behaviour is mirrored in every speech act. It *goes beyond* ‘the dialogic self’ of Hermans (e.g., 2012) or *intersubjectivity* (Zlatev et al. 2008) and defines the species not by the ability of thought but by the ability of competence-in-performance. Human beings are endowed with finding their way in the maze of multiple possibilities of action and reaction. Specialising does not mean some cognitive concept but relates to the purpose of action.

The speech act typology derives each speech act in the two-part sequence either as *initiative action* or as *reaction* in the two-part sequence. This brings about a paradigm change from Searle’s monologic and philosophical theory (e.g., 1969) to New Science of dialogue and performance. Searle’s speech acts are defined by philosophical statements without verification in performance. Weigand’s dialogic speech acts, by contrary, are speech acts as they occur in performance. They are verified by human nature from the outset. The dialogic relation between action and reaction is not defined by the empirical criterion ‘turn taking’ or the order in the sequence, but defined by meaning, more precisely, by the interrelation between the initiative and reactive act.

Usually, the basic mental states are considered to be the states of belief and desire. In my book on the Mixed Game (2010), I derived all speech act types from

these two mental states. In the meantime, however, I became convinced that we need a third mental state, the state based on a claim to validity. Wilson (1999, 186) refers to ‘*contract formation*’, which, according to him, “is a human trait as characteristic of our species as language and abstract thought”. I would therefore like to start with three basic mental claims, a *claim to truth, volition, and validity*. It is peculiar of the claim to validity that it is made and put to action at the same time if it is institutionally backed, as we know from the speech act type of declaratives. No separate reaction is needed. The claim to validity needs some *power* to be based on. Power can be *institutional, legal or also the routine of conventions* in everyday games, according to Willard (1989, 73) called ‘conventional obligations’.

There are many issues when dealing more precisely with individual speech acts and utterances. I will return to some of them later. It is in the nature of complexity in a world of non-equilibrium that not everything can be classified precisely.

The *meaning of the reaction* is dependent on the initiative act. It is derived within the dialogic unit of action and reaction by the *internal dependency of making versus fulfilling the same claim*. In this sense, the initiative claim to truth and volition postulate a certain reactive speech act and thus create the dialogic unit. The realization of the dialogic unit is, of course, dependent on the circumstances of a world in non-equilibrium (Part VI).

Basic speech act types can thus be derived in minimal dialogic games, starting from the general purpose of ‘coming to an understanding’. They will then be specialised to derived types by specific dialogic claims. The process of *specialising minimal games* can be illustrated by the following figure:

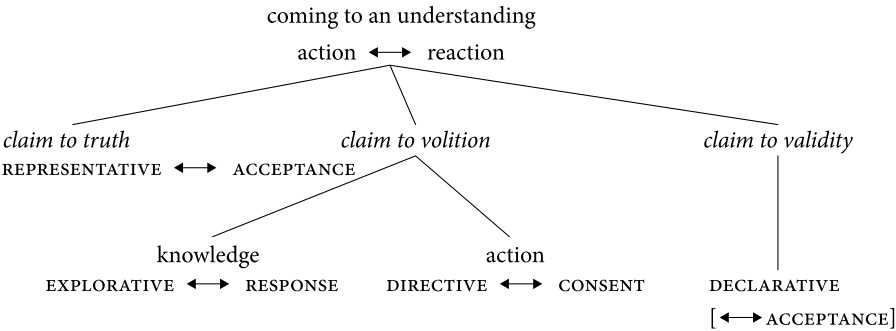


Figure 15. Basic minimal games

Searle’s class of ‘*expressives*’ is not included in the hierarchy of basic games. It is heterogeneous and contains, in most part, declaratives such as ‘congratulate’ or ‘condole’. There are also representatives expressing some emotional involvement.

I consider them as derivation of the representative purpose and will turn to them below (see also Weigand 2010, 166f.).

I also differ from Searle in that I consider the human desire to get information to be a basic need derived from a claim to volition which results in an own basic type of *EXPLORATIVE* game.

To sum up

The hierarchy of the complex whole starts with basic needs and purposes, determined by mental states, and proceeds by specialisation. Specialisation means *decomposition* or derivation of ‘*compartments*’ (Nurse 2020) by deriving sub-purposes from the super-ordinated purpose. The unit is the dialogic sequence of action and reaction. Specialising the purpose of the initiative function results in specialising the corresponding reaction. In my book on the MGM, I developed a nearly complete dialogic speech act typology by specialising the purpose. Taking account of insights gained in the meantime, the guidelines can, in principle, remain the same but details require some modification. Moreover, the typology to be expounded here focuses on principal lines of derivation, not so much on details, as in the MGM (2010).

1.1 Declaratives

In my book on the MGM I started from the assumption that *declaratives* are not derived to sub-purposes but only differentiated by propositional criteria. I am not so sure nowadays and think that the declarative purpose itself can be derived to subpurposes dependent on the basis they rest on: *institutional power* or *conventional obligations*. I would no longer describe the declarative power as ‘creating world’ but as ‘creating validity’. The difference is then where force comes from. In this way, derived declarative forces can be distinguished as follows:

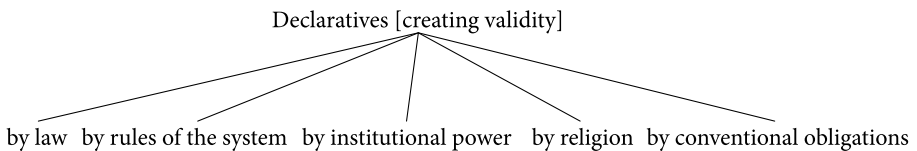


Figure 16. Specialising the declarative purpose

The declarative force need not be explicitly expressed by *I herewith declare* ... It can as well be expressed by some conventional syntactic form issued in the appropriate environment by the person entitled to. Here are *a few examples* for each type:

- By law: the verdict of the judge: *be declared to be guilty, you are sentenced to ...*
- By rules of the system, e.g., in chess: *Checkmate!*
- By institutional power, e.g., by the chairperson: *The meeting is opened.*
- By religion or supernatural forces, e.g., ‘creating light’ by *Es werde Licht.*
- By conventional obligations: This is the most weak class which only exists for human beings who keep to some social behaviour, for instance, politeness rules:

Thanks — you are welcome.

My condolences — Thank you.

I apologise for ...

What I thought to be propositional differences are differences of the power that creates validity, ranging from laws to conventions. The issue is: How does this power become action, how is the declarative force expressed? In principle, this is a question of a ‘*grammar*’ of *performance*. I will turn to it in Part VI and will only briefly comment on it here. A ‘grammar’ of performance is completely different from the term ‘grammar’ in traditional grammar or in ‘modern linguistics’. Whereas ‘grammar’ in modern linguistics signifies the system, by definition a rule-governed pattern, a ‘grammar’ of performance describes how human beings proceed in dialogic interaction on the basis of principles of probability, ‘embedded’ in a world of non-equilibrium. Declaratives are a crucial component of such a ‘grammar’ of performance. Declarative validity is expressed by *performative utterances* which comply with the conditions of the environment. They not always need a performative verb, as can be seen in the examples above.

The *reaction* plays a specific role with declaratives, because in many cases no reaction is allowed, for instance, in court. The declarative utterance creates validity, the reaction of everybody’s acceptance is presupposed. No confirmation is necessary. Declaratives by conventional obligations, however, mostly expect a reaction.

Conventional obligations can also be sequence-dependent, as in the case of ‘*promises*’. Contrary to Searle, promises do not represent an own basic class of ‘*commissives*’. The obligation only means strengthening the force of consent by the position in the sequence, the fourth move in a directive sequence (Weigand 2010, 178).

1.2 Exploratives

Exploratives are speech acts based on human beings’ *mental state of desire to get to know*, a desire which, *contrary to Searle*, is fundamental and cannot be subsumed under the category of directives (Weigand 2010, 147ff.). What exploratives have in common with directives is the claim to volition, which can aim at knowledge, in case of exploratives, in contrast to future action in the case of directives:

EXPLORATIVES	↔ RESPONSE
claim to volition	
aimed at knowledge	
DIRECTIVES	↔ CONSENT
claim to volition	
aimed at future action	

Figure 17. EXPLORATIVES VERSUS DIRECTIVES

The claim to knowledge and its specific reaction of RESPONSE justifies *an own basic type of purpose*, which can be *further specialised* as ‘knowledge in order to know’, as ‘knowledge in order to act’, and as ‘knowledge in order to create validity and reliability’. Consequently, the reaction aimed at by the explorative speech act will be a representative, directive or declarative reaction (Weigand 2010, 158):

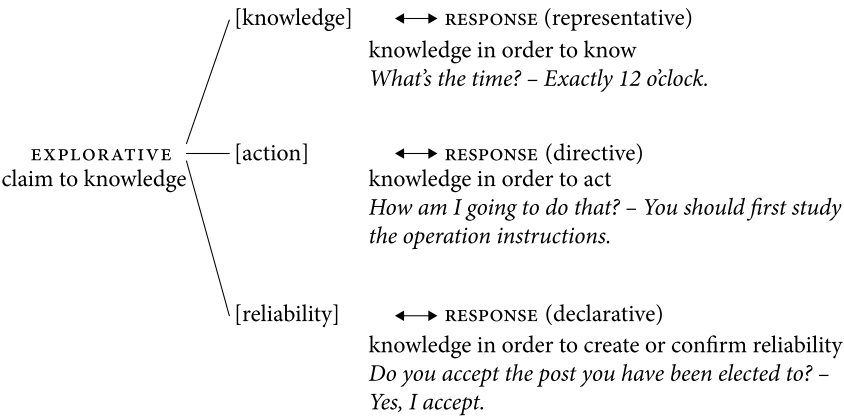


Figure 18. Specialising the explorative purpose

EXPLORATIVES as reaction are not included. If an explorative is followed by another explorative, for instance,

- (16) A Do you have sky dry on your notebook?
 B What do you mean by 'sky dry'?

the explorative reaction opens up an internal dialogic phase of clarification which is sequence-dependent and subordinated to the initiative act. We will take up this issue in Part VI, relating to syntax.

The explorative minimal sequence can, however, be extended by taking the representative RESPONSE as initiative for another phase, as in the following example (Weigand 2010, 148):

- (17) What did you do yesterday? – We went climbing. – Oh, always sporty.

In the literature, we are, on the one hand, confronted with approaches which want to establish a three-part sequencing principle (see above Part III 2, and below Part VI). On the other hand, we are confronted with sophisticated terminological differences between the terms 'response', 'reply' and 'answer', in German between 'Antworten' and 'Erwiderungen' (Weigand 2003, 84f.). I do not think that these *terminological problems* are worth dealing with in detail. As I already clarified in Weigand (2010, 148), if I need a defined term, I use the term RESPONSE for the reactive speech act which fulfils the claim of a preceding explorative, and the term 'reply' in the general sense of a positive or negative reaction after an initiative act of any sort. A reaction of reply can also be elusive, i.e. avoid fulfilling the claim of the preceding act. In this sense, a RESPONSE and a CONSENT are different reactions, whereas a 'reply' can include a CONSENT. The use of the term 'answer' is not precisely defined, nor are the terms 'response' and 'reply' closely restricted to their defined use. They are simply often used as words of everyday use.

Purposes are related to propositions. In the case of exploratives, however, it seems that there are no specific correlations between the explorative purpose and the proposition. Exploratives can relate to anything. Specific features of the proposition cannot be used as features of specialising the purpose in this case.

1.3. Directives

Like exploratives, the purpose of DIRECTIVES goes back to a claim to volition which however aims at an action by the dialogue partner. The difference is clearly marked by the reaction of CONSENT to directives:

DIRECTIVES ↔ CONSENT

Figure 19. The directive game

The claim to volition is directed to a future practical action or change of behaviour by the interlocutor. As with exploratives, the purpose of directives can be specialised to derived directive speech acts (Weigand 2010, 160f.). In the literature we find typologies which use heterogeneous criteria and distinguish numerous sub-types. If we stick to coherent specialisation of the purpose, the issue is quite different. The criterion used for specialisation in this case is the criterion of decisiveness, or illocutionary strength, by which three derived types of directives can be specialised:

- the claim of an ‘order’ based on the availability of sanctions
- the claim of a ‘request’ relying on mutual cooperation
- the claim of a ‘plea’ appealing to the helpfulness and kindness of the interlocutor

By differentiating the initiative claim to volition we simultaneously differentiate the reactive function of consent. In this way, the following minimal games can be derived (Weigand 2010, 161):

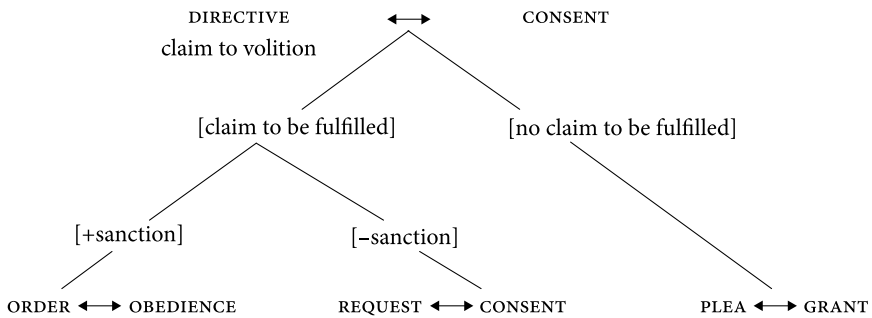


Figure 20. Derived types of directives

The term ‘sanction’ relates to legal sanctions or is based on authority. It can even be widened to the risk of ‘losing honour’ or ‘not being accepted in the community’ by a feature of the proposition (see below 1.5.3).

It is interesting to see *by the following examples* that the action type becomes evident by features of the action condition, the surrounding and the acting people. It is not a case of ‘constructions’ (Ungerer and Hartmann 2023), form-meaning pairs, which simply continue the line of modern linguistics. It is a case of purpose and action conditions that regulate interaction.

ORDER (father to young daughter)

(18) A You’re home at 8 o’clock!

B OK

REQUEST (among friends)

- (19) A Can you bring a glass of milk, please.
B Yes, certainly.

PLEA (e.g., between customer and salesperson)

- (20) A Would you please put the book aside for me for one day?
B Yes, for one day, but no longer.

Proposals and desires are sometimes also classified as directives, if the classification is made more or less intuitively from the level of expressions as in the literature. They are, to my mind, representatives (see below).

1.4 Representatives

REPRESENTATIVES are a highly complex class. To be clear: they are not defined by 'truth' but by a 'claim to truth' which is not an abstract constructed item but an action by dialogic individuals based on their *mental state of belief*. Human beings as individuals have different views about the world, different beliefs, but as dialogic individuals they aim to come to an understanding. This is the basic starting point in the hierarchy of representative speech acts:

REPRESENTATIVE $\leftrightarrow$ $\pm$ ACCEPTANCE
claim to truth

Figure 21. The representative game

I elaborated the multiple subtypes in my book on the MGM (Weigand 2010, 164ff.) and do not aim to describe them here completely. Again, as was the case with directives, the criterion on which the hierarchy is based is the *strength of the illocutionary force* which can vary from a strict, uncompromising claim to a claim that leaves other possibilities open:

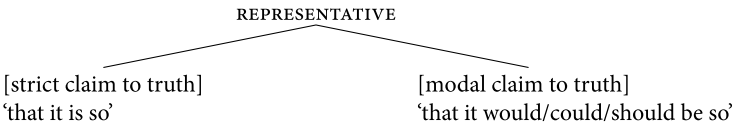


Figure 22. Derivation of the representative game

Both claims to truth, the strict as well as the modal, can be variously specialised further. Let me start with the branch of the strict or *simple claim to truth*. A basic distinction to be made refers to the feature whether truth is taken to be clear or empirically evident or whether it is to be proved. The question is what can

count as proof. ASSERTIVES aim at a speech act of acceptance: the speaker wants to have his/her view confirmed. This cannot be based on faith but requires reasons and arguments (Weigand 2010, 163):

- | | | | |
|------|--------------------------------|---|--|
| (21) | Our economy is going downhill. | ↔ | Unfortunately you're right there. |
| | ASSERTIVE | | ACCEPTANCE |
| (22) | Our economy is going downhill. | ↔ | How can you say that? I don't see it that way. |
| | ASSERTIVE | | ACCEPTANCE _{negative} |

In the case of doubts or objections, the claim to truth must be negotiated by putting forth arguments pro and contra (Weigand 2006a).

Not every assertive speech act can rely on rational arguments. Sometimes we have a certain *feeling* that something is true. In this case the interlocutor cannot do other than believe it:

- (23) Doris is hatching something up. — How do you know that? — I've got a feeling.

There is another speech act type which I allot to the simple claim to truth even if its truth is neither based on rational arguments nor on empirical evidence. I call this type IDENTIFIER:

- (24) What kind of herb is that? — That's St. John's wort.
What kind of tree is that, the one that has a wonderful scent? — That's a lime tree.

This type of speech act has mostly been ignored in speech act taxonomies. Identifiers are based on knowledge which relates to *definitions*. They give objects a name not in the sense of declaratively creating the name but in the sense of identifying the object in relation to existing nomenclature.

We normally expect identifiers to be accepted. They can be thrown into doubt if the speaker's competence is questioned. They can be justified by explanation or consulting a reference book.

In the examples above, identifiers appear in reactive position after an explorative speech act. They can also be near-initiative, for instance, in lessons which are intended to instruct and to impart knowledge. In this case, they are introduced as terms in a didactic game as if an explorative speech act were preceding them:

- (25) What you can see here in this picture, is a very special type of fish: the Eurasian dolphin.

Quite another speech act is the type of representatives which impart new information. I call them INFORMATIVES. The feature 'new' is not an independent fea-

ture attributed to an object but a predicate in the mind of the speaker who might assume that the message is new and interesting for the interlocutor. Normally, the truth of the news is believed by the interlocutor but, in principle, it could also be called into question and be taken as ‘fake news’ or dependent on pre-evaluation by the media.

Informative speech acts usually aim at BEING TAKEN NOTE OF by the interlocutor or at a COMMENT:

- | | | |
|----------------------------------|---|-------------------|
| (26) Hans has got married again. | – | Oh, I am pleased. |
| INFORMATIVE | | COMMENT |

However, if the interlocutor responded explicitly *I take note of it*, this could have additional meaning in everyday dialogue, something like: ‘No comment/I’ll refrain from commenting.’

What is called ‘new information’ here, has been dealt with quite differently in the past, mostly in terms of ‘theme/rheme’ or ‘topic/comment’. The issue of what counts as ‘given’ versus ‘new’ was central and largely discussed in the Prague school of Functional Sentence Perspective. It was always difficult for me to understand how the quality of ‘new’ could be contributed to sentence constituents according to rules without taking account of the individual speaker’s action.

Beside INFORMATIVES, there are also two other speech act types which do not require to be proved, CONSTATIVES and EMOTIVES. CONSTATIVES are specialised by a claim to truth for something that seems obvious. ‘Obvious’, first of all, refers to what can be empirically stated. However, also internal states of the speaker can be taken as ‘obvious’:

- | | | |
|--------------------------------------|---|-------------------------------------|
| (27) Look, the tree’s got buds. | – | Oh yes, spring’s coming. |
| CONSTATIVE _{external world} | | CONFIRM |
| (28) I don’t feel well today. | – | I believe you, you don’t look well. |
| CONSTATIVE _{internal world} | | BELIEVE |

EMOTIVES, too, make a statement about the inner world but also imply some emotional affect. I call them ‘emotives’ in order to avoid confusion with Searle’s class of expressives (see above). Emotives are occasionally introduced as an own action class, for instance, by Bühler (1934/1982, 28), who calls them “Kundgabe der Gefühle”, which means more than a simple statement and implies emotion. However, an emotional statement represents a derived representative purpose, not a basic purpose as in Bühler’s classification. If the emotion is overwhelming, the purpose is different from a simple statement and can also be expressed by a special sentence type correlated with a reaction of EMPATHY:

- (29) What a wonderful view! – Yes. Wonderful.
 EMOTIVE EMPATHY

The fact that there is a special sentence type to express EMOTIVES must not induce us to equate a category of expression with a category of meaning. The correlation between expression and function is by far not 1: 1. In the literature, emotions are not uniformly dealt with. In traditional grammar, such as the Duden grammar (1995, 591), they are dealt with as ‘exclamations’ at the level of grammar, not at the level of speech acts. Whereas Searle ignores emotives, Bühler exaggerates them by hypostatizing them as a basic functional type. There are various other expressions for emotives, not only the sentence type of exclamation, but also, for instance, interjections and particles.

Before we go on to specialise the modal branch of representatives, let me illustrate the derivation achieved so far by the following figure:

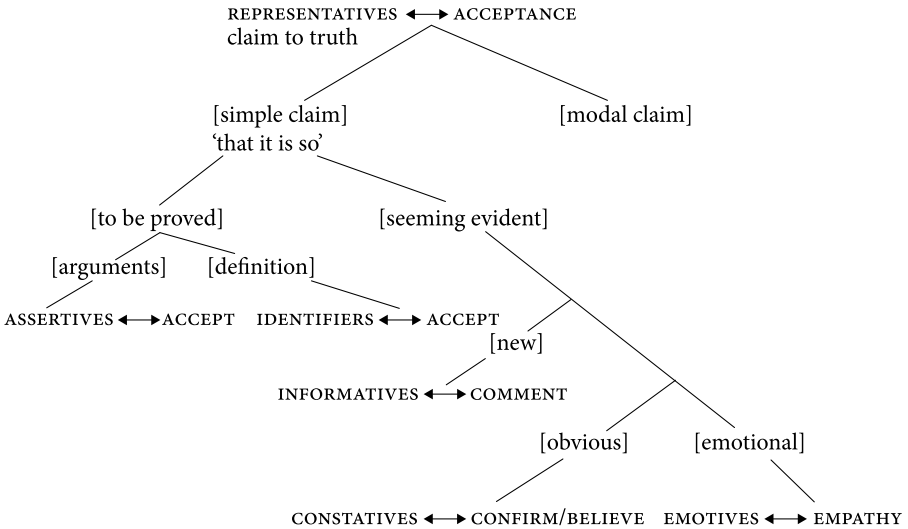


Figure 23. Derivation of the simple claim to truth

The *modal claim to truth* is a claim put forth in representative speech acts which do not relate to existing reality but to hypostasizing *potential realities* dependent on the speaker’s mind and conditions of the surroundings, social as well as natural. In principle, there are three types of derivation: ‘that it would/could/should be so’ (Weigand 2010, 168ff.). To some degree, this distinction coincides with von Wright’s modal logical description (1969, 5f.) which distinguishes between an epistemic logic of certainty, a doxastic logic of belief and a deontic logic of norms.

The type of derivation which makes reality dependent on a condition ‘it would be so if ...’ represents the type of **CONDITIONALS** variously dealt with in logic. Conditionals aim at acceptance or belief if they relate to the speaker’s inner world:

- (30) If we had a different government, ↔ You’re right.
 things would be better.
 CONDITIONAL ↔ ACCEPTANCE
- (31) If we had a different government, ↔ I believe you.
 I wouldn’t be able to stay here.
 CONDITIONAL ↔ BELIEF

The term ‘conditional’ is used in the literature in various ways (e.g., Hancher 1979, 5; Ohmann 1972). For our definition it is decisive that the claim to truth is dependent on the condition, i.e., the conditional clause does not represent an own speech act.

There are other modalised representative speech acts, among them **DELIBERATIVES** which express the possibility of ‘it could be so’. We not always express the claim to truth with assertive definiteness but also think about what *could* happen:

- (32) John might come. No, that’s not possible/I don’t believe so.
 John will probably come. I don’t think so.
 I suppose John will come. You may be right.
 DELIBERATIVE ↔ ACCEPTANCE

Even if the reactive speech act can contain the speech act verb *believe*, it can be classified as **ACCEPTANCE**: we accept the possibility of an action or event and could give rational reasons for it.

A deliberative speech act can also be bound to a condition:

- (33) If the sun didn’t exist, it could be possible that there wouldn’t be life on earth.
 – Yes, that’s true, that could be possible.

In the literature, deliberative speech acts are mostly dealt with by starting from the expression side, for instance, by speech act verbs or adverbials. Epistemic logic also differentiates degrees of the deliberative claim to truth by starting from adverbials such as *possibly*, *perhaps*, *presumably*, *probably* in contrast to the simple claim expressed by adverbs such as *certainly*, *surely*, *definitely*, *undoubtedly*. They all ignore the fact that there is no direct correlation between expressions and functions.

Besides **CONDITIONALS** and **DELIBERATIVES** other types can be derived: **DESIDERATIVES** and **NORMATIVES**. Both specialise the purpose of representatives

to ‘it should be so ...’, which can relate to desires or to norms. We can state desires without emotional involvement. I would then assign them to **CONSTATIVES**. We can however also express a desire by desideratives if we are emotionally involved. This can even lead to the use of special means, such as:

- | | | | |
|------|------------------------------------|---|-----------------------------------|
| (34) | If only there would be more jobs. | ↔ | You’re right, we’d all like that. |
| | DESIDERATIVE | | ACCEPTANCE |
| (35) | Hopefully, it will work this time. | | I believe that you’re nervous. |
| | DESIDERATIVE | | ACCEPTANCE |

The claim ‘that it should be so’ can also be a normative claim which tells us how we should act or behave:

- | | | | |
|------|--|---|---------------|
| (36) | You should be stricter with your daughter. | – | You’re right. |
| | NORMATIVE | | ACCEPTANCE |

In the literature, normative speech acts are often dealt with as directive speech acts. The corresponding reactive speech act, however, unambiguously decides that they belong to representatives. Normatives aim at ‘acceptance’ of the norm. A speech act of ‘consent’ might indirectly be implied.

Normatives can be combined with a deliberative function:

- | | | | |
|------|---|---|---------------------|
| (37) | You should probably be stricter with your daughter. | – | You might be right. |
|------|---|---|---------------------|

There are also speech acts which tell other people what they should do in the sense of ‘*advice*’ or ‘*recommendation*’, which are often dealt with as directive speech acts. I will deal with them below as representative speech acts specialised by the proposition (1.5.4).

We can now illustrate the derivation of the modal claim (Figure 24, see also above Part I, with regard to the distinction between science and philosophy):

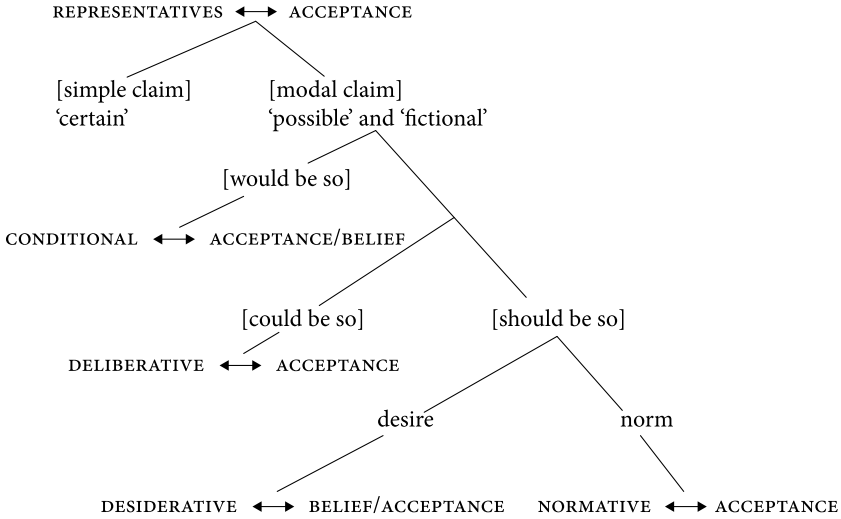


Figure 24. Specialising the modal claim to truth

In principle, the distinction between the simple and the modal claim corresponds to the distinction between what is certain and what is possible. I would include the *fictional* claim of literary texts among modal representatives of possible events. Possibility does not necessarily relate to reality but can mean ‘possible in our minds’. Fictionality is often not explicitly expressed but hangs in the air presupposing understanding. New Science claims to include all ways of language use, everyday, institutional, literary.

1.5 Integration of propositional features

In order to arrive at the speech acts as they occur in language use, we have to include specialisation by propositional features. The action is not independent of the proposition, and the same applies vice versa. There is some inner dependency between the purpose and the event the proposition is about. In principle, the purpose needs a proposition and vice versa the proposition needs a purpose to fulfil the communicative purpose of the speech act. Due to the multiplicity of possible propositions that fit the purpose, propositions are *rather freely combined with the purpose*. Searle’s propositional rules are not sufficient nor are they always adequate. We might restrict propositions to what is possible in our world but we may even go beyond to what is imaginable in dreams or science fiction. Facing performance inevitably means facing variations, vagueness and vagaries of life. Whereas in my book on the MGM I tried to comprehend the propositional specialisation

rather systematically (Weigand 2010, 173ff.), I will select here *a few outstanding examples*.

1.5.1 *Declaratives*

As I outlined above, we can observe that in language use there are various types of DECLARATIVES which are intended to create validity, despite the non-equilibrium of the world they are embedded in. The question is how they arise. As they mainly use different speech act verbs, in my book on the MGM I decided to deal with these differences as specialisation by the proposition. Separating force and proposition is however questionable in case of declaratives. I therefore think the differences are better explained by reference to the power that creates validity (see above Figure 16).

1.5.2 *Exploratives*

Contrary to Searle, I introduced EXPLORATIVES as an own type of action and defined it by a claim to volition aimed at knowledge. Such a claim is justified by the specific reaction of RESPONSE in contrast to CONSENT in case of directives (see Figure 15). The reaction can also be commented on in a seemingly three-part sequence, which however is analysed as two two-part sequences:

- (38) *What did you do yesterday?* ↔ *We went climbing.* ↔ *Oh, always sporty.*
 EXPLORATIVE ↔ RESPONSE
 REPRESENTATIVE_{informative} ↔ COMMENT

According to the basic two-part sequencing principle (see Figure 6 above IV 2), the reaction can secondarily be taken again as initiative.

The claim to knowledge, which defines exploratives, can be specialised according to the type of knowledge (see Figure 17 above V 1.2): knowledge in order to know, in order to act or in order to create reliability. This functional specialisation corresponds to REPRESENTATIVE EXPLORATIVES, DIRECTIVE and DECLARATIVE EXPLORATIVES respectively.

We are now going to ask which propositional patterns can be distinguished. The question of the criteria that could be applied turns out to be a rather difficult question. In the literature there have been attempts to distinguish explorative actions according to different *thematic* types (e.g., Hindelang 1981), which however remain unclear and arbitrary. Mostly explorative actions are distinguished by syntactic criteria which lead to the *distinction between sentential or yes-no questions and word questions*. Declarative exploratives always seem to be sentential questions whereas representative and directive exploratives can be sentential as well as word questions.

- (39) *Declarative*: Do you accept the will?
- (40) *Representative*: Are you coming? – When are you coming?
- (41) *Representative/directive*: Shall I go to the doctor? – When should I go?

According to Lyons (1977, 760), the distinction between sentential questions and word questions represents a *universal distinction* which is independent of the specific utterance structures of individual languages. It is however difficult to grasp this distinction in a way that it can be useful for specialising propositions at the action level. According to action criteria we can distinguish propositions with respect to the expected reaction. Sentential exploratives aim at an action: representative, directive or declarative, whereas word exploratives aim at specialising a constituent of the proposition, or even the whole proposition:

- (42) What could have happened?

In this way we grasp a *propositional difference by reference to the expected reaction*. We not only want to get any knowledge but, for instance, in a directive explorative we want to get ‘*advice*’ or ‘*instruction*’ (see below the derivation of representatives).

1.5.3 Directives

Directives comprehend the derived purposes of an ORDER, a REQUEST and a PLEA which are correlated with a specific reactive speech act of OBEDIENCE, CONSENT and GRANTING. As with exploratives, *specialising the proposition is not an easy operation*. As soon as we rid the proposition from the restrictions of logic or syntax, we face the whole problem due to the integration of components of meaning in performance. Propositions are no longer an independent part but represent a component in the whole game, dependent on the individual speaker and circumstances of the environment.

Let us start with an especially difficult example:

- (43) Jump off the wall.

Can we understand this utterance by analysing the traditional structure of syntax or applying empirical corpus analytic methods or by constructing form-meaning pairs as in construction grammar? New Science is not a science of method but a science of finding out what is at stake. We can easily imagine a situation where the utterance is used as directive speech act: parents telling their kids what to do when facing the difficulty of climbing down the wall. But this utterance can as well be used in quite another way depending on the action conditions when jumping off the wall is a *risky endeavour*. It becomes immediately obvious that there

is more about the issue of the proposition and the whole directive speech act. Is it yet a directive speech act? As far as the action conditions comply, we are confronted with a *challenge*. Challenges, to my mind, also belong to directives but they are different from simple requests. Challenges pose the risk of 'losing honour', which can be considered as some sort of 'sanction'. Whether the proposition indeed poses a risk is dependent on the conditions of the game, such as the age of the interlocutor or the height of the wall. The purpose of the utterance, therefore, is, in the end, left to the mind of the speaker.

This confirms that anything depends on human beings who, by their competence-in-performance, are endowed with an ability of adapting and finding their way through the maze of complexity. They are not the species which is defined by thinking or speaking, but the species which has purposes and interests and uses all their abilities, including thinking and speaking, to come to an understanding and settle the vicissitudes of life.

Wunderlich (1976, 159ff.) presented a typology of directives which seems to be, at least in part, based on propositional criteria, among them

- Directives requesting a certain result, e.g.: *Tidy up your room.*
- Directives requesting an activity, e.g.: *Go for a walk.*
- Conjunctive requests, e.g.: *Fetch a crate of beer and hand the bottles in.*

The criteria, however, for instance, 'result' versus 'activity', are not convincing. The typology does not go beyond the general assumption that the proposition of directives relates to an action or behaviour in the reach of human abilities. We might also include 'magical directives' (Jakobson 1960, 355) which can exceed the reach of human abilities.

What, in the end, remains from the unit proposition? There is no logical structure but more or less the outlines of an event which is dependent on the purpose of the speaker. Complexity, the object of New Science, limits any attempt of designing a precise picture of specialisation. Nonetheless, we might think about a few lines capable of introducing some order in the complex whole. For reasons of coherence, the lines should start from the purpose of directives and proceed via derived purposes to specialising propositional features.

Directives of the type of an **ORDER** rely on some sort of sanction or means of exerting pressure. It would be contradictory in itself to combine such a function with an action or behaviour carried out voluntarily. Utterances like

(44) Be nice.

can hardly be an order. Conversely, an utterance such as

(45) Clean my shoes.

is usually issued as an order. Consequently, an order leads to specialising the proposition as expressing an action or behaviour which is normally only reluctantly performed. Over and above such general assumptions, it is difficult to design specific specialisations of the proposition. If we widen the term 'sanction' to include 'lost honour' or 'not being accepted in the community', we can include 'challenges', as dealt with above.

REQUESTS do not rely on sanctions but are nonetheless issued with a claim to fulfilment. Such a claim mostly presupposes readiness to cooperate or some own interest in the requested action. Propositions of requests can therefore be described as 'cooperative action or behaviour'. The interlocutor's willingness to cooperate will hardly be achieved in the case of an action or behaviour which is to their disadvantage.

REQUESTS and **PLEAS** are mostly not distinguished by specific devices of expression. The difference is a functional one, 'having' or 'not having a reasonable claim to fulfilment'. In contrast to requests, in pleas the speaker *wants* the interlocutor to fulfil the purpose but *cannot make a claim* to fulfilment. Pleas intend to *persuade* the interlocutor of a certain action or behaviour. However, whether the interlocutor complies with the plea, is completely up to them. To issue a plea therefore only makes sense under the condition of a certain social relationship which allows the speaker to expect the interlocutor to fulfil the plea for the speaker's sake or, at least, to consider fulfilment possible. This condition need not be explicitly expressed but relies on joint understanding of the situation. The expected action or behaviour represents a favour or help voluntarily done out of kindness or love. If the social relationship is deep enough, the plea can also refer to something which demands some sort of sacrifice.

Special emphasis is needed if the plea demands more than a favour. Emphasis is achieved by referring to the importance or urgency of the plea or to some moral commitment resulting from the special social or *emotional* relationship between speaker and interlocutor:

- (46) You can't refuse this request, you know what it means for me. ... you know what I've done for you.
- (47) Don't come home so late, otherwise I'll worry.
- (48) Please, stay alert. If you are tired, drink a cup of coffee or sleep a bit.

For *reasons of politeness*, the directive claim can be weakened and not be explicitly expressed in order not to damage the 'face' of the speaker. An 'order' issued by a chief executive and directed at their secretary can therefore seemingly put forth as 'plea' but remain an 'order':

- (49) It would be nice if you phoned.

(50) I'm asking you to write this out again, please.

The meaning again remains behind the verbal form and demands the acting people's competence-in-performance in the integrated use of their abilities.

There are a few *interesting specialisations of directives* which are very frequent in everyday language use but difficult to describe, for instance, '*asking for permission*'. Asking for permission presupposes the propositional feature of something being forbidden and represents the initiative act expecting a reactive speech act of 'consenting permission':

(51) Please allow me to stay out till 10pm. — All right I'll let you.

(52) May I stay out till 10pm? All right, you are allowed to stay out till then.

Sometimes permission is restricted within limits for specified groups:

(53) Female visitors are allowed till 10pm.

The utterance seems to be an initiative speech act but is, in effect, a reactive speech act of a ban.

Interesting speech acts connected with requests are also '*offers*' and '*threats*'. There are two ways of intensifying a claim to volition: by presents or by punishments, i.e. by positive or negative conditioning, or by offers and threats (Weigand 1997), for example:

(54) Mum, can you wash my hair? Then I'll tidy my room up. — Hm, that's an offer.

(55) Stop smoking. Otherwise you'll have to look for your own flat. — You can't threaten me.

Threats can be further specialised towards 'blackmail' by the use of illegal means or towards the 'announcement of revenge' if the claim to volition has not been obeyed:

(56) You'll regret that.

(57) Just come round to my place!

In the literature, speech acts of *suggestion*, *advice* and *warning* are also attributed to directives. To my mind, they belong to representatives (see below) and are only indirectly directives.

Identifying individual speech acts 'in the stream of life' *demonstrates the whole complexity of the game*: Nearly everything is connected with everything. The decision is made by the individual speaker, depending on purpose, interests and actual circumstances. It is an illusion to conceive of adaptation as a completely analysable process.

1.5.4 *Representatives*

Representatives stand out for their complexity. *Derivation* follows the basic lines of the simple versus modal claim to truth. In my book on the MGM I tried to elaborate them rather systematically. I will here only point to some outstanding examples, including a few specifications.

Let me start with *the line of the simple claim to truth*, and here with **ASSERTIVES**. What can we assert with a simple, strict claim to truth? We assert something which is not evident to direct perception – otherwise the speech act would be a statement – but needs reflection. The proposition therefore describes a state of affairs which is possible, conceivable and could be justified by reasoning. Consequently, assertives show a special affinity to abstract, rational matters, to arguing between thesis and antithesis in theory.

- (58) Language is a system which assigns expressions to contents, as asserted by some linguists.

Empirical phenomena can be asserted if they are not directly perceivable:

- (59) The earth is round, as asserted by Columbus.

The claim to truth of assertives can also underlie evaluations:

- (60) John has a very special relationship with his mother.

Evaluations in assertives, as in this example, are individual predicative evaluations, which in some cases might indirectly have a normative note of ‘it should (not) be so’.

‘WARNINGS’ and ‘ADVICE’ are particular evaluative speech acts which, to my mind, also belong to representatives. In the literature, however, they are mostly dealt with as directive speech acts (e.g., Vendler 1972, 20) or as a separate speech act type (e.g., Searle 1969, 67; Katz 1977, 200ff.). Austin (1962, 40) already considered ADVICE to be assertive. If we advise an action, we assert that it is suitable in a certain problematic situation:

- (61) I advise you to go to the doctor.
 You should go to the doctor.
 If I were you, I’d go to the doctor.
 Go to the doctor.

From the feature of ‘being suitable’ we can *indirectly* deduce that the action should be carried out. This is the reason why advice can be expressed by means of the grammatical category imperative. The imperative as verbal expression however is not correlated 1:1 with the purpose of a directive. In problematic cases, only the speaker knows how the imperative is used.

There is a clear functional difference between a directive and a piece of advice which becomes manifest by the expected reaction. Whereas the reaction after a directive is CONSENT, the reaction after advice is a speech act of ACCEPTANCE:

(62) I advise you to go to the doctor. — You're right, I should do that.

From the fact that the advice is accepted, we can only indirectly conclude that it should be followed.

There is another functional difference, namely the possibility of 'withdrawing' if the advice becomes problematic:

(63) I urgently recommend that you go to the doctor. — No, that's the last thing I want to do. — It was just a piece of advice. You have to make the decision. It's your decision.

With directives the decision to act is made by the speaker, whereas with advice it is left to the interlocutor. The possibility of withdrawing represents a strong argument against classifying advice as directive.

A further argument is the fact that an advice cannot be connected with the particle *please*. If the particle occurs:

(64) Please go to the doctor.

the utterance changes to a directive speech act.

WARNINGS represent the negation of ADVICE and are, therefore, more or less assertive. If you warn against an action, you assert or believe that the action is dangerous, not advisable in a specific situation. A well-known example is Strawson's utterance (1971):

(65) The ice over there is very thin.

which has been differently analysed in the literature (Weigand 1993 in contrast to Hundsnurscher 1990). If it is used as warning, it represents an indirectly directive speech act. It can however also be used as information in a situation where the density of the ice is to be reported. Advice and warnings are evaluative speech acts and therefore different from the neutral speech act of *informing*, for instance in the bank:

(66) What would you advise me to do then? — I am not allowed to advise you, only give you information.

Whereas with ASSERTIVES the claim to truth is not immediately evident but has to be justified by arguments relating to the special proposition, **CONSTATIVES** refer to events the truth of which appears to be manifest. This can be the case if we talk about things which are obvious, either empirically for everybody or internally for

insiders. No real claim to truth is needed. The reactive speech act of acceptance is weakened to CONFIRMATION or, in the case of an internal event, to BELIEF. I do not consider talking about one's feelings as an own basic type of action like Searle's expressives (see above Part V 1).

In speech acts of **EMOTIVES**, mental events are expressed with emotional emphasis. The expected reaction is a speech act of empathy (see Figure 23 above):

(67) What a marvellous view! ↔ Yes, marvellous.

EMOTIVE

EMPATHY

As can be seen by this example, there is an own sentence type for the overwhelming emotional involvement.

There are many more propositional specialisations of the simple claim to truth, as can be seen in Weigand (2010, 192ff.). I will now turn to propositional specialisations of **the modal claim**.

CONDITIONALS are a frequent topic in logical literature (e.g., von Wright 1957). Conditions put the derivation under the hypothesis 'if': 'if it would be so'. This specialisation of the purpose widens the proposition to any possible event, beyond the limits of the natural world. It can relate to an external state of affairs as well as to the inner world of the speaker. Correspondingly, the reactive speech act will be ACCEPTANCE or BELIEF:

(68) If the sun didn't exist, there'd be no life on earth. — Yes, that's right.

(69) If I didn't have my children, I wouldn't know what to do. — I (can) believe you.

If I didn't have my children, I would perhaps go to South Africa now.

Conditionals can also be combined with directives and exploratives:

(70) If you come, phone first.

If you come, would you have an ice-cream with me?

In this case, it is not the directive or explorative purpose which is affected by the condition, but again the representative claim.

Whereas **CONDITIONALS** put the representative claim under a condition, **DELIBERATIVES** make a claim to possible truth: 'it could be so'. The most important deliberative speech act type is, to my mind, *the proposal*. In the literature, proposals are often classified as directives. They are, of course, close to directives but first of all they aim to be ACCEPTED and are only indirectly directives. The devices by which proposals are expressed are not unambiguous devices for deliberative representatives. In problematic cases only the speaker knows how the utterance is meant:

(71) Where shall we go on holiday this year? — Let's go to Paris.

Proposals indicate a possibility of action which is considered to be convenient or useful and can indirectly imply carrying out the action.

As was the case with advice and warnings, proposals *evaluate* possibilities of action. In contrast to them, they relate to an action to be primarily carried out by both the speaker and their partner. The evaluative nature of these speech acts is predicative not normative.

Advice assertive relates to an action of the partner which is considered to be useful

Warning assertive relates to an action of the partner which is considered to be dangerous

Proposal deliberative relates to an action of speaker and partner which could be useful

The difference between assertive advice and deliberative proposals also shows up in the use of different modal expressions, mainly different modal verbs:

(72) I *advise* you to go to Paris. — You *could* go to Paris, you should perhaps go to Paris, I advise you.

(73) I *suggest* we could go to Paris. — We *could* go to Paris, I propose.

These examples however also point to an issue which is important for New Science. It seems that we can structure meaning rather clearly in our mind, for instance, the difference in meaning of advice, warnings and proposals. Expressing these meaning differences, relies, to a great deal, on modal verbs and other modal devices, such as adverbials and particles, and is not fixed, not unambiguous, because dependent on the action conditions of the actual game. I think this relates to a pertinent feature of complexity. Human beings are able to draw the essential threads together and find their way through the maze of performance. They mostly are aware of the relevant meaning differences but expressing them requires integration of various means, verbal, perceptual, cognitive, under various action conditions. To my mind, this is what *competence-in-performance* allows them to do. I will return to this issue in Part VI when we discuss the difficult issue of a 'grammar of performance'.

The evaluative modal claim 'it should be so' mainly relates to **DESIDERATIVES** and **NORMATIVES**. **DESIDERATIVES** trace back to the mental state of desire which can be oriented to any event, realizable or, in principle, utopian. Desires that can be fulfilled relate to the future:

(74) I hope I pass the exam.

Desires that cannot or can no more be fulfilled relate to the past or to utopian events and are often combined with some emotional involvement:

(75) If only I hadn't done that.

(76) If only humans could live like birds.

Again multiple devices can be used to express desideratives.

NORMATIVES are speech acts which set up norms of action and behaviour and aim at acceptance. They are based on the specific purpose to decide on conditions of our lives. Setting up a norm indirectly implies following the norm; normatives are therefore indirectly directive speech acts.

The question is: who can set up norms? This is, to my mind, the question of what distinguishes science and philosophy I have dealt with in Part I 3. The key is the difference between ‘is’ and ‘ought’ and Kuhn’s theorem: “Is cannot imply ought” (Kuhn 1962/2012, 206). The goal of science is to describe and explain events versus the goal of philosophy which is to guide the way how human beings can tackle the vicissitudes of life. In philosophy, this means *morality* as it supports humanity. Morality in this sense can even be taken as scientific criterion if it is in favour of *survival needs* in evolution.

Setting up norms depends on the purpose of institutions and systems which need to regulate their procedures in order to achieve their goals. Mostly such norms are backed by *sanctions*. Norms of everyday life are different. To a great deal, they depend on the actual societal conditions which have become conventional. There might be some sanctions also in this case, but mainly sanctions of losing reputation which are not really binding. Can there, for instance, be a norm of punctuality or comfortableness?

(77) A teacher should be punctual.

Climbing-trousers should be comfortable.

Normative assumptions of everyday life are usually evaluative assumptions. An interesting example are **REPROACHES**. In the literature, we find descriptions of sequences of ‘reproach and justification’, such as, for instance, by Fritz and Hundsnurscher (1975), without clarification of the functional core of reproaches. Reproaches can be variously shaped but, in general, mean: ‘it should not be so’, for instance,

(78) You’ve left the light on again.

In addition, reproaches are, at least to some degree, combined with an *emotional* component of annoyance or anger.

Reproaches aim at a speech act of **ACCEPTANCE** which can be affirmative or negative. If the reproach is accepted, an apology might be expected. If it is rejected, some justification is expected:

(79) You’ve left the light on again. — Sorry, I was in a hurry.

- (80) You've left the light on again. — I did that on purpose, so that people wouldn't think the house was empty.

1.6 To sum up

In part V, complexity has been opened up in the vast network of purposes and sub-purposes, as they can be structured in the New Hierarchy which is the basis of New Science. The New Hierarchy starts from the complex whole and achieves hierarchic structures by specialisation of components. Human beings are at the centre. We cannot go behind the human mind as it has evolved by sociobiological processes. The basic impulse that keeps life going is human beings' needs and purposes, inborn in human nature, and their capability of competence-in-performance which leads them to tackling the action conditions of performance by adaptation.

Specialisation means derivation and presupposes decomposability of the complex. The complex is basically a complex of purpose, as Nurse defines the animate area. The nature of the human species as dialogic individuals determines the comprehensive purpose of 'coming to an understanding'. Specialisation does not relate to the concept of knowledge. According to Simon (1983, 105), 'knowledge is not the Philosopher's Stone that is going to solve all problems'. It is the purpose which is specialised towards subpurposes in the New Hierarchy. Decomposing the complex purpose of 'coming to an understanding' proceeds from basic purposes to derived purposes and to specialisations by propositional features.

In this way, the *new hierarchy forms the structure of meaning* by starting from human nature and proceeding to the vicissitudes of life. Purposes are not autonomous. They determine action and the components of the proposition dependent on action. This does not mean playing with concepts but being guided by purposes. The *transition to realization* requires us to address a *world of non-equilibrium* and to pose the question how human beings can find the thread to pursue their purposes in the maze of performance. I will turn to this difficult question in Part VI.

2. Specialising interests and strategies

Let us continue asking how the basic components of meaning are specialised. We have purposes and needs due to our nature. Purposes might be prompted by interests. I therefore widened the structure of meaning by interests (see above):

interests [purpose (reference and predication)]

However, *what are interests?* To my mind, interests are a *component* of human double nature which requests human beings to *balance their selfish interests and dialogic-social concerns*. As dialogic individuals we can take various positions in the range between the extremes of *total power and total service* for the other individual. I referred to this aspect by ‘Regulative Principles’ in the MGM. The question is whether there is some principle for specialising certain positions. *Human nature is not fully deterministic but leaves space to individual regulation*. Individuality is not only a feature of realization but, to some degree, already included in the structure of meaning. In this sense, interests determine strategies to be taken for achieving them, in general, choosing persuasion or power, as we will see by two authentic examples analysed below (Part VI). To put it in a nutshell: *interests* are a component of meaning, which in performance is realized by *strategies*:

interests ↔ strategies: intentional, individual or institutional
[meaning] [means]

Figure 25. Interests and strategies

Strategies are intentionally chosen by individuals or agencies of society, but can also be due to *conventions pregiven by culture*. According to human beings’ double nature, we can specialise our interests between cooperation and confrontation and individually choose appropriate strategies for our position in the various action games.

The co-presence of deterministic and stochastic phenomena makes it difficult to design *clear principles of specialisation* in this field beyond the basic specialisation into cooperation and confrontation. It is obvious that specialisation is not the same as hierarchy. We might pose the question whether there can be a *rational strategy*, which complies with the subject matter to be negotiated. The subject matter will, in any case, be influenced by the conditions of society, and “the New Society must produce a New Man” (Simon 1983, 98). In the society of today, the guideline can only be ‘*rationality of performance*’ (Weigand 2014) which cannot be abstract order but means purposeful behaviour of coming to an understanding between individuals and society, or ‘*evolutionary adaptation*’ as Simon called it (1983, 35).

An interesting example of specialising our interest is *how to intensify the purpose*. How can we underline our claim to truth or our claim to volition? Beside up- and downgrading the purpose itself, for instance, from a deliberative speech act to an assertion, there are a number of other ways which can be used to optimize our goal, for instance, the *strategies of presents and threats* for strengthening our directive purpose (Weigand 1997). The whole field of *business* is dominated by strategies in our social market society, for instance, *power versus win/win* (Weigand

2010, 117ff.). Whereas interests as components of meaning result from human nature under conditions of non-equilibrium, strategies represent a crucial device of the means and are therefore an important component of rhetoric or how to present one's goal in order to be *persuasive* (Rapaille 2007). Choosing a win/win strategy is not only due to an ethical stance but also often considered to be the successful strategy for achieving acceptance and, in the end, profit.

In addition to the global distinction between cooperation and confrontation, there is another interesting strategy guiding the sequence of interaction. Simon (1983, 87) calls it the '*tic – toc strategy*'. This seems to be a perfect *strategy of persuasion* which, according to Simon, 'does particularly well in contests between different computer strategies.' It calls for taking the benign action until the opponent aggresses; then switching for one round to the aggressive action; and then, as soon as the opponent retreats to the benign action, doing likewise. In this way, *cooperation and confrontation are combined for tactical reasons*.

To my mind, *deceiving* and *lying* also represent strategies, especially if they refer to sequences of action. They cannot be defined by the purpose they seem to have but by a strategy to deceive. This strategy is chosen if the speaker believes to achieve his/her goal more effectively by seemingly meeting cooperative standards (Weigand 2010, 172). In fact, however, *deceiving* and *lying* transgress honestly cooperating. The question is whether *honesty* can be requested as principle of dialogue. Accepting principles such as Gricean cooperative principles results in constructing norms which are outside of performance (Weigand 2010, 122). To my mind, we are here at a point to decide *what humane behaviour means*. Such a decision is, in the end, a *philosophical decision* of the type of 'ought'. Evolution will decide on the way the dialogic species will proceed. In any case, it will be highly desirable that human beings, if acting consciously, protect humanity.

3. Specialising reference

Having clarified basics of reference in Part IV, we can now take a closer look at how reference is specialised in performance. In the framework of orthodox linguistics, reference has been described in the limits of sign linguistics as grammatical semantics, complementary to lexical semantics, or in the framework of philosophy. In philosophy we are lost in endless, mostly logical approaches (e.g., Russell 1905), which are only verified by the philosophical attitude of being superordinated to science, or remain in the field of general statements outside of any judgement by natural language use.

Artificial studies on reference did not stop but fortunately recognized that reference is not the issue of special expressions that can be picked out from discourse

but an issue *integrated* in language use, which means not analysable by separating phrases. Calling an approach ‘integrated’ must not only deal with words and concepts but has to address what ‘integrated’ means. This would however require developing an approach that goes beyond models of the past, such as ‘Systemic Functional Linguistics’, which is the reference point of Fontaine, Jones, and Schöenthal (2023) in their book on *Referring in Language. An integrated approach*. A study of reference on the basis of Systemic Functional Linguistics is, from the outset, restricted by the methodological limitations of this model. Even if the focus is on a ‘functional’ description of referring expressions, the starting point is expressions, including also the relation between units of discourse, not the meaning of reference. *Reference is, however, more than relation*. Integration in this study means the integration of ‘typical and atypical uses’ of referential expressions, which is, in principle, nothing else than distinguishing between rules and exceptions in traditional grammar. It is clear that in this way the model remains in the field of method without problematizing the transition from method to meaning or the notion of ‘integration’ as ‘multidisciplinary’ approach. Even if language use is included as ‘spontaneous discourse’, the focus on discourse as text is not appropriate to language use in performance. The crucial *difference between writing and speaking* is not addressed. Perceptual means, such as *gestures*, do not seem to play a role, or, if they do, they only take a marginal role. Such a procedure ends up in a chapter on ‘reference and metonymy’, far from reference in performance.

Starting from the method will not achieve a description of how reference works in performance. It, inevitably, remains within the limits of orthodox linguistics, considering language as *discourse*, even if using examples of authentic language use (Fox 1987). *Language use goes beyond the verbal concept of discourse*. It is not only text but action in dialogue, not only method but meaning, comprising not only face-to-face dialogue but also written dialogue (Weigand 1996). The example, already discussed above (Example 3),

One for her. — Eve, too.

demonstrates that all the rules so far established in discourse linguistics cannot be the basis of a theory of performance.

Reference in New Science starts from meaning. Referential expressions are a mix of means, used by the speaker in dependence of individual action conditions in a world of non-equilibrium. The relation between meaning and means is not always definite but the result of deterministic and stochastic phenomena. For instance, the dialogue is about two men, and the speaker not always identifies definitely the one he is referring to but speaks of *the other*. Whereas the speaker knows whom he/she means, the dialogue partner is left to suppositions and asks: *who do you mean?* Language use can even include misunderstanding (Weigand

1999). Problems of understanding and misunderstanding can be clarified in the next moves.

The first question to be posed is what 'reference' means. Reference is, in any case, *not only a relation*. Textual reference might be conceived of as a relation between two arguments in the text, but in general, reference is quite another subject matter. Searle (1969), rightly, defined *reference as action*. However, he could not adequately integrate the action of reference in his concept of the speech act. He did not shy away from nonsensical conclusions defining definite reference by the definite article.

Reference belongs to the constitutive meaning components of dialogue. It represents a subordinate action of the speaker expressing the objects to which the dominant action relates. *Objects* are humans, the partners, speaker and addressees, at the dialogical level: who speaks to whom. Objects are also components of the proposition the speaker wants to talk about, humans as well as things and events. These components have been called argument and predicate, long ago in logic, and dealt with as *syntactic categories*. At the level of meaning they are however subactions by the speaker, with 'reference' meaning the *action of creating arguments* in performance.

Reference, in this sense of building arguments or noun phrases, is *differently specialised, according to what the speaker might consider to be useful for his/her purpose*. We want to know

- whether the object we refer to is identifiable as individual or as a class of objects
- where the object is placed, in the outside world or in the mind
- how culture influences the meaning

The criterion '*identifiable*' has been mainly grasped in the past within a network of features, such as '*definite*', '*indefinite*', '*generic*':

- as identifiable unique object: definite
- as identifying a class of objects: generic
- as non-identifiable single object: indefinite

These criteria can be considered as *universal criteria of meaning*. In the literature, they were inadequately introduced according to verbal means, mainly forms of the article. Sometimes also a further specialisation of 'indefinite' is discussed, namely the feature 'specific', in the sense of 'indefinite only for the partner'. This feature manifests that reference cannot be restricted to verbal means of the discourse but intrinsically includes perceptual variables of the situation. It also demonstrates that the object is different if considered from an observer or from an insider. Whereas for an observer the object is non-identifiable, an insider might identify it. Specialising the means represents *criteria of method* but cannot specialise the

action yet. *The action is an action by the speaker.* This highlights again the difference between starting from method versus starting from meaning and from the speaker.

An object may be identifiable for the speaker relating to the *outside world* or relating to what has already *been said or implied*. Even if the object is empirically detectable, *it depends on the beholder, the speaker and his/her interest*, if and how it is referred to. The crucial aspect is that reference is not an entity constructed by the system, but created by an action of the speaker and his/her interest. The object may even be invented by the speaker and only exist in their minds.

The basic component of referring to objects of any kind is differently specialised in *different cultures*. They may not only consider the difference between ‘an identifiable member versus the class’ as basic meaning difference but also include the entity of two members, even expressed by morphological categories in addition to singular and plural. Moreover, it is not enough to refer to objects by pointing. Already in language acquisition, babies combine the gesture of pointing with *da, da*, meaning ‘there, there’. In general, the object needs to be specialised as definite or indefinite and other features by verbal or perceptual means according to the environment.

As we have seen with the example above, reference is completely different in *face-to-face dialogue versus written dialogue*. Face-to-face dialogue demonstrates that it is by far not only verbal means used for referring but primarily a case of perceptual means. Moreover, it is a case for insiders who know the circumstances of the game. Written dialogue, on the contrary, has to replace what is in the mind of the speaker by verbal text, as far as it is desirable. Decisive are not the various expressions, not the constructed ‘function’ of phrases, but reference as an action by the speaker. There might be conventions, which are however not binding. Especially *literary texts* pose their own problem as they leave much to the reader and the realm of art. It is the author who decides about the integration and interaction of verbal, perceptual and cognitive means.

Returning to the approach of ‘Systemic Function Linguistics’ by Fontaine, Jones, and Schönthal, we can highlight the most important insight that starting from models focusing on the method cannot describe reference in the real world. It only reduces the real object to an artificial object which does not exist in performance. We see again: the systems of method are at stake. It is the human being and the conditions of the environment which have the lead. Systems can be of help for organization but not for explication. This is also the reach of AI which makes human efforts of organization much easier (Mitchell 2009). Even if the impact of AI is huge, it remains a method, not the creator of natural complexity.

4. Specialising predication

There is an old dictum, presumably going back to Aristotle, which combines predication with reference as parts of the proposition in the sense of ‘whatever we say, we have to refer to things and say something about them’:

Proposition (reference and predication)

Predication in this sense means ‘saying something about it’. Traditional science stopped here and excluded what we are doing with saying. I always wonder about analyses which take language use as if it is an autonomous object, without a speaker, or saying something without purpose. We must not forget Russell’s principle: ‘man is at the centre’. In performance, *it is the speaker* who says something about objects dependent on his/her *purpose* and conditions of the world. The speaker’s interest goes beyond syntax. Syntax is a matter of FORM, not the key to meaning (see Part VI). Saying something represents a subaction by the speaker who selects what he/she wants to say. The question is *what* we can say about the objects, animate and inanimate, we are referring to, and connected to it: what do we want to say. In principle, this is the question of specialising the ‘*the meaning of it all*’ (Feynman 1998; also Wilson 2015), a question that cannot be completely and precisely settled, due to the complexity of the whole.

Specialising what we can predicate is not a simple matter. In traditional science the question has been dealt with in *semantics and syntax*, which however are no longer independent parts in New Science, but dominated by the purpose of the speaker. Meaning is, in the end, purpose. It is the speaker who predicates, not an abstract system of syntax. *Everything depends on the purpose*.

Let me illustrate this with a simple utterance of a child, a four-year old boy, who has already been confronted with various types of music. When entering the room and listening to the music there, he says:

(81) Beautiful music!

Should we add *beautiful music* in the list of possible collocations at the level of semantics? It is not the system of syntax and semantics, but the speaker who predicates on the basis of his individual competence-in-performance by a speech act of EMOTIVE EVALUATION. This manifests again that *predication is an action* by the speaker, not of semantics or the lexicon.

The question of the ‘meaning of it all’ includes the difficult issue *how predicating could be specialised*. Like reference, predicating represents a subaction dependent on the purpose. The possibilities of specialisation are rather infinite. We might understand ‘all’ in this regard as ‘all meanings expressible’. The *complex* is *however not completely analysable* nor can it be grasped by some ‘creativity

of life’ (Ball 2024). Evolution does not tackle problems by creativity. Evolution includes chance and proceeds in ‘a zig-zag journey’ (Wilson 1999, 47) by *adaptation* of animate beings to conditions of a world in non-equilibrium. This process of adaptation is not an arbitrary process of *concepts*, including even ‘semantic primitives’ (Wierzbicka 1972) or constructing some ‘network of concepts’, or any other method. It is a process of meaning which starts from human abilities and specialises, in the end, according to evolution.

First of all, meanings presuppose physical and cognitive abilities which enable animate beings to recognize them by their senses. Tracing complexity back to human beings’ abilities, makes it possible to specialise the ‘meaning of all’ in a first step according to human abilities. As a *working hypothesis*, we might assume the following list of fields (Weigand 1998, 32):

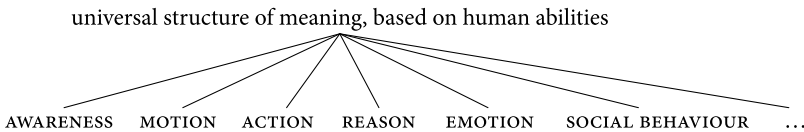


Figure 26. Universal predicating fields

These fundamental fields are intended to comprehend all the types of human abilities which are at the basis for predicating, keeping in mind that a complete, fixed list is not achievable. These basic fields can be *further specialised* according to components of life. Thus, for instance, the fundamental field of AWARENESS can be specialised according to the five senses: awareness by vision, by hearing, smelling, tasting and touching, to which we might add the field of consciousness. Similarly, ACTION comprises the whole field of intentional action which might be a combination of practical, linguistic, physical action on the basis of mental, visual and other intentional activity.

EMOTION represents another fundamental component, which however is not easy to *specialise* (Weigand 1998, 47ff.). We have to clarify difficult questions, for instance: what can we take as emotions? Should emotions be distinguished from moods such as irritation, stress, or aggressivity? What are basic emotions? Only the four of fear, anger, sadness, and happiness, as discussed in a study by Damasio and his team (e.g., Damasio 2000; Rainville et al. 2006)? If we assume an emotion of tension opposed to another of relaxation, even moods can be considered to be a type of emotion. I therefore start from a *large concept of emotion* which includes feelings, moods and urges. Certain cognitive attitudes such as cynicism, sarcasm, are excluded, partly because they are intentional attitudes. On the other hand, qualities as brotherliness are assigned to the predicative field of social behaviour. In general, I think we can define emotions as phenomena that emerge neither

by convention nor by intention but causally as a reaction to inner physiological processes or as a possible reaction to exterior events.

We might start with listing emotions as follows, indicating antonyms where available (Weigand 1998, 49):

anger	
joy	sadness
happiness	unhappiness
hope	disappointment
	despair
love	hatred
sympathy	antipathy
admiration	disgust
fear	courage
pride	shame
enthusiasm	indifference
tension	relaxation
satisfaction	dissatisfaction
desire	
jealousy	magnanimity
envy	
seriousness	
compassion	
pain	
surprise	
remorse	
.....	

Figure 27. List of emotions

This list is certainly too much detailed to be understood as a list of basic emotions. Some items are simply words, not basic emotions, some of them structured in antonyms. To establish a precise *hierarchy of emotions* would require to find out basic emotions from which other emotions can be derived, or at least, to find out groups of emotions structured by the relation between superordinate and subordinate ones. Specialising emotions, in this sense, is a difficult issue that has to be tackled and verified by neurobiology and physiology (e.g., the work of Damasio 1994; 2000).

In the literature of philosophy, we find attempts which circumscribe emotions by a network of related concepts. In this way, Hacker (2021, 247f.) constructs the

'idea' of happiness by putting it in the midst of a network of related concepts. This 'idea' of happiness, however is an idea in Hacker's mind, not the physiological phenomenon of feeling 'happy'. The concepts in the network include concepts not included above, for instance, merriment, gaiety, pleasure, which are words that can be differentiated in the lexicon. As emphasized above, *predicating is an act by the speaker not a concept*.

In order to access the immense field of words by hierarchical specialisation, we must give up the goal of rationality and completeness. Completeness of empirical registration is primarily the goal of the *lexicon* (see, for instance, Weigand 2009a, 236ff.). However, we must not forget that the meaning of predicating is not an issue of the lexicon nor of syntax. Lexical items can be used for predicating in specific syntactic structures (Weigand 2009a, 223), as in:

(82) The doorbell is ringing. — I am in the bathroom.

Predicating as action, in such cases, includes *inferences* prompted by lexical items in specific environments. Integrating inferences by predicating represents an interesting move in the zigzag journey of a 'grammar' of performance (see Part VI).

5. Division of labour

'Dialogue in the stream of life' presupposes the emergence of institutions due to the increasing knowledge in various fields (Weigand 2010, 233ff.). Structuring this field by division of labour is *not only done by knowledge or differentiating the situation but again by purpose*.

Division of labour means specialised labour or area-specific action complexes which need some organization within the working group. *Institutions* were about to develop and *experts* to stand out by specialised knowledge. *Hierarchies in rights and duties* were set up and backed by sanctions. There have to be those who are entitled to decide and those who are committed to carrying out the decisions. This step of creating organizational hierarchies can be considered as a decisive step in creating an institution insofar as it includes a shift from function by virtue of physics and natural abilities to *function by virtue of status* (Searle 1999, 125). In this way, experts having certain knowledge and experience can gain a certain status in their field (see the example in Part VII). Whereas in primitive societies certain persons may have a specific status or reputation, for instance, as a witch-doctor, without any legal basis, for modern societies, institutions and status functions need to be backed on a legal basis by a specific organizational structure.

Status functions have direct consequences for dialogic action insofar as they not really need arguments but can be combined by *power*.

It is the increasing complexity of growing communities and the diversity of labour which necessitates specialisation and the establishment of institutions as legally based organizations for specific purposes. For actions in everyday life, such as planning a journey, we can rely on experience and practical knowledge, for actions in institutions, for example, planning the future course of a company, we need highly specialised expert knowledge. Decomposing the whole thus includes the emergence of institutions (Weigand 2010, 234):



Figure 28. The emergence of institutions

We see, that institutions are *not created by establishing disciplines but by specialising the purpose* in the hierarchy of action games. Any institution is confronted with basic issues, which can be, to a great deal, analysed as sequence of action complexes, for instance, STOCKTAKING, PLANNING, PROBLEM SOLVING and CREATING ASSURANCES:

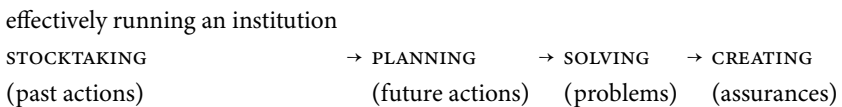


Figure 29. Basic action complexes

Stocktaking aims at knowing the position already achieved or at evaluating the actual state of affairs. *Planning* means deciding the future course of action in a

world of non-equilibrium, which necessitates determining the goal and evaluating possible alternatives for achieving it, and *problem solving* means getting to know what is at stake and settling inconveniences. Finally, *creating assurances* and inter-subjective validity by commitments is a necessary step for reliable negotiations in any institution.

These subcomplexes can be *further specialised* by their action components, PLANNING, for instance, as a sequence of action games of the type:

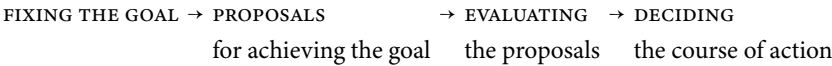


Figure 30. Components of planning

These steps in the hierarchy of action in institutions are interrelated and, in the end, *determined by the purpose and strategy* of the institution. In our capitalistic society, we can, for instance, assume that the dominant purpose and strategy of *business* is roughly speaking ‘making a profit’, which determines the *relation between stocktaking and planning* in a strategy meaning:

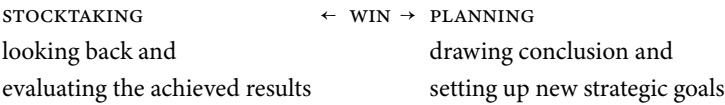


Figure 31. Components of a strategy meeting

In addition, we have to take account of the fact that these action complexes strongly depend on cultural conventions, as Trompenaars and Hampden-Turner (2020) convincingly describe. Elaborating the various steps in the New Hierarchy, dominated by purpose, manifests the vast complexity and depth of the whole field which, in principle, can only be partially illuminated. Analyses of authentic examples from different cultures could illustrate the main points (see, for instance, the analysis of an authentic business game in Weigand (2010, 233–236 and 240–248) or in my article on ‘Principles of New Science’ (2023).

6. To sum up

The structure of complexity does not result from any complementation of traditional science. The structure of complexity represents the *New Hierarchy* starting from the complex whole and deriving the components from it. Derivation means

specialisation and requires the complex object to be decomposable. *The starting point is meaning.* Human action and behaviour rest on the meaning structure of

interest [purpose (reference and predication)]

Part V outlines the derivation of each of these basic components. The whole is dominated by interests, relating to human double nature and adapting to the conditions of society in a world of non-equilibrium. In this way, the *purpose of dialogue*, coming to an understanding, is derived to subpurposes, initiative as well as reactive. *Interests* are specialised by human beings' double nature. Institutions emerge by the necessary division of labour and lead to the development of experts who can help understand specific complex issues. Division of labour means division of the purpose by specialising subpurposes, which influences the whole game.

In this way, *reference and predication* as subactions are dependent on the purpose of the speaker. Reference as action means relating to the objects by approaching them from the actual situation which can be oral or written, everyday or institutional, real or fictive, dependent on time, society, and culture. Predication as subaction means saying something about the objects, selecting components of meaning from the 'meaning of it all'.

Adaptation does not mean following fixed rules but means following principles of probability in the endeavour of finding a thread through 'dialogue in the stream of life.' The thread is not a method pre-given by a system. The thread derives from meaning, which, in the end, is action by human beings. The method of adaptation is the tool for human beings in this endeavour, which depends on their abilities and the action conditions in a world in non-equilibrium. New Science describes the complex whole of human action and behaviour in the attempt to tackle the vicissitudes of performance. *Performance* means action by individual human beings on the basis of their ability of *competence-in-performance*.

New Science requires verification, which in the end means verification by human nature. Contrary to traditional assumptions, the human species is a species of human beings defined by their double nature as dialogic individuals. *Non-equilibrium starts here.* Verification, in the end, relates to human nature determined by biology and culture. The aim of New Science takes account of the fact that there cannot be different types of science in some sort of patchwork, as designed by different disciplines, but that 'man' is always at the centre of any science, natural as well as human. In this sense, New Science aims at throwing light on the *unity of science* or consilience.

Integration is the name of the game, not only relating to the integration of components of meaning but also to the integration of components of the means. It remains to address the most complicated issue of how all these components

are interrelated. Human science has for long started from so-called 'empirical evidence' in the attempt to arrive at meaning. There is however no empirical evidence as such. The meaning arrived at by 'empirical evidence' will, in any case, be artificially constructed meaning. For New Science, the time of fixed systems has passed. It is the 'meaning of all' where we have to start in our search for a way through the complexity of life. We will, of necessity, be confronted with the question of the 'order' of performance.

Being confronted with complexity in all its components, New Science stands out by its feature of providing *one* theory for all the issues human beings are confronted with in performance. Contrary to recent views which even consider life as 'creative' (Ball 2024), it is not life but human beings who can be creative if there is at all creativity at stake. It is the ability of competence-in-performance which allows human beings to find out some 'order' in the complex world they are 'embedded' in.

The big question of a ‘grammar’ of performance

1. The problem

Finally we have arrived at the big problem of bringing all the components together so that they represent what they are: components of the complex whole. This is the problem of a ‘grammar’ of performance. Both concepts, ‘grammar’ and ‘performance’, seem to be incompatible with each other, and require rethinking what ‘grammar’ might mean in performance. Can it be reduced to so-called ‘*performative utterances*’? Performative utterances focus on specific ways of use, for instance, with so-called ‘performative verbs’ in explicit syntactic constructions and appropriate environments, which do not really address the problem but take the perspective of the system in some ‘idealized’ situation. It is however not the system but the speaker who creates performativity.

In the literature there have been many attempts at producing a ‘grammar of use’, ‘a grammar of communication or interaction’, and the like, which do not seem to be troubled by combining these two concepts. We are confronted with a ‘crisis’ of science (Staddon 2017). However, I cannot share Staddon’s view which ‘diagnoses our age of wishful, magical thinking’. He recommends ‘a return to reason which means the search for objective knowledge and truth’. Are we meant to turn back to science of certainty and reject progress made in science? I find it astonishing that he proposes ‘a return to reason’ as a correction, nor can I consider actual science as ‘magical thinking’. Have we indeed left reason, or is reason to be defined in a new way as *reason of performance*? New Science does not want to go back to ideas of the past, but considers the crisis of the actual state of science as a crisis which is due to starting from method instead of first thinking about the object.

The object is not only *speech*. Use is more than speech. Can there be a ‘constructed’ *speech*? New Science aims to describe how humans succeed in tackling the vicissitudes of life based on real conditions of life. We cannot close our eyes and skip the environment we are embedded in. Traditional or classical science is oriented towards finding out rule-governed patterns. The term ‘grammar’ has been used for such a pattern which, in the age of philology, allowed for exceptions outside of the pattern, but in the age of ‘modern linguistics’ was used for some defined order in the correlation of meaning and expression. Such an ‘order’ has

been constructed by grammarians, mainly of structuralist and generative grammar, and only represents rules by overlooking the exceptions around. I remember the time when generative grammar had its high point by constructing some ideal language. Already back then, I was wondering who could verify this type of rules. The ideal speaker? We were content with identifying the native speaker as an ideal speaker who knows the rules and the exceptions. It is right that the speaker is at the centre, but not as an ideal speaker and not as a speaker of a constructed system either. The rule-governed system does not need a speaker, it is the system that decides. The rules, in the end, are based on a system of signs. Variabilities of language use are left outside.

In the age of ‘*construction grammar*’, grammarians looked beyond the limit of the sentence and addressed ‘constructions of use’. Use is considered as speech which is described by keeping to the traditional ‘form/meaning’ relation. Such a manoeuvre can only lead to ‘constructions’ that do not exist in performance. Obviously we are fixed by a view of order to be applied everywhere, also with an object which has its own ‘order’. Which type of meaning is addressed in such a model which does not include the meaning of action, for instance, the model of Herbst and Hoffmann (2024)? Such an approach can only be considered as an approach of the ‘form’ and its constructions ignoring the purpose of use.

Wiltschko’s (2023) ‘interactional grammar’ proceeds in a similar way, calling the issue by name, ‘interactional grammar’, but not really dealing with it. Action and emotion are added to grammar, not integrated (Wiltschko 2024; see also above Part II, 2.1).

A ‘grammar’ of performance cannot be achieved by starting from method or from science of the simple. As I already explained in Part II, the question is to be posed by starting at the beginning all over again. Performance is not a rule-governed system nor some sort of ‘anything goes’. To my mind, in natural science, far-reaching progress has been made by insights which taken together represent *the nuts and bolts of New Science*. They are at the bottom of everything human beings can do and think and represent the basics of *uniting natural and human sciences*. I am thinking of Wilson’s term of a ‘zigzag journey’ of evolution (Wilson 1999, 47) and Nurse’s definition of life by ‘purpose’. For a grammar of performance, Prigogine’s term of ‘*non-equilibrium processes*’ (1987) is of particular importance, which he defines by two pairs of features: ‘irreversible versus reversible’ and ‘deterministic versus stochastic’. Both pairs characterize performance. *Performance combines deterministic and stochastic phenomena*. It is, in principle, irreversible and can only be addressed by principles of probability. On the whole, the ‘order’ of performance results from specialisation of the object in a *New Hierarchy*, embedded in a world of non-equilibrium.

In the animate area, meaning and its specialised components all arise from purpose. It is the purpose of life which determines what human beings intend. They have to meet the conditions of performance in order to achieve their purpose as far as possible. It is not a case of a fixed correlation between meaning and expression. Expressions are *the means* that human beings can use according to their abilities in the process of a zigzag journey in performance. A 'grammar' of use is not a pre-defined system but the action of human beings determined by their dialogic nature and the conditions of the world human beings are 'embedded' in. In this sense, a 'grammar' of use means *adaptation* to ever changing conditions.

Adaptation according to human nature means dialogic interaction, sometimes simply by verbal means but more often by a complex process of negotiation. Life in our times has become so multiple and complex that humans look for facilities that might help them to come through. Such a facility is, without doubt, *Artificial Intelligence*. The digital system of AI is however a system of method which does not really address adaptation as dialogic action. *ChatGPT* is praised as great progress as if this digital method could work like the human mind or even better. In effect, ChatGPT is not the method of dialogic action but more likely a method to increase knowledge by listing possible components of the event. Users can find *points of knowledge* to mention in their speech. Unfortunately, the state of the art is, in principle, the same as decades ago with Eliza (Weigand 2019). Eliza and similar programs were, at least, conceived of as dialogic action programs, though without solving the dialogic issue, whereas ChatGPT is only a program of increasing knowledge which leaves the option of choice to the user. It is, in some sense, a digital appliance which can be used according to the traditional lessons we always had about competently writing a text. Progress is made by formalizing memory, not action. My evaluation does not mean to diminish the value of the program. As method it is highly helpful in our ever more complicated lives. Life is however not knowledge but human action in performance. *The crux is that knowledge cannot replace action*. The program needs to be applied by human beings who will decide which option to take. This is a decision to be made not by some artificial competence but by the *competence-in-performance* of individual users.

A 'grammar' of performance is based on human reason and goes as far as human abilities can reach, including individuality and chance. It will be a *zigzag journey* guided by human competence-in-performance, according to human dialogic nature, paved by meaning and its components derived from purpose. The complexity of meaning is structured according to specialisation in a new hierarchy and allows for individual choice. There is no independent truth or certainty. Human beings try to achieve their purpose by means of principles of probability guided by expectancy.

To my mind, we have reached a point where we can identify the relevant *premises* of a ‘grammar of performance’:

- *Human beings are at the centre*, tackling the issues of their lives by their competence-in-performance.
- There cannot be an independent system of correlation between meaning and means.
- ‘Grammar’ cannot be a specific method but has to *start from meaning or purpose*.
- Consequently, a ‘grammar’ of performance has to be verified by meaning and cannot be any ‘construction,’ starting from method.
- There is no ‘empirical evidence’. Verification means verification by human nature and conditions of the world humans are living in.
- A ‘grammar of performance’ *combines human and natural sciences*. There is no other possibility if we respect human beings and their nature at the centre of everything we can do and think. Human abilities determine science not vice versa.
- At the core of a ‘grammar of performance’, there is the issue of how human beings tackle the *co-presence of deterministic and stochastic phenomena* in their lives. Deterministic phenomena are phenomena of the ‘form’, for instance, syntax, morphology and prosody, which are considered as binding to some degree. How much they are really binding depends on the complexity of the actual action. Stochastic phenomena arise from the individuality of the speaker and of the situation.

2. Solving the problem

Let me first sum up the problem we are facing: *Human nature* is determined by purpose which is the basis of action and behaviour. Human nature as double nature brings in two options from the outset: sociality or power, or something in between, and requires taking position. Human nature also predicts how to proceed: *integration is the name of the game*. The goal of the game is achieving one’s purpose by integrating the components, such as strategy and ethical position. The means human beings apply relate to human abilities, mainly speaking, thinking, perceiving, which are integrated and cannot be separated.

Human beings are ‘embedded’ in a *world of non-equilibrium*. It is not the case that the world is something outside of us. Instead, we are living IN the world. The world is not a stable world, it is always changing. Considering the world as rationally structured (e.g., Habermas 1981), is a utopian view, outside of reality. We

have to accept that it is a world that goes beyond deterministic rules, as Prigogine (1987) introduced the term 'non-equilibrium'. Human beings are called to find their way through seeming chaos. Describing and explaining it needs to combine *human and natural sciences*. Whereas the animate area is determined by purpose (Nurse 2020), the inanimate area follows the basic physical relation of CAUSE and EFFECT.

Consequently, a 'grammar' of performance cannot be an independent system determined by regularities. On the contrary, it is a 'grammar' on the move, a 'grammar' of *adaptation*, dependent on all the basic points mentioned above. Adaptation does not proceed in a straight, linear way, but allows for choice between options as well as corrections, misunderstandings and specification. A 'grammar' of performance therefore represents a *zigzag journey* of human beings aiming to achieve their purpose. The zigzag journey follows regularities as far as they go and complies with individuality and chance which are inevitable variables in the game of coming to an understanding. The zigzag journey meets Prigogine's fundamental criterion of a world in non-equilibrium defined by the co-presence of *deterministic and stochastic phenomena*. This is precisely *the criterion that distinguishes the traditional concept of grammar from a 'grammar of performance'*. Traditional grammar aims at bringing everything under the dominance of rules, setting up a deterministic system and excluding all other means as stochastic exceptions. To some degree, I also followed this principle in my book *Sprache als Dialog* (1989/2003) when I introduced different types of correlation between meaning and expression in the utterance, direct, indirect and idiomatic.

The big question is: what are regularities and what are stochastic phenomena in a 'grammar of performance'? In principle, the speaker can deviate from any regularity. Regularities belong to the field of the *form*. *Morphology and syntax* are to some degree binding. Native speakers mostly avoid making errors in these fields. We might therefore say, *form is deterministic, and meaning includes stochastic components*, being dependent on the actual game. Both form and meaning are however not parts of a fixed system but individual sub-actions of the speaker in performance.

Let's take an example: We might define *rules about the construction of sentences*, but such rules do not define the purpose of the utterance (Weigand 1994b). We might thus formally define how, for instance, grammatical categories are built in different languages, but this does not determine their actual meaning, for instance, in the case of the category 'imperative'. Starting from rules of the *form* and calling the literal use 'typical' and other non-regular uses 'atypical' takes 'frequency' as criterion. Frequency is however not meaning. *Meaning is an action of the speaker*. The form might include certain so-called *salient* items, which can deliberately point to meaning but do not represent yet meaning. *Salience* plays a

specific role in mediating between form and meaning, as we will see in the example below. In the case of ambiguity, it draws our attention to potential meanings which are then clarified by the ongoing dialogue.

The issue of a 'grammar' of performance mainly arises from the question of *how to combine regularities of competence with variables of performance*. As I explained above, there is no way at the level of models, it is human beings and their ability of *competence-in-performance* which is capable of bridging the gap between competence and performance. The way from 'language as dialogue' to 'dialogue as complex whole' cannot be handed over to various disciplines, such as logic, sociology, education studies. Dialogue gets lost if the focus is, for instance, on narratives at school or in law. This only means drifting away from the real issue of dialogue. We cannot hope for solving the problem with methods of the past. Disciplines might enrich the description at the level of knowledge but cannot be constitutive for dialogue. The question of how competence-in-performance proceeds is not solved either by changing the object language to *speech*. Competence-in-performance requires starting from scratch and relies on human abilities and the world humans are 'embedded' in.

3. An example

The zigzag journey is best illustrated by an example we already analysed at the beginning of Part III (Example 4). I repeat the example here:

H Don't let yourself get infected!

E Are you ill?

H Didn't you see the water? Everyone's got a hobby.

F I'd never do that when we pay so much just for the cleaning.

E Ah, now I understand. You're right. No, I won't let myself get infected.

We analysed this example above in order to demonstrate the key position of the lexical entry of *get infected* which derives from the integration of verbal means and variables of the circumstances. It is an example of small talk which, as usual, refers to events of our life. Acting in performance we have to find out which event is pertinent. In traditional science, the meaning of lexical items comprehends the type of ambiguity, which amounts to multiple cases of possible meanings (Weigand 2009e, 226f.). The meaning of our example is rather specific and would probably not be included. It evolves in the course of small talk by triggering off the individual, particular meaning due to the circumstances of an event experienced

together (Weigand 2010, 42). This step in the search for meaning starts with standard meaning and specialises it to the particular meaning of the actual case.

- H 1 directive: standard meaning of *get infected*
Don't let yourself get infected!
- E 2 clarifying
Are you ill?
- H 3 specialising by reference to shared experience
Didn't you see the water? Everyone's got a hobby.
- F 4 commenting
I'd never do that when we pay so much just for cleaning.
- E 5 shared understanding
Ah, now I understand.
- E 6 from 'shared understanding' to consenting
No, I won't let myself get infected.

It can be well illustrated as a *zigzag line*:

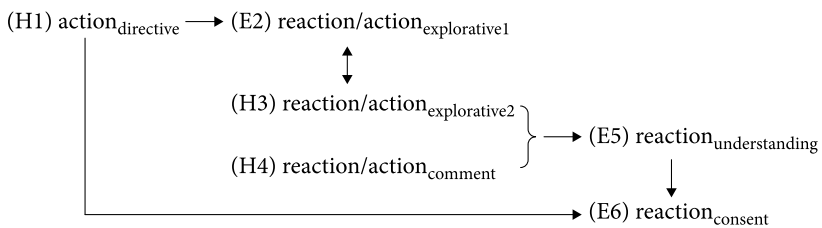


Figure 32. The 'zigzag journey' of coming to shared understanding

In dialogic interaction we always have to be attentive to possible zigzag lines which help us to come to some joint understanding of what is meant. As is well illustrated by this example, it is, in general, always due to adapting to the purpose of dialogue. To be precise, we must not consider the environment as stable process. It is changing in non-equilibrium. To open up this complex whole by selecting and integrating pertinent variables, poses a huge challenge. I would say, in fact, it is not possible to describe it completely. The complex is not ultimately measurable. In a first attempt, I am going to *elaborate a few guidelines*.

We have to tackle the argument that there are regularities of the form, for instance, in morphology. The problem is that form does not provide direct access to meaning-in-use. Recognizing some items of form as *salient* is not yet meaning. Prigogine's concept of non-equilibrium has been developed in physics but is also conceived of as relating to living systems. Considering dialogue as non-

equilibrium system means that we have a deterministic component in the area of form, for instance, syntax and morphology. However, constructing form-meaning items by starting from form, remains within a concept of language separated from use. We already knew in traditional linguistics that grammatical categories, such as *tempus*, do not yet express 'time', nor can the category *modus* be equated with a specific meaning of modality. *It is the form which is deterministic, not the meaning.* What items of the form, for instance, grammatical categories or the syntax of sentence types, mean, depends on many other variables. A declarative sentence can be used in representative as well as directive speech acts. *Meaning arises from the integration of special variables* in the complex whole, as selected by the speaker.

What can we conclude from such a view? Grammatical and lexical expressions are means, not signs. *In performance, there are no signs.* Signs are constructed by grammarians and linguists of 'modern linguistics', who consider language as a system of syntax and the lexicon. In performance, *lexical items are not words but phrases*, and *syntax* must not be separated and attributed a specific, technical meaning. Like morphology, also syntax primarily represents a principle of form, which can be described by rules only in an artificial system of language. In performance, syntax is mainly relevant as sequential *feature of linearity*, which can contribute to expressing the purpose, for instance, in specific sequences of clarification or repetition.

We might ask why 'dialogue in the stream of life' is such a complex matter, and how human beings nonetheless succeed in finding a way through. The first difficulty lies already in choosing an expression for what the speaker wants to express, the second, for the partner, identifying the purpose and strategy behind. We are 'embedded' in the waves of non-equilibrium where deterministic and stochastic phenomena interact, and we are ourselves complex beings uniting deterministic abilities and stochastic variables. The co-presence of both phenomena is not only the basic principle of physics but also of human action and behaviour. Unfortunately, orthodox assumptions of construction are hard to change. How should such systems at all come to existence, if not 'formed' by human beings? We are called to reflect upon the complexity of the real world, and try to grasp essentials by some outstanding examples.

4. Essential cases of adaptation

The concept of complexity contradicts the claim to a complete, precise description of all possibilities of action in dialogue. Complexity and non-equilibrium cannot be restricted to fixed types. Human beings are at the centre, and they choose their way of adaptation. Individuality is best described by *authentic* examples.

4.1 Human beings at the centre

I often wondered how systems and constructions of science can obtain validity without relating to human beings' actions. Human actions and behaviour are based on human nature and features of the world humans are living in. Russell (1948, cover) already introduced this basic insight with the premise 'Man occupies the centre'. Meaning starts with needs and purposes which can be traced back to 'mental states' of belief and desire. *Mental states* are *neurobiologic components*, not artificial semiotic constructions of 'what is', 'what can be', and what ought to be'. They are the root of basic claims, such as the claim to truth, to volition and validity, which define basic speech acts (see above Part IV, e.g., Figure 4).

Emotion, morality and persuasion are integrated components of human nature. Describing them as biological features leads to connecting natural and human sciences in consilience or the unity of science. The field of animate beings has been defined by purpose, whereas the field of inanimate phenomena is determined by the relation between CAUSE and EFFECT. Anything we can say about both fields is said by human beings and reflects the limits of human abilities. More precisely, this means: human beings are at the centre, even if they are not explicitly mentioned.

Human beings are not facing the world as something opposite to them. They are living IN the world and act and behave according to its conditions. I consider Prigogine's insight of our world in non-equilibrium as groundbreaking. Such a world requires specific abilities of human beings to come to grips with it. To my mind, this is precisely human beings' *competence-in-performance* which enables them to find their way within the co-presence of deterministic and stochastic phenomena. There are no models which can describe and explain reality. This point is extremely crucial and, to my mind, self-evident. It is unfortunately often ignored, for instance, in studies of sociology which deviate to storytelling about social situations. The core of dialogic action, the relation between the purpose and the situation described, gets lost in narratives of different disciplines.

4.2 The role of syntax

Contrary to syntactic models of the past, syntax, isolated as part of the form, is not a meaningful component in performance. It is basic as component of form, insofar as speech proceeds in a linear manner. Linearity is a formal feature and not directly related to pragmatic meaning. Linearity of the form does not presuppose linearity of meanings. Form within the sentence is language specific, defining, for instance, languages of the order of subject, verb, object compared with languages of the order subject, object, verb. How these components are built is

also language-specific, for instance, the order of the noun phrase as sequence of determiner, adjective, noun. 'Language of the simple' attributes syntactic meaning to them, which however is very remote from meaning in performance. The syntactic structure of the noun phrase is, for instance, often used for referential meaning which however does not comply with performance. The key to meaning in performance is not syntactic order but structure according to *phases* which determine subphases.

In 'science of the simple', syntax has so far been mostly analysed as *syntax of the sentence*, including relations within and beyond the sentence (Harweg 1968). The sentence is, however, not an independent unit of use. A first attempt at reaching out from syntax to pragmatic meaning has been made by changing sentences to utterances and creating so-called *explicit performative utterances* which allegedly perform the meaning of the action expressed by the verb. This can be the case but it only represents one possibility among others and requires special conditions of use. It is not the syntactic-lexical structure which carries the action. It is, in the end, the speaker who performs the action by selecting specific means. Moreover, in performance the direct expression of the 'explicit performative utterance' is rather unpopular and occurs only rarely.

Connected with this example is another point which played an important role in modern linguistics, the category of the 'sentence type'. It is striking that there are, at least in many languages, *sentence types which correspond to basic action types*: the declarative sentence type for representative speech acts, question sentences for exploratives, the sentence type of a request for directives, and the sentence type with a performative verb for declaratives. To evaluate this correspondence, it is however necessary to take account of the fact that meaning is not a classification of syntactic-grammatical features of the form. For instance, the meaning of a 'question sentence' is dependent on many other variables and cannot simply be indicated as 'question action'. I have dealt with the issue of sentence types and their combination with modality many years ago (Weigand 1994b), and will not return to it again. I only want to emphasize that the unit of meaning in performance is not the sentence but the *utterance*.

In performance, the question is how the linear syntactic sequence can be structured. This is also the question, debated for long, how utterances can be separated as items. They cannot be separated at surface level as turns. It is meaning, *purpose*, initiative and reactive, which determines the utterance, not meaningless turns. The initiative and reactive purpose together make up the phase. The role of syntax in a grammar of performance relates to *phases*, starting with the minimal phase of action and reaction and reaching out to multi-phase complex dialogues.

The *sequence of actions* is not structured by the position of utterances. Nonetheless, utterances are sequence-dependent. Dialogue rests on the meaning-

ful relation between initiative and reactive action, which is the source of syntax. In my book on the Mixed Game, I have called it the Dialogic Principle proper, which creates dialogic action as purposeful action (Weigand 2010, 82), even extending across large sequences:

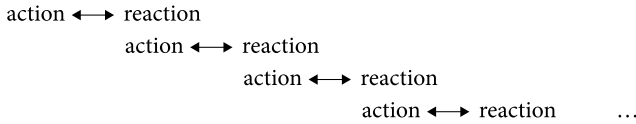


Figure 33. The sequence of actions

The *two-part unit of action and reaction* represents the minimal phase of dialogic meaning, defined by the initiative purpose (see above Figure 15, Part V 1):

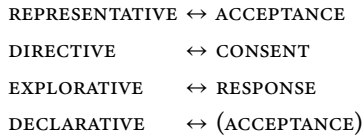


Figure 34. Basic meaning sequences

In principle, the reaction can be *positive*, accepting the initiative purpose, or *negative* or *negotiating* joint understanding. The reaction, especially if positive, can also be expressed by 'silence'. Each phase is *defined by purpose*, be it the purpose of the whole game or a sub-purpose. At the basis of any extension is the purpose, which can, for instance, be the necessity of *clarifying* components or problems of understanding including misunderstanding. Such inserted phases do not only add phases in the linear sequence but fulfil their sub-purpose in a *syntactic hierarchy*, as can be seen by the following examples (Weigand 2010, 214):

- (83) (Can you buy trainers there?
 (What do you mean by "trainers"?
 (Shoes for jogging.
 No, they haven't got them.

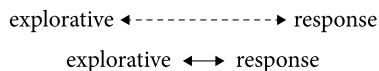


Figure 35. Inserted phase

The *syntactic relation among purposes* can also mean *repetition* which is not only a formal feature but can intensify the purpose, for instance, by a sequence

of INSISTING as in the following authentic dialogue between a father and his son (Weigand 2010, 223; Hundsnurscher 1981):

- | | | | |
|------|--------|---------------------------|----------------------|
| (84) | Son | Could you clean my teeth? | directive |
| | Father | You can do it yourself. | no consent |
| | Son | No, you do it. | directive, insisting |
| | Father | Alright. | consent |

How could the meaning of syntax in performance be described by constructing form-meaning pairs? There are no form-meaning pairs but the speaker who wants to emphasize their purpose and come to some understanding with their partners. The type of meaning constructed in form-meaning pairs is *simply classification of formal items*, syntactical, morphological, prosodical, no meaning in performance. Items of a formal grammar might define types of form, for instance, the *sentence type*, by listing and combining formal means (Weigand 1994b). Form can be considered as deterministic part, which must not be taken as absolute constraint. Which use is applied in the actual case, can only be decided in terms of the whole game. A *grammar of form*, or the system, *does not decide upon use*. It is human beings who decide according to their *competence-in-performance*. If we are interested in how human beings proceed in life, a *grammar of form* does not help us much. We might use it to get an overview of the formal system which might be, to some degree, helpful in teaching a foreign language. A *grammar of performance* is however not applying a formal system. Not even language acquisition in the case of learning our mother language proceeds by construction (Weigand 2022).

4.3 The role of words

Words, like syntax, represent elements of form. They gain importance in use within phrases or in oral dialogue by evoking cultural knowledge or common experience, as in Example (4) above. Like syntax, they have been dealt with in artificial systems, for words in the system of the lexicon (e.g., Pustejovski and Batiukova 2019). Their use in phrases in performance clearly contradicts such artificial procedures. The multiplicity of use in the lexical area has been impressively demonstrated by empirical approaches, such as that of Mel'čuk and Wanner (1994) and Wandruszka (1969). I have dealt with the complexity of words in use in various publications, some of them collected in my book on "Language as Dialogue" (Weigand 2009a) or in Weigand (1998). The multiple polysemy of isolated words is tackled by human beings' *competence-in-performance* in use by words-in-phrases.

I will focus here on the interesting feature that the speaker can use this ambiguity in performance to express first salient uses which secondarily can point to some other specific meaning. Dialogue can thus, in part, be structured by *salience* (Kecskes 2023), as in the example above with *get infected* which then is specialised to quite a particular use by relating it to some special environment. This is again an example of *adaptation*, which *cannot be grasped as direct correlation between purpose and means* nor as change from direct to indirect meaning at the very same spot but has to be worked out in a *zigzag* journey.

The *basic question of how to express the purpose* can only rarely be reduced to some direct expression. Performance is there from the start. Starting from scratch means starting with what is given. If there are verbal means, features of the form cannot be ignored. *Lexical items* can take a special role pointing to potential meaning which is then clarified by the ongoing dialogue. This is, however, not the artificial shift from semantics to pragmatics, but a step deliberately taken by human beings having in mind some specific meaning (Simon 1983).

'Dialogue in the stream of life' means dialogue on the basis of the fundamental principle of 'integration is the name of the game'. In this sense, the meaning of words used in performance is integrated with cultural and individual cognitive assumptions related to the actual event. A clear example is Brown and Yule's example (1983; above, for instance, Example 2):

The doorbell is ringing. — I am in the bathroom.

Scholars of the past (e.g., Stati 1994) could not explain how both utterances are related. By such examples it becomes evident that performance does not proceed by verbal means alone but integrates cultural knowledge (see more precisely below 4.7).

4.4 Grammar as adaptation in a zigzag journey

The conditions of performance, mainly the co-presence of deterministic and stochastic phenomena, exclude the concept of a grammar as stable, rule-governed system. Performance extends from simple two-part games to complex sequences of trying to come to an understanding. 'Grammar' becomes a process of adaptation, proceeding step by step in a zigzag journey. This is the decisive point which clarifies the conditions of a 'grammar' of performance. Searching for something stable, as in traditional or modern grammars, is doomed to fail. We have to accept that we can orient ourselves towards regularities, as far as they go, but, in the end, are left to randomness of events. The interaction of deterministic and stochastic phenomena marks the process of adaptation in a world of non-equilibrium, including individuality and chance. Deterministic phenomena regard the form,

mainly morphology, syntax and prosody. So-called grammars of interaction, as actually proposed, are only grammars of form, even if they are deliberately called grammars of language usage. Meaning is included as the result of categorization of form items, not interactive, pragmatic meaning.

The question whether we can arrive at pragmatic meaning by starting from empirical items, has been discussed for long in the past (e.g., Weigand 1984). The answer is clear: There is no direct correlation of form and meaning in a 'grammar' of performance. Form is, to a great extent, rule-governed. The individual selection of the speaker among various possibilities is a selection among formal possibilities offered by the system. In contrast to form, meaning is a matter of the speaker and their purpose and includes individuality and chance. Adaptation is regulated by *competence-in-performance*, which does not mean adding performance to competence.

As a natural consequence of adaptation, 'grammar' becomes a *zigzag journey*. Dependent on ever-changing action conditions we are trying to understand what is meant. Coming to an understanding can be possible in a short game, consisting of a two-part sequence only, and can also be a difficult and long game, *negotiating* the position of each player and, at the end, finding some gradual understanding. In a world of non-equilibrium, negotiating proceeds step by step in a zigzag journey starting with some seeming 'understanding' and looking forward to 'coming to mutual understanding'. It is a process negotiated by *principles of probability* according to what the players *expect* to happen. Principles of expectancy relate to variables of the game which in many cases can be best identified by insiders of the game. The decision is made by the people involved, not by the analyst who might construct a distinction between typical and atypical cases according to frequency. It is not frequency which guides the decision of the acting human being, but features of the moment and their integration and interaction as deterministic or stochastic phenomena.

The zigzag course is, in part, guided by salient points which might lead from standard cases to particular ones (see Example 4 above, Part VI 3). In this way, salience can play some role in the process of coming to an understanding.

4.5 Comparative grammar

Taking account of the multiplicity of different languages and cultures, a grammar of performance is to be considered as a comparative grammar, dependent on various socio-biological features. To my mind, the differences arise from cultural features which, according to *epigenetics*, co-evolve with genetic features. To put the question more precisely, we can assume a *universal basis* which is affected by the *prism of culture* creating different languages in use. The structure of the universal

basis of meaning results from *specialisation* in the new hierarchy. Cultural differences might be due to certain steps of specialisation, a question that requires considerable efforts of empirical studies and verification in a *new anthropology*.

There are innumerable examples which could demonstrate this course (see, for instance, Weigand 2009a; Grein 2020; Guo 2024). I will only refer to some examples which I was able to experience myself when living in Italy. Regarding the basic correlation between action and reaction (see above Part III 2), we might assume that the possibility of receiving a positive versus negative answer is universal. However, in Italy, there seems to be a third reaction. You might receive an answer which seems to be an elusive reaction, but in effect it means 'not responding' at all, deliberately remaining uncertain, despite repetition of the initiative claim (Example 5 above):

Ne parleremo.

Insisting on your claim to an answer, i.e., taking the reaction literally, does not help much. You will always receive the same answer. We might also take such an elusive answer as *avoiding a negative reaction*.

There is another particularity of expressing negation within the utterance in Italian, for instance:

- | | |
|---|---|
| (85) Per poco non rovesciò la birra. | Fast hätte er das Bier verschüttet.
He (would have) almost spilt his beer. |
| (86) Le biciclette si rivelano nei fatti ben
più care di quanto

i listini prezzi <i>non</i> indichino | Die Fahrräder erweisen sich im
Gebrauch viel teurer als die Listenpreise
angeben.

In practice, the bicycles turn out to be
much more expensive than their list
prices suggest. |
| (87) Serve niente? Serve qualcosa?
Serve nient' altro?
No, <i>non</i> mi serve più <i>nulla</i> . | Brauchen Sie etwas?
Do you need anything?
Nein, danke, ich brauche nichts.
No, I don't need anything else. |

Moreover, in Italian it is necessary to use *non* after certain conjunctions:

- | | |
|----------------------------------|---|
| (88) finche non imparasse | bis er gelernt hatte
until he's learnt (it, how ...) |
|----------------------------------|---|

As you can see, there are certain languages in which you need to use the negation where in other languages no negation is used. Such particularities demonstrate

cultural differences and point to the necessity of conceptualizing ‘grammar’ in a *comparative* way.

The difference in the use of the negation is however not so strict, as I later discovered to my surprise. Whereas in official written language use, we do not find the use of negation in German as in Italian, in everyday oral language use such phrases occur, as can be seen in Ludwig Thoma’s *Lausbubengeschichten*, for instance (2020, 52 or 56):

- (89) Ich habe *keinen Nepos nicht* präparieren gekonnt, weil meine Schwester auf dem Ball war.
(response by the pupil to their professor)
I *didn’t* give him *no* Nepos
Wenn man zu ihm geht, kriegst man ein Heiligenbild, aber *nie kein Geld* oder zu essen.
... but *never no* money or food

Similar examples from other languages are those where the difference of use seems to be due to local regional differences and even creates a new type of translation, the discipline being called ‘Geo-translation’ (e.g., Xu 2025).

4.6 Integration of speaking and perceiving

Integration can be integration of the means and integration of components of meaning. We use our abilities as means for what we want to communicate. Due to our nature, we cannot *speak* without *perceiving* nor without *thinking*, nor can we switch off *emotion*. Meaning is determined by purpose, to be more precise, determined by human beings’ double nature and by innate components of human nature, such as persuasion and morality. Due to the co-evolution of ‘genes, mind, and culture’, human beings act and behave as *cultural beings*, and take a position between the social and the selfish. In the next sections, I will *focus on a few outstanding possibilities* of integration which I partly already addressed in my book on the MGM but which are to be *modified by new insights about the co-presence of deterministic and stochastic phenomena* in our world of non-equilibrium.

I will start with the field of integration of speaking and perceiving. Even in written language use, what can be perceived needs to be mentioned, if it is pertinent to the game. Due to inevitable integration, there is no speech that could be separated. Performance is more than language use, performance means performance by individual speakers who use all their abilities, including perceptual means mainly consisting of gestures and body movements. Children very early learn that they can communicate by gestures, movements of the hand and body. Perceptual means can have meaning independently from verbal means, for

instance, nodding or shaking the head. They are however usually used in integration with verbal means, for instance, touching to express emotional nearness. Eye contact has gained attention as a pertinent point in dialogue. Research on perceptual means has increased in the last decade, including differences in nonverbal behaviour across languages and cultures (e.g., Nash 2007).

Integration of speaking and perceiving can even mean *replacing speaking by nonverbal means*. A very interesting example in this respect is the institutional game that took place between Donald Trump and Nancy Pelosi in the House of Representatives in February 2020 (Weigand 2021a, 555f.). It has been carried out by gestures, body movements and face expressions. We can see that nonverbal empirical means can take over the whole task of coming to an understanding including non-understanding, due to conditions of the environment. Such a change is only possible because the dialogic sequence of meaning is institutionally clarified from the outset.

The dialogic encounter has two phases which correspond to the two images. First, Pelosi wanted to greet Trump by handshake when he stepped up to the rostrum in the House of Representatives but Trump demonstratively turned his back:

(90.1)



Pelosi withdrew her hand, 'appearing to shrug slightly and raise her eyebrows as if to say, "Well, I tried"', as it was described by the American press. At the end of Trump's speech, Pelosi's reaction of disparagement arrived when she ripped the copy of Trump's speech in half and threw the pieces on the table in front of her:

(90.2)



The right to dialogue in the sense of respecting the other human being is obviously rejected by Trump demonstrating power and in return by Pelosi displaying clear disparagement of Trump’s speech. The *institutional* game is changed to the actual *individual* game of disparagement that obstructs what is institutionally expected. A grammar of dialogue in performance has to demonstrate how purposes and means are correlated even if no means of language use are involved:

handshake (Pelosi)	↔ turning his back (Trump)	<i>means</i>
GREET	DECLINING GREETING IN RETURN	<i>purposes</i>
State of the Union Address (Trump)	↔ tearing to pieces (Pelosi)	<i>means</i>
INFORM AND RECOMMEND	NOT ACCEPTING, DISPARAGINGLY	<i>purposes</i>

Figure 36. Dialogic games without language

Dialogue in performance is diverse in many respects. The *unity* is constituted by its meaning starting from the general human need of coming to an understanding, and allowing various choices which even extend to refusing understanding. Deriving components from the complex whole represents a basic requirement which together with the premise of integration is crucial for the ‘architecture of complexity’. Human beings can make different choices by means of specialisation which brings in *diversity*, not the diversity of different parts but the diversity of components which are interrelated and interact with each other.

4.7. Integration of speaking and thinking

The integration of speaking and thinking is as fundamental as the integration of speaking and perceiving. It is determined by human nature and cannot be shut

off. There are basically two areas where thinking becomes dialogically pertinent, the area of *reference* and the area of *inferences*. I dealt with both, reference and inferences, above *from the perspective of meaning*, and will now address them *from the perspective of grammar*, i.e. how they are integrated into the complex whole.

Reference in oral dialogue inevitably refers to what can be perceived. The selection of perceivable points is however done by the speaker, an insider of the game, who has to decide, mostly unconsciously, what is pertinent to the actual purpose (see the example above in V 3). This underlines the fact that speaking, thinking and perceiving are integrated. *Reference* in written dialogue represents quite another case, as it is a matter of form, restricted to verbal means. The author has to select verbal means which could induce the reader's thinking and imagining. He can decide to remain within conventional patterns or go beyond. In literary action games he might feel entitled to break rules and conventions. The issue of permitted differences arises in a particularly clear way.

The field of *inferences* has been extensively discussed in the literature. In general, it is about the question of describing conclusions from what is said to what is meant, also called *from direct to indirect meaning*. Grice's principles and sub-principles combine the logic of coded meaning with inferences or implicatures. Can inferences be added to a code? Inferences are made by the individual human being, *in part, following regularities and, in part, individually drawn conclusions*. I have already dealt with Grice and his followers when 'looking back' in Part II. Indirect meaning cannot be addressed by science of the simple, starting from coded meaning, such as sentence types, and then deriving indirect meaning by addition of variables of performance. Indirect meaning is a phenomenon of performance and to be addressed by starting from the complex.

Quite another proposal is made by introducing the concept of '*ventriloquism*', used by Bakhtin (1984) from the perspective of interpreting words and texts. Later, however, it has been used to explain how the dialogic purpose comes about (e.g., Cooren and Sandler 2014). I already commented on it as an attempt of science of the simple in Part II (2.2). In principle, action under conditions of a world in non-equilibrium cannot be dealt with by ventriloquism.

For 'dialogue in the stream of life', inferences relating to conditions of the real world are always included due to the general principle of integration. An important component is how we use words. The *lexicon* is, in this sense, a valuable resource for inferences, including also rational conclusions. I have dealt with the issue of the lexicon, how it is structured and how lexical phrases are indirectly the carrier of inferences, in my book on 'Language as Dialogue' (2009a, 222–225). We can expect that our dialogue partners have, to some degree, so-called *encyclopedic knowledge*, as we could already see with an example of predication, analysed above (Example 10, IV 5):

Doris is waiting at the airport.

The example is an *indirect speech act*. To identify the real purpose you need to know the conditions of our actual life. Indirect speech acts are a clear example of the general principle that we mean more than we say, in this case:

‘Could you please fetch Doris?’

The utterance, and especially the use of the lexical item ‘wait’, aims at being recognized as reason for the action ‘fetch’, and this should be indicated as a feature of the lexical entry: [reason for an action such as ‘fetch’].

Another example, also of the type of an indirect speech act, is Brown and Yule’s example (1983; Example (2) above):

The doorbell is ringing. – I am in the bathroom.

This example has often been dealt with as if missing any connection between both utterances (see above VI 4.3). As I elaborated (e.g., Weigand 2009a, 223), they are connected by the Dialogic Principle between initiative and reactive utterance, which in this case presupposes *world knowledge* of our actual life situation. Cognitive means, like inferences, are not some independent world knowledge to be speculated about in philosophy. What is called ‘world knowledge’ is knowledge possessed by human beings, individually applied in dialogue, dependent on cultural habits, evaluations and conclusions. The lexical items could be annotated with this sort of interrelations between events of our life:

<i>ring</i>	
[ringing (doorbell)]	→ [open the door]
REASON	CONCLUSION

I am in the bathroom.

[being in the bathroom] ≠ [appear in the public/open the door]

Figure 37. Lexical items and world knowledge

World knowledge, based on human experience, enters the lexicon as relation of probability. It is relevant not on its own but with regard to the influence it has on the meaning of dialogue. Once again world knowledge as cognitive means demonstrates that the lexicon is not an independent subject matter but an integrated component of a grammar of performance. The *choice* between possible meanings is to be made in use *by the individual speaker* in dependence of the actual life situation.

4.8 Integration of emotion

Human beings are emotional beings. Emotions cannot be dealt with as separate feature but are interrelated with reason, as confirmed by Damasio (2000):

emotion ↔ reason

Figure 38. Emotion and reason interrelated

Contrary to other human abilities, emotions are not subordinate to intentions. However, the possibility that they are intentionally motivated is not excluded. They can, for instance, be used in order to support the purpose, within the *prism of culture*.

It is really strange to see how emotions are dealt with in some recent approaches, for instance, in linguistics. Wiltshko (2024) indeed argues for a 'theory of constructed emotions'. It is hardly believable how far astray constructionism can be extended by reference to perspectives such as 'phylogenetic, ontogenetic and neurological properties'. Is human nature dependent on methods of the past?

Contrary to such pseudo-scientific constructions, I will start with an authentic example, which uniquely demonstrates the complexity of human emotional action. At the centre of the whole action game, there is a speech act which demonstrates culturally dependent principles of emotion (Weigand 2004, 18). It was in New Orleans during a conference held over several days, on the Saturday before Easter. With a few colleagues, we left the building, a conference centre, where we were staying, and were confronted by a striking sign skilfully painted, which was posted right in front of the entrance. On the sign we read (names changed by EW):

(91) MIRIAM does still LOVE LARRY unconditionally.

My colleagues and I, from Northern Europe, were surprised and looked and studied the sign. Larry was the name of the head of the conference centre, a reserved type who was rather reticent. Apparently, it was he who was meant. What struck us most was the fact that this was a declaration of love. A very private individual love story had been deliberately made public. The sign was intentionally installed at the entrance so that everybody noticed it and connected it with the head of the conference centre. The writing was an explicit performative speech act, however, very interestingly in the 3rd person.

Now we might reflect (Weigand 2004, 18–20) on universal versus culturally shaped emotions. There is undoubtedly an emotion called love in America and in Europe and everywhere else. But what is love? Is this a linguistic question at all? What is the meaning of the verb *love* on the sign? It is not at all a defined concept

but a concept which varies and is indeterminate and different for every speaker. In different cultures different principles are used to express it. Whereas in Northern Europe we often follow a principle such as “Hide your emotions in public,” such a principle does not seem to be pervasive in America. Love, a very private emotion, is deliberately and without any reservation made public. We must however admit that even in Europe teens declare their love by openly and publicly writing *I love you*, however, at least partially in an anonymous way. In this specific American action game Larry was a man in his fifties.

Even if we were always to be cautious in drawing general conclusions from a single event, it seems to indicate that Americans deal differently with private emotions. This is confirmed by other experiences during our stay in New Orleans. For instance, walking in a park, we passed a man sitting on a bench phoning. ‘Hi’, he addressed us, ‘I am talking with my brother’, and then followed the whole private story of his brother. Such behaviour is quite unusual to people from Northern Europe who would never start a conversation with complete strangers by telling private stories except perhaps in a pub after a few glasses of beer. The question as to what remains private for Americans suggests itself.

The sign in front of the conference centre contains other very interesting details which confirm the integrational view. Not only verbal means but also perceptual means are used: different types of writing, capital letters, underlining, different colours, and mainly the painting of a heart above the word LOVE thus combining feelings with the body according to folk understandings of emotion. All these perceptual means stress the urgency of the feeling and expose privacy once more to the public.

Moreover, there is another intriguing point in the writing to be reflected on. While standing around and wondering about it, a colleague from Britain commented: “There must be a *sad story* behind it.” How do we know this? Nothing is expressed explicitly. The fact that love still persists is expressed. We could try to construct inferences which might lead from the declaration of love to the sad story. We follow paths of probability and even only possibility in order to grasp the complex we are confronted with. The way the declaration is made must contain some hint of a story which is waiting to be fulfilled or worse which seems to be unable to be fulfilled. Again we wonder why Miriam declares her love in public, on the street, and not personally towards Larry himself. Why does she use *does love* and not simply *loves*? Moreover, *still* might be a means which expresses the fact that she is still waiting for her love to be fulfilled. Also *unconditionally* is full of possible meanings and points to problems and hindrances of a sad story.

In this way, by bringing different variables together and integrating them, we try to make sense of a complex action game which only consists of one single utterance. The problems of understanding this utterance as a component of the

action game are increased by the fact that we are only observers of the action game. Naturally, Miriam and Larry could tell us more. But not even they as speakers seem to be able to deal with their emotions in a satisfying way. Words and communicative means come to an end, and the inexpressible remains. What we can clearly see, is that the event combines various features which are integrated in the complex whole. It relates to an action by an individual, with a certain dialogic purpose and carried out by the integration of verbal and perceptual means. The action is directed to an *insider*, the conditions left unknown to the observers.

Moreover, we see that emotions are *culturally differently* shaped. It seems that in America private emotions are more freely displayed in dialogue. In general, we can observe different *Emotional Principles* applied in different cultures. They can be summed up by their relation to reason:

Emotions can be held under control by reason.

They can be in conflict with reason and can even lead to conflict.

They can be dominating.

Authentic dialogues can be found in my article 'emotions in dialogue' (Weigand 2009a, 173ff.).

4.9 Integration of culture and morality

Human beings are cultural beings, and they are moral beings. According to *Edward Wilson* (2003, xxii), "humanity is the species forced by its basic nature to make moral choices". The double nature of human beings opens up the field between selfish and social action. Any action will take a position between these poles. Culture plays a decisive role by setting up guidelines for moral reasoning, for instance, within the family, due to the coevolution of genes and culture. Human beings are cultural beings, and this contradicts pragmatic attempts to simply add cultural features to verbal features of the utterance. Culture is a feature of any community and manifests itself as an inseparable component of the utterance (Marchand 2010), as can, for instance, clearly be seen in the following authentic action game (see also Weigand 2018a, 22):

Two mothers talk about their daughters:

(92) E Does your daughter criticize you much, too?

O I'd like to see her try.

E Macht Ihnen Ihre Tochter auch ständig Vorwürfe?

O Das soll sie sich mal erlauben!

O repudiates a situation presupposed in E's utterance: reproaches are not permitted in the family of O. Cultural conventions are thus integrated into the utterance and cannot be separated at the empirical level.

Culture also decisively affects *evaluation*, as we already illustrated with examples of *compliments* in Part IV 6.3 when introducing evaluation as an inborn component of human nature (Example 15). In general, there are no fixed categories of evaluation, such as telling us definitely what is negative and what is positive. Evaluation is, in principle, *biased evaluation* dependent on culture-specific guidelines, reaching out from striving for harmony to taking a confrontational stance, as outlined in the Figures 11 and 12 above. Biased evaluation mainly affects the role of the individual in the community and therefore also influences the strategies taken in institutional games, for instance, in business or politics (Rapaille 2007; Weigand 2018c; Weigand 2022, 162; Harford 2007).

Against this background, the issue of *politeness* plays a different role in different cultures. It can have meaning not only when we are searching for harmony but also when we are persuasively supporting the individualist line. I am aware of the fact that such a rough-and-ready distinction between the balance of self-interest and respect in behaviour will have to be more clearly differentiated in future studies of anthropology and *ethnopragmatics*.

4.10 Integration of persuasion

Human beings are also persuasive beings. New Rhetoric has been introduced by Perelman and Olbrechts-Tyteca (1971) with a focus on persuasion. However, the concept of persuasion has not been clarified. To my mind, persuasion is an inborn human characteristic: *human beings want to be accepted*. This inborn feature can be considered as the basis of human action. The means applied to achieve it are manifold. They are the object of traditional rhetoric even without tracing them back to the meaning of persuasion. Human beings are not lost in the chaos of ever-varying action conditions of a world in non-equilibrium but are competent-in-performance to achieve their interests.

Rhetoric in this sense as the means for persuasively achieving one's purpose is integrated with all the other variables of the action game. There are basically *two types of arguing dependent on strategies*, one trusting the strategy of reason and one trusting the strategy of power, as demonstrated in the authentic action games below. Both examples go beyond the scope and methodology of analytic philosophy, post-modern philosophy and classical science. We can, in principle, apply two different strategies for effective action: the *persuasive strategy of cooperation and motivation*, as used in the first example, and the *strategy of confrontation, power and suppression*, as used in the second example (Weigand 2010, 123f.; Weigand 2021a, 554). Both examples are directive action games.

The first example is a dialogue between a girl and her mother. The situation is the following: The girl tries to persuade her mother to allow her to take part in a very attractive but also expensive school exchange program with America. The mother has not decided yet and is more inclined to decide for a cheaper program:

- (93) Girl We have to talk about America. I thought I could save, I could earn money by giving lessons and I would contribute the money I have in my account.

Mother Well, I'll think about it. Be quiet, I tend to agree.

Without expressing it explicitly, the central speech act of the girl that underlies her utterance is: 'please let me go to America.' Her strategy of persuasion consists of giving arguments in favour of her claim to volition. These arguments become effective on the basis of cooperation. No special rhetorical expressions are used.

The other example can be considered as a counter-example because it uses the strategy of confrontation. The central speech act, indirectly expressed, is again based on a claim to volition. The dialogue however suddenly changes into a display of power and oppression. In this case, however, power is the wrong means to use because it is vacuous, only simulated:

- (94) A We have asked you to present a joint working plan.
 B Here it is.
 A (angry) This won't do. You cannot start with your position only.
 B But I expressed it as you wanted it, some time ago.
 A (very angry) We won't discuss with you.
 B OK, then I might as well go

A tries to oppress the colleague by means of harsh undemocratic power: *we won't discuss with you* which might have been successful with a shy and timid interlocutor, but in the actual case it leads to the dialogue breaking off. We see that all these variables, the dialogic claim of the speech act, strategic means, and also emotion are included without being explicitly expressed.

Another type of persuasion relates to the *argumentative power of words* (Weigand 2009a, 365ff.). In the question of how to move people's minds with words, we might distinguish two rhetorical techniques, the *voice of rationality* and the *voice of persuasion*. Rationality relies on the fact that the steps of argumentation are conclusive and emphasizes the clarity and lucidity of how we depict what we want to present as facts. Sincerity does not necessarily play a part. Rationality is *not a universal value*. In performance, there is no pure rationality. *Rationality of performance* (Weigand 2014) is dependent on specific cultural conditions and includes persuasion and *indirectness*. As we could see in the example above (VI 3),

words are ambiguous in multiple ways and can be used for indirectly pointing to events not explicitly expressed.

Indirectness is also an important technique for behaving in a *polite* way (see above VI 4.9). Politeness is a concept of meaning which can be used for different purposes, e.g., effectiveness of the own position versus respect for the partner. The question is how it is expressed. Sentence types and particles can play a role. In general, the principle 'don't express your purpose directly' is a leading principle which induces the speaker to express his/her purpose in the form of a question sentence instead of directly as directive or representative speech act. Particles, such as *perhaps*, can also be used in order to show politeness. On the whole, contrary to ideal principles such as those applied by Grice (1975), politeness as relation between form and purpose is a highly complex phenomenon, which depends on the speaker's individual decision to take a position in a world of diverging interests.

5. To sum up

New Science poses the sophisticated problem of opening up the complexity we are living in. In principle, this represents a task which is nearly impossible to tackle because it goes beyond certainty and asks to structure what, in principle, cannot be structured according to traditional views of structure. Nonetheless, it is precisely what human beings are practicing every day: finding their way through the vicissitudes of life. Human experience tells us from the outset: this task cannot be precisely or completely tackled. Complexity cannot be analysed by methods of certainty, by rules, but requires starting from scratch. What has been dominant so far, the rule-governed pattern, does not exist in its artificial structure in performance. Complexity requires us to go beyond what has so far been considered the only scientific method, the rule, and to start from the object, the complex whole, and to derive from it how human beings can manage to cope with it. This is the problem of a 'grammar of performance', a phrase that changes the meaning of 'grammar' completely.

Life does not mean thinking, but having a purpose. Action and behaviour in performance require human beings to come to grips with a world of non-equilibrium. It goes without saying, that this cannot be achieved by seemingly independent artificial systems but by human beings' extraordinary ability of *competence-in-performance*. *Human beings are at the centre* of any attempt to tackle complexity, which means *adaptation* to ever-changing action conditions. Adaptation is directed towards a purpose which complies with human nature, and proceeds by means accessible to human nature. Most of the components, both of the purpose and of the means, are integrated and interact in order to achieve the

purpose. The principle of '*Integration is the name of the game*' shapes the whole endeavour.

With such components of complexity, it is hardly possible to design what adaptation clearly means at every step. There is no clear-cut way, human beings can, in principle, proceed as they prefer. They are guided by their double nature, being individuals and dialogic-social beings at the same time, which fortunately has been confirmed by natural sciences. Humans are defined by *purpose*, the world they are 'embedded in' is a *world in non-equilibrium*. To my mind, this is the decisive step which characterizes New Science: the co-presence of deterministic and stochastic phenomena. In combining in this way insights of natural and human sciences, we can get close to consilience or the unity of science in a 'grammar' of performance.

The relation between meaning and means, so far taken as the core of a grammar, can no longer be considered as independent system but is to be recognized as human action determined by purpose. In this way, the insights of New Science are based on the insights of the natural sciences. Action is not an independent concept but dependent on the environment. Grasping the environment as it really is, we arrive at a very important point which changes the science of the past. Performance does not impose to restrict everything to a rule-governed system. In performance, there is no such system at all. New Science cannot be a science of the method but is a science of the complex object with human beings at the centre. Prigogine's insight of the co-presence of deterministic and stochastic phenomena (1987) is, together with other insights of natural science, constitutive for New Science and for the concept of a 'grammar' of performance. We no longer need to exclude exceptions but can follow the line of a *zigzag journey* (Wilson 1999) when trying to come to an understanding. Grammar is no longer a fixed pattern but means following the steps of adaptation in 'dialogue in the stream of life'.

The complexity of this journey contradicts the claim of a definitive description. Outstanding principles and examples can be elaborated, most of them determined by the basic principle of 'integration'. Components of this process are human abilities, variables of the environment, and purposes dependent on other variables of the whole game. In Part VI, we focused on 'one-phase' dialogues, which means 'one purpose' dialogues. They can also be extended syntactically by internal sub-purposes. As a matter of fact, there are multiple complex dialogues which go beyond the unity of one purpose. I am going to delineate principles of 'multi-phase' dialogues in the next Part.

PART VII

Complex games

Beyond the unity of purpose

So far we have been dealing with the issue of a 'grammar' of performance within the reach of one purpose or one phase. The structure of one phase can be internally extended by sub-purposes, for instance, a sequence of clarifying. Such sequences do not touch the super-ordinate correlation of the initiative and reactive action. Besides clarification, the sequence can also be extended by repetition in order to underline and insist on the purpose of the phase (Hundsnerscher 1981).

Apart from such extended games, there are games which are based on complex purposes that need to be worked off in additional phases. Such *complex multi-phase games* can arise for different reasons, for instance, in order to negotiate complex issues of institutions, or for everyday issues that need the mediation of experts, but also by deliberately creating other worlds, for instance, in fiction. In Part V 5, I dealt with the 'division of labour' by specialising the purpose. It is not situations or knowledge that are differentiated but different types of purpose that have become relevant in the course of evolving societies. Specialising the purpose is, as a matter of fact, accompanied by growing knowledge in specific fields and dependent on societal conditions. For instance, the general purpose of business may be grasped as 'making profit', but in particular will be addressed quite differently dependent on conditions of the society, for example, capitalistic or communistic. In this sense, the field of business can be specialised by different sub-fields which demand different sub-purposes:

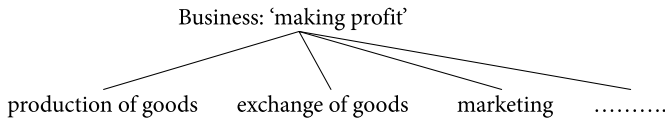


Figure 39. Sub-fields of business

Describing the different fields resulting from the 'division of labour' requires first to grasp the general purpose of the field, and secondly, presupposes that the general purpose can be decomposed. In a first attempt, I would propose the following rough specialisation (see also Figure 28, V 5):

For business: make profit

For law: decide with validity controversial issues

For the media: transmit information, neutrally as far as possible, or from a specific viewpoint

For health care: strengthen health, consult and decide medical issues and inform the patients

For instruction: teaching, bring about learning

The next step requires decomposing these general purposes, which includes the question of how to effectively proceed in the sequence of actions. To my mind, there are a few basic action complexes any institution is confronted with among them STOCKTAKING, PLANNING, PROBLEM SOLVING and CREATING ASSURANCES which might be following each other in a sequence (Weigand 2010, 235ff.):

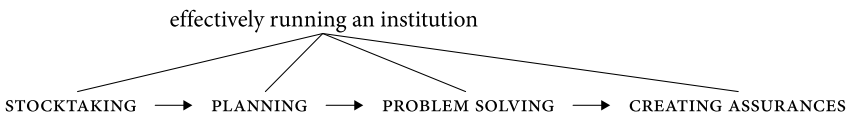


Figure 40. Basic action complexes

These action complexes can be further decomposed. PLANNING, for instance, can be roughly decomposed as sequence of action games of the following type:

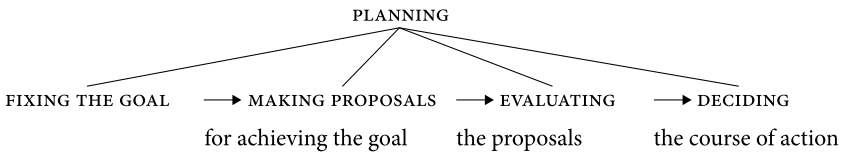


Figure 41. Components of planning

The process of specialising or deriving the next steps can be continued by decomposing sub-purposes. In the end, it needs to be confirmed by the analysis of authentic games which take the step to individual action. In this way, I analysed an authentic business game (Weigand 2010, 240ff.) and also games of law (e.g., Weigand 2005) and of instruction (e.g., Weigand 2006b) (see also Trompenaars and Hampden-Turner 2020 on cultural diversity of business games, and Harford 2007 on the performance of economics). It becomes obvious that describing the complex whole more precisely in a justified way cannot be taken as work of one scholar. It will be the challenge of science of the future. What is most important is that derivation primarily follows the path of purpose and does not get adrift to criteria of knowledge or situation.

Unfortunately, some publications do not focus on the purpose but instead shift immediately to aspects of the situation the purpose is related to. In this way, the purpose is emptied to 'talking' about social or judicial structures, even to considering dialogue as narrative. Dialogue as inborn purpose of the species gets lost and erroneously becomes an issue of the *sociological field*.

I will illustrate the course complex games can take with an example which arises by different viewpoints of the interacting parties and requires the *mediation of an expert*. This type of action game is particularly interesting because it demonstrates that the general purpose of coming to an understanding cannot always be reached by the participants themselves. They need the advice of an expert, who by his competence can also rely on some power for his decisions.

Moreover, the example I am going to analyse is a useful example to demonstrate a central premise of New Science, namely, that interaction proceeds in a *zigzag journey* if different interests meet. Human beings are prepared to tackle the vicissitudes of life by their extraordinary ability of competence-in-performance. I already analysed this authentic example in an article of 2015 but then I was not aware yet of the basic feature of non-equilibrium of our world. Non-equilibrium also characterizes human double nature. We already had a clear example of an everyday dialogue above, and the example I am now analysing is an excellent example of a difficult interaction which necessitates introducing an expert.

The interaction takes place in the environment of a new house under construction. The interacting persons consist of two groups: the client E, myself, joined by her architect D, and the opposing group of the tradesmen who constructed the windows and balcony doors, the owner of the firm R and his employee B. Empirically, we can distinguish three phases: a short preceding phone call between E and R, the central dialogue at the actual location of the new house, and a closing sequence. The original dialogue is in German (see the appendix). The transcript was made immediately after the dialogue had finished. For our purpose of elaborating the underlying structure of a zigzag journey, prosodic features of intonation and accent need not be transcribed phonetically as they do not have a clear and independent effect.

The text is only one component of interaction which is not independent in New Science. Against Sinclair, we cannot 'trust the text'. Verbal means are integrated with perceptual and cognitive means. I will not divide the analysis into paraphrasing and theorizing, as I did in my article of 2015, but will immediately point to the essential features of New Science in the course of action. I already mentioned above that genuine understanding is, in difficult cases, only achieved by an insider of the game. Fortunately, I participated as insider in this case (E).

(95) (in translation, see the original in the appendix)

Pre-phase, by telephone

- 1 E Yes, but we have a problem now, *the door upstairs is too wide*.
 2 R Yes, we'll have to have a look at it.

Central phase at the location of the new house

- 3 R Hm, hm [on seeing the problematic result]
 4 E It can't stay like that. The question is why the door was put in there at all.
 5 R We weren't there when the door was put in.
 6 E Now they've taken out part of the wall and they even wanted to take away the roofing tiles. That's completely unacceptable. And besides being structurally wrong the appearance is also wrong. Now the panes at the top are wider than the ones at the bottom and the whole thing was supposed to fit in with the structure of the roof.
 7 R The roofing tiles can stay as they are, we just have to finish off the wall there and on the other side we can stop up here.
 8 D Then the wall wouldn't be symmetrical any more.
 9 E That's not a technically neat solution and it wouldn't change the fact that it doesn't look right.
 10 R Yes, but from below you hardly see anything and you only notice it if you know. And besides there are going to be railings there so it wouldn't be noticed.
 11 E Correcting it afterwards, changing things here and there, adding something and taking something away, none of that makes it any better. There's only one solution: *the door has to be taken out*.
 12 R No, that's out of the question. *The door's not coming out*.
 13 B We could put in a screen.
 14 R And that can be done here on site?
 15 B Yes, why not?
 16 R Hm, hm ... [shakes his head]
 17 E To get to the crux of the matter: the appearance, the look of the thing is what is most important for us and we've paid a lot to make sure the appearance was right, at least from the front. And the house does look good, and now everything is going to be ruined because of this door.

- 18 R The quality won't be any better if we take out the door, take it away and put it back in.
- 19 E Mr. D, what do you think ...?
- 20 D Well, if it has to be done ...
- 21.1 R The cost will be exorbitant, we need a crane to take away the door and bring it back, that costs 1,000 euros a day. And the panes will have to be ordered again, we can throw these away, that will be a total of about 8,000 euros.
- 21.2 R to B Why didn't you get the correct measurements?
- 22 B Well, a frame was in front of it and so I couldn't see it properly.
- 23 D Well, you should have moved it and looked behind it, in the contract it clearly stated, three times, with doubling ...
- 24 E Anyone can make a mistake, well, we'll just have to make it good.
- 25 R My son said don't lean out too far ...
- 26 E Well, we agree on that then ...
- 27 R Well, we'll just have to do it.

Post-phase, continuing the dialogue after reaching the agreement

- 28 E We still have to sort out the handles.
- 29 R Yes, you get handles with keys ...
- 30 E I've heard that you can get lockable handles without keys.
- 31 R Well, you'll have to come and look at the handles.
- 32 E Yes, all right, we'll come and have a look at them.
- 33 R Just phone us and we'll arrange a time for you to come.
- 34 E Right, we'll do that.
- 35 R OK then, good bye.

We clearly see that the key component which structures the whole game is *purpose*, introduced first as a *problem* (line 1) and then explicitly expressed as the purpose of a *reproach*:

- (1) E The door upstairs is too wide.

In complex cases, a reproach cannot simply be reacted to by an excuse or a rejection but necessitates negotiation. The interlocutor R therefore adopts the *strategy of wait-and-see*:

- (2) R Yes, we'll have to have a look at it.

REPROACH (directive subtype) ↔ WAIT AND SEE → negotiating/getting as much as possible

The procedure of *negotiating* is clearly a *zigzag journey* of trying to get as much as possible, and it takes place in a world determined by the *co-presence of deterministic and stochastic phenomena*. At the centre there are human beings who orient themselves according to rules as far as they go but can in any moment decide individually. The co-presence of deterministic and stochastic phenomena is the key factor of performance. Performance is a process of adaptation, in situ, which, in the end, proceeds by individual strategies. At the bottom of every interactant party there is the purpose, in our game to be successful, to make profit. If possible, strategic principles of power are included but they have to interact with other interests which affect the relationship among the participants. In general, integration is the name of the game.

Adaptation means starting from the complex, focusing attention on as many variables as possible and approaching each other step by step, checking how far they might go without losing too much. It is a zigzag journey adapting to evolving conditions of action, which from the beginning might not be clear. Strategic principles are important. They may range from an intransigent strategy of not giving in, as first followed up by the tradesman (line 12), to a strategy of averting damage by problem-solving and making concessions. In principle, the tradesman is prepared to give in and to avert the damage. E, on the other hand, insists on her position and is not going to budge because she knows her opponent is to blame. For any contingency, she has asked her expert D to back her position. These contrary strategies first lead to the dialogue break in (11) and (12):

(11) E There's only one solution: *the door has to be taken out*.

(12) R No, that's out of the question. *The door's not coming out*.

but then proceed to negotiation and can close the interaction satisfactorily.

The sequence of a zigzag journey is underlined by the *interaction of the means*. We not only act with verbal means, cognitive means and perceptual means are decisive and demonstrate that only insiders of the game can really understand what is going on. E knows that there are two owners in the company which constructed the windows and balcony doors, R and his son, and it is the son who has the greatest decision-making powers:

(25) R My son said don't lean out too far ...

Saying *don't lean out too far* means 'go as far as you can but don't break our relationship with the client'. It is thus an instruction about the strategy to take. The tradesman R follows this principle, controlling his emotions by reason versus the client but not against his employee B when he blames him for having taken the wrong measurements

(21.2) R to B Why didn't you get the correct measurements?

E, on the other hand, can allow herself playing down the issue by saying

(24) E Anyone can make a mistake.

The example demonstrates the complexity of our world which also includes ourselves. By our own nature as dialogic individuals, we are ourselves in non-equilibrium and have to see how to tackle the contingencies of life. The question is not a question of 'constructing' or of emerging utterances. The question is how we are, by our competence-in-performance, prepared to find a way through the complex we are living in. For science, it means starting from scratch and developing New Science in order to describe 'the meaning of it all' (Feynman 1998). It will be necessary to integrate natural and human sciences not by inventing methods but by starting from the object, which is an object of meaning, human nature and the environment.

Outlook

From basics to the challenge of the future

New Science aims to *unite natural and human sciences*. I hope I could, at least, design the basic lines of this endeavour. I could never understand why natural and human sciences can go different, separate ways as if the other side does not exist. For anything we can imagine it is always *we who are at the centre*. Where are systems, closed patterns independent of the human mind? Also in the natural sciences what we believe to know is limited to human belief. To my mind, it is indisputable that there is the animate and the inanimate, the animate determined by *purpose* and the inanimate determined by *cause and effect*, but both are connected in the human mind.

Science is waiting for a theory that does not start with method but dares to address the object. However, what is the object? The *object* is the complex whole of 'life in the world around us'. It is, in the end, *an indissoluble whole* of components which are integrated and interact with each other (Marchand 2010). The issue in science, in general, is the *relation between object and method*. As long as we were under the spell of certainty and truth in science, the starting point has been the method, in particular, the rule-governed method of closed systems, which limits the object to an artificial one. As soon as the scientific interest changed from the artificial towards reality, the starting point could no longer be the method. In principle, the method does not determine the object, but on the contrary, the method derives from the object. Science has to start from an object never addressed before. The complex whole requires us to develop *New Science* from scratch.

There is no bridge between traditional science of certainty which, according to Chomsky, rests on competence, and New Science, addressing performance. The bridge is created in the mind of human beings by their extraordinary ability of *competence-in-performance*. Science presupposes verification. Human beings are at the centre of any scientific approach. Science should, therefore, be verified by human nature. Competence-in-performance arises from the integration of human abilities. The human species has a *double nature*, being individual and social-dialogic at the same time. We are not a species which is distinguished from others by being capable of speaking or capable of thinking, but by being able to integrate various abilities in their double nature. Science is not forced to fol-

low order if there is no rule-governed order in performance. The order in performance is *adaptation* by which human beings aim to cope with complexity.

Having outlined the basics of New Science in the first Parts of this book, I am going to describe the decisive steps of adaptation. The starting point is meaning. Purpose determines meaning. Everything starts with human needs and desires. Already here we can see that the structure cannot be a rule-governed pattern but a structure of integration of the components. In action, to my mind, purposes arise from interests and relate to events consisting of reference and predication. In this way, the basic *universal structure of meaning* is elaborated in Part IV:

Interest [purpose (reference and predication)]

Human beings as dialogic individuals are at the centre, and shape each component as dialogic component, starting with the purpose of the species, which is individual and dialogic at the same time. In this sense, I conceive of the general inborn purpose of human beings as being to survive in the complex whole and to come to some understanding with their fellow beings.

At this point, the question arises how these general components are specialised. So far, we were accustomed to hierarchies built by division and addition of parts, like the generative hierarchy. Complexity, however, does not consist of separate parts but means integration of components and requires a New Hierarchy built by decomposing the components (Part V). To my mind, it is amazing to see how far we can come with deriving the components from the complex whole by specialisation, most impressively by specialising the purpose towards individual dialogic actions of performance in the new hierarchy of a dialogic speech act taxonomy (Part V).

These reflections are not storytelling but verified by natural sciences, especially sociobiology, going back to neurobiology as well as sociobiology, as described by epigenetics, and are based on the concept of the co-evolution of genes and culture. At this point Prigogine's concept of non-equilibrium cannot be ignored. It is non-equilibrium which affects human nature and basically shapes what could be called a 'grammar' of performance. A near-universal meaning structure is expressed by specific means in different languages and cultures. We are not forced to exclude exceptions, on the contrary, a world in non-equilibrium is based on the co-presence of deterministic and stochastic phenomena. This completely new view permits to grasp human competence-in-performance when adapting to complexity which, according to Wilson, proceeds in a zigzag journey (Part VI).

In this sense, natural and human sciences are united in exploring and verifying human action and behaviour in the real world. There are no absolute rules. Human beings orient themselves by principles of probability based on what they

can expect according to their experiences. Life is not a chess game. The wonder of life, cannot be described as a patchwork of aspects from different disciplines but waits to be grasped as a melody of the whole. The basic premise is *dialogue as action*. According to the co-evolution of biology and culture, the theory will, from the very beginning, be a *comparative* theory, by starting from a universal structure of meaning and specialising means and meaning in different cultures.

The whole is far too much to cover in one book. We are at the beginning of New Science. I tried to elaborate the possible within the impossible and would finally like to express my hope that scholars in the future might continue to bring light in this enterprise of 'dialogue in the stream of life'. The various chapters can represent the basics for further studies, leading mainly to specialising the results in a new anthropology that does not separate parts but addresses the components of a complex whole which is, in the end, undissoluble.

Epilogue

Finally, I would like to make just one point which seems to be left, the point which refers to the ‘message of dialogue’. Dialogue as an inborn feature of the human species not only means that human beings are dialogic individuals but also implies the *right to dialogue*, which unfortunately is not always and everywhere permitted. I gratefully remember the work by Gabriella Valera Gruber (Trieste), who dedicated her life to the right of dialogue for the young worldwide (‘diritto di dialogo’).

It is not power and war which we should give the right to shape our living together. We are called to protect humanity in a world striving for power. Life is like a flower and we should endeavour to let it blossom in freedom.

Life is much more than order. It is a *melody* that arises from components and, in the end, remains a wonder in the stream of life. So why should science be restricted to the order of closed systems? The meaning of human existence is waiting.

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APPENDIX

The German original text

Pre-phase, by telephone

- 1 E Ja, da ist ja nun leider ein Problem aufgetreten, die Balkontür oben ist zu breit.
- 2 R Ja, müssen wir mal sehen.

Central phase at the location of the new house

- 3 R Hm, hm [on seeing the problematic result]
- 4 E Das kann so nicht bleiben. Ich frage mich, warum die Tür überhaupt eingebaut wurde.
- 5 R Beim Einbau waren wir nicht dabei.
- 6 E Jetzt ist ein Stück der Mauer weggenommen und dann wollte man sogar noch die Ziegel wegnehmen.
Das ist völlig unmöglich. Außerdem stimmt jetzt neben dem Technischen die Optik nicht mehr. Jetzt sind ja die Scheiben oben breiter als unten, dabei sollte sich das Ganze ja entsprechend dem Dach verjüngen.
- 7 R Die Ziegel können ja so bleiben, wir müssten halt hier einen Abschluss machen und an der anderen Seite könnte man auch hier oben aufhören.
- 8 D Dann wäre die Tür aber nicht mehr symmetrisch.
- 9 E Das ist keine saubere Lösung, und an der Optik ändert das auch nichts.
- 10 R Ja, aber von unten sieht man das ja fast nicht, nur wenn man es weiss, sieht man es. Außerdem kommt noch ein Geländer hin, so dass es nicht mehr auffällt.
- 11 E Dieses nachträgliche Ausbessern, hier und da etwas ändern, dazutun, wegtun, dadurch wird es doch besser. Es gibt nur eine saubere Lösung: die Tür muss raus.
- 12 R Nein, das kommt nicht in Frage. Die Tür kommt nicht raus.
- 13 B Man könnte ja auch eine Blende einsetzen.
- 14 R Und das sollte hier am Bau gemacht werden?
- 15 B Ja, warum nicht?
- 16 R Hm, hm, ... [shakes his head]

- 17 E Um es mal auf den Punkt zu bringen: für uns war die Optik schon wesentlich, wir haben immer darauf geachtet und viel dafür auch bezahlt, dass die Optik, zumindest von vorne, stimmt. Und das Haus ist auch schön geworden, und jetzt soll das alles wegen dieser Tür verpfuscht werden.
- 18 R Durch das Ausbauen der Tür, Abtransportieren und wieder Einbauen wird die Qualität auch nicht besser.
- 19 E Herr D, was sagen Sie dazu ...?
- 20 D Na ja, wenn es sein muss ...
- 21.1 R Die Kosten sind ja enorm, wir brauchen einen Kran, der die Tür abholt und sie wieder bringt, das kostet pro Tag 1000 Euro. Und die Scheiben müssen auch neu bestellt werden, diese hier können weggeworfen werden, das kommt insgesamt auf ca. 8000 Euro.
- 21.2 R to B Wieso haben Sie das denn nicht richtig ausgemessen?
- 22 B Ja, da stand ein Rahmen davor und so konnte ich nicht genau sehen.
- 23 D Ja, das hätten Sie halt wegtun müssen und dahinter schauen müssen, Im Auftrag stand deutlich, dreimal, mit Aufdoppelung ...
- 24 E Fehler kommen immer vor, dann muss man sie eben beseitigen.
- 25 R Mein Sohn hat gesagt, lehn dich nicht so weit vor ...
- 26 E Na ja, dann verstehen wir uns ja ...
- 27 R Na dann müssen wir das halt machen.

Post-phase, continuing the dialogue after reaching the agreement

- 28 E Die Griffe müssen wir ja auch noch klären.
- 29 R Ja, Sie bekommen Griffe mit Schlüssel ...
- 30 E Ich habe schon gehört, dass es auch abschließbare Griffe ohne Schlüssel gibt ...
- 31 R Ja, Sie müssten halt mal kommen und die Griffe anschauen.
- 32 E Ja, gut wir kommen und schauen sie an.
- 33 R Ja, rufen Sie halt an, dann machen wir einen Termin aus.
- 34 E Gut, das machen wir.
- 35 R Gut, dann auf Wiedersehen.

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This book looks beyond the limit of certainty which has long been taken as a defining characteristic of science. Beyond certainty lies complexity. How can complexity be addressed in the framework of science? What can science of complexity mean? The first and basic principle is that we recognize that it is not the method which determines the object but vice versa. We have to start from the object of complexity and derive methodology from it. This basic principle determines New Science. Rules of predefined systems become principles of probability which comprehend the whole of the object by integration: human beings as dialogic individuals in the stream of life. Starting from the mind of human beings, these principles unite the range of different disciplines, from science to philosophy, and aim to achieve the unity of science. Insights from natural sciences represent the verifying basis, results from human sciences demonstrate how the basis of sociobiology is shaped in human action and behaviour in a world of non-equilibrium. Philosophy can finally give guidance to a humane way of life.

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