The challenge of complexity

iD **Edda Weigand** | University of Münster

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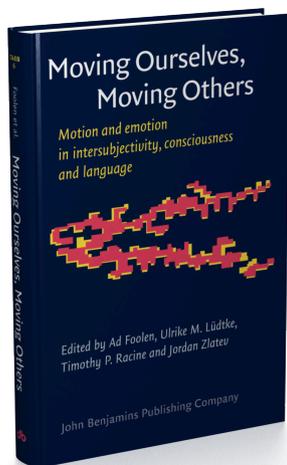and Jordan Zlatev**
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The challenge of complexity

Body, mind and language in interaction

Edda Weigand
University of Münster

In our post-Cartesian times we can assume that human abilities are integrated abilities and that body, mind, language and emotion interact. We can finally open up the 'black box' and observe how the brain works, at least to some extent. 'New Science' has been developed on the basis of consilience or the unity of knowledge of the natural and social sciences and the humanities. The challenge is to describe how human beings address the complexity of life, which includes the issue of how we can move others by moving ourselves.

The chapter starts from human beings and their abilities, which are determined by human nature, the environment and culture. On a sociobiological basis it proposes a holistic approach that aims to explain how human beings act and react in ever-changing surroundings. Different theses on the relationship between the individual and the species are discussed, resulting in the view of human beings as social individuals who need to go beyond the shared mind and to interact in dialogue. The Mixed Game Model is introduced as a holistic model that starts from the natural object and derives methodology from it. The object is the complex human ability of 'competence-in-performance', which requires an adequate methodology based on Principles of Probability. A few authentic examples are analysed in order to illustrate how different human abilities interact in language use, especially the abilities of speaking, thinking, having emotions and perceiving, and to show how they enable us to move others by moving ourselves.

Keywords: emotions; integration; consilience; sociobiology; holism; the Mixed Game Model; competence-in-performance

1.   Living in post-Cartesian times

How is it possible that 'moving ourselves' can lead to 'moving others', those we do not even know, those who might live at the opposite side of the world? Many actants are involved: words in language use such as *to move*, modern communication technology, and at the core the internal relatedness of ourselves and others. The "New Science" addresses the issue of "how we connect with others" (Iacoboni 2008). The connection

certainly is made in our minds but is not restricted to our minds. Can it make sense to consider the human species as beings destined to understand each other? The human species is a species of individuals who need to interact in dialogue. The mental ability of 'understanding' in the hearer's mind is only the first step in the interactive process of 'coming to an understanding'. From the very beginning, mirror neurons point to action and not only to understanding (Weigand 2002a). Dialogic action presupposes dialogic mental orientation. 'Intersubjectivity' or 'the shared mind' can be considered a precondition of interaction (Trevarthen 1999; Zlatev et al. 2008). The issue is: how are we to conceive of this *step from intersubjectivity to dialogic action*?

The 'New Science' starts from the natural object, living beings, and tries to describe their behaviour and actions by means of goal-directed observation. According to Feynman (2001: 173), "making observations" must not omit "the vital factor of judgment about what to observe and what to pay attention to". Such an endeavour cannot accept the limits of disciplines nor can it be restricted to abstraction and reduction. What is abstracted from is lost forever. The complex object inevitably requires a *holistic theory* if it is to be adequately described and explained. It does not evolve from addition of methodologically separated parts but from interaction of sub-complexes (see also Zlatev 2003: 8). As a whole it is more than the sum of all the interactions. A few voices, like Austin (1962) and Simon (1962), emphasized that the starting point has to be the complex whole. They did however not get a great deal of attention in the past. Recent neurological experiments on mirror neurons, for instance, eventually demonstrated that there is no 'simple' starting point (e.g. Rizzolatti & Arbib 1998; Damasio 1994; 2000): the physiological object cannot be separated from its function (cf. Weigand 2002: 230). From the very outset, body and mind, perception and intention are directed towards dialogic interaction.

Body, mind, and language interact, as is also testified by language use if analysed without methodological blinders. For instance, we have the phrases *the inner eye, their mind's eye* "*das geistige Auge*" or we can *move the audience* as well as *move the chairs*. Of course, we can construct artificial theories and describe such phrases as figurative or metaphorical use of language. However, separating in this way the concrete from the mental contradicts routines of language use. The concrete and the mental are connected as interacting components in the "architecture of complexity" (Simon 1962) which allows us to explain how physical motion can cause physiological (e) motion and vice versa. All our senses, cognitive abilities and emotions are embodied senses and abilities. How else could we, for instance, explain blushing as an external marker of embarrassment? Even our sense of being a self is anchored in a body (Ramachandran 2003: 125). Embodiment of cognition and emotion seems to be a key concept to human behaviour.

Human beings need specific capacities in order to cope with ever-changing surroundings, basically the capacity of adaptation. Adaptation means grasping the

complex from the very outset as a whole by any ability and means available, and by changing the course of action whenever necessary. Human abilities are used in the way they are neurologically programmed. As we know in post-Cartesian times, they are *internally connected* and used in integration. The mind or cognition inevitably interacts with other human abilities. What science has separated over the centuries in the wake of Descartes by postulating, for instance, an area of reason separated from emotion, turns out to be the result of a methodological fallacy (Damasio 1994).

Starting from human beings and their abilities is an inevitable consequence for any scientific endeavour if it seriously reflects the insight that whatever we think and perceive is dependent on our abilities. This insight might seem banal but it is crucial in respect of analysis: human *abilities are capacities as well as restrictions*. The world as such or any so-called absolute truth is beyond our reach. We are at the centre of the complex whole, we live *in* the world, not outside the world. What we perceive and think is not the total range of what can be perceived and thought. There are, for instance, animals which can see and hear what human eyes and ears cannot perceive. In the end any statement of truth remains a claim to truth, or as Wittgenstein (1972: 32e) puts it: "Mustn't we say at every turn: 'I believe this with certainty'?"

If we try to develop a theory which accounts for the complex whole, we need to go beyond traditional theorizing and to start from our natural object of study 'human action and behaviour' by means of 'goal-oriented' observation. Observation is thus combined with evaluation according to the benchmark of crucial criteria. Crucial criteria for human action and behaviour are, in the end, evolutionary criteria. In this way we can set up *premises* that circumscribe the complex object and describe how it works. The *methodology* of such a holistic theory can then be derived from the premises (see Section 3).

2.   The individual human being and the species

The complexity starts with human beings' double nature as individuals as well as social beings (Weigand 2007). The relationship between the individual and the species has been the object of various theses:

–   human beings as selfish individuals (Dawkins 2006)
–   human beings as symbolic beings (Deacon 1997)
–   human beings as intersubjective beings (Trevarthen e.g. 1999; Zlatev, Racine, Sinha & Itkonen 2008)
–   human beings as social individuals (Weigand e.g. 2007)

These will be, in turn, discussed in this section.

2.1 Human beings as selfish individuals

Nobody would object that human beings are selfish beings. I am however reluctant to follow Dawkins' thesis (2006: 2) that we misunderstand how evolution works if we assume "that the important thing in evolution is the good of the species (or the group) rather than the good of the individual (or the gene)". Of course, such a view and the catchword of the "selfish gene" excite attention. Dawkins' arguments however are not always convincing. He explains the selfish gene as follows (p. 88):

> It is trying to get more numerous in the gene pool. Basically it does this by helping to program the bodies in which it finds itself to survive and to reproduce. But now we are emphasizing that 'it' is a distributed agency, existing in many different individuals at once.

To my mind, Dawkins' argumentation turns the chain of reasoning upside down. He rightly points to the survival of "the bodies". However, he considers the bodies to be individuals and contradicts the statement that they are programmed as members of the species. I think this precisely makes the difference: according to Dawkins, human individuals are genetically programmed as individuals and can learn altruism by culture (p. 3): "Let us try to *teach* generosity and altruism, because we are born selfish." Even if he thus concedes "a limited form of altruism" (p. 2), his overall tenet stands as it is: evolution is directed towards "the good of the individual (or the gene)" rather than "the good of the species (or the group)". To my mind, however, it is hardly sufficient, in terms of evolution, to believe that the individual counts as an individual. In terms of evolution, the individual counts insofar as it counts for the species.

According to Lipton (2008: 15), "we need to move beyond Darwinian Theory, which stresses the importance of *individuals*, to one that stresses the importance of the *community*. […] Evolution becomes a matter of the survival of the fittest *groups* rather than the survival of the fittest individuals." Wilson (2004: 157ff.) imagines "a spectrum of self-serving behavior" ranging from benefiting the individual to benefiting "the highest sociopolitical units". He considers human beings as having an "innate predisposition" to social behaviour and assigns them a position "on the spectrum somewhere between the two extremes". For him it is not self-contradictory that "true selfishness […] is the key to a more nearly perfect social contract"; or to put it like Gordon (1975): "man defending the honor or welfare of his ethnic group is man defending himself".

The individual has been at the centre of philosophic interest since antiquity. Stressing now the selfish gene as an argument for the *selfish individual*, goes beyond philosophical thought and introduces evolutionary criteria. Talking about the selfish gene throughout a whole book however seems to me exploiting a single phrase inappropriately. Genes as well as human individuals are interacting members of complex networks. Genes distributing themselves as "replicators" or "distributed agencies" are

not really interacting. Interaction needs some shared basis, for human individuals 'the shared mind', which is laid down in our genetic blueprint. Our consciousness is a double consciousness that of being individuals as well as social beings. Human beings' double nature is differently weighted in any individual on a scale that ranges from extreme selfishness to seemingly total social orientation. Evolution certainly needs the individual's selfishness because otherwise the species could not survive. Trying to attract attention by the catchword of the selfish gene may have an effect for a moment but in the end does not stand up to close examination.

The goal of describing and explaining human actions and behaviour points, at its core, to the ultimate question of who we are, a question which seems to go beyond the reach of human cognition. We can explain our self-consciousness, according to Damasio (2000), by our ability to connect our actions and behaviour with ourselves, but the question of who we are ultimately seems to be inaccessible to our consciousness and understanding. What does it really mean when we all think of ourselves in terms of 'ego'? We seem to have consciousness about what we are doing, what we are feeling, and about being dependent on what our fellow beings are doing. But, in the end, the ego, our own ego, remains an elusive concept. Perhaps the last illusion? Certainly an illusion or at least a question of faith if we believe that our own personal self will have some existence after our lifetime. Why should it be of interest to biology that the individual survives as an individual? Evolution is interested in the survival of the species. The species survives if the individual struggles to survive. This is the reason why the individual has to be a selfish individual. There is no contradiction between the selfishness of the individual and the advantage for the species. On the contrary, it is in the interest of the species if individuals are to some degree selfish individuals. It is not a question of 'either or' but a question of 'as well as'. If the individual's selfish ego acts exclusively in its own interests, it will, in the end, destroy the species as well as itself. Acting exclusively for social concerns, on the other hand, is basically nothing other than masking the individual's selfish interests with social terms. Human beings are neither individuals in the sense of hermits nor cogs in the social machine. The species flourishes if the individual flourishes. Consciousness of our own self implies consciousness of our social embeddedness, of the self as being the self of the other human being.

2.2   Human beings as symbolic beings

The thesis of human beings as the *symbolic species* also draws on the individual even if it uses the term "species" (e.g. Deacon 1997; Wilson 1999). Deacon's book on "The symbolic species" stimulated intensive discussion among linguists as it concerns a central linguistic issue, the issue of word meaning and reference. Although Deacon and Wilson depict a reasonable network of the co-evolution of social and biological

processes, their view of language and communication is restricted to what they call "symbolic communication". We might be content that they include communication, but their focus is on the feature "symbolic". It is not so easy to understand what they really mean by these terms. According to Deacon (1997: 22), "language is not merely a mode of communication, it is also the outward expression of an unusual mode of thought – symbolic representation …", or more precisely (p. 41):

> I mean language in the following very generic sense: a mode of communication based upon symbolic reference (the way words refer to things) and involving combinatorial rules that comprise a system for representing synthetic logical relationships among these symbols.

According to Wilson (1999: 146f.) "concepts and their symbols are usually labeled by words. Complex information is thus organized and transmitted by language composed of words." The background of such theses is a view of language as transmitting information by means of words. With respect to the progress brought about by the view of 'coevolution of genes, mind, and culture' (Lumsden & Wilson 2005), the view of language as symbolic language can be interpreted as a relapse into orthodox models of sign theory. Symbolic representation as a mode of thought characterizes human beings as thinking individuals. Nothing is really said about communication if it is reduced to symbolic reference by words and to information transfer.

As a linguist I wonder what symbolic reference as "the way words refer to things" is intended to mean. Deacon combines symbolic reference with "combinatorial rules that comprise a system for representing synthetic logical relationships among these symbols". Reference in the narrow linguistic sense of identifying objects as individual or generic objects is not achieved by words but by noun phrases which are in part constructed by combinatorial rules. In Deacon's "generic sense" of "the way words refer to things", word meaning can be understood as evoking concepts independent of the speech situation in a process which is unique to human communication. However we interpret the "everyday miracle of word meaning and reference" (p. 43), the term "symbol" is obviously used in a broad sense, not in the literary sense of creating a symbol which by means of the concrete points to something figurative.

Symbols play an important role in mainstream linguistics, not only in models of language as a sign system but also in pragmatic models that try to arrive at performance by starting from competence. The meaning of a word is claimed to be a concept in our mind, a 'symbol' for its 'real' meaning in the external world. It is attached to and described as a defined part of the sign. In performance, however, meanings are not defined by signs but negotiated by human beings. The symbolic model is based on methodological exigencies of reduction and abstraction, not on the complex natural object.

Reference to things not present in the situation is certainly a very important component of interaction, which increases the effectiveness of language for communicative purposes. The evolution of the species however does not primarily depend on its ability to refer to things but on its ability to negotiate communicatively, i.e. for dialogic purposes including reference. Language plays a major role in this process of negotiating meaning and understanding, not as a system of symbols but as an integrated component that is in part determined by biology and in part by culture (Weigand 2007).

One might wonder whether the concepts of language as a system of symbols and language as an integrated component in the process of negotiating meaning and understanding really exclude each other. Couldn't we revise the theory of signs with the aim of arriving at natural language use? The question is to be posed in principle: could there be a semiotic theory of performance? A theory of signs might be part of a semiotic-pragmatic theory; however, such a pragmatic theory cannot cope with performance as it is artificially constructed by the addition of parts, which do not exist as separate parts in natural language use. Using the terms 'component' versus 'part' underlines the issue at stake. Integration of components does not come about by the addition of parts; integration means the interaction of components that are interconnected from the very beginning. Including a system of symbols in a theory of performance inevitably represents an artificial step that affects the whole theory.

A revised theory of signs, such as Ruthrof's 'corporeal pragmatics' (2009 and forthc.), is based on two parts: language and perception. There is however no language as such, no signs which have meaning on their own. Rather, there are human beings and their abilities of speaking and perceiving which are from the very outset integrated as components of the complex whole of human behaviour (Weigand forthc.). It is human beings who communicate by the use of their abilities; all their abilities, from emotions to self-awareness, are inevitably embodied abilities. Perhaps Ramachandran (2003: 125) is right in suspecting mirror neurons to be "at least partly involved in generating our sense of 'embodied' self-awareness as well as our 'empathy' for others".

Semiotics, in general, and Ruthrof's corporeal pragmatics, in particular, does not go beyond structuralist methodology. They start by claiming the existence of two sign systems, of verbal expressions and non-verbal ones. Furthermore, the 'perceptually oriented theory of language' needs to be humanised (Weigand 2002b). It is from the very outset human beings' needs and purposes, not simply perception, from which communication starts. Communication as interaction means more than "information control" (Ruthrof 2009: 6), namely making claims to truth and volition and interactively negotiating these very claims (see below). Some remarks by Ruthrof (forthc.: Chapter 8) can be read as pointing to 'interaction' and the need to go beyond a 'corporeal pragmatics'. The issue however cannot be settled by 'complementation' but by changing the core of description.

2.3 Human beings as intersubjective beings

A dialogic perspective is put forward by Trevarthen (e.g. 1999: 415) and his view of human beings as *intersubjective beings*

> Intersubjectivity is the process in which mental activity including conscious awareness, motives and intentions, cognitions, and emotions is transferred bet] ween minds.

But 'transfer between minds' is not yet dialogic action. For Trevarthen (1999: 416) "human linguistic dialogue … rests on intersubjective awareness". 'Mental activity' and 'linguistic dialogue' thus remain to some extent separated, the one being the basis for the other. 'Linguistic dialogue' in the sense of dialogic action however does not mean transferring thought into action. Nor is it the case that we 'do things with words'. We 'do things' with our abilities to talk to one another and to share our minds and perception in interaction. What I would like to stress is the intrinsic interconnectedness of body, emotion, mind, and language from the very beginning, as for instance, suggested by research on mirror neurons (e.g. Weigand 2002a; Bråten 2007). Emotion and mental activity are not something in the air but from the very outset are embodied in the brain. Only in this way are we able to feel empathy and compassion and are moved by perceiving what happens to other people, be it in everyday life or in the arts.

Trevarthen's position of the intersubjective being is an important step forward as it goes beyond the limit of the individual being and takes account of the individual's dialogic orientation. The mind is a mind we share in part. The same view is, for instance, taken by Humphrey (2002: 176): "We are beings with a unique capacity to mind, to mind what we are and to mind what other people are."

Zlatev et al. (2008: 6) define the notion of intersubjectivity as "the sharing and understanding of experiential content". Whereas Trevarthen (forthc.) considers intersubjectivity to be also shared by animals, according to Zlatev et al. (2008: 12) intersubjectivity points to the complex phenomenon of "what it means to be human". 'The shared mind' however cannot be the pivot of the survival of the species any more than can 'transfer between minds'. Living together means we need to talk and act together practically. Moreover, what does 'the shared mind' or 'sharing experiential content' mean precisely? Human beings are social individuals. They are able to share experiences in part but do not act on totally common ground. Meaning and understanding are different for different individuals and are negotiated in dialogue. Some common ground and the ability to share experiences are a necessary precondition; the pivot however is human beings' needs and purposes, which drive them to act communicatively and practically. Human beings are not destined to think dialogically but to interact dialogically.

There is one point in the work of Zlatev (2003) which is particularly worth mentioning. In his sketch of a "meaning-as-value theory", he suggests seeing the driving force for

human action in an internal value system which "is intimately connected to *emotion* and *feeling*" (p. 258). Even if 'notions of moral obligation' were already included in Trevarthen's notion of intersubjectivity (1999: 417), Zlatev relates values more directly to human action. Although he considers meaning in a very general sense that goes beyond linguistic meaning, it is enlightening to see that his hierarchy of meaning systems starts from value systems. His tenet that "life implies the presence of *intrinsic value*" (p. 255) coincides with my assumption of evaluation as the basic and intrinsic first step in human action (e.g. Weigand 2007). According to Zlatev (2003: 258) "internal value systems signal to the organism that some action needs to be taken. They thus give rise to motivation and various degrees of *intentionality*, in the sense of goal-directedness." The issue however remains how the term 'action' is to be conceived.

2.4   Human beings as social individuals

Intentionality and goal-directedness are indeed crucial features of human action that need to become the centre of attention. If we try to justify our view by evolutionary criteria, I doubt whether humankind's evolutionary development can be solely based on intersubjectivity and sharing our minds. Intersubjectivity is rooted in the double nature of human beings as social or dialogic individuals. Trevarthen (2008: vii) rightly points out that human beings are not "single heads processing information, storing it up in memory for reprocessing, and transferring it symbolically". Nor are they restricted to having minds that can share mental activity. There is no independent theory of the mind. The dialogic mind calls for dialogic action. All the abilities and concepts discussed so far – self-interest, symbols, intersubjectivity and value systems – are essential components in human dialogic interaction but are not crucial in themselves as far as evolution is concerned. Humankind is not limited to intersubjectivity; human beings could not survive if their intentions only referred to sharing experience. Human beings are destined to interact. They are *social individuals* who act in their own interests but inevitably have to take account of social concerns. In this sense, it is not the dialogic mind but dialogic interaction that characterizes human beings as the *dialogic species*. Evolution cares for the individual only insofar as it is a member of the species. Evolutionary concerns of the human species require dialogic interaction and the emergence of *language* when the purposes and goals of interaction become more and more demanding.

3.   How to deal with complexity

Progress in science requires going beyond the limits of traditional approaches. Nowadays, we recognize limits in various respects: the limits of individual disciplines, of the individual human being, of the mind and of language if considered as

separate independent fields. The view of human beings as social individuals faces the challenge of addressing complexity with a genuinely holistic approach which crosses the limits of disciplines, goes beyond the level of the mind and places individual beings at the centre of the dialogic action game. Let us see what conclusions can be drawn for the architecture of a holistic theory that is capable of describing and explaining human beings' action and behaviour.

The theory of dialogic action games or the *Mixed Game Model* (MGM) addresses complexity in two steps. The first step aims to achieve an understanding of the complex whole by a set of *premises* which are the result of goal-directed observation. An understanding of the whole includes understanding how it works. Thus the *methodology* of the theory has to be derived from the object, i.e. from the premises about the complex whole, not vice versa. A holistic theory only works in this direction: the starting point has to be the complex natural whole from which methodology has to be derived. Starting from methodological exigencies will inevitably 'damage' the natural object and result in a reductionist model (Martinet 1975: 10). Having expounded premises and the resulting methodology of the MGM in various recent publications (e.g. Weigand 2006a; 2007; 2009; 2010), I can restrict myself here to focusing on how the model deals with the interaction of body, emotion, mind, and language.

3.1 Premises

Let me start with *premises* which circumscribe the complex whole and identify the key or driving force for how it works.

– The object-of-study or the complex whole can be grasped as a dialogic action game with human beings at the centre. Human beings do not find themselves outside the world or detached from what happens in the game but live *in* the world, act *in* the game. Physical 'reality' is dependent on the instruments used to measure it. What we consider as concrete, visible or audible depends on our senses. The world could be a different world looked at with different eyes and apprehended with different minds. The world as such is beyond our reach.
– Human beings have needs and desires, which are the driving force for their actions or the key to opening up the complex whole. As dialogic beings their demands are dialogically directed and negotiated in dialogic interaction.
– Human beings are not the 'victims' of complexity; they are able to cope with the mixed games of life by their extraordinary ability of 'competence-in-performance' which can be paraphrased in Sampson's words (2005: 193) as "being capable of coming to terms with whatever life throws at us".
– Competence-in-performance consists of many integrated abilities, among them the abilities that draw on the mind and body, i.e. cognition, emotion, perception,

and speech, which are used as dialogic means for dialogic purposes. There is no separate object language, only the ability to speak which interacts with other abilities and is influenced by emotions (cf. Weigand forthc.). As a consequence, linguistic models that address performance by the separation and addition of parts, such as the speaker, discourse, and the situation, cannot claim to describe competence-in-performance.

– Complexity as a whole is more than the sum of individual components and abilities (Simon 1962). Sociolinguistic models based on the addition of components, such as 'language' and 'interaction' (e.g. Gumperz 2003: 111ff.), will not solve the issue of complexity (Weigand 2004a). Language use is more than a sign system put to use. Linguistic signs and conditions of performance are incompatible and resist any reasonable combination.

– Complexity is ever-changing and requires human beings to act as adaptive beings under conditions of uncertainty according to Principles of Probability. Human beings apply rules and conventions as far as they go and rely on individual inferences when the game turns out to be played as a game beyond standard conditions.

The Theory of the Mixed Game thus starts from human beings as dialogic individuals and aims to explain how physics and physis interact, how moving ourselves can cause others to be moved, how reason is influenced by emotion, or, in general, how body, mind and language interact. Human beings' consciousness is a consciousness of these various abilities in their mutual dependencies that cannot fully be controlled. Human beings can question their abilities but cannot go beyond them. Human cognition inevitably remains restricted to human capacities.

3.2   Methodology

As mentioned above at the beginning of Section 3, the *methodology* of a holistic theory is to be derived from the premises about the complex object. Competence-in-performance does not arise from an independent system of rules, conventions or norms nor from a methodology of 'anything goes'. The contrast between semantics and pragmatics, between a coded system and inferential use, is a contrast constructed by orthodox theory and inadequate to explain language use. The methodology we are looking for has to conform to the way human beings come to grips with the uncertainty of life (Toulmin 2001). Explicit and implicit means of communication, the use of rules and inferences, complement each other. In simple cases, where everything seems to be explicitly said, suggestion will not be needed. In complex cases where nothing seems to be clear, human beings proceed tentatively by referring to particularities of the game that might help to clarify what is going on. In general, they address the uncertainty of life by adapting to ever-changing conditions on the basis of Principles of Probability.

The bridge between competence and performance which linguistics has searched for for decades is not a step that combines different methodologies but a step taken in human beings' minds. Principles of Probability are applied to the decision of individual interlocutors and are changed in accordance with the conditions of the game.

Before starting to introduce the individual principles in more detail, I would like to shed some light on the very first step in this process of adaptation to the complex architecture of the game. This first step is a simple mental action that is often neglected: the step of focusing attention. Being at the centre of the mixed game, we first focus attention on some sub-complex. In this way we start with complexity from the very outset. Usually we first focus attention on standard conditions and in a second step broaden our view towards particular conditions if understanding cannot be achieved by reference to standard cases.

From this view of human beings as dialogically interacting beings, *constitutive* or basic *principles* can be derived. These are the Action Principle, the Dialogic Principle proper and the Coherence Principle which is of special interest to the issue of body, emotion, mind, and language in interaction. Examples that illustrate the principles are given in Section 4.

The *Action Principle* gives an answer to the question of what makes up an action in general. Having intentions does not yet necessarily mean carrying out an action. Actions of any type, communicative, mental and practical actions, are based on the correlation of purposes and specific means by which the purposes are attained. Depending on the type of action, the specific means are communicative, mental, or practical means. Dialogic actions can be double-layered actions, i.e. behind openly expressed purposes they can pursue different hidden interests. Consequently Searle's (1969) formula F(p) has to be extended by including interests as dominant predicate (e.g. Weigand 2006a):

Action Principle
Interest [purpose (reference + predication)] $\leftrightarrow$ communicative means

Figure 1. Action Principle

Communication does not proceed by means of a concatenation of single autonomous speech acts but by means of sequences of internally related initiative and reactive speech acts. The features 'initiative' versus 'reactive' are not only formal features dependent on the position in the sequence but primarily qualify the speech acts as functionally different speech acts: initiative speech acts make a dialogic claim, reactive speech acts fulfil this very claim (e.g. Weigand 2006a). Dialogic action is, in the end, based on two fundamental claims, a claim to truth and a claim to volition, which conform to the basic mental states of belief and desire (Weigand 1991).

The connection between the processes in the brain and language action that has been searched for extensively becomes manifest and emotion plays a fundamental role: action starts from beliefs and desires.

The dialogic nature of every single speech act and the resulting basic structure of communication are represented by the *Dialogic Principle proper*:
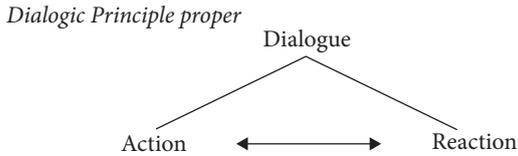
Dialogic Principle proper

Dialogue

Action ⟷ Reaction

Figure 2. Dialogic Principle proper

In this way dialogue is constituted at the level of interaction by action and reaction. Only by action and reaction can the interactional purpose of the dialogue 'coming to an understanding' be attained. The correlation of *action and reaction* goes beyond the correlation of *meaning and understanding* at the level of the shared mind or intersubjectivity. An utterance is meant by the speaker and more or less understood by the interlocutor. Understanding or sharing our minds is never total, always gradual. Understanding is a mental action by the hearer and related to the utterance of the speaker. However, due to the intrinsic integration of our abilities we are unable to stop with understanding and cannot help taking a position, i.e. reacting, in general by accepting or objecting, i.e. basically evaluating the speaker's position.

The third constitutive principle, the Principle of Coherence, relates to the dialogic means by which dialogic action is performed. Dialogic means rely on abilities of the body, mind and language and are used as integrated means which complement each other. Coherence of dialogue comes about by understanding how the dialogic means interact. The *Coherence Principle* thus represents the crucial principle for the interaction of body, emotion, mind and language:

Coherence Principle

Interest [purpose (reference + predication)] ↔ communicative means
(speech, perception, cognition)

Figure 3. Coherence Principle

The term 'coherence' was initially introduced as a term that exclusively related to the text, i.e. to verbal means. In the meantime the level of the text has lost its autonomous status: coherence of the text changed to coherence in the mind (Givon 1993; Weigand 2000). Speaking or verbal means are intrinsically intertwined with other communicative

means, mainly those of thinking and perceiving. Feelings as a physiological phenomenon have a bodily expression that becomes manifest without or even against the intention of the speaker. They can take the role of communicative means in so far as they are intentionally demonstrated. The basic tenet of speech act theory of 'doing things with words' can be considered very generally a catch phrase. We do not act by speaking alone; we act with utterances which are a combination of different communicative means. By making an utterance we speak and at the same time we see what is going on in the speech situation and we make assumptions about the conditions of the game. Our communicative abilities interact when producing the utterance as the carrier of the action.

As a consequence of such a view of coherence, we have to change our traditional view of language and speaking. There is *no separate object 'language'*, only the ability to speak which is an integrated part of human competence-in-performance (Weigand 2009). The nature of language manifests itself in language use as it happens in dialogic interaction. Language is used by individual human beings. Of course, there must be something common in their use, not only rules, conventions or norms but also techniques such as inferences; otherwise language would be of little help in coming to an understanding. It is however the speakers who decide whether to conform to these norms or not. "Common knowledge" is only in part common knowledge and above all not equal knowledge. The species is made of individuals who do not precisely know what is behind the face of the other individual. As social, intersubjective individuals, we are able to share knowledge, in principle and in part. Shared knowledge is, in the end, individually shaped knowledge and is negotiated in dialogue. Negotiation of meaning and understanding presupposes intersubjectively oriented minds.

Constitutive Principles are combined with Regulative and Executive Principles. *Regulative Principles* mediate between different and even contradictory abilities and interests. They are, for instance, responsible for how we match our self-interest with respect for the other human being as well as for how we deal with emotions. Principles of Emotion mediate between emotion and reason. Methods of regulation are dependent on cultural conventions (Weigand 1998a, 2007). Whereas in Northern Europe we often follow a principle such as "Hide your emotions in public", such a principle does not seem pervasive in southern countries or in America (Weigand 2004b: 18f.). Emotions are only in part intentionally controlled. They are strong enough to cancel rationality whereas the "controlling power of reason is often modest" (Damasio 2000: 58).

The eminent role of emotion in human beings' behaviour is in fact no longer in doubt (e.g. Lüdtke 2006). According to Foolen (1997: 26), "emotions are an important part of our self-experience, and they cannot be left out of an enterprise that aims to be experiential". How could such an experiential enterprise be reconciled with a view of language as determined by norms? The result would invariably be an artificial concept of language incompatible with human self-experience.

Executive Principles finally refer to cognitive processes and strategies with which we try to successfully pursue our interests and purposes. Executive Principles are thus part of a rhetoric of dialogue which evaluates communicative means with respect to their effective use in specific dialogic action games (Weigand 2008a).

4. Sample cases

Having sketched the theoretical basis of the mixed game, I am now going to illustrate the interaction of language, emotion, mind, and body by a few obvious examples. They clearly manifest our competence-in-performance as a complex integrated ability if looked at without methodological blinders. Even if "pragmatics allows humans into the analysis" (Yule 1996: 4), one might still be burdened by the traditional view of language as an independent object. Yule thus considers it a "problematic case" when he passes other people and is unable to understand what they are talking about even though they are speaking the same mother language. There is nothing to be surprised at if we take into account that discourse or spoken language is not an autonomous object. We communicate by simultaneously speaking, thinking, and perceiving. It is therefore a natural consequence that as observers we often cannot understand what other people are talking about even if they speak the same language; we simply do not share their minds. We have to be insiders of the game, and not even as insiders can we see what is going on behind the face of our interlocutors. In the end, in problematic cases only the speaker knows what he/she meant.

Such a view of the complex integrated whole is beyond the reach of clear-cut rule-governed models where understanding is conventionally or normatively defined and presupposed as the equal understanding between speakers of the same mother language. Methodological claims of this type cannot be our starting point if we aim to come to grips with human beings' competence-in-performance. We have to start from the complex whole and try to find coherence at the level of interacting components. Understanding then turns out to be a never-ending process that can only gradually be attained.

The first type of examples we are going to analyse illustrates the interaction between speaking and thinking or *language and cognition*. I take the well-known example of Brown & Yule (1983: 196):

(1) a. There's the doorbell.
     b. I'm in the bath.

These two utterances show no sign of textual coherence; nonetheless they are connected. Obviously we understand their internal relationship even without any description of the situation. We do not need, like Brown & Yule, to resign, or need to assume

a zero connector, like Stati (1990). Coherence comes about by the Dialogical Principle proper and by the interaction of verbal means with cognitive means. Our actions are dialogically oriented: with the initiative utterance of our example the speaker makes a dialogic claim to truth, and indirectly to volition, and expects a reaction that addresses this claim from the interlocutor. The initiative and reactive utterance are thus connected at the cognitive level by making and fulfilling the same claim. That is precisely what is represented by the Dialogic Principle proper, which is not in need of any verbal sign because it is based on human beings' nature as intersubjective, i.e. dialogical individuals.

Cognition comes to play in this example in another respect, too. The claim to volition of the initiative utterance is not explicitly expressed by verbal means but left to inferences. It is a characteristic of indirect speech acts that the real claim remains uncertain, in the balance of probabilities and is thus to be negotiated: someone has to open the door, if possible the interlocutor (also Weigand 2002b).

Speech not only relies on sharing our minds; it is also intrinsically connected with *shared perception* as we can see with the following authentic example (Weigand 2002b):

(2) a. One for her.
      b. Eve, too.

Without a description of the speech situation we will not really understand what is going on in this action game. We might be baffled and ask: *Where have all the 'sentences' gone?* We do not find sentences; we find utterances, i.e. communicative means, not just verbal ones. Verbal means are integrated with perceptual means in a way that go beyond language rules or norms. It is necessary to perceive what is going on in order to understand. In our case we can observe that B, the father, is cutting willow branches for the son, and A, the mother, asks him to cut a branch for the daughter: *one for her*, which is accepted by the father: *Eve, too.* Integration in the sense of interacting dialogic means – verbal, perceptual, and cognitive – is a constitutive feature of human competence-in-performance.

Perception cannot be separated from speech. This is in part the reason why oral and written language cannot be directly compared. Perception in the speech situation and perception in the written medium are completely different and consequently result in different ways of constructing utterances.

There is also another issue that finds its genuine explanation in the integration of speaking, thinking, feeling and perceiving: the issue of human beings' ability to produce ever-new utterances never produced before. It can no longer be considered an astonishing event but the natural consequence of the fact that meaning is created through the eyes of individuals and is not only expressed by the use of verbal means. The complexity of meaning and understanding is, in principle, without limits. Neither Chomsky's recursive rules (1965) nor the infinite possibilities of variation in spoken language touch upon the real issue.

The following authentic example illuminates once more very clearly the complex network of communicative means that we use without any effort in everyday communication (see also Weigand 2004c). I will first present this example without any description of the speech situation, i.e. as if we could 'trust the text' (Sinclair 1994) or accept a concept of language as autonomous object:

(3) H: Lassen Sie sich nicht anstecken!
    (Don't let yourself get infected!)
    E: Sind Sie krank?
    (Are you ill?)
    H: Haben Sie nicht das Wasser gesehen? Jeder hat sein Hobby.
    (Didn't you see the water? Everyone's got a hobby.)
    F: Das würde ich nie machen, wo wir soviel bezahlen allein fürs Putzen.
    (I'd never do that when we pay so much just for the cleaning.)
    E: Ah, jetzt verstehe ich. Sie haben recht. Nein, da lasse ich mich nicht anstecken!
    (Ah, now I understand. You're right. No, I won't let myself get infected!)

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 are we guessing in language action? On the contrary, we do not need to guess because as human beings we not only use our ability to speak but inevitably bring in other integrated abilities, namely perceiving, feeling and thinking. In order to understand what is going on in language use, we have to participate in the action game and to analyse it *from inside*, addressing the complex directly and not reducing it to the empirical level of the text.

Consequently language action is not action by speaking but by integrated dialogic means including verbal means. In the action game we approach each other as individuals with different cognitive backgrounds and cannot therefore presuppose understanding. Sharing our minds does not mean knowing what is in the mind of other people nor does it mean that meaning and understanding would be pre-given by rules or norms and thus be the same for every participant in the game. Sharing our minds means the possibility of opening up our minds and of coming to an understanding by negotiating meaning and understanding and this also includes tackling problems of understanding. 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 a misunderstanding. Language-in-use can accept the risk of misunderstandings because they are normally immediately repaired, as in our example.

It thus becomes evident that we have to go beyond the empirical level of the text and have to add a description of the cognitive, emotional and perceptual background from which the interlocutors derive their cognitive and perceptual means of communication. Clearly, they do not trust the verbal text alone but trust cognitive means,

associations and allusions, which an observer cannot understand. 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, and 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 ones, are necessary for E to come to an understanding and to arrive via negotiation at the right meaning of *to be infected*, namely 'to be infected by a mania for cleaning'. There is no explicit disambiguation by the verbal environment.

I think the conclusions to be drawn from this example are evident. Linguistics as a science of language alone is not capable of addressing language action. Yule is right when he writes that as observers we can only understand simple examples that are mainly based on verbal means. Trusting the text in a corpus does not lead to an understanding of the interaction. On the other hand, corpus linguists who consider the corpus as a record of our behaviour, like Stubbs (1996: 233), are wrong because only part of our behaviour is recorded in the corpus.

Example (3) also shows how *body movement* is deployed as perceptual communicative means. Perception is directed at the body, at gestures and any other body movements. Whereas gestures have already been dealt with at length in the literature as an important dialogic means (e.g. Nash 2007), body movement still needs to be analysed in more detail. Not every body movement can be conceived of as communicative means, only movements that are intentionally carried out, as in our example where moving forward indicated the place of the event.

After these three basic examples which demonstrate the nuts and bolts of the interaction of body, emotion, mind and language, I want in addition to focus on some special components and consequences of the complex interplay between them. It is as a consequence of the intrinsic interaction of language, emotion and body that the *notion of text* must be questioned. The written text sometimes includes graphic or pictorial images which are not simply a complement to the written text but interact with it in an essential way. This combination of visual and verbal means exerts a particularly strong persuasive force and evokes powerful emotions. Such textual compositions are therefore frequently and readily used for advertising messages or any other appeals to action (see Roque 2008; Weigand 2004c).

Body movements are not only deployed to indicate the place or direction of an event but also to strengthen our dialogic claims and express emotions. We can, for

instance, intimidate our interlocutor by hitting the table or by using paralinguistic devices such as increasing the loudness of our voice. *Physical motion* indicating potential violent action sometimes seems to be the last resort for demonstrating power and imposing our claims on our opponents. We know how this can result in waging wars in order to achieve political and religious goals even those of social order, democracy or Christian faith.

The correlation between *facial expressions* and emotions is another very clear example of the internal, biologically determined interdependence of body and mind. Ekman's numerous publications (e.g. Ekman 1999) clearly demonstrate that there are typical universal facial expressions, including activities such as crying, from which we can deduce the corresponding emotion. These facial expressions are only in part intentionally controlled and can thus reveal emotions we do not wish to show. They may however also be feigned and thus intentionally used for manipulative purposes.

Emotions are a strong force that can be used to move other people's minds. On the basis of our shared minds, appeals to compassion are a powerful persuasive technique. Whether these appeals will have any effect depends on the individual actants in the particular game. Politicians know the power of compassion and use it in their own interests. George W. Bush, for instance, in his famous speech in Congress on the State of the Union of January, 28, 2003, deployed this technique in picturing in detail a terror scenario by using a sequence of typical utterances in order to get acceptance for a pre-emptive war against Iraq:

(4)   Iraqui refugees tell us how *forced confessions* are obtained: by *torturing children while parents are made to watch*.
International human rights groups have catalogued other methods used in the *torture chambers* of Iraq: *electric shock, burning with hot irons, dripping acid on the skin, mutilation with electric drills, cutting out tongues, and rape*. If this is not evil, then evil has no meaning. [Applause]

At the literal level, he uses the phrase *torturing children while parents are made to watch* as an argument to excite compassion, and he lists violations of human rights as further arguments by using phrases such as *electric shock, burning with hot irons*, etc. all of which are designed to provoke indignation. He thus evokes powerful emotions in this indirect directive game in order to move his audience.

There is a nice story on the Italian internet which once again demonstrates the power of words and of indirect speech acts (cf. also Weigand 2008b). It is the story of an anonymous author, not the description of an authentic case. The story compares two ways of asking for help in the case of a blind beggar. The beggar first writes directly and explicitly on the sign beside his hat:

(5)   I am blind. Please help me.

He directly expresses the fact that he is blind as an argument why people should help him, and gets very few coins. A copywriter passes by and changes the text: the argument of blindness is now expressed as an appeal to compassion and the claim to act is left verbally unexpressed:

(6)   Today, it's springtime, and I can't see it.

And the hat fills up with coins. People are more likely to be moved by persuasive appeals to their emotions than by direct demands telling them what to do.

Finally let us have a look at some *lexical phrases,* which clearly confirm the intrinsic connectedness of body and mind, as already mentioned in Section 1. We must however again abandon traditional theorizing in order to cope with the way the interaction of body and mind is conventionalized in the lexicon. Phrases like those in (7) suggest that the lexical unit is the phrase, the way-of-use, or collocation (e.g. Sinclair 1998; Weigand 1998b), which is in most cases unambiguous between bodily and mental readings.

(7)   the inner eye – *das geistige Auge*
       I see what you mean – *ich sehe/verstehe, was du meinst*
       as far as the eye can see – *soweit der Blick reicht*
       to be moved – *gerührt sein*

To start with single, often highly polysemous words and to claim that they would be disambiguated by the context amounts to an artificial manoeuvre which contradicts language use. Traditional views, for instance, by Sweetser (1990), separate the field of perception from cognition and explain diachronic change by a change from concrete perception to figurative cognition or from body to mind. They are based on methodological hypotheses that 'damage' the natural object. Language change does not start with human beings separating their abilities. On the contrary, there is evidence that earlier historical periods did not make the distinction between their bodily and mental abilities but instead considered concepts of the mind as perceptual concepts. This can be seen with the Greek examples *thumós* relating mind to fumes and *psyché* relating mind to breath (Weigand 2006b: 98). Kronasser's comment in this respect (1968: 188f.) that it is often difficult to distinguish between the meanings of these words is very instructive. The separation between these two domains has been made by linguists in an attempt to divide the simple concrete area from the more difficult cognitive one.

The lexicon is rife with phrases of this type that easily cross over from physical perception to cognition and emotion. We can *stir the dough* as well as *stir somebody to pity.* Emotion influences everything, cognition is bound to perception and vice versa. Instead of artificially constructing lexical theories as codes that divide the multi-word lexical units into words and describe use by a transformation from literal to figurative

meaning, we should accept that language represents a network of phrases used by human beings in combination with other communicative means in order to negotiate meaning and understanding.

5.   Conclusions and outlook

The conclusions to be drawn from the examples given above are clear: if we want to understand human beings' actions and behaviour, it is of no help to refer to a concept of language as a code. Signs carrying meanings that are defined by a code are constructs of reductionist theories of language. An adequate theory of human beings' actions and behaviour in performance has to cope with the complexity of its object. Motion and emotion, moving our body and moving the minds of other people, are not completely separated but interrelated and interdependent actions. Human beings as dialogic individuals aim to move other people's minds in their own interests but simultaneously they need to take account of the fact that they live in a community. Consciousness of our own self is at the same time consciousness of the other self. As individuals we differ in the way we position ourselves between the extremes of egocentricism and social self-sacrifice.

Genuine interdisciplinary research is research on the same complex object from different perspectives and with different scientific interests. Any scientific endeavour is in the end related to human abilities. Our abilities allow us to proceed some steps within the hierarchy of complexity. They also allow us to point to mysteries that are beyond our explanatory reach. Mysteries such as the fact that matter does not have to be visible or that there is not only a single geometry (du Sautoy 2004: 110f.) once again question the distinctness of matter and energy, of body and mind. However, in order to shed some light on these dark areas, we must not take refuge in the simple but must dare to undertake an adventure of the complex which we ourselves are part of.

Emotions play a crucial role on the switchboard of human behaviour and action. They are however not completely controlled by reason and can show up in our physiological reactions even against our intentions. Like any other human ability they are invariably embodied and can be purposively deployed as communicative means. Emotions are not superfluous abilities but fit the evolutionary schema of survival needs. In this sense, 'fear', for instance, indicates the need for protection. In the end, it is the interests and advantages of human beings, which induce and guide human behaviour.

Attempts at defining emotions demonstrate another specific feature: emotions resist being explicitly described. They are to some degree the inexpressible. This is why they are often talked about by means of metaphors or symbols. Emotions thus cross the limits of verbal communication; on the basis of intersubjectivity, they

are emotion and motion at the same time and can be comprehended without and beyond words.

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