10.3726/81608_169

Jordan Zlatev

The Semiotic Hierarchy: Life, consciousness, signs and language

This article outlines a general theory of meaning, *The Semiotic Hierarchy*, which distinguishes between four major levels in the organization of meaning: *life, consciousness, sign function* and *language*, where each of these, in this order, both rests on the previous level, and makes possible the attainment of the next. This is shown to be one possible instantiation of the Cognitive Semiotics program, with influences from phenomenology, Popper's tripartite ontology, semiotics, linguistics, enactive cognitive science and evolutionary biology. Key concepts such as "language" and "sign" are defined, as well as the four levels of The Semiotic Hierarchy, on the basis of the type of (a) subject, (b) value-system and (c) world in which the subject is embedded. Finally, it is suggested how the levels can be united in an evolutionary framework, assuming a strong form of emergence giving rise to "ontologically" new properties: consciousness, signs and languages, on the basis of a semiotic, though not standardly biosemiotic, understanding of life.

CORRESPONDENCE: Jordan Zlatev. Centre for Cognitive Semiotics, Centre for Languages and Literature, Lund University, Sweden. EMAIL: jordan.zlatev@ling.lu.se

Introduction

The goal of this article is to outline a general theory of meaning that I will refer to as *The Semiotic Hierarchy*. It distinguishes between four (macro) evolutionary levels in the organization of meaning: *life, consciousness, sign function* and *language*, where each of these, in this order, both rests on the previous level, and makes possible the attainment of the next. Thus, as a matter of logic the theory implies (what typological linguists call) an "implication hierarchy": life < consciousness < sign function < language. In other words, some of the claims of the theory are that consciousness presupposes life, that sign use presupposes consciousness, and that language presupposes the sign function – but e.g. not vice versa. As can be surmised even from these rather terse formulations, the theory shares some of the concerns of *biosemiotics* (Hoffmeyer 1996, Emmeche 2007, Brier 2008, this volume, Kull this volume): above all, the need to find a place for meaning in nature, and in effect to *relativize* the nature-culture distinction within

a general evolutionary approach. But in contrast to biosemiotics, my goal is not to *abolish* distinctions such as "nature/culture" and "mind/matter", but rather to make them clearer (which does not necessarily mean sharper). My major disagreement with biosemiotics, as with many current varieties of Peircean semiotics, is in the definition of the concept of the *sign*. And this does not mean that I thereby should be pigeonholed into the "anthroposemiotic" camp, with a Saussurean sign-concept and so on – following a simplistic binary logic which is not uncommon.[1] As Sonesson (e.g. 2007) has tirelessly pointed out over the past 20 or so years, it is meaningless to write about "dyadic" vs. "triadic" sign-notions, without clear criteria for what concepts such as "object", "representamen", "interpretant", "expression", "content", "referent" etc. *actually* may apply to. Without such criteria, their usage easily becomes metaphorical. I would argue, for example, that a word or a picture is quite literally a sign, but that hormones, transmitter molecules etc. are "signs" only in a metaphorical sense. In other words, our intuitive understanding of what a sign is, is based on things like words, gestures and pictures, but then we *project* it on the basis of a perceived analogy with entities in the biochemical world, and with some more imagination, even on the physical world, as done by e.g. Deely (2001).[2]

These are rather strong claims, and they are bound to ignite the opposition of most Peircean approaches to a general theory of meaning (e.g. Hoffmeyer 1996, Brier 2008, this volume). As mentioned above, for biosemiotics life and "signs" are considered co-extensional and primary to consciousness. Furthermore, for those influenced by Maturana's notion of "languaging" (Maturana 1988, Cowley this volume), or by Dennett's logocentric, "meme"-based theory of consciousness (Dennett 1991), an argument for the dependence of language on consciousness (Zlatev 2008b) may be hard to swallow. But at least in part, such disagreements are *conceptual* rather than (only) *empirical* (cf. Wittgenstein 1953), since they rest on what we mean by such general, and indeed hard to define terms as "life", "consciousness", "sign" and "language" (cf. Zlatev 2008a).

Therefore, in the following two sections I will spend a good deal of ink in spelling out how I use these concepts, and hence the basis for the four different levels of The Semiotic Hierarchy. Following this and due to space limitations, I

1 And to which the title of this special issue of Cognitive Semiotics ("Anthroposemiotics vs. Biosemiotics") might further induce.

2 Note that in this case, as in many others, the "source domain" concerns an experiential and cultural phenomenon, while the "target domain" concerns nature. So the often stated generalization that metaphors usually "map" from the more "concrete" to the more "abstract" (cf. Lakoff & Johnson 1999, Grady 2007) is clearly an over-generalization.

only briefly address some *really* hard empirical questions: how could evolutionary processes, broadly conceived, have given rise to the *three transitions* between the four levels: from life to consciousness, from consciousness to sign function, and from sign function to language? On the transition "from matter to life", I will have very little to say, and biosemioticians will probably recognize this as a blind spot in the theory. But rather than objecting, I would rather suggest this as a spot in which the two approaches could meet since it is possible that Peirce-inspired proposals such as those of Hoffmeyer (1996) and Brier (this volume) concerning "Nature's tendency to acquire habits" may indeed contribute to resolving the mystery of the origin of life. Still, I would maintain that such "habits", and even the (intrinsic) *meanings* of all living beings *are as yet not signs*, and furthermore that we need not resort to a rather mystical theory such as that of Peirce, in which consciousness is "present from the start" (cf. Brier this volume).

Let me also try to circumvent two other possible objections. The four levels of The Semiotic Hierarchy are indeed very broad, and within these various "sublevels" may be distinguished (e.g. Emmeche 2007, Stjernfelt 2007). Indeed I mention several such possible ones in Section 4, when discussing the complexities of evolution and empirical evidence from primatology, neuroscience and child development. The major point in keeping the general levels of the theory to four is to emphasize their implicational relations, which differentiates The Semiotic Hierarchy from various alternatives, as mentioned above. The second objection might be that I seem to be implying a kind of "uni-directionality of dependence", while there are good reasons to believe that human consciousness is on its part dependent on sign use and language (e.g. Vygotsky 1978, Sinha 2004, Menary 2008). In fact, I by no means imply any such uni-directionality, but only: (a) the logical relations of implication/presupposition and (b) the empirical claims concerning the order of the *emergence* of the levels.

Before I proceed, however, I feel that it is necessary to motivate the *need* for a general semiotic theory such as the present one, and to point out some of its intellectual pedigree. With this, I must (unfortunately) climb up one more level of generality into my interpretation of what is required of a *general interdisciplinary theory of meaning*, where semiotics as "the systematic study of meaning making" (Fuller 1997: 30) rather than "the study of signs" (see below) is one among several sources of inspiration.

2. The Semiotic Hierarchy and Cognitive Semiotics

As a preliminary to an attempt at defining a "unified biocultural theory of meaning", I had previously written (Zlatev 2003: 253):

> Our conception of *meaning* has become increasingly fragmented, along with much else in the increasing 'postmodernization' of our worldview. The trenches run deep between different kinds of meaning theories: mentalist, behaviourist, (neural) reductionist, (social) constructivist, functionalist, formalist, computationalist, deflationist… And they are so deep that a rational debate between the different camps seems impossible. The concept is treated not only differently but *incommensurably* within the different disciplines.

Since then, several impressive attempts at providing an integrational semiotic framework have been proposed (Emmeche 2007, Stjernfelt 2007, Brier 2008) as well as a rapprochement between phenomenology and cognitive science (Gallagher & Zahavi 2008, Schmicking & Gallagher in press). The appearance of the journal *Cognitive Semiotics* on the scene can be seen as a reflection of the same need to counter the fragmentation described in the quotation above. Indeed, it was stated programmatically that *Cognitive Semiotics* aims at "[...] integrating methods and theories developed in the disciplines of cognitive science with methods and theories developed in semiotics and the humanities, with the ultimate aim of providing new insights in the realm of human meaning production [...]" (Editorial Preface, *Cognitive Semiotics*, Issue 0 (Fall 2007), available online at <http://www.cognitivesemiotics.com>). The theory outlined in this article is one more such endeavour, and it can be seen as one possible instantiation of the Cognitive Semiotics program.

2.1. Theoretical background

The "evolutionary epistemology" and the tripartite ontology of Popper (1962, 1992) help escape on the one hand the Procrustean bed of reductive physicalism, where "all is matter", various versions of idealism where "all is mind" on the other hand, and poststructuralism or social constructivism where "all is text" on the third hand.

> The three worlds are: the physical world 1 of bodies and physical states, events and forces; the psychological world 2 of experiences and of unconscious mental events, and the world 3 of mental products. [...] The order of world 1, 2 and 3 (as indicated by these numbers) corresponds to

> their age. According to the current state of our conjectural knowledge, the inanimate part of world 1 is by far the oldest; then comes the animate part of world 1, and at the same time or somewhat later comes world 2, the world of experiences; and then with the advent of mankind comes world 3, the world of mental products; that is the world that anthropologists call 'culture' (Popper 1992: 9)

However, from the standpoint of phenomenology (Husserl 1989 [1952], Merleau-Ponty 1945 [1962]), such a division of "worlds" in unsatisfactory, since we live not in three worlds, but in a single *human Lifeworld:* "As conscious beings, we always inhabit – in a pre-theoretical manner – an experiential world, given in advance (*vorgegeben*), on hand (*vorhanden*), and always experienced as a unity" (Moran 2005: 9).

Since everything that is given to us, including the "the physical world 1 of bodies and physical states" and the instruments, models and practices of the natural sciences used for "measuring" it is given to us through consciousness, it is important to recognize that phenomenology - "[...] the careful description of what appears to consciousness precisely in the manner of its appearing" (Moran 2005: 1) – has at least *epistemological* precedence. Furthermore, since from the perspective of phenomenology, Popper's "three worlds" are not three separate ontological realms, but different "regions" (domains, areas, parts) of the human Lifeworld, the latter can be asserted to have *ontological* precedence as well. These regions do indeed appear *different* to us: rocks and atoms as "physical", human beings and at least some animals as "mental creatures" and languages, notations and theories as "mental products", "culture". But privileging any of these ontologically and epistemologically leads to what Husserl called "absolutizations" – physicalism, psychologism, and today we might add "postmodernism", which constitute different distortions of the Lifeworld.[3]

But while indispensable for providing a good *description* of our experience, and a philosophical ground for this, phenomenology was never intended as a method for providing *explanations*, e.g. to answer *why* cats and not rocks appear to us (at least in Western cultures) as conscious beings, and even more so of *causal* explanation, e.g. what neural processes appear to be casually necessary for consciousness. It can also not provide us with an evolutionary framework (Brier this volume), in which we can ask *how* life can give rise to consciousness, consciousness to signs, and all of these to language – questions that will be

3 I take it that Brier (2008, this volume) makes very much the same point with his "Semiotic Star" model.

addressed in Section 4. Luckily, the ongoing "naturalization" of phenomenology, which is different from the reductive naturalization of meaning and mind prevalent in analytic philosophy (e.g. Quine 1960, Dennett 1991), has given rise to projects in which both first-person and third-person experience are described meticulously, and then *correlated*. For example, "neurophenomenology" (Varela 1996, Lutz & Thompson 2003) is a research program involving "[...] rigorous and extensive use of first-person data about subjective experience as a heuristic to describe and quantify the large scale neurodynamics of consciousness" (Lutz & Thompson 2003: 31).

In general, the "theories and methods" of cognitive science that are most consistent with phenomenology and the evolutionary perspective of The Semiotic Hierarchy are those of so-called "enactive" cognitive science (e.g. Varela et al. 1991, Thompson 2007). Both phenomenology and "enactivism" reject a representational model of perception – of the "physical", as well as of the "social" world. For both, "other minds" are not inferred or simulated since the actions, intentions, and emotions of others are perceived directly (Zahavi 2001, Gallagher 2005). And visual perception is carried out not by the eyes, nor by the occipital cortex, and even less by a homunculus looking at "internal representations", but by the embodied, moving and interactive subject as a whole.

The problem is, however, that by focusing on perception, and by opposing the representation-*alism* of traditional cognitive science, these lines of thought tend to formulate their rhetoric as against *representations* as a whole. Two of the leading figures of "embodied cognitive semantics", which Brier (this volume) sees as compatible with biosemiotics, for example state:

> As we said in *Philosophy in the Flesh*, the only workable theory of representations is one in which a representation is a flexible pattern of organism-environment interactions, and not some inner mental entity that somehow gets hooked up with parts of the external world by a strange relation called 'reference'. We reject such classical notions of representation, along with the views of meaning and reference that are built on them. Representation is a term that we try carefully to avoid. (Johnson & Lakoff 2002: 249–250)

But such a position is not only incompatible with phenomenology (Zlatev in press), but with a phenomenological *semiotics*, where the notion of representation is equivalent to that of a sign, and the latter is postulated to exist only when "there is a *differentiation* between expression and content in the double

sense [...] that they *do not go into each other in time and/or space*, and they are perceived to be *of different nature*" (Sonesson 2007: 93, original emphasis). This can be illustrated clearly in the case of pictorial signs. Investigating their understanding by great apes, Persson (2008) distinguishes between (a) "surface mode", in which only the marks of lines and colour are perceived (*Bildding*, in Husserl's terminology), (b) "reality mode", in which the picture is confused with the object it represents (*Sujet*), e.g. a banana and (c) "pictorial mode", in which the *Bildding* is seen as an expression with a certain kind of content (*Bildobjekt*) which can, but need not represent a particular object (*Sujet*). Only in the case of (c) does the subject (in this case, the ape) *see the picture as a sign* – in the sense of Sonesson, and of the present theory. This is clearly a representational, as well as *intentional* (i.e. directed) relation, mediated by the picture's content. The sign function can be seen as a generalization of this and can involve other semiotic resources such as (iconic and emblematic) gestures, symbolic play, pantomime, theatre – and language. In all these cases what is directly perceived is "non-thematic" (not focused on by the consciousness of the subject), while what is indirectly perceived (or conceived) is thematic (cf. Sonesson 2006, 2007). Figure 1 clarifies how this relates to other kinds of meanings, in one possible interpretation of some key Peircean concepts, which differs substantially from what one finds within biosemiotics.

	Firstness	Secondness	Thirdness
Principle	Pure iconicity (identity of features)		
Ground (relation)	Iconicity (similarity)	Indexicality (contiguity in space/time)	
Sign function	Iconic sign/icon	Indexical sign/index	Symbolic sign/symbol (based on convention)

Figure 1. Distinguishing principle, ground and sign function, along the three central Peircean categories of Firstness, Secondness and Thirdness (adapted from Sonesson 2007).

Pure Firstness is found only in the case of *pure iconcity*, which is non-relational and there is no basis even for a distinction between the experiencer and the experience. Secondness is most clearly reflected in *indexicality*, where there is a relation of space/time contiguity between two perceived entities, which can be learned by the organism, as, for instance, in classical conditioning (Deacon 1997). Such contiguity is also the "ground" for the relationship, while in the case of (relational) iconicity, the ground is similarity, but non-identity, since a relation between two separate entities is involved, as in the similarity between e.g. two members of the same species. Thus while such iconicity may be said to inherit its "principle" from Firstness, it also involves Secondness, as reflected in Figure 1. Importantly, none of the meanings discussed so far are signs. For example, chimpanzees see both the similarities between the members of their group, and their differences since they can recognize individuals, but they do not see one member as a "sign" of another. It is only with Thirdness, prototypically instantiated by *symbolic signs* (symbols), based on a conventional ground, such as emblems, words or grammatical constructions (cf. Tomasello 2003), that there are signs, in the sense of "double differentiation" between expression and content stated earlier. The other two major types of signs are *icons* (distinct from iconicities), such as iconic gestures and pictures, and *indices* (distinct from indexicalities), such as pointing gestures and various "natural signs" such as smoke meaning fire. Finally, the same empirical sign (expression) may be connected to its content (either its "object", its "interpretant" or both) on the basis of more than one kind of ground. For example, a pointing gesture typically involves deixis (a special kind of indexicaliy) to its referent, resemblance (iconcity) with the intended gaze alternation or motion of the addressee, and conventionality (symbolicity), since there are different norms for pointing in different cultures (cf. Zlatev & Andrén 2009).

Much more can be said about this kind of semiotic theory, formulated mainly by Sonesson and colleagues, and sometimes referred to as the "Lund school of semiotics", but this should suffice to show why it is a *phenomenological* semiotics – since all the distinctions made in Figure 1, and especially the sign function, presuppose one or another form of consciousness. Thus, semiotics is from this point of view "the systematic study of meaning", where *among many different kinds of meaning,* signs are a special (and important) type. The implications for cognitive science were indicated by mentioning the pictorial capacities of non-human primates. In fact, this approach has been used in developmental and evolutionary studies of transitions "from pre-representational cognition to language" (cf. Ikegami & Zlatev 2007). For example, it has been the major

hypothesis of the project *Stages in the Evolution and Development of Sign Use* (Zlatev et al. 2006), that what makes human consciousness different from that of other primates is above all due to one or more aspects of the sign function, rather than to language per se (see Section 4.2 for more discussion).

The final field that serves as intellectual "input" for The Semiotic Hierarchy is that of linguistics – which is only natural considering that the fourth and final level is that of language. Similar to Brier (this volume), some of my earlier work on formulating an integrative approach to meaning was enticed by the promises of "embodied" cognitive linguistics (Zlatev 1997). However, the last decade has shown its mainstream theories to be lacking, precisely in the aspects necessary for an evolutionary-phenomenological-semiotic synthesis (Zlatev 2007, in press). Rather, more congenial is Halliday's emphasis on "language as social semiotic" (Halliday 1978) and Itkonen's metatheoretical investigations of the foundations of "autonomous" (non-causal) linguistics (Itkonen 1978) and causal (psycho and socio) linguistics (Itkonen 1983), both summarized and updated in a recent volume (Itkonen 2003). In brief, Itkonen privileges the role of consciousness for both the study and the existence of language as a "social institution", distinguishing between *intuition* (concerning the normative level of language, i.e. our intuitions of what is correct and what is incorrect in the languages that we speak), *introspection* (concerning experiences such as mental imagery, which can vary between speakers) and *empathy* (involving notions such as "rationality" and the ability to imagine the perspectives and goals of others). Zlatev (2008b) refers to this, as well as to some of the phenomenological and semiotic insights mentioned earlier, and argues for a "phenomenological linguistics" where consciousness, in its various forms and manifestations, plays a central role. The Semiotic Hierarchy can be viewed as an extension of this work, situating the phenomenon of language in an evolutionary cognitive semiotic framework.

2.2. Pluralistic methodology

Given an ontology informed by phenomenology as outlined above, The Semiotic Hierarchy implies methodological pluralism in the study of meaning, where methods can be grouped on the basis of the type or *perspective* adopted for the particular phenomenon under study. Table 1 shows some of these in a schematic manner.

Perspective	Method	Appropriate for the study of
First-person	Conceptual analysis Phenomenological reduction Imaginative (eidetic) variation	Normative meanings, rules Perception Mental imagery
Second-person	Empathy Imaginative projection	Other persons (e.g. as in conversation analysis), "higher" animals
Third-person	Experimentation Brain imaging Computational modelling	Isolated behaviours (e.g. spatiotemporal utterances) Neural processes

Table 1. Examples of methods, grouped in terms of type of perspective, used in developing a synthetic cognitive semiotic theory such as The Semiotic Hierarchy.

In other words, The Semiotic Hierarchy is predicated on a "triangulation" of methods from the three perspectives, or what are usually called "subjective", "intersubjective" and "objective" methods. The clearest difference from traditional cognitive science, evolutionary theory and psychology is the emphasis on the first-person perspective, in agreement with the statement by Gallagher & Zahavi (2008: 89): "We should never forget that our knowledge of the world, including our scientific knowledge, arises from a first-person perspective, and that science would be meaningless without the experiential world". But, at the same time, unlike traditional (cultural) semiotics (corresponding to what biosemioticians disparagingly refer to as "anthroposemiotics"), and phenomenology, this integrative perspective also allows the use of third-person methods such as psychological experimentation – as long as the perspectival, and essentially inter-subjective character of such research is remembered.

2.3. Why integration?

Why endeavour to develop an integrative, evolutionary-phenomenological-semiotic theory of meaning such as The Semiotic Hierarchy? Perhaps it is obvious from what has already been said, but let me point to three major motivations:

- First of all, it provides an antidote to the fragmentation of the concept of meaning, pointed out in the quotation by Zlatev (2003) above, and a way to both acknowledge the distinction between "nature" and "culture" argued for by Hornborg (this volume), and to provide a larger framework in which both can be included.
- Secondly, as argued by Zlatev (2003) as well as biosemioticians who use some notion of "levels" or "semiotic thresholds" (Emmeche 2007, Brier this volume, Kull this volume), an integrative approach to meaning requires *an evolutionary framework*. Experience has shown, however, that there is little agreement on how to specify such a framework, and what its levels are. With its four broad levels, The Semiotic Hierarchy could provide significant common ground for further theoretical and empirical investigations.
- Third and finally, the "pluralistic" and evolutionary approach here advocated can serve as a basis for the study of *language*, which, as has become obvious over the last century, is a highly polysemous concept: language as social institution (cf. *langue*, "meaning potential"), as concrete usage (cf. *parole*, speech, discourse), as knowledge of language (cf. "competence"), as bodily skill (cf. "embodiment"), as neural structures and processes (cf. "neurolinguistics"). Many debates in the language sciences have raged, and continue to do so, concerning *which sense* to view as primary, and its relation to the others (cf. Itkonen 2003, Johansson 2005). As argued in Section 3.4, a "bio-cultural" theory such as The Semiotic Hierarchy reveals these senses to be not mutually exclusive, but rather complementary and co-dependent.

3. The four levels of meaning of the Semiotic Hierarchy

Extending the analysis presented by Zlatev (2003), where meaning was defined as "the relationship between an *organism* and its *environment*, determined by [...] *value*" (ibid: 258) the concept of meaning in the present theory presupposes (a) *subject* S, (b) a subject-internal *value system* V and (c) a *world* in which the subject (as being-in-the-world) is embedded, W. Thus a particular phenomenon within the world (p), which will necessarily transcend (i.e. go beyond) the subject, will have a given meaning M for S, according to the "formula" given in (1) and illustrated in Figure 1. In other words, the meaning of a given phenomenon, for a given subject, will be determined by the "type" of world (see below) in which both are embedded AND the value of the phenomenon for the subject. If either p falls "outside" W, or its value for S is nil, p will be meaningless for S.

(1) M (p, S) = W(p) * V(p, S)

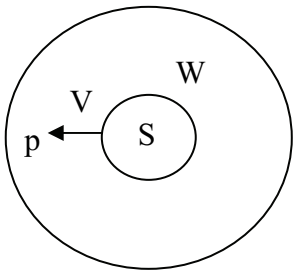

Figure 2. Subject S, world W (the borders of which are determined by the value-system of the subject, V), with phenomenon p, whose meaning is determined by its (type of) value for S.

Depending on the nature of (a), (b), and (c), four levels of semiosis can be defined, summarized in Table 2. These are the four levels of The Semiotic Hierarchy, which build atop each other "incrementally", as explained in this and in the following section.

Level	Subject	World	Value system
1	Organism	Umwelt	Biological
2	Minimal self	Natural Lebenswelt	Phenomenal
3	Enculturated self	Cultural Lebenswelt	Significational
4	Linguistic self	Universe of discourse	Normative

Table 2. Summary of the four levels of meaning of The Semiotic Hierarchy

3.1. Level 1: organism, biological value, Umwelt

Following von Uexküll (1982), the theory maintains that the fundamental subject (S) is an *organism*, even of the simplest kind. Its world (W) is that of the *Umwelt* – that part of the larger "environment" which is picked out by a value system (V), which is either innately, or through learning, geared for the survival and reproduction of the organism. Only organisms (living systems), and not artificially created machines, have the properties of self-organization, *autopoiesis* (Maturana & Varela 1980), *identity-Umwelt polarity* (Thompson 2007), and an *intrinsic value system* (Edelman 1992), serving their own interests, rather than optimizing some externally defined function. No artificial system has these properties, but if such a system is one day created (or perhaps: is allowed to

emerge), then the term "artificial life" would become more than a metaphor (cf. Zlatev 2003).

Thus, in agreement with biosemiotics, though not exactly for the same reasons, meaning is seen to be co-extensional with life. However, the subject of biology, the organism, is not yet an experiencing subject. The living body is not identical to *the lived body* (Husserl's *Leib*). The relationship between the organism-subject and the phenomenon (e.g. the "smell" of the animal picked up by the tick in the famous example of von Uexküll 1982), is intrinsically meaningful for the tick, but this is not a sufficient reason to grant the tick subjective experience, as done by von Uexküll. Otherwise, without special reasons to assume that e.g. the tick, but *not* simpler (and even unicellular) organisms, has some basic consciousness, one would have to postulate that Popper's "world 2" does indeed commence with life itself. There is no logical fault with this, but the point is that it is not *required* by assuming a basic pre-conscious, biological level of meaning. Following "Morgan's Cannon" (do not assume more complex processes if simpler are sufficient), biological value suffices to explain why an *Umwelt* is intrinsically meaningful for an organism.

On the other hand, the proto-intentional relationship inherent in the organism-*Umwelt* polarity, i.e. the *biological directedness* of the organism-subject toward phenomena which it "experiences" (due to its intrinsic value system) as meaningful, even if non-phenomenally, is a plausible ground for the emergence of consciousness (as primitive sentience) in evolution. Discussion on why this could be so will be postponed for Section 4.1, since the purpose here is to define the levels, and not the transitions.

3.2. Level 2: minimal self, phenomenal value, natural Lebenswelt

On the next level, there is not only a biologically meaningful *Umwelt*, but a phenomenal *Lebenswelt* in which the subject finds himself immersed. The subject S is here a "minimal self" (Gallagher 2005), with (at least) affective and perceptual consciousness, which is *intentional* (i.e. directed) towards whatever is perceived. Thus the biological value of Level 1 is extended to what can be called *phenomenal value* (cf. Table 2): the heat of the fire is felt as *warm*, the sweetness of the apple is tasted as *sweet*, its redness is seen as *red* etc. However, the focus on such "qualia" in analytical philosophy is much too atomistic. As pointed out by Gurwitsch (1964), perceptual consciousness has Gestalt structure with a *figure* (theme), *ground* (against which the figure is profiled) and *margins* – which are experienced non-thematically, since they are not related to what is being focused on, but to which consciousness can easily (re)focus, e.g.

the multiple tactile sensations felt while in the background, while attention is being directed elsewhere.

While this has been denied, from Descartes to Dennett, there can be little doubt that at least "higher animals" (mammals and birds, but possibly all vertebrates), have some forms of such phenomenal consciousness, and thus Level 2 of meaning. Unlike what was said about the tick above, here we have multiple independent reasons apart from the existence of biological value (and hence meaning) to affirm this.

First of all, there is empathy: we spontaneously "attribute" feelings and perceptions to animals that behave like us in similar occasions. This is not the proverbial "argument from analogy for other minds" (e.g. I scream when I am in pain, the dog whines, the two outer behaviours are similar, ergo it must be in pain), since it is not an *argument*, but a result of spontaneous, directly perceived "co-feeling" (Zahavi 2001, Overgaard in press). In support of this can be offered our ordinary use of language: "Only of a living human being and what resembles (behaves like) a living being can one say: it has sensations; it sees; is blind, hears; is deaf; is conscious or unconscious" (Wittgenstein 1953 #281).

Apart from such first-person and second-person arguments, there is convincing third-person evidence. First, there is data from psychological experimentation, e.g. *mirror-self recognition* in all the great apes, tamarins, elephants and dolphins (cf. Beshkar 2008). Even more "objectively", it has been recently suggested that consciousness might be supported by the massively interconnected thalamocortical system (Edelman & Tononi 2001), and is characterized by high-frequency, irregular and low-voltage activity. Essentially the same system and identical neural activity has also been found in monkeys, dogs, cats and rats (Baars 2005).

Further evidence is offered by showing that the contrast between "blind sight" and conscious perception is also present in macaques (Cowley & Stoerig 1995). In brief, macaques were rendered "cortically blind" in one hemisphere, by making incisions in their striate cortex, giving rise in them to a condition similar to that of human stroke patients experiencing the paradoxical condition called "blind sight". When the task was e.g. to grasp toward the correct stimulus in their blind field of vision, the macaques were successful, similar to human stroke patients. But when given the option to press a key to show that they could discriminate between two stimuli, the cortically blind macaques did so only when the stimuli were in their non-impaired field of vision. The (rather cruel) irony is that these, possibly most conclusive third-person results of animal consciousness were produced by one of the least *ethical* methods –

something that has seemed to pass unnoticed due the "blindness" to first- and second-person methods in the scientists performing and discussing such experiments.

There is much more to be said about meaning on this level, but for the present outline it is sufficient to note that it is a natural (sic!) elaboration of meaning on the previous, purely biological level. Culture, at least in the anthropological sense (cf. Hornborg this volume) is not yet involved here, since all that was mentioned above does not require the sign function.[4] Put otherwise, having a *Lebenswelt* does not presuppose the sign function, but as argued below the opposite is the case.

3.3. Level 3: enculturated self, significational value, cultural Lebenswelt

As stated in Section 2, the sign function, originally called the "symbolic function" by Piaget (1945), and requiring a "double differentiation" between expression and content from the standpoint of the subject (Sonesson 2007), is required for there to be signs, according to the phenomenological type of semiotics here adopted. Stated more explicitly, a sign is present if and only if E (expression) *signifies* C (content) or at least R (referent), for subject S, so that:

- The relation is *asymmetrical* (E → C/R, not E ← C/R)
- E and C/R are *differentiated*: E is qualitatively different from C/R for S
- E and C/R are *connected*: in perceiving or enacting E, S indirectly perceives (or conceives of) C/R

From this definition, it can be seen that a sign involves *at least* a triadic relation (between E, R and S), and when the relationship between E and R has been generalized so that there is a "generic" C(ontent) mediating between E and R (where the latter may even be non-existent), a *quadratic* relationship. The consciousness of S, making both the differentiation and the connection possible, is a prerequisite for the sign function, and hence Level 2 is a precondition for Level 3 meaning (cf. Zlatev 2008b). While it is logically possible for the

4 Even "culture" in the more minimal sense – "the existence of intraspecies group differences in behavioural patterns and repertoires, which are not directly determined by ecological circumstances (such as the availability of particular resources employed in the differing behavioural repertoires) and which are learned and transmitted across generations" (cf. Sinha 2006: 112), indicating the presence of social learning – does not seem to be required. To my knowledge, there is no evidence of cultural traditions in macaques, dogs, cats and rats, which are nevertheless creatures with a natural Lebenswelt.

sign function to emerge individually, signs are typically learned socially, through imitation and communication (see Section 4.2). They become stable, and eventually conventional (i.e. mutually known) in a "symbolic" culture. Thus, the subject S of Level 3 is an *enculturated subject*, and the world W is not only the directly perceived natural *Lebenswelt*, but also a *culturally mediated Lebenswelt* (not replacing, but augmenting the first). The posthumously published work of Husserl explores this enriched notion of the human Lifeworld (cf. Zahavi 2003).

But is (true) signification equivalent to "anthroposemiotics"? Not really, since while no animal has been shown to use signs (in this sense) spontaneously (Deacon 1997, Tomasello 2008, though see Savage-Rumbough 1995 for some evidence for the presence of spontaneous use of signs by bonobos in the wild), members from a number of species have been shown experimentally to possess the ability to acquire one or another kind of protolanguage, when especially "enculturated" in a human environment: chimpanzees and bonobos (Savage-Rumbaugh et al. 1998), gorillas (Patterson 1980), orangutans (Miles 1990), dolphins (Herman 2005), dogs (Kaminski, Call & Fischer 2004) and even grey parrots (Pepperberg 2000). In the case of all the species of great apes, there are further reasons, such as those given in the previous subsection, to believe that their Level 2 "natural *Lebenswelt*" is sufficiently similar to the human one for enculturation and sign use to bring them at least in the periphery of the human *cultural Lebenswelt*, or, perhaps less anthropocentrically, to a "shared *Pan/Homo* culture" (Segerdahl et al. 2005).

All the studies referred to above where carefully performed, using third-person criteria such as double blind protocols (Savage-Rumbaugh et al. 1998). Furthermore, in all these cases (with the exception of the dogs), the signs acquired were used bi-directionally, i.e. in both comprehension and production. And at least in one case, involving the bonobo Kanzi, understanding of pictures in the "pictorial mode" (cf. Section 2) has been clearly demonstrated (Persson 2008). All this speaks against the claims of Sebeok & Danesi (2000) concerning animal sign use being always an instance of the so-called "Clever Hans phenomenon", implying that the subjects used unconsciously produced cues by their human interlocutors, rather than understanding the sign function itself, i.e. true signification. Therefore sign use, involving indexical signs such as pointing, iconic signs such as pictures, and symbolic signs such as lexigrams, is *not* per definition a matter of "anthroposemiotics", and Level 3 of The Semiotic Hierarchy should be not confined to the species of *Homo sapiens*, i.e. on the basis of purely biological criteria.

However, what I called above "protolanguage" – the use of an inventory of simple signs – is distinct from language, which involves *systematic combinations* of such signs, in a variety of functions: declarations, requests, instructions, narrations – and thinking. Despite some optimistic interpretations (e.g. Greenfield & Savage-Rumbaugh 1991), systematic third-person evidence for such language (-based) skills in non-humans has not been provided yet. Thus, there is ground for one last semiotic threshold.

3.4. Level 4: Linguistic self, normative value, universe of discourse

The fourth and final level of The Semiotic Hierarchy implies a subject proficient in (one or more) language(s): a "linguistic self", values (meanings) give rise to normative signs, and a Lifeworld that is not only cultural, but profused with language, a "universe of discourse" (cf. Sinha 2004). But to understand what this means, the earlier mentioned ambiguity of the term "language" needs to be addressed. A good online English dictionary (<http://www.dictionary.com>) lists the following senses, which can be glossed and interrelated as follows:[5]

1) A particular public language, e.g. "The French *language*"
2) Communication by means of (1), e.g. "His *language* was fluent", speech
3) In linguistics/cognitive science: Knowledge of (1), permitting (2), "*Language* as a cognitive phenomenon"
4) In linguistics/cognitive science: The (neuro)biological basis for (2) and (3), e.g. "*Language* in the brain"
5) In linguistics/philosophy: The capacity to acquire (1), resulting in (3) and (2), e.g. "*Homo sapiens* alone possesses *language*".

While Saussure (1916) established modern linguistics by emphasizing the dialectical relationship between (1) and (2), and emphasizing the importance of (1) which he called *langue*, stating that it is to be viewed as "a social institution", he did not resolve its relationship with (3), the individual level of "knowledge of language". With the "cognitive turn" in the 1950s, it was easy for Chomsky to monopolize the latter, calling it first "competence" (Chomsky 1965) and later

5 Apart from these literal uses, there are many others which should be regarded as metaphorical, or otherwise extended: e.g. (6) any kind of communication signals: "The language of birds", (7) any expressive medium: "The language of art", "body language", (8) a particular style of speaking: "Flowery language", (9) In computer science: "PROLOG is an easy programming language", (10) A people or nation, e.g. "The Amondawa number several hundred people" (Amondawa is a language spoken by a small community of indigenous people living in the rainforest of Brazil, cf. Sampaio et al. 2008).

"I-language" (1986). Due to Chomsky's claims that the blueprint of the latter, Universal Grammar (UG) was innate, it became natural in the further scientification of the language sciences to privilege (4), looking for it initially in the "classical language areas" (Broca's and Wernicke's) of the human brain. The fruitlessness of this search, however, and emerging focus on evolutionary issues in the last two decades, have quite clearly shown this to be a dead end (Johansson 2005). There is growing consensus that (5), the capacity to acquire and use a public language such as English, Swahili or Amondawa, does not consist in anything like an innate "language module" or UG, but is due to a complex process of biological-cultural co-evolution, resulting in qualitatively different cognitive capacities and cultural tools in all (non severely impaired) members of our species (Johansson 2005, Burling 2005, Tomasello 2008, Sinha in press). Along with this, one can argue for refocusing on (1) as the basic sense of "language", and the others as conceptually dependent (Itkonen 2003) – as also indicated by the order, and the relations between the senses in the list given above.

Thus, a convenient concise definition of language, appropriate for Cognitive Semiotics would be *a conventional-normative semiotic system for communication and thought* (Zlatev 2008c, Zlatev 2008d). Of course, its defining terms need also to be spelled out. A common starting point for the definition of *convention* is that of Lewis (1969: 76), which in an abbreviated form states:

> A regularity R in the behaviour of members of a population P when they are agents in a recurrent situation S is a *convention* if and only if it is true that, and it is common knowledge in P that, in any instance of S among the members of P, (1) everyone conforms to R; (2) everyone expects everyone else to conform to R; [...].

Even from this it can be surmised that conventions are not just "habits". The expectation that everyone (should) conform to them implies a more or less explicit *normative* element in the knowledge of conventions. The judgment that some expressions are *correct* (either grammatically or semantically), while others are *incorrect*, is a pre-theoretical universal (cf. Itkonen 1978, 2008, Zlatev 2008b). Hence, Itkonen's long-term insistence on *the (implicitly) normative character of language* – as a social system, i.e. (1), and the knowledge of these norms, i.e. (3), must be accepted as (meta)correct (cf. Zlatev 2007).

Not all conventions/norms (e.g. to drive on the right side of the road) are however, signs (as defined in this article) and not all signs are (primarily)

conventional/normative, e.g. most gestures and pictures.[6] Even when such semiotic resources include conventional signs (e.g. emblematic gestures), the latter are not organized in *systems*, implying minimally grammatical and semantic relations between the signs. Human spoken, signed and written languages (and derivative forms, such as mathematical and logical notations) are thus the only "conventional-normative semiotic systems" that are known to us.

From the present perspective, communication can be defined as *(intentional) transmission of meanings through different (primarily bodily) expressions between two or more subjects*. Non-intentional communication is ubiquitous for animal subjects (and human beings as well, e.g. laughter) but these do not consist of signs. Intentional communication through (mostly) deictic and iconic signs appears to be spontaneously conducted only by human beings, as mentioned earlier. But only through public languages can complex meanings, e.g. narratives, be transmitted. While initially (in both evolution and development) languages are used for communication, their internalization (Vygotsky 1962, 1978), gives rise to *linguistically mediated cognition*: e.g. internal speech, complex planning, narrative explanations, and an autobiographical self (Stern 1985, Hutto 2008, Menary 2008).

Linguistic mediation is not the only kind of *semiotic mediation* (in the Vygotskyan sense); thinking as mediated cognition can also be performed through mimetic and visual representations, both external ones (gestures and pictures) and internalized ones, as well as by using various artefacts, such as Vygotsky's proverbial knot on the handkerchief or the abacus (cf. Sinha & Rodriguez 2008). But language has had a privileged place in human culture and human thought, as shown by the fact that the name of a given language and that of the people speaking it are nearly always the same. Information technology and the internet are sometimes hailed as providers of a "new level" (Logan 2004), but it is arguable that they are nothing but a new technically sophisticated medium for visual and linguistic representations, (with both positive and negative consequences for the quality of human communication and thought), and not a qualitatively new type of semiotic resource.

Finally, as stated in the onset of this subsection, the Lifeworld of subjects as "linguistic selves" consists not only of the pre-sign meanings (e.g. those of direct perception) and pre-linguistic signs (e.g. mimetic rituals), but of all those denizens of Popper's "world 3": cultural beliefs, myths, scientific theories,

6 Note that conventionality implies mutual knowledge (of the signs) and not arbitrariness. The emphasis on the latter, especially when interpreted literally as "unmotivated", has perpetuated a misunderstanding of the concept of convention in linguistics (cf. Zlatev 2003, 2008a).

political ideologies, novels, poems, internet forums, blogs etc. which are made possible by language, and can be said to "live" in it. This can be called, following Sinha's (2004) use in a more general (semiotic) manner of a concept from logical semantics, "a universe of discourse".

3.5. Uniting the levels

By now, we have come a long way from the biological meaning inherent in autopoiesis and an *Umwelt* based on biological value systems directed to self-preservation and reproduction. In order to provide a general theory of meaning, one could attempt, as some representatives of biosemiotics, to extend concepts defined on the higher levels downward (as I suggested was the case with the *sign* concept), or vice versa, as Maturana (1988) does when extending concepts such as *autopoiesis* and *structural coupling* upward to conclude that "languaging" operates on similar principles as that of biology (Cowley this volume, Kravchenko 2009). From the present viewpoint, however, this is hardly the right approach, since qualitative differences between the different levels of meaning are thereby abolished. As least one prominent biosemiotician seems to be of the same view:

> [B]iosemiotics is not enough to account for the characteristics of human embodiment because of [...] our [...] nature as techno-culturally embedded beings within a space of meanings that are not only symbolic, but argumentative and socially empowered by different kinds of sociocultural systems. (Emmeche 2007: 379)

The alternative then, is to propose that the levels of the Semiotic Hierarchy form, not only an implicational hierarchy, but an evolutionary one: with higher levels *emerging* from lower ones, giving rise to qualitatively different properties. In the following section, my intention is to show that this is at least plausible, and in fact more so than either to deny the new properties (as in reductive physicalism), or to claim that somehow they are "present from the start".

4. Transitions between the four levels

An evolutionary theory of the emergence of life, consciousness, sign function and language, would require (at least) a volume of its own. My goal here is to suggest that such a theory is at least feasible. Furthermore, the emphasis on evolutionary emergence can remove a possible misconception concerning The Semiotic Hierarchy: that each subsequent level somehow "replaces" the earlier

one(s), and e.g. a (minimal/enculturated/linguistic) self is independent of the "underlying" biological self, the organism. This is far from my intentions; rather in consistence with "layered models" of development (Stern 1985, Zlatev & Andrén 2009), each higher level "subsumes" earlier ones (see Figure 3). We, for example, are at the same time organisms (living bodies), minimal conscious selves, users of non-linguistic signs and linguistic selves, and our meaningful world is both an *Umwelt* that we are not (necessarily) conscious of, and a *Lebenswelt* that is natural, cultural and discursive. Furthermore, given the assumption that consciousness evolved from life (see below), the border between the unconscious and the conscious should not be considered water-tight. We may not be conscious of certain "stimuli" that affect us (e.g. as in subliminal perception), but we can increase the sphere of our awareness by learning to pay attention to their effects.

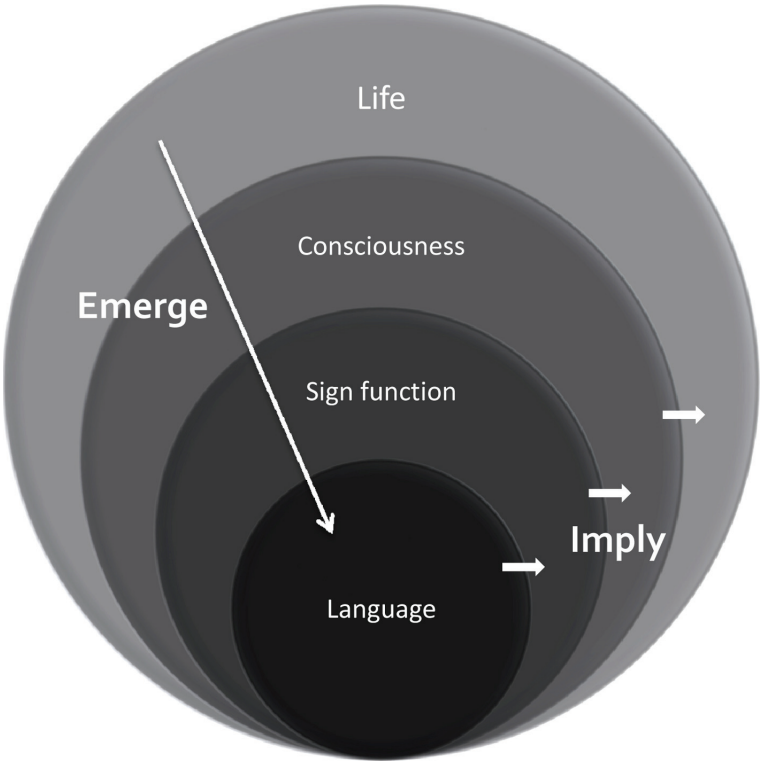

Figure 3. The levels of the Semiotic Hierarchy shown as embedded layers, with arrows for (ontological) emergence and (logical) implication. If we consider ontogeny to begin in conception, rather than birth, the hierarchy would also apply to individual development.

As can be seen in Figure 3, there are three transitions, or "semiotic thresholds" to be accounted for. Explaining the origin of life is, as stated in Section 1, (far) beyond my ambitions. It is possible that as physicists and biologists are currently changing their conception of matter (Brier this volume), this would prove to be less of a mystery. At the same time, I do not think that it is necessary to assume that "qualia and mind are 'installed' in the metaphysics from the beginning" (ibid). Departing from the meaningful, but pre-experiential *Umwelt* of the simplest organisms, and an "indentity-*Umwelt* polarity" inherent even in the simplest organisms, it is possible to suggest evolutionary reasons for the emergence of consciousness, and likewise for the two highest levels.

4.1. From Umwelt to Lebenswelt

A recurrent argument, used by both those in favour of reductive (or eliminative) physicalism on the one hand, and panpsychism (or "hylozoism", cf. Brier this volume) on the other, is that that there is no (biological) reason why consciousness should emerge in a material world (cf. Chalmers 1996). But is this really the case? Popper speculated that the original *function* of consciousness was to evaluate perception and action, and to anticipate "success or failure in problem-solving" through positive or negative emotions:

> Consciousness, World 2, was presumably an evaluating and discerning consciousness, a problem-solving consciousness, right from the start. [...] My basic assumption regarding World 2 is that this problem-solving activity of the animate part of World 1 resulted in the emergence of World 2, the world of consciousness. [...] the original task of consciousness was to anticipate success and failure in problem-solving and to signal to the organism in the form of pleasure and pain whether it was on the right path or the wrong path to the solution of the problem" (Popper 1992: 17).

Still, a basic form of "evaluation" can be performed even without any consciousness (i.e. phenomenal experience), on the basis of a biological value system, as in Damasio's (2000) somatic marker theory, where "emotions" are defined as bodily states outside of awareness, and not as experiential ones. Some simple forms of learning may be performed on this basis, by connecting "features" of a disjoint *Umwelt* with such bodily states.

However, "binding" the *Umwelt* into coherent multimodal wholes – objects, scenes and situations – would be functional for behavioural flexibility, learning, anticipation and "problem-solving", which are all necessary for navigating in a

complex environment (Edelman 1992). The hypothesis that I am proposing is that consciousness emerged as a biological adaptation in creatures in need of a "common currency" for multimodal perception, action and evaluation, so that attentional resources can be allocated flexibly, and evaluation can be performed efficiently via *feelings*, e.g. for the purpose of anticipating the results of actions. Thus, (part of) the *Umwelt* becomes transformed into a *Lebenswelt*, perceived as separate from the acting and feeling subject. This on its side would lead to the pre-reflective self-consciousness of the minimal self, and to what Husserl called "the correlational structure of intentionality": intentional objects are perceived as external to the self, but are simultaneously categorized and "felt" on the basis of internal phenomenal value systems. This, I believe, is what is meant by concepts such as "core consciousness" (Damasio 2000) and "primary consciousness" (Edelman 1992).

The advantage of such a view is that consciousness is clearly *functional* (cf. Donald 2001), and ceases to be a mystery for evolutionary theory. As mentioned in Section 3.2, there are even empirically grounded proposals for the neural bases of this adaptation: the widely distributed and interconnected thalamocortical system present in mammals, but much less developed in e.g. reptiles. As is generally the case in evolution, consciousness even in its "core" and "primary" forms hardly emerged wholesale. But since even a minimal form of what was sketched above would have been adaptive for animals inhabiting a complex *Umwelt*, it would have been selected for in our distant ancestors, and its evolution into "higher" forms, e.g. with more flexible control of attention, more diverse feelings etc., under way. The major point is that it makes sense to claim that even the most minimal form of phenomenal consciousness was (and is) absent in simple organisms (such as amoeba), but as possessors of a Level 1 meaning system, they served as that natural ground from which it could emerge. This is not the case for human artefacts such as machines, which can conduct billions of billions of "computations" in a second, but lack an internal value system (cf. Zlatev 2003).

4.2. From Consciousness to Sign function

The natural place to look for the next major transition is in our branch of the evolutionary tree (or rather bush), where the great apes split off some 14 million years (orangutans), 8 million years (gorillas) and 6 million years (chimpanzees and bonobos, who then split into separate species afterwards). While these nearest currently living relatives of our species have evolved since our evolutionary paths diverged, paleoanthropological evidence indicates that

they have done much less so than the hominids, and thus it is commonly accepted to consider great apes as good models for the corresponding "common ancestors" in the study of human cognitive (and semiotic) evolution

Apart from differences in language capacity and other forms of sign use mentioned in Section 3.3, a multitude of experiments in comparative psychology have established relevant differences in *imitative capacity* and *intersubjectivity*, i.e. the ability to share and eventually to understand the experiences of others. Table 3 summarizes some results from the SEDSU project (Zlatev et al. 2006) mentioned in Section 3.3., comparing "just-verbal" children with our increasingly distant relatives among the great apes. As can be seen, chimpanzees (and bonobos when tested) performed more or less similarly to children, except in imitation of action and mutual gaze (between mothers and infants), while gorillas and orangutans differed in every test but the recognition of being imitated.

	Children, 2 years	Chimpanzees	Bonobos	Gorillas	Orangutans
Picture comprehension	+	+	?	-	?
Imitating actions	+	(+)	?	?	?
Food sharing	+	+	+	-	-
Yawning contagion	?	+	?	-	-
Mutual gaze	+	(+)	(+)	-	?
Recognizing being imitated	+	+	+	+	+

Table 3. Comparative results concerning sign use (picture comprehension), intersubjectivity (food sharing, contagion, and mutual gaze) and imitation (on actions, and recognition of being imitated) from the SEDSU project: + = positive results, - = negative results, (+) = mixed results, ? = results lacking.

On the basis of such evidence, Zlatev (2008c, 2008d) argued that intersubjectivity and imitation basically co-evolved with the capacity for *bodily mimesis*, the use of the body as a representational device, and that furthermore the latter gave rise to the sign function in evolution. Unlike Donald (1991), who first proposed the notion of mimesis as a "missing link" between ape-like "episodic" cognition and culture, and human "mythic" culture, Zlatev divides bodily mimesis into a

Mimesis Hierarchy (Table 4), consisting of 5 levels, the lowest three of which are: *proto-mimesis* (e.g. neonatal imitation), *dyadic mimesis* (imitation and non-communicative reenactment), and *triadic mimesis* (e.g. pointing and pantomime). While proto-mimesis, which even more distant relatives such as macaques are capable of, is quite removed from the sign function, dyadic mimesis brings in the properties of differentiation and "correspondence", and triadic mimesis communicative intentions. On the other hand, as can be seen from Table 4, even triadic mimesis lacks the property of conventionality (normativity), which is required for the emergence of protolanguage and subsequently language (along with the property of semiotic systematicity).[7]

Level	Characterized by acts which are
Language	divided (semi)compositionally into meaningful sub-acts that *systematically* relate to other similar acts (as in grammar)
Protolanguage	*conventional-normative*
Triadic mimesis	*intended* to stand for some action, object or event for an addressee (and for the addressee to recognize this intention)
Dyadic mimesis	under conscious control and *corresponding*– either iconically or indexically – to some action, object or event, and at the same time being *differentiated* from it
Proto-mimesis	based on a *cross-modal mapping* between exteroception (normally dominated by vision) and proprioception (normally dominated by kinesthetics)

Table 4. The five levels of the Mimesis Hierarchy (cf. Zlatev 2008c, 2008d), with the "lowest" level given at the bottom, and the "highest" at the top.

The proposal is thus that the evolution of "mimetic skills" (Donald 1991, 2001) gave rise to the first true signs in evolution, i.e. the transition from Level 2 to Level 3 in The Semiotic Hierarchy. Furthermore, bodily mimesis, in both its

7 In Section 3.3 it was argued that studies with humanly enculturated apes have shown that at least some non-humans are capable of sign use, and possibly even of learning conventional-normative signs, i.e. protolanguage. However, this was achieved through human scaffolding, and the presence of even triadic mimesis in non-enculturated apes remains uncertain.

dyadic and triadic forms, made possible the subsequent evolution of language, i.e. the transition to Level 4.

4.3. From Sign function to Language

The topic of the evolution of language is currently intensely investigated and hotly debated (cf. Deacon 1997, Christiansen & Kirby 2003, Johansson 2005, Burling 2005, Tomasello 2008). I have no opportunity to do justice to the issues here, but simply point out that The Mimesis Hierarchy (MH) model is in line with current "gestural origins" theories (e.g. Donald 1991, Corballis 2002, Arbib 2005, Tomasello 2008). The "transition" from the manual-brachial to the vocal modality, often presented as a problem for such theories, could have occurred gradually over 1.5 million years from *H. ergaster* to *H. sapiens* as "vocal gestures" became increasingly recruited to supplement, rather than to replace gestural communication. By the appearance of *H. sapiens* in Africa about 200,000 years ago, this process would have been firmly established, and with this at least the emergence of an integrated gestural-vocal *protolanguage* (McNeill 2005, Zlatev 2008d), which through processes of cultural evolution gave rise to the multitude of languages we know today. Note that this does not assume that *H. erectu*s had "gestural language", since triadic mimesis (pointing and pantomime) lacks the normative aspect inherent in language. Thus, the present proposal is less vulnerable to the objection that evolutionary drift would have led to languages with predominantly manual-brachial signs (as in the modern signed languages of the deaf).

A crucial point for this scenario is to explain how normativity emerged in evolution. The topic is currently investigated with respect to *moral norms*, but these are not obviously related to the appearance of *norms of communication*, involving conventional signs (symbols) and rituals.[8] To understand the nature of the transition from predominantly non-conventional to conventional (normative) signs, albeit on a very different timescale, several researchers have turned to look at how this occurs in ontogeny (Nelson 1996, Tomasello 2003). Still, there is a traditional "spoken-language bias" involved in language acquisition research, in the sense that semantic and grammatical norms are sought above all in the vocal modality, rather than in what was called above "an integrated gestural-vocal protolanguage". With the intention to compensate for this, in a recent study, Zlatev & Andrén (2009) investigated the development of

8 Though see Deacon (1997), for an attempt to trace the origin of symbol use to a particular cultural and ecological niche some 4 MYA, when male group hunting and male-female distribution of labour necessitated the emergence of the social norm of "marriage".

so-called acts of bodily communication (ABCs) in three Swedish and three Thai children, between 18 and 27 months of age, using a transcribed and video-linked corpus of spontaneous adult-infant interactions. App. 1600 such acts were identified over the period, and analyzed using a semiotics-based coding system, distinguishing (on the highest level, with sub-categories not discussed here) between *deictic* (DEI), *iconic* (ICO) and *emblematic* (i.e. conventional) (EMB) "components", since one and the same ABC need not include only one type of semiotic ground (cf. Section 2). One of the most interesting findings of this study was the following:

> When viewing the children from both cultures as a single group, some general developmental patterns appeared. In particular, there was *evidence for a transition around 20 months*, when DEI components (in association with deictic expressions and nominals) peaked, along with a dip in ICO components, and a rather sudden increase of EMB components (consisting to a considerable degree in *nod-yes* and *headshake-no*). (Zlatev & Andrén 2009: 396).

Relying on the MH-model, we interpreted this as a transition from triadic mimesis to protolanguage (cf. Table 4 above), and since changes in the measures correlated in time (albeit for the group as a whole), and the transition seemed to be relatively "discrete" – as evidence for something resembling an *insight* of semiotic normativity, occurring cross-culturally around 20 months. In other words, this gives rise to a hypothesis (in need of further testing) that children at around this age "get it" that an E(xpression) can not only be used to mean a certain C(ontent), but that it is *appropriately* used in their (mini)culture to do so. The fact that the "vocabulary spurt" typically begins around this time may be (at least in part) a result of this "symbolic insight".

Parallels between ontogeny and phylogeny should be performed with care, but since insight-learning is often attributed to the prefrontal cortex (PFC), which matures slowest in ontogeny and this is the brain region that expanded most compared to other brain regions in human evolution (cf. Deacon 1997), it is not impossible that a *relatively* sharp transition into Level 4 meaning also occurred in evolution, possibly with the advent of *Homo sapiens*. This is consistent with the argument (often attributed to Hume) that there is a gulf between fact and norm, between *is* and *should*, requiring some sort of a "jump" (cf. Itkonen 2003). What The Semiotic Hierarchy emphasizes is that such a jump cannot come out of the blue, but requires (at least) three previous jumps: to life, consciousness and sign use.

5. Conclusions

The cognitive semiotic theory outlined in this article, The Semiotic Hierarchy, is certainly a "grand theory" (as many semiotic theories tend to be), that could be criticized for aspiring to cover too much territory. Indeed it needs to be further specified in many details, especially concerning the transitions between the levels discussed in the previous section. Still, even the brief formulation here offered hopefully shows that such an enterprise is feasible.

Therefore, The Semiotic Hierarchy is best regarded not as a specific empirical theory, but as a general transdisciplinary framework (uniting ideas from phenomenology, semiotics, linguistics, cognitive science and evolutionary theory), which sets guidelines for the formulation of such integrative theories, possessing the conceptual and empirical tools necessary for explaining the nature of meaning, consciousness and language.

Unlike both mainline materialist theories, attempting to reduce such concepts to bio-physics, and biosemiotic theories, in which an opposite kind of reduction is sought: of matter and biology to signs, The Semiotic Hierarchy implies *qualitative transitions* between at least the four levels of life, consciousness, signs and language. Adopting a strong notion of emergence, each level brings with it properties and phenomena not previously present. These are differences "important enough to be called 'ontological'; and it shows how increasing complexity makes a new ontological level 'emerge' out of an ontologically simpler level" (Itkonen 2008: 290). At the same time, this does not imply that we live in three or four different "worlds". Rather, we live in subjectively coloured, but intersubjectively shared Lifeworlds, which differ across cultures to various extents, but are all grounded in a common Pan-human "natural" *Lebenswelt* due to certain universal features of human consciousness (and the human *Umwelt*). Even more, we seem to share this experiential world with at least some non-human animals. We may be unique as (spontaneous) sign users, and especially language users on this planet, but we are not unique as semiotic and conscious creatures, implying the need for a more ethical attitude to our fellow living beings.

References

Beshkar, M. (2008). Animal consciousness. *Journal of Consciousness Studies* 15 (3), 5–34.

Brier, S. (2008). *Biosemiotics: Why Information is not Enough*. Toronto: University of Toronto Press.

Burling, R. (2005). *The Talking Ape*. Oxford: Oxford University Press.

Baars, B. J. (2005). Subjective experience is probably not limited to humans: The evidence from neurobiology and behaviour. *Consciousness and Cognition* 14, 7–21.
Chomsky, N. (1965). *Aspects of a Theory of Syntax*. Cambridge, MA: MIT Press.
Chomsky, N. (1986). *Knowledge of Language*. New York: Praeger.
Christiansen, M. & Kirby, S. (2003). *Language Evolution*. Oxford: Oxford University Press.
Corballis, M. C. (2002). *From Hand to Mouth: The Origins of Language*. Princeton, NJ: Princeton University Press.
Cowley, A. & Stoerig, P. (1995). Blindsight in monkeys. *Nature* 373, 247–249.
Damasio, A. (2000). *The Feeling of What Happens. Body, Emotion and the Making of Consciousness*. New York: Harvester.
Deacon, T. (1997). *The Symbolic Species: The Co-evolution of Language and the Brain*. New York: Norton.
Deely, J. (2001). *Four Ages of Understanding*. Toronto: University of Toronto Press.
Dennett, D. (1991). *Consciousness Explained*. Boston, MA: Little Brown.
Donald, M. (1991). *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*. Cambridge, MA: Harvard University Press.
Donald, M. (2001). *A Mind so Rare: The Evolution of Human Consciousness*. New York: Norton.
Edelman, G. (1992). *Bright Air, Brilliant Fire: On the Matter of the Mind*. New York: Basic Books.
Edelman, G. & Tononi, G. (2001). *A Universe Of Consciousness How Matter Becomes Imagination*. New York: Basic Books.
Emmeche, C. (2007). On the biosemiotics of embodiment and our human cyborg nature. In T. Ziemke, J. Zlatev & R. Frank (Eds.), *Body, Language, Mind: Volume 1, Embodiment* (pp. 411–430). Berlin: Mouton de Gruyter.
Fuller, G. (1997). Reading the readers: The role of semiotics in visitor research. *Visitor Behavior* XII (3–4), 30–31.
Gallagher, S. (2005). *How the Body Shapes the Mind*. Oxford: Oxford University Press.
Gallagher, S. & Zahavi, D. (2008). *The Phenomenological Mind: An Introduction to Philosophy of Mind and Cognitive Science*. London: Routledge.
Grady, J. (2007). Metaphor. In D. Geeraerts & H. Cuyckens (Eds.), *The Oxford Handbook of Cognitive Linguistics* (pp. 188–213). Oxford: Oxford University Press.
Greenfield, P. M. & Savage-Rumbaugh, S. (1991). Imitation, grammatical development, and the invention of protogrammar. In N. Krasnegor, M. Rumbaugh, M. Studdert-Kennedy & R. Schiefelbusch (Eds.), *Biological and Behavioral Determinants of Language Development* (pp. 235–258). Hillsdale, NJ: Erlbaum.
Gurwitsch, A. (1964). *The Field of Consciousness*. Pittsburgh: Duquesne University Press.
Halliday, M. (1978). *Language as Social Semiotic: The Social Interpretation of Language and Meaning*. London: Edward Arnold.
Hoffmeyer, J. (1996). *Signs of Meaning in the Universe*. Bloomington: Indiana University Press.
Husserl, E. (1989 [1952]). *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy, Second Book*. Dordrecht: Klüwer.
Husserl, E. (2001 [1900]). *Logical Investigations*. London: Routledge.
Hutto, D. D. (2008). *Folk Psychological Narratives: The Socio-cultural Basis of Understanding Reasons*. Cambridge, MA: The MIT Press.

Ikegami, T. & Zlatev, J. (2007). From pre-representational cognition to language. In T. Ziemke, J. Zlatev & R. Frank (Eds.), *Body, Language and Mind. Vol. 1. Embodiment* (pp. 241–283). Berlin: Mouton de Gruyter.

Itkonen, E. (1978). *Grammatical Theory and Metascience: A Critical Inquiry into the Philosophical and Methodological Foundations of "Autonomous" Linguistics*. Amsterdam: John Benjamins.

Itkonen, E. (1983). *Causality and Linguistic Theory*. Bloomington: Indiana University Press.

Itkonen, E. (2003). *What is Language? A Study in the Philosophy of Linguistics*. Turku: Turku University Press.

Itkonen, E. (2008). The central role of normativity for language and linguistics. In J. Zlatev, T. Racine, E. Sinha & E. Itkonen (Eds.), *The Shared Mind: Perspectives on Intersubjectivity* (pp. 279–306). Amsterdam/Philadelphia: John Benjamins.

Johansson, S. (2005). *Origins of Language: Constraints on Hypotheses*. Amsterdam: John Benjamins.

Johnson, M. (1987). *The Body in the Mind*. Chicago: University of Chicago Press.

Johnson, M. & Lakoff, G. (2002). Why cognitive linguistics requires embodied realism. *Cognitive Linguistics* 13 (3), 245–263.

Kaminski, J., Call, J. & Fisher, K. (2004). Word learning in a domestic dog. Evidence for fast-mapping. *Science* 304, 1682–1683.

Kravchenko, A. (2009). Reassessing the project of linguistics. In J. Zlatev, M. Andrén, M. Johansson-Falk & C. Lundmark (Eds.), *Studies in Language and Cognition* (pp. 30–45). Newcastle upon Tyne: Cambridge Scholars Publishing.

Lakoff, G. & Johnson, M. (1999). *Philosophy in the Flesh: The Embodied Mind and its Challange to Western Thought*. New York: Basic Books.

Lewis, D. K. (1969). *Convention: A Philosophical Studie*. Cambridge, MA: Harvard University Press.

Logan, R. (2004). *The Sixth Language: Learning a Living in the Internet Age*. Caldwell, NJ: Blackburn Press.

Lutz, A. & Thompson, E. (2003). Neurophenomenology: Integrating subjective experience and brain dynamics in the neuroscience of consciousness. *Journal of Consciousness Studies* 10 (9–10), 31–52.

Maturana, H. R. (1988). Reality: The search for objectivity, or the quest for a compelling argument. *Irish Journal of Psychology* 9 (1), 25–82.

Maturana, H. & Varela, F. (1980). *Autopoiesis and Cognition – The Realization of the Living*. Dordrecht: Reidel.

McNeill, D. (2005). *Gesture and Thought*. Chicago: University of Chicago Press.

Menary, R. (2008). Embodied narratives. *Journal of Consciousness Studies* 15 (6), 63–84.

Merleau-Ponty, M. (1962 [1945]). *Phenomenology of Perception*. London: Routledge.

Miles, H. L. (1990). The cognitive foundations for reference in a signing orangutan. In S. T. Parker & K. R. Gibdon (Eds.), *"Language" and Intelligence in Monkeys and Apes* (pp. 511–539). Cambridge: Cambridge University Press.

Moran, D. (2005). *Husserl: Founder of Phenomenology*. Cambridge: Polity Press.

Nelson, K. (1996). *Language in Cognitive Development: The Emergence of the Mediated Mind*. Cambridge: Cambridge University Press.

Overgaard, S. (in press). The problem of Other Minds. In D. Schmicking & S. Gallagher (Eds.), *Handbook of phenomenology and cognitive science*. Hamburg: Springer.

Patterson, F. (1980). Innovative use of language in a gorilla: A case study. In K. Nelson (Ed.), *Children's Language. Vol. 2* (pp. 497–561). New York: Gardner Press.

Pepperberg, I. (2000). *The Alex Studies: Cognitive and Communicative Abilities of Grey Parrots*. Cambridge, MA: Harvard University Press.

Persson, T. (2008). *Pictorial Primates: A Search for Iconic Abilities in Great Apes*. Lund: Lund University Cognitive Studies, 136.

Piaget, J. (1945). *La formation du symbole chez l'enfant*. Paris: Delachaux et Niestlé.

Popper, K. (1962). *Objective Knowledge*. Oxford: Oxford University Press.

Popper, K. (1992). *In search of a better world: Lectures and essays from thirty years*. London: Routledge.

Quine, W. (1960). *Word and Object*. Cambridge, MA: MIT Press.

Sampaio, W., Sinha, C., & Silva Sinha, V. da (2008). Mixing and mapping: motion, path and manner in Amondawa. In J. Guo, E. Lieven, S. Ervin-Tripp, N. Budwig, S. Őzçalişkan & K. Nakamura (Eds.), *Crosslinguistic Approaches to the Study of Language. Research in the tradition of Dan Isaac Slobin* (pp. 427–439). New York: Psychology Press.

Savage-Rumbaugh, S. (1998). Scientific schizophrenia with regard to the language act. In J. Langer & M. Killen (Eds.), *Piaget, Evolution and Development* (pp. 145–169). Mahwah, NJ: Erlbaum.

Savage-Rumbaugh, S., Shanker, S. & Taylor, T. (1998). *Apes, Language and the Human Mind*. Oxford: Oxford University Press.

Schmicking, D. & Gallagher, S. (in press). *Handbook of Phenomenology and Cognitive Science*. Hamburg: Springer.

Sebeok, T. A. & Danesi, M. (2000). *The Forms of Meaning: Modeling Systems Theory and Semiotic Analysis*. Berlin: Mouton de Gruyter.

Segerdahl, P., Fields, W. & Savage-Rumbough, S. (2005). *Kanzi's Primal Language*. Houndmills: Pelgrave.

Sinha, C. (in press). Language as a biocultural niche and social institution. In V. Evans & S. Pourcel (Eds.), *New Directions in Cognitive Linguistics*. Amsterdam: John Benjamins.

Sinha, C. (2004). The evolution of language: From signals to symbols to system. In D. Kimbrough & U. Griebel (Eds.), *Evolution of Communication Systems: A Comparative Approach* (pp. 217–235). Cambridge, MA: MIT Press.

Sinha, C. & Rodríguez, C. (2008). Language and the signifying object: from convention to imagination. In J. Zlatev, T. Racine, C. Sinha & E. Itkonen (Eds.), *The Shared Mind: Perspectives on Intersubjectivity* (pp.357–378). Amsterdam/Philadelphia: John Benjamins.

Sonesson, G. (2007). From the meaning of embodiment to the embodiment of meaning: A study in phenomenological semiotics. In T. Ziemke, J. Zlatev & R. Frank (Eds.), *Body, Language and Mind. Vol. 1: Embodiment* (pp. 85–128). Berlin: Mouton de Gruyter.

Sonesson, G. (2006). The meaning of meaning in biology and cognitive science. *Sign Systems Studies* 34 (1), 135–214.

Stern, D. N. (2000 [1985]). *The Interpersonal World of the Infant: A View from Psychoanalysis and Developmental Psychology*. New York: Basic Books.

Stjernfelt, F. (2007) *Diagrammatology*. Dordrecht: Springer.

Thompson, E. (2007). *Mind in Life: Biology, Phenomenology and the Sciences of Mind*. Cambridge, MA: Belkarp Press.

Tomasello, M. (2003). *Constructing a Language*. Cambridge, MA: Harvard University Press.

Tomasello, M. (2008). *Origins of Human Communication*. Cambridge, MA: MIT Press.

Varela, F. (1996). Neurophenomenology: A methodological remedy for the hard problem. *Journal of Consciousness Studies* 3 (4), 330–350.

Varela, F., Thompson, E. & Rosch, E. (1991). *The Embodied Mind.* Cambridge, MA: The MIT Press.

von Uexkuell, J. (1982). The theory of meaning. *Semiotica* 42 (1), 25–82.

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes.* Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1962 [1934]). *Thought and Language.* Cambridge, MA: The MIT Press.

Wittgenstein, L. (1953). *Philosophical Investigations.* Oxford: Basil Blackwell.

Zahavi, D. (2001). Beyond empathy: Phenomenological approaches to intersubjectivity. *Journal of Consciousness Studies* 8 (5–7), 151–167.

Zahavi, D. (2003). *Husserl's Phenomenology.* Stanford: Stanford University Press.

Zlatev, J. (1997). *Situated Embodiment: Studies in the Emergence of Spatial Meaning.* Stockholm: Gotab.

Zlatev, J. (2003). Meaning = Life + (Culture): An outline of a biocultural theory of meaning. *Evolution of Communication* 4 (2), 253–296.

Zlatev, J. (2007). Embodiment, language and mimesis. In T. Ziemke, J. Zlatev & R. Frank (Eds.), *Body, Language and Mind. Vol. 1: Embodiment* (pp. 297–337). Berlin: Mouton de Gruyter.

Zlatev, J. (2008a). The dialectics of consciousness and language. *Journal of Consciousness Studies* 15 (6), 5–14.

Zlatev, J. (2008b). The dependence of language on consciousness. *Journal of Consciousness Studies* 15 (6), 34–62.

Zlatev, J. (2008c). The co-evolution of intersubjectivity and bodily mimesis. In J. Zlatev, T. Racine, C. Sinha & E. Itkonen (Eds.), *The Shared Mind: Perspectives on Intersubjectivity* (pp. 215–244). Amsterdam: John Benjamins.

Zlatev, J. (2008d). From proto-mimesis to language: Evidence from primatology and social neuroscience. *Journal of Physiology* 102 (1–3), 137–151.

Zlatev, J. (in press). Phenomenology and cognitive linguistics. In D. Schmicking & S. Gallagher (Eds.), *Handbook of Phenomenology and Cognitive Science.* Oxford: Oxford University Press.

Zlatev, J. & Andrén, M. (2009). Stages and transitions in children's semiotic development. In J. Zlatev, M. Andrén, M. Johansson-Falck & C. Lundmark (Eds.), *Studies in Language and Cognition* (pp. 380–401). Cambridge Scholars Publishing.

Zlatev, J. & SEDSU-Project. (2006). Stages in the Evolution and Development of Sign Use (SEDSU). In A. Cangelosi, A. D. Smith & K. Smith (Eds.), *The Evolution of Language: Proceedings of the 6th International Conference (EVOLANG6)* (pp. 379–388). New Jersey: World Scientific.

Zlatev, J., Racine, T., Sinha, C. & Itkonen, E. (Eds.) (2008). *The Shared Mind: Perspectives on Intersubjectivity.* Amsterdam/Philadelphia: John Benjamins.