

Jordan Zlatev / Göran Sonesson / Piotr Konderak (eds.)

Meaning, Mind and Communication

Explorations in Cognitive Semiotics



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Jordan Zlatev, Göran Sonesson & Piotr Konderak

Chapter 1

Cognitive Semiotics Comes of Age

0. Introduction

A decade since the appearance of the journal *Cognitive Semiotics*, the establishment of the *International Association for Cognitive Semiotics* (IACS) in 2013, and two successful international conferences, in Lund in 2014 and Lublin 2016, cognitive semiotics can hardly be characterized as an “emerging” discipline anymore. It is already here. Yet, we who are involved with this field are often pressed to answer: what is it really?

The chapters in this volume, which originate from the IACS conference in Lund, are a kind of extensional answer to this question: *this* is what cognitive semiotics is like! The reader may note that the editors of the volume and authors of this introduction – who have served as “founding fathers” or, less pretentiously, as the main organizers of the first two international conferences – do not participate as authors in this anthology. Rather, we have taken up the role of “mid-wives”, for a proper mix of metaphors, of this important project, which in effect is *the first published volume of explorations in cognitive semiotics*.

This discipline of cognitive semiotics can be described as the study of *meaning, mind and communication*, as reflected by the title of this book. Admittedly, this is a broad object of study, but as this volume aims to show, there is both an internal coherence to, and an important mission for, cognitive semiotics to help in “mending the gap between science and the humanities”, in the words of Stephen Jay Gould (2003). Crucially, this is to be done through mutual respect and methodological understanding, rather than a reductionist takeover from the side of natural science, or a postmodernist relativism from the side of the liberal arts.

In previous works, we have highlighted a number of features of the new discipline of cognitive semiotics (Sonesson 2009, 2012; Zlatev 2012, 2015). All of these features do not have to be fulfilled, but together they define a prototype-kind of structure; as we can see, the chapters in this volume conform to this characterization by displaying at least the first two features, and in many cases more.

The first feature is that cognitive semiotics focuses on the study of *meaning*, and does so through a trans-disciplinary (implying tighter contact than “interdisciplinary”) combination of methods and concepts from at least semiotics, cognitive science, and linguistics. As these fields are interdisciplinary themselves, this opens the doors to a number of related fields such as anthropology (e.g. Pelkey, this volume), graphic reasoning (Copin, this volume), cognitive development (McCune,

this volume), language acquisition (Imai, this volume), and political discourse analysis (e.g. Avelar, this volume, Sušić, this volume).

The second feature is what we have referred to as the *conceptual-empirical loop* (Zlatev 2012) or more adequately: *spiral* (Zlatev 2015). One particular variant of this is what we have called “the dialectics of phenomenology and experiments” (Sonesson 2013). The point is that cognitive semiotics takes a keen interest in the analysis of concepts, not unlike philosophy, starting with proverbially ambiguous notions such as *meaning*, *sign*, *language*, *culture*, and *consciousness*. But to do so adequately, it is necessary to plunge into empirical studies where these phenomena are studied through scientific (in the broad sense) methods, and then re-emerge, reinvigorated, on the conceptual side. Conversely, empirical investigations, for example on the difficult issues concerning how language emerges in evolution and development (discussed in Part 2), inevitably become involved with conceptual issues, since “what”-questions constrain the answers to “how and why”-questions. This also has the advantage of making it possible to specify psychological experimental paradigms in order to answer specifically semiotic questions, and of integrating experimental results into discussions within semiotics, phenomenology, and other variants of philosophy (see Sonesson 2013, Pérez, this volume).

A third feature, more or less explicitly manifested in cognitive semiotic research, is to proceed in the study of the phenomenon in question – be it children’s symbolic play, the use of metaphors, symmetrical reasoning, hallucination etc. – by combining methods using a *first-person perspective* (of the analyst or the participant), a *third-person perspective* of detached observation and experimentation (allowing quantification in many cases), united by a *second-person perspective* acknowledging that every form of scientific exploration is an act of communication, between experimenter and participant, analyst and informant, author and reader etc. The chapters by Parthemore, Brücke-Schulz and Pudlak discuss this procedure overtly, but it is present in many of the other chapters, especially in those influenced by phenomenology, which is in itself important enough to be given as a fourth feature of cognitive semiotics.

The “scientific study of consciousness”, or more adequately “the study of human experience and of the ways things present themselves to us in and through such experience” (Sokolowski 2000: 2), phenomenology is the philosophical tradition inaugurated by Edmund Husserl over a century ago, and continued by Maurice Merleau-Ponty and others up to the present day (e.g. Zahavi and Gallagher 2008). In cognitive semiotics it is especially useful for the study of *subjectivity* (e.g. perception, affect, sense-making) from the “inside” in a manner that is *intersubjective*, providing results that are, in a sense, *objective* (see Sonesson 2015a). It is also a very useful tool for analysing the difference between signs and other meanings (see Sonesson 1989, 2012). Further, as phenomenologists have been consistently anti-reductionist while open to science, concepts and methods from phenomenology have been very productive for researchers searching for “mutual enlightenment” (Gallagher 1997, see Pérez, this volume) between lived experience and detached

experimentation. The chapters by Pérez, Parthemore, Mendoza Collazos, McCune, Pelkey, and Brücke-Schulz include explicit acknowledgments of this, but traces can be observed in many of the other chapters, such as in the analysis of gestures (Müller) or language (Brandt).

The last feature is that of *meaning dynamism*, or the emphasis on the study of the various forms of meaning, not as objects or structures, but as processes, on various time scales, from those of evolution and development (see Part 2), to those of “the human level” of social interaction (the analysis of gestures, “multimodal metaphors” and language use in Part 3 and 4, or of language) to the micro-level of “time consciousness” in retention and pretension process (in the chapters by Perez and Pelkey).

So what kind of topics has cognitive semiotics been applied to so far? If we look at some representative previous publications we can list: the relation between attention and rhetoric (Oakely 2001), dynamic linguistic semantics (Brandt 2004), the evolution of consciousness (Donald 2001), children’s gestures (Andrén 2010) and pictorial competence (Lenniger 2012), the theoretical integration of semiotics and phenomenology (Sonesson 1989, 2009, 2015a), intersubjectivity and mimesis in evolution (Zlatev 2008a) and ontogenetic development (Zlatev 2013, 2014). Most of these topics are also addressed in the chapters of this volume, which we have grouped into four parts, with each part and contribution presented in the remainder of this introductory chapter, followed by some brief concluding words.

1. Part I: Meta-theoretical perspectives

In the first part the authors all address issues concerning the relation between cognitive semiotics and its surrounding fields: phenomenology and embodied cognition (Pérez), cognitive science (Parthemore), biosemiotics and enactivism (Tønnesen), agentive semiotics (Mendoza Collazos) and the semiotics of science (May, Skriver and Dandaneil). In doing so, they address important disciplinary questions, such as what, if anything, makes cognitive semiotics “special”. Further, these chapters delve into central conceptual issues concerning the nature of meaning (both subjective and intersubjective, both perceptual and categorical etc.), agency, representation, and metaphor, and others – which also appear in the rest of the volume.

In chapter 2, Carlos A. Pérez takes on the task to elucidate the “mutual enlightenment” – in the words of Gallagher (1997) and Thompson (2007) – between phenomenology and embodied cognitive science. This is done by assessing Bergen’s (2012) *embodied simulation hypothesis*, according to which we understand language by performing (mostly unconscious) “mental simulations”. Bergen’s work is meant for a broader audience, but in effect it popularises many of the key ideas of leading cognitive linguists (e.g. Lakoff and Johnson 2009) and cognitive scientists (e.g. Barsalou 2009) on the embodiment of meaning.

Pérez reviews a simple experiment meant to demonstrate such unconscious mental simulation. Participants first read sentences concerning everyday objects like nails and walls, and then, when given pictures of such objects, where shown

to be faster in responding when the objects where presented in more common orientations than in less common ones. Pérez shows the ambiguity of the notion of "embodied simulation" from the perspective of phenomenology and proceeds to provide a more adequate analysis.¹ Combing the analysis of language and speech acts of the early Husserl (where *act*, *object* and *meaning* are distinguished, and the intersubjective nature of the latter is emphasized) and the notions of *presentification* and *potention* of Husserl's later genetic phenomenology, the author provides a convincing elucidation of the relation between linguistic and perceptual meaning, explaining the results of such experiments in a more coherent manner than by appealing to embodied simulation. This contribution is particularly important as it shows how a phenomenological cognitive semiotics differs from, and may offer advantages to, more mainstream accounts.

Joel Parthemore begins chapter 3 by providing a brief history of cognitive science, with some of its trials and tribulations, including the (in)famous "computer metaphor" of mind. On this basis, he proposes that cognitive science "needs periodically to re-invent itself – in light of the present age, in keeping with contemporary insights and discoveries" – and suggests that cognitive semiotics, with its considerable ontological and epistemological openness, can be seen as one such "reinvention". Parthemore then proceeds to summarize his own theory of concepts (Parthermore 2011a, 2013), *Unified Conceptual Space Theory* (UCST), which goes beyond a number of classical dichotomies, such as that between *know-what/know-how*, and shows advantages compared to what he refers to as the "knowledge representation view" in traditional cognitive science.

In a number of respects, Parthermore proposes that UCST naturally falls within the (broad) framework of cognitive semiotics, illustrating this claim with respect to some of the typical features of the new discipline. Through its "grounding in semiotics", the theory demonstrates how concepts are both entwined with language and pull apart from it. Through its roots in phenomenology, the theory takes an informed view on the nature of "representations". Through its focus on meaning as a dynamic process, it shows how concepts' relative stability belies an underlying dynamics, and through its resonance with enactive philosophy, it shows how concepts impose seemingly sharp boundaries onto underlying continuities. Finally, Parthermore applies this perspective to debates concerning the nature of metaphor, and argues that the crucial distinction is not between literal and metaphorical meanings, but between meanings that call attention to themselves and those that do not (in agreement with e.g. chapter 21 by Avelar).

In chapter 4, Morten Tønnessen compares the notions of agency in one particular school of semiotics, *biosemiotics*, and in the enactive approach in cognitive science (e.g. Varela, Thompson and Rosch 1991). This is highly relevant, as biosemiotics partly overlaps with cognitive semiotics in seeking to bridge the gap be-

tween biology and meaning (see Sonesson & Zlatev 2009), while enactivism has been highly influential for cognitive semiotics (see Zlatev 2012; Parthermore, this volume; Collazos, this volume). Tønnessen shows that neither biosemiotics nor enactivism are internally unified frameworks, with single coherent conceptual systems, and both harbor different conceptions of subjectivity and agency. The notion of agency is intrinsically related to the conception of action, and the understanding of what constitutes action varies. Thanks to the variation in views, however, specific similarities between different approaches in biosemiotics and enactivism can be identified. Tønnessen discovers a clear affinity between the Uexküllian approach in biosemiotics, and the "mind in life" approach of Thompson (2007). In particular, both theories find agency and thus (minimal) meaning in even the simplest organisms such as bacteria. At the same time, both are capable of distinguishing between this and the *experience of agency*, which presupposes self-awareness, and is only found in "higher" organisms (cf. Zlatev 2009a, 2009b).

As far as cognitive semiotics is concerned, Tønnessen suggests that, since biosemiotics and enactivism are two of the most innovative and integrative contemporary approaches to the nature of life and living systems, cognitive semiotics, as a field devoted to the study of cognition, should look for its foundations in them. Or, as he formulates his point rather bracingly: "cognitive semiotics should therefore be conceived of as a subfield of biosemiotics". A different conclusion, however, might be that cognitive semiotics, being an even newer and (hopefully) even more integrative approach than either biosemiotics or enactivism, may learn from the strengths and weaknesses of both, as well from other theoretical resources such as phenomenology and cognitive linguistics, in order to avoid using notions such as *agency*, *semiosis*, and *meaning* too broadly and, when necessary, to introduce clear subdivisions and "semiotic thresholds".

In chapter 5, Juan Carlos Mendoza Collazos presents an overview of a new approach to signification, known as *agentive semiotics*, that "links achievements of logic, phenomenology and cognitive sciences" (Niño 2015). As the author states, this clearly aligns this approach with cognitive semiotics. Similarly, agentive semiotics is influenced by enactivism, though it takes a more specific stand on the notion of agency, defining an agent as a being that is animate, situated, and capable of paying attention. This means that artifacts for example only have *derived agency*, that is, a kind of agency that has been assigned by agents proper, which in the case of artifacts means designers.²

The bulk of the chapter applies the theory of agentive semiotics precisely to the semiotics of artifact design. Unlike traditional semiotic design analysis, the agentive approach implies focus not on the artifacts themselves, but on acts

¹ A similar critique of "embodied simulation" is provided by Blomberg and Zlatev (2014).

² This is reminiscent of the notion of *remote intentionality*, introduced by Sonesson (1999), seemingly for the opposite reason: in arguing against the denial of there being any agency involved when a camera is rigged up in front of the finishing line of a horse race to be triggered automatically when the horses cross the line.

of production and response. Artifacts have *significance* ('a network of potential responses) and *signification* ("the actual response an agent activates"), thus paralleling (one version of) the distinction between semantics and pragmatics. The chapter makes a strong case for the application of the theoretical corpus of agentic semiotics to design practice, allowing new insights into the actions and experiences of designers and users. Notions such as *agenda*, *per-agenda*, *agenteive scene*, etc. are clearly explained and illustrated, showing how theoretical and "applied" cognitive semiotics can intermix.

In chapter 6, Michael May, Karin Skriver and Gert Dandanell argue for the urgent need for a "semiotics of science" that integrates "different literacy issues in science education and the interwoven conceptual issues in the history and didactics of science". The authors point out that such a project was prophesised by Charles Morris nearly a century ago, but that despite some efforts from the direction of Hallidayan "social semiotics", it was never realized. The authors then propose that by integrating semiotics, cognitive science, and cognitive linguistics, as well as first, second and third-person perspectives and methods, cognitive semiotics would be more suited than alternatives to establish such a discipline.

Pointing to common themes in the history and didactics of physical chemistry, they illustrate the need for "semiotic literacy" with reference to several concrete cases occasioned by the use of such semiotic means as mathematical formulas and diagrams as representations of chemical reactions. In one case study, they show that a schema becomes misleading when interpreted as an *image*, in the Peircean sense of a bundle of qualities, rather than as a Peircean *diagram*, that is, as a rendering of relationships. A second example concerns graphs showing enzymes "speeding up" chemical reactions, the misunderstanding of which is explained through the notion of force dynamics (Talmy 2000). The conclusion is, rather in the manner of the previous chapter, that a cognitive semiotics of science should not be a purely philosophical project, but an "empirical investigation of the individual sciences from the point of view of meaning, signification and experience".

2. Part II: Semiotic development and evolution

The second part groups together chapters that deal with the emergence of sign use and language either in ontogeny or in evolution. While all of the authors apart from Nelson frame their explorations as primarily concerning the emergence of language, each investigation focuses on specific cognitive-semiotic preconditions or prerequisites for the ability of language to emerge: *mental representation* (McCune), *abductive inference* (Imai), *symbolism* (Nelson), *navigation and mental time travel* (Ferretti and Adornetti), *affordance perception* (Chiera) and *goal-directed actions and pantomime* (Nichiarelli). Several recurring themes are parallels between phylogeny and ontogeny, embodied meaning and the stage-like progression from action to signification and language.

In chapter 7, Lorraine McCune, a prominent Piagetian developmental scholar, summarizes her comprehensive theoretical framework for the emergence of ref-

erence during the first two years of life (McCune 2008) relating it to concepts in cognitive semiotics. Consistent with Sonesson (2007) for example, according to McCune "all experience of meaning (even sensation) can be considered semiotic (i.e. meaningful), but only some special kinds of meaning are signs". Also, in line with both Piaget (1962) and many scholars in cognitive semiotics, McCune regards mental representation as the capacity for "contemplation beyond the here and now", and thus crucially dependent on *consciousness*.

McCune argues that semantic development starts with relatively holistic experiences of perception and movement, and proceeds largely through processes of *differentiation*, between self and other, and between expression and content. McCune documents five levels of representational play, aligning these with stages in Piagetian theory, and thus charts the transition from pre-sign meanings to mental representation and sign use. Yet, human language is predominantly vocal, and McCune proposes a theory for "embodiment symbols in the vocal medium", consistent with the approach of Werner and Kaplan (1963). She extends this conception by hypothesizing that *laryngeal vocalizations* ("grunts") are of particular importance, as they undergo a transition from automatic responses to "personal symbols". The author reviews a study showing how such grunts co-occur with effort, attention and communicative use. The third crucial prerequisite for the transition to referential speech, according to McCune, are *vocal motor schemes*, deriving from babbling.

In chapter 8, the well-known cognitive scientist Mutsumi Imai addresses the so-called "symbol grounding problem" (Harnad 1990) i.e. how to connect meaningless "symbols" to experience, from the perspective of language acquisition by children. While initially presented as a challenge for "symbolic AI", the author argues that it is no less damaging for "connectionist" models, as children cannot acquire a lexicon by associating perceptual experiences with word-tokens. Rather, a realistic model of language development needs to account for the following cognitive-semiotic capacities and achievements: (a) understanding that words refer to concepts, (b) finding the referent in a particular context, (c) finding the semantic domain to which the word belongs, (d) generalizing the meaning of the word in the context of previous linguistic experiences and (e) acquiring "an adult-like representation of the domain as a whole".

Reviewing and combining much of her own research on these topics, Imai first shows that sound symbolism, i.e. non-arbitrary mappings between expression and content, may serve as a powerful "bootstrapping mechanism" for (a) and (b). Still, children have to learn to infer the meaning of words when the help from sound symbolism is not available, and they have to do that in relation to other words they have already learned", i.e. proceed to (c-e). To account for this, the author outlines a model grounded in empirical studies, in which *fast-mapping* (grasping rough word meanings) and *slow mapping* (further adjustments of meanings of words in relation to other words) processes combine in constructing lexical systems. Finally, Imai proposes a cognitive function that may be crucial for these achievements: a uniquely human capacity for a "bidirectional reasoning bias", related to Peircean abductive

reasoning. In sum, without explicitly referring to cognitive semiotics, Imai's chapter is an excellent illustration of the potential of combining methods and concepts from cognitive science and semiotics.

Chapter 9 by Keith Nelson turns the focus to evolution, but like earlier chapters uses developmental data (along with evidence from archaeology) to argue for *the found symbol hypothesis*. According to this proposal, the first "full symbols" (i.e. signs used intentionally to refer to categories of objects and acts) in hominin evolution were neither words nor gestures but rather natural objects such as the Makapansgat Pebble, dated at over 2 million years ago and resembling a human face (*cf.* Bednarik 1998). The pre-condition for this to arise in our ancestors (but not in any other species) according to Nelson was a "tricky convergence" of cognitive capacities such as pattern detection-comparison processes and attention regulation, and social processes like cooperation and negotiation.

Nelson provides two kinds of support for this hypothesis. The first is based on comparative neuroscience, where the author compares early hominids, nonhuman primates, and human infants, and concludes that using "found symbols" requires cognitive skills within the reach of early Homo species, but not of other non-human primates. The second concerns evidence for symbol learning by children in the second year of life, such as that referred to by McCune and Imai, crucially involving not only words and gestures but also material objects (such as pictures) as symbols. The hypothesis is attractive, and could potentially provide a missing piece to other cognitive-semiotic models of symbol origins (e.g. Donald 1991; Deacon 1997; Tomasello 2008), as "communication with found symbols would not have required any tool use or complex planning ... adequate for complex communication sequences in any sign, gesture, speech, art or multimodal forms". It helps explain certain apparent "anomalies" in the archaeological record (e.g. why brain size increased while tools remained more or less the same among the early Homo), and serves as the basis for predictions for future findings.

In chapter 10, Francesco Ferretti and Ines Adornetti argue, in line with the conceptual-empirical spiral (see the introduction) that the topic of language origins requires re-thinking the nature of language. They align their approach with the "action-oriented perspectives" in cognitive science (e.g. Clack 1997) and with cognitive pragmatics (Sperber and Wilson 1996). Thus, they reject syntax-centric perspectives in linguistics and the related "code model of communication", also dominant in classical, structural semiotics. What both lack, the authors argue, is the ability to account for discourse-level coherence, which cannot be reduced to formal devices of text cohesion, as shown by neurolinguistic research where coherence may be preserved without syntax (e.g. aphasia) and vice versa (e.g. schizophrenia and Alzheimer's disease). On this basis, the authors propose that "language has a proto-discursive origin and the selection pressures that drive the evolution of language meet the needs of pragmatic concerns before grammatical concerns", in apparent agreement with the influential *relevance theory* of Sperber and Wilson (1996), where the speaker gives "clues" as to his/her intension,

and the audience draws inferences on the basis of "mindreading". Such a model of language evolution has actually been proposed and argued for in some detail by Scott-Phillips (2014).

However, Ferretti and Adornetti contend that "models such as these suffer from a serious difficulty: the exclusive attention paid to the speaker's intentions leads one to exclude the temporal dimension from discourse". In the remainder of the chapter, they propose a remedy by outlining a model where priority is given to events, and discourse is organized as a temporal chain of events. Such a revision requires additional cognitive abilities underlying discourse comprehension and communicative skills, which the authors link to navigation in space in time, and specifically to the proposal by Corballis (2011) that the uniquely human capacity for "mental time travel" underlies the ability to construct and interpret narratives. Research on this hypothesis is in progress, e.g. concerning schizophrenia, possibly supporting the authors' conclusion that "the metaphor of navigation we have assumed as a key explanation of human narrative capacities is more than a simple metaphor".

In chapter 11, Alessandra Chiara continues the theme from the previous chapter: the development of a "holistic model of language evolution". Like Ferretti and Adornetti, she rejects bottom-up, computational approaches to language in linguistics and cognitive science. The motivations for the critique and the proposed solution are, however, somewhat different. The main problem of "modular" approaches in the spirit of Fodor (1983), according to Chiara, is that they imply rigid boundaries between semantics ("code") and pragmatics ("context", "inference"). The reason this is problematic is that empirical studies in language comprehension and production strongly suggest that contextual, top-down information influences language use in real time: i.e. that "speakers build a cumulative representation of the global message conveyed by the conversation and that such a representation immediately constrains production and comprehension processes."

Consequently, the author seeks to ground the evolution of language primarily in the contingencies of online *conversation* (more than the coherence of narrative). In the next step, she asks where human capacities for perceiving socially relevant contextual and conversational features derive from, and proposes that these are essentially not a matter of "mind reading", but of affordance perception: "In order to extract relevant contextual information, individuals rely on the same processes by which they interact with the physical environment, that is action and perception processes". Such processes allow what she calls *pragmatic alignment*, in which communicative actions are coordinated, and successful conversations emerge. The advantage of such an account is that it allows successful communication "despite fragmentary and ambiguous coding", while at the same time providing the frame for the gradual evolution of a conventional-normative system, in a dialectical manner. The author explicitly applies the conceptual-empirical spiral of cognitive semiotics in several cycles, offering original and productive definitions: "In this framework, conversation can be defined as a dynamic interactive exchange, situated within a jointly determined – and constantly evolving – semiotic system."

The final chapter in this section (chapter 12) by **Serena Nicchiarelli** adds one more brick to the (putative) bridge between the linguistic and cognitive skills of the common ape-human ancestor and our own: a blend of practical, goal-directed actions and communicative acts that Nicchiarelli terms “communic-action”. The chapter starts with a discussion of the concept of protolangauge (a hypothetic semiotic system that helps span the gap between ape communication and human language), outlining the two major models that have been proposed: a lexical, “grammarless” protolangauge (e.g. Bickerton 2010) and a holistic protolangage with utterances expressing complex, but non-compositional, communicative acts (e.g. Arbib 2005a). Nicchiarelli defends the latter view, presenting her specific communic-action hypothesis, according to which protolangage evolved from the combination of (conventionalized) pantomimes and “vocal gestures”. This is consistent with Arbib’s (2012) evolutionary model, but the author differs by emphasizing the pragmatic dimension of such formulaic utterances as performatives (Austin 1962) and facilitators of social interaction and online conversations.

Evidence for the hypothesis is twofold. First, by building on work by Wray (2002), Nicchiarelli argues that the communic-action strategy serves today as a “living fossil” from the holistic protolangage stage. Second, the chapter reviews neurolinguistic evidence that formulaic language, along with discourse and non-verbal communication, is dependent on the basal ganglia and subcortical pre-frontal circuitry in the right hemisphere – areas responsible for activities such as planning, evaluating cues, acting in an environment. As a capstone of the chapter, Nicchiarelli points out an intriguing dissociation: it is precisely these areas that are damaged and these capacities, including formulaic language use, that are impaired in Parkinson’s disease. On the other hand, formulaic language and motor control are preserved in Alzheimer’s disease, while higher functions such as coherence and navigation are damaged, as noted in chapter 10. If so, then it appears that the cognitive-semiotic capacity targeted by this chapter (perhaps along with the alignment mechanisms studied by Chiara) is more basic, and evolutionarily more ancient, than the one explored by Ferretti and Adornetti. This is just one indication of how the ideas in the chapters of this section could possibly be combined in a more synthetic account.

3. Part III: Meaning across media, modes and modalities

The third part combines chapters that deal with “cross-modality” in a broad sense. In fact, this characterization can be given to most studies in cognitive semiotics, as a central tenet of cognitive semiotics is that the study of meaning cannot be restricted to a single semiotic resource (language, gestures, pictures), modes of presentation (perception, imagination, material artifacts) and sensory modalities (hearing, vision, touch...). This idea is sometimes expressed by the term “multimodality” (e.g. Krress 2010), but we will refrain from using it as it conflates the distinctions just made. In any case, the chapters in this part deal explicitly with crossing semiotic borders: between gesture and mimesis (Müller), language and

gestures (Kreydin and Khesed), symmetry in visual patterns, embodied experience and language (Pelkey), indexicality in hallucinations and perception (Pudlak), felt qualities and gestalts across language and pictures (Bruché-Schulz) and iconicity across vision and hearing (Coplin *et al.*)

In chapter 13, **Cornelia Müller**, one of the leading scholars in gesture studies, asks how the fundamental human capacity for bodily mimesis (Donald 1991; Zlatev 2008b) shapes the structure and meaning of a central semiotic resource: gestures. She begins by reviewing the interest in mimesis in cognitive semiotics from a diachronic perspective, where it is applied in attempting to explain the ontogeny and phylogeny of sign use in general, and language in particular. She agrees with such approaches, but argues that the role of mimesis is greater than this, as it also has a key synchronic dimension since it “motivates the (embodied) semantics of referential gestures”, or what she terms *gestural mimesis*. Müller thus echoes the argument from chapter 12 by Nicchiarelli concerning “living fossils”.

In her analysis, Müller departs from Aristotle’s classical concept of mimesis and his claim that human beings are fundamentally mimetic beings. Following his three categories of mimesis in the arts, Müller analyses (a) bodily articulators as *media*, (b) concrete or abstract actions or entities displayed as *objects*, and (c) ways of displaying as *modes* of mimesis. Generalizing over previous analyses, she distinguishes between two fundamental modes: *Acting* (“enacting bodily actions and movements”) and *Representing* (“becoming bodily sculptures”), noting that only the first corresponds to *mimetic schemas* (Zlatev 2005). With multiple examples, she then shows that the relation between objects and modes is complex and flexible, allowing both entities and actions, either concrete or abstract, to be displayed in either mode. For that reason, she is critical toward the distinction between “iconic” and “metaphoric” gestures (McNeill 1992), as both can use the same mode, and differ only with respect to their object. Müller’s analysis is not only theoretically fruitful for cognitive semiotics, distinguishing between processes of “sign formation (motivation)” and “local meaning”, but also for practical gesture analysis, as it “offers intersubjectively accountable descriptions of the particular form of conceptualization in... everyday gestures”.

In chapter 14, **Grigory Kreydin** and **Lidia Khesed** take a very different approach to the analysis of gestures as “non-verbal sign units” embedded in a “corporal semiotic code” which they argue is closely related to the semiotic code of language. Specifically, the authors focus on the category of *impoliteness*, as reflected in the social norms, linguistic categorization and gestures in modern Russian culture. The methodology used is informed by the dictionary-oriented Moscow Semantic School, by Kreydin (2002). Accordingly, the analysis begins with semantic analysis of the Russian adjectives *злы́бый* (*grúbjij*) ‘rude’; *зрзкый* (*dérzkij*) ‘impudent’ and *хамкуй* (*hámskij*) ‘caddish’, which are claimed to structure the semantic field of impoliteness. The authors emphasize features such as (a) culture-specificity, (b) historicity and (c) context-dependence of the categories involved.

Interestingly, however, when they proceed to the analysis of gestural signs of impoliteness, no clear correspondence with the linguistic categorization transpires. The features (a-c) are indeed illustrated, but all the examples given do not appear specific to the Russian context. One group of gestures are “impolite in all contexts of their usage”, including cross-culturally familiar types such as a raised middle finger, and sticking out the tongue. A second class that varies contextually and historically such as hand-shaking and hand-kissing are also fairly widespread, though, of course, by no means universal. The specific norms on pointing in Russian culture (“don’t point with your index figure at people”) are also well-known, and even more (alas!) dominance expressing “gestures of bosses” and gestures of male sexual harassment. Thus, without contradicting the analysis presented by the authors, interesting parallels with the previous two chapters emerge. In line with Nicchiarelli (chapter 12), the “impolite gestures” appear to function not so much as the compositional elements of language, but as embodied holophrases, and in line with Müller (chapter 13), their embodied meaning is grounded in mimesis, either enacting or representing offensive behaviors. In this view, language-specific semantics and culture-specific mirco-conventions (e.g. the meaning of the OK gesture) are sedimented upon such meanings that are originally more holistic, embodied, and hence more universal.

In chapter 15, Jamin Pelkey investigates the phenomenon *symmetrical reasoning*, as manifested in different semiotic resources. In agreement with Imai (chapter 8), he argues that it is essential for language, but extends this to any full-fledged sign use, with reference to Helen Keller’s famous insight, which was “not so much an awakening to the existence of symbols as it is an awakening to the reflexive symmetrical potential of symbolic activity for modeling possible worlds.” But what is its fundamental nature and origin? Pelkey’s exploration focuses on symmetrical designs found in human material cultures around the world, showing striking resemblances between, for example, Celtic knot designs from medieval Ireland, ritual sand tracings of Vanuatu islanders in the South Pacific and “eternal knots” of Tibetan Buddhism. Even the earliest (relatively uncontested) symbolic expression from over 70,000 years ago, found in the cave in Blombos shows symmetrical criss-crossing X-figures. Semiotically, such patterns may be treated as “iconic legisigns”, i.e. diagrams, and formally described in anthropology with the help of mathematical group theory, but as Pelkey shows, such analyses tell us very little about their meaning. Nor do they help explain the riddle of their apparently universal appeal. To do so, he argues, it is necessary to regard such patterns not only as visual (or somehow derivative from language), but as *bodily*, in the sense of embodied phenomenology, which has shown that “we not only experience our bodies in movement but also project the feeling of our bodies onto other people, things and events”. Such ideas are reflected in much current thinking related to cognitive semiotics, the most important precursor of which, the author suggests, is M. Merleau-Ponty, who uncovered a fundamental form of (near-)symmetry between our sensed and the sensing bodies, referring to it as a “chiasm” and representing it as the X-figure. Secondly, and more empirically, Pelkey reports on the development

of a digital web app prototype in which participants are to observe and retrace intertwining patterns, and subsequently are tested for “cognitive benefits”. While pointing out that this is still ongoing research, Pelkey thus manages a bold foray into answering the riddle of symmetrical design and thought, thereby showing the potential of cognitive semiotics.

Štěpán Pudlák addresses in chapter 16 another, no smaller “mystery”: the nature of mental disorders, with a focus on schizophrenia and more specifically on hallucinations. He shows how these have been misrepresented in psychiatric theories either as “misinterpretations of the inner speech” or as “especially vivid images”, since such descriptions do not get at the core of their phenomenology: they are experienced as *indexical* (directed to their object as something contiguous in space and time) in the same manner as sensory perceptions. Using Peircean terminology, he explains that the hallucinatory nature of, for example, the utterance “There is a unicorn on the porch” does not have to do with the semantic content of the dicisign or proposition (see Stjernfelt 2014), or its mode (verbal or visual), but with the experience of indexicality: the (immediate) Object of the sign (the “utterer” of the sentence, or the “vision” of the unicorn on the porch) is indistinguishable from objects of perception in schizophrenic first-person experience.

Such an analysis is obviously very close to one that can be provided by phenomenology, where the indexicality in question corresponds to the most fundamental kind of *intentionality*: the directedness of perception (cf. Sokolowski 2000). Accordingly, Pudlák finds resonances between his Peircean analysis and a study of mental illness by Gallagher (1997), but is critical toward the latter’s claim that hallucinations may be attributed to failure in distinguishing between self and other. Still, to distinguish between a hallucination and a real worldly object, Pudlák uses the Peircean division between Immediate and Dynamic object: the hallucinated unicorn may only be the first (as it can be subjectively experienced) but not the latter, as it does not exist in intersubjective reality. Failures in indexicality may thus be related to failures in intersubjectivity: In any case, Pudlák’s chapter is another excellent illustration of the integrative potential of cognitive semiotics to unlock (if not yet fully open) the doors to long-standing mysteries.

In chapter 17, Gisela Brüche-Schulz analyzes the “pictorial responses” (see below) produced by student-participants from five different cultures and languages (English, Chinese, German, Russian and Turkish) when presented with a page of Saint-Exupéry’s *Le Petit Prince*, translated into their own language, and asked to “jot down whatever comes to mind” in the margins. All five groups produced approximately as many responses, but interestingly, the “English group” (actually Cantonese-English bilinguals living in Hong Kong) produced between 4 to 10 times more pictorial responses than the other groups. However, the author is less interested in accounting for any (cultural) differences between the groups than in finding common (experiential) structures. This is in part due to previous research (Brüche-Schulz 2014), which showed that all the responses were distributed into text segments in a comparable fashion across the five groups, with peaks and valleys that correlated with the content of the text, analyzed in terms of force gestalt patterns.

Hence, Bruche-Schulz proposes examining the pictorial responses as reflections of an intersubjective “felt reality”, inspired by the social phenomenology of Alfred Schütz.

In the analysis, the author initially distinguishes between three different kinds of pictorial responses, depending on the degree of figurative details: (a) scenes with at least some detail, (b) relatively abstract diagrams and (c) pictographs: “highly conventionalized and abstracted pictorial symbols” like circles and hearts, presenting and discussing several examples of each category. The boundaries turn out to be somewhat blurred, but (c) is, as admitted by the author, is most difficult to interpret, possibly due to the fact that abstract symbols afford less access to “the *felt* impact of the ‘halos’ of things”. As Bruche-Schulz was the person who conducted the study, engaging with the participants on their own turf, as well as the analyst who lives through the relevant “gestaltist patterns of experience”, her methodology can be described as a productive combination of the first-person and second-person perspectives in cognitive semiotic analysis.

Peter Coppin, Ambrose Li and Michael Carnavale start their exploration in chapter 18 with the observation that blind people are impaired when needing to access representations such as charts and graphs through linguistic descriptions. But what kind of information is “lost in translation” and how can the problem be redressed? They propose that sound would be the natural medium for communicating to blind persons, but “how could a designer identify appropriate mappings from iconic properties of visual graphics to those of sound to convey the same relations?”

In the spirit of the conceptual-empirical spiral, the authors first delve into a conceptual exploration, and begin with distinctions made by Shimojima (1999): *graphic representations* are presented two-dimensionally, allow the representation of relations with relations, are analogue (“dense”), and obey intrinsic constraints on processing. In contrast, *linguistic representations* are sequential, represent relations with symbols, discrete and obey extrinsic constraints. The authors briefly relate these notions to semiotic analyses of such notions (e.g. Sonesson 1989; Stjernfelt 2000), pointing out both overlaps and a degree of terminological confusion. The challenge, as they see it, is to present a consistent model that integrates the relevant concepts with findings from cognitive science. They depart from a previous model (Coppin 2014), but extend it to make it more terminologically coherent with the semiotic literature. In brief, the main distinction of this extended model is between (a) iconic and (b) symbolic properties (using primes to indicate that their synthetic concepts are related but not identical with standard semiotic definitions). Applying these to the problem at hand, they propose that (a) correspond to features that in “both visual graphics and sound ... [are] picked up by sensory receptors and processed by lower-level perceptual categories and simulators”. On the other hand, (b) build upon (a) but “cause the perceiver to have a simulation that falls under the author’s intended conceptual category”. As can be seen from these definitions, the authors rely heavily on the notion of (*embodied*) simulation (Barsalou 1999), criticized by Pérez (chapter 2) for being excessively broad. Still, such apparent

disagreement could possibly be resolved by unpacking the authors’ use of the term with the help of phenomenology (e.g. their “low-level simulations” clearly correspond to protentions). Most importantly, the chapter answers the question of how sound could be recruited to preserve iconic properties, and proposes how their analysis can inform design.

4. Part IV: Language, blends and metaphors

The chapters in the fourth and final part all deal with “blends” and “mappings” across different kinds of meaning – and in this way are continuous with those in Part 3 – but they deserve to be grouped separately as they deal, more or less, with language. At the same time, each one explores to what extent its structures are continuous with those of other structures such as *political institutions* (Oakley), *conceptual metaphors* (Süsac), *gestures and social background* (Avelar), *embodied experiences* (Bagli) and *non-discursive practices* (Jensen).

Finally, the chapters by Ursini and Brandt take up and answer – from very different theoretical perspectives – the issue: what would a cognitive semiotic approach to language look like?

In chapter 19, **Todd Oakley** addresses a recurrent use of the English modal auxiliary verb *must*, which blends epistemic and deontic modality, referring to it as *deontemic* modality. An example is the sentence “This tax must be unconstitutional” used by the Supreme Court of the United States (SCOTUS), where Oakley documents extensive use of such blends, which in Searleian terms combine a *mind-to-world* (epistemic) and *world-to-mind* (deontic) direction of fit. In searching for an explanation of this phenomenon, Oakley argues that linguistic analyses, even those that emanate from cognitive linguistics (Sweetzer 1999; Talmi 2000), which emphasize the link between the modalities, are lacking. The author suggests that the reason they have treated linguistic modalities as necessarily distinct is that they have not sufficiently appreciated the socially layered nature of language, and in particular its extra-cranial institutional nature.

Oakley proposes that a cognitive semiotics of institutional discourse would be better suited for addressing the puzzle, as “a proper understanding of the deontemic modality comes sharply into focus when we examine these texts as multi-layered artifacts, with each layer potentiatting actions of different addressees.” To address this, he develops a descriptive six-layer model of SCOTUS discourse, building on notions from rhetoric (Blitzer 1968) and discourse analysis (Clark 1996). The first two layers are those of Decision and Rationale, stemming from the nature of the institution itself, whose deontic powers issue from the perception of its decisions being “prudential” and “reasonable”. The author points out that the model implies that language users *must* (deontemic usage?) have a shared capacity for differentiating one layer of meaning from another in order to be able to appreciate the deontestic category itself, “whose signal purpose is to blend our obligation with our reason”.

Vlado Sušac's chapter 20 adopts a rather unusual cognitive semiotic synthesis between structural semiotics in the legacy of Barthes (1967) and conceptual metaphor theory (Lakoff and Johnson 1980) in order to investigate the possibility of replacing metaphorical concepts in political discourse with alternatives. Specifically, the aim is to apply the *commutatation test*, where one signifier is substituted with another and the effect on signification assessed, to expressions from different "source domains" such as WAR and TRAVEL. This is challenging, as conceptual metaphors are specifically defined as "mappings across cognitive domains", rather than across linguistic expressions. Methodologically and conceptually, Sušac resolves this with the help of work by Andrew Goatly (2007) and a database that links conceptual mappings ("root analogies") with specific linguistic expressions in English. Sušac finds cases of "formal diversification" from the database, i.e. where more than one source domain maps to a single target domain (e.g. POLITICS IS WAR, POLITICS IS PATH), and applies these to a corpus of Croatian political discourse.

One of the findings is that the use of respective metaphor/mapping correlated with political ideology (i.e. the more right-wing party used the more "aggressive" metaphor). More importantly, he shows that only the commutational replacement of source domains requires more than domain overlap: what is needed is a degree of "conceptual synonymy" between the alternative source domain expressions, as well as the target "lexical item", which Sušac theorizes in terms of a shared ground (Richards 1991). For example, *bashing* on and *keep on trucking* can be commuted as they share a common aspectual meaning of CONTINUE ACTIVITY, while backlash and milestone cannot. Having clarified the conditions for performing the commutation procedure on political metaphors, the chapter leaves it for further research to determine if this could and should be performed pro-actively as a form of "conceptual correctness".

Chapter 21 by Maira Avelar continues the topic from the previous two chapters – political discourse – and likewise uses it for the exploration of theoretical issues. In her case, this concerns studying metaphors not as static mappings, but as dynamic, multimodal *metaphoricity*, involving actual usage, socio-cultural context, speech and gesture. The descriptive model used, Multimodal Semiotic Blending, is itself an impressive cognitive semiotic blend, based on Brandt and Brandt's (2005) enunciation-based extension of "classical" blending theory (Fauconnier and Turner 2002), combined with Kendon's (2004) analysis of gestures and Müller and Cenki's (2009) verbal-gestural metaphorical compounds.

Using this model, the author analyses sequences of two presidential debates in Brasil between Dilma and Serra (2010) and Dilma and Alécio (2014), focusing on the verbal and gestural resources used by the participants. In line with the dynamic, context-sensitive perspective on metaphor employed, Avelar proposes that multimodal metaphors will differ in their degree of "compression" (i.e. how much important information can be expressed in few expressions), and thus in their perceived "metaphoricalness" depending on their degree of conventionality. The limited amount of data (and degree of operationalization) does not allow her to test this as a true empirical hypothesis, but the distinction is clearly illus-

trated, with e.g. CONFUSING IS MAKING FOAM as non-conventional and highly compressed, and MOVING FROM X TO Y as conventional and less compressed, and can be further pursued in the future. In sum, the chapter clearly illustrates a major claim of cognitive semiotics ("our conceptual system is broader than our linguistic system") and the tools presented contribute to an important goal: "to show in detail how each modality works, how they interact, and jointly lead to emergent metaphors".

Chapter 22 by Marco Bagli addresses the topic of cross-domain mappings between spatial concepts (in/out), brightness (light/dark) and morality (good/bad) in a predominantly cognitive-linguistic framework, analyzing concepts in terms of image schemas and the metaphors as experiential mappings. Bagli's main descriptive tool is conceptual blending theory (Faconnier and Turner 2002), presenting a compact and useful summary of this in relation to CMT (Lakoff and Johnson 1980). He points out that the light-good/dark-bad mapping can be explained as a (possibly) universal "primary metaphor" (Grady 1999), grounded in pan-human experiences that link darkness with danger. However, he asks, why should one kind of mapping IN-LIGHT/OUT-DARK be preferred to another IN-DARK/OUT-LIGHT, when there seem to be experiences of both kinds (e.g. bright rooms, and dark caves)?

To answer this question, he first investigates this particular mapping in two very different kinds of narratives: the classical Bildungsroman *Demian* by Hermann Hesse (1919) and *The Rocky Horror Picture Show* by Jim Sharman (1975), which is "iconic" for American youth culture. He points out that both "texts" (the second also in music and visual art) link LIGHT-IN-GOOD on the one hand, while OUT-DARK-BAD on the other hand (*Rocky Horror* rather ironically and subversively). But these connections are made (and perceived) highly consciously while cognitive linguistic analysis maintains that the relevant mappings are done above all within the "cognitive unconscious". In an original manner, Bagli manages to address the issue by applying an experimental design from social psychology known as the Implicit Association Test, where by measuring reaction times, "subtle forms of evaluative difference" can be shown. The results, with native English speakers of university age, showed very high association strength value between the categories of IN and LIGHT, leading the author to conclude that this particular mapping is indeed the "default construal". The extent to which such results generalize beyond Western culture remains to be shown, but Bagli proposes that this could further validate the thesis that embodied experience grounds human cognition and language.

In chapter 23 Katherine O'Doherty Jensen proposes the original notion of *performative metaphor*, which concerns primarily neither language (as in traditional metaphor theory), nor conceptualization (as in CMT), but "non-discursive practices in which something is treated in terms of something else". Her recurrent example is that of applause at a concert, where the higher levels correspond to higher levels of evaluation, and vice versa. As this example shows, and as the author repeatedly points out, a key feature of such non-discursive cultural practices is *gradience* rather than the (relative) discreetness typical for linguistic categorization. The dimensions that are mapped in performative metaphor are thus scalar, and the mapping itself

is best characterized in terms of *structural analogy* (Itkonen 2005). According to the author, performative metaphors give rise to shared gradient meanings and are reproduced when they "make sense" to social actors. Thus they have an implicit normativity and are truly "metaphors we live by".

O'Doherty Jensen then applies this notion to an illuminating analysis of a puzzle concerning food practices. There are apparently universal evaluative tendencies (e.g. meat > fruit & vegetables > cereals; alcohol > soft drinks), which are furthermore gendered: despite much cross-cultural variation, men value the foods higher on the scales, and women tend to value those that are lower. The author considers both substantive metaphorical accounts ("men are (like) animals, women are like fruits") and functional accounts based on social power and finds them lacking compared to an analysis in terms of the performative metaphor GRADES OF FOOD ARE GRADES OF PEOPLE. The analysis implies that "discernments of gender-appropriate consumption are ... mediated ... in a non-arbitrary fashion. In the measure such practices are recognized as appropriate, they become conventionalized, regulated by social norms and the sanctions that accrue to deviation from gendered role." She concludes by emphasizing the difference between such non-discursive practices and meanings (which she regards as "mimetic", using the term rather broadly) and those based on language, and, analogously to Müller (chapter 12), argues for the importance of the former not only as a "stage" in evolution and development, but as a crucial part of all concurrent human cultural sense-making.

In chapter 24, Francesco-Alesio Ursini takes a more formal approach than customary in cognitive semiotics in his investigation of systematic connections between linguistic and non-linguistic meaning. He formulates his project as the quest for (a) "core cognitive modalities and their underlying ontologies, defined as the sets of basic categories and relations on which cognitive processes operate" and (b) "properties and relations underpinning these ontologies and their governing processes", and focuses on commonalities between visual perception of objects and the semantics of noun phrases (NPs). An "ontology" for object perception is formulated on the basis of central sub-systems proposed in cognitive science; four categories with respective types are identified: *motion*, *attributes*, *geometrical structure (shape)*, and *quantity*. In the case of NPs, four semantic categories are proposed, building on the literature in linguistic typology (i.e. the study of similarities and differences across languages): *animacy/gender*, *qualities of the referent* (e.g. *mass/count nouns*), *shape*, *number* and *quantity*. Even from this simple listing, it appears that "the classification principles ... work in parallel across the two domains", but as Ursini points out, this parallel needs to be more formally elaborated. He proceeds to do so with the help of a formal theory of "information flow" (Bawwise and Seligan 1997) that utilizes the notion of *informorphism*. In a dense but clear section, the author defines the core concepts of the approach, including classifications for object types and noun phrase types, defining two *symmetrical* functions, from object to noun phrases and vice versa.

The final section provides an empirical application (serving as a justification) for Ursini's informorphic approach. First, as the theory allows for both one-to-one and

many-to-many functions, it is possible to precisely describe patterns of linguistic variation (e.g. an ambiguous object like "a lump of coins" can correspond to different types of NPs *coins* vs. *money*), within and across languages. Second, flexibility with respect to patterns of reference, corresponding to the notion of *construal* in cognitive linguistics, can be accounted for. Third, and perhaps most relevant for cognitive semiotics, the symmetric functions between object categorization and nominal semantics, are consistent with a dialectical relation between linguistic and perceptual categorization of objects, in agreement with findings in language acquisition (*cf.* Chapter 8 by Imai).

In the final chapter of this section (chapter 25), and the book as whole, one of the pioneers of cognitive semiotics, Per Aage Brandt, turns back to one of the sources for cognitive semiotics, linguistic theory, and asks how it could be reinvigorated with the help of the new discipline. His proposal focuses on the core of linguistics: the nature of grammar. Brandt briefly considers both generative grammars in the tradition of Chomsky, and construction grammars (e.g. Goldberg 1995), which dominate cognitive linguistics, and finds both lacking; the first as they have very little to say about (sentence) meaning, and the second because they treat meaning/content and form/expression in terms of "pairings" or "mappings", which may be appropriate for simple signs, but not for the limitless creative potential of language. Rather, Brandt's proposed semio-syntax is conceived as a system that can link, in both directions, imagination and thought on the one hand, and linearized sequences of symbols on the other. The representations of grammar that mediate are "simulations of thought", allowing "a relatively stable transfer" of meaning between speakers. Admitting the vastness of the topic of re-conceptualizing grammar in semiotic terms – rather in the spirit of a recent proposal by Daniel Dor (2015) – Brandt proceeds to offer some ideas for this project, viewing it as a cognitive semiotic extension of construction grammars. One such idea is to ground grammar in *enunciation*, living language use. Another is to "find the organizing semantic principle of all constructions, in as many languages as possible", for which he proposes a kind of semantic hierarchy, a "canonical sequence of operations", that can account for the ungrammaticality of some constructions. Finally, he proposes a kind of semiotic syntactic sentence trees corresponding to the "stems" of Tesnière's dependency grammar and illustrates this with examples from English, Danish and French. He concludes, echoing Saussure (1916) one century later, that the principles of semiosis may be extended to culture as a whole as "cultural life presupposes semiotic simulations ... of thoughts and concepts that circulate more or less anonymously, in order to form shared ideas".

5. Concluding remarks

The reader that has had the patience to read through these summaries – on which we have labored extensively – should be able to appreciate both the richness of cognitive semiotics, and to notice challenges and potential disagreements. For example, the notion of (mental) simulation is both criticized (chapter 2) and

utilized (chapters 18, 25). There are also differing interpretations of the notion of mimesis (chapter 13 vs. 23). A possible criticism (and one which we have met at conferences) of cognitive semiotics is the lack of sufficient internal coherence (*cf.* the analysis of agency in biosemiotics in chapter 4). Our reply is, however, that such a criticism would misunderstand the difference between a discipline and a theory. Cognitive semiotics is the former and not the latter. While it would indeed (most likely) be incoherent if a single *theory* used both a structural and a Peircean sign concept, or a given theoretical term with different meanings, we cannot and should not expect different theories in cognitive semiotics to always agree. That would actually be stifling and "block the way of inquiry" (to quote the famous Peircean principle on what is *not* to be done).

What we can and do expect is that disagreements are acknowledged, and dealt with the necessary respect, asking questions such as: are the issues conceptual or empirical? If the former, can the concepts be calibrated? If the latter, what kind of evidence can be adduced to make an informed decision between the alternatives?

In sum, cognitive semiotics has created a platform for asking such questions – with respect to what is arguably most central to our lives, and to the future of life on our planet: meaning. With this we step back, and urge the reader and possible beginner to cognitive semiotics to jump in, and participate in the discussion!

Introduction

Part I.

Metatheoretical Perspectives