CogSem Notes V
On Meaning as Such

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These notes are dedicated to bringing information and comments on current research, reflection and academic activities in the new discipline of cognitive semiotics, a field of studies in which cognitive science and general semiotics merge, collaborate or contribute to the inquiry into meaning and the mind. I am honored by the generous invitation and grateful to the editor of this important journal for the opportunity to offer its readers these *CogSem Notes*.

1. On Meaning, Mostly on the Semiotic Side

In this issue I would like to discuss a problem that is more important than anything else in semiotic theory since it concerns the understanding of the sort of reality that semiotic research can be said to study, and since its treatment gives rise to strands of semiotics that are so different that, sadly enough, they barely maintain any intellectual exchange at all. The problem is, simply phrased: What *is* meaning? How can 'meaning', the object of all semiotic studies, be characterized, as distinct from other objects of inquiry in this world?

1.1 Previous Approaches

Outside of semiotics, e.g., in analytic philosophy, meaning is predicated on propositions and is often defined as the conditions under which they are true. Here, meaning equals truth. The study of meaning in this sense is 'truth-conditional' semantics. By contrast, in so-called continental philosophy, meaning is instead predicated on words, which have lexical intensional meanings and co-textual/contextual extensional meanings (cf., in German, the distinction between *Sinn* and *Bedeutung*).

In F. de Saussure's *semiology*, the meanings of words are *signified* concepts (of a *langue*), to be distinguished from the *referential* meanings of these concepts in use (speech, *parole*). The semantics of semiological systems would follow the

linguistic distinction between signifieds and their referents, or referential meanings, in use; in practical research on texts or discourse, meaning would therefore refer to the semiological systems of textually or discursively signified concepts, for example ideological systems (as in R. Barthes).

In C. S. Peirce's *semeiotic*, signs in nature or culture always have referential consequences, interpretants, determined by contextual grounds. Anything can in principle mean anything, *aliquid stat pro aliquo*, and this is in principle almost all that can be stated generally about meaning: it is determined by context, which is to say: the world decides what means what. This is, in a sense, a fine poetic view of meaning, drawing its beauty from its vacuity. It invites, of course, a pragmatic approach to the genres of actual meaning production in the universe (physical, biological, zoological, sociological, logical, theological and so on). However, in this respect, Peirce and Saussure are on opposite ends of a scale running from reference to concept, or, as it is phrased in L. Hjelmslev's glossematic theory, from substance to form. So, in this phrasing, for Peirce, meaning is contextual, referential, 'substantial', whereas for Saussure, it is conceptual, signified and 'formal'.

Structural semantics, which shaped modern French semiotics, has adopted the Hjelmslevian double distinction between expression and content (the terminology sounds nicer in Hjelmslev's Danish, using the contrast of *out* and *in*: *ud*tryk and *ind*hold, cf. German *Ausdruck* and *Inhalt*) and between substance and form. The result is a fourfold series of instances defining the sign function: substance of expression – form of expression – form of content – substance of content. The substances on both sides are called 'meaning', when considered as exterior to the sign function, so we get an expressive meaning (material phonetics) and a content meaning (referential semantics). In Hjelmslev's (rather absurd) dogma, the two 'planes' of the sign function must be regarded as equivalent in all respects and be analyzed in the same way.

It is not clear how contemporary mainstream semiotics manages to integrate or make sense of these contradictory conceptions; a curious reader should take a look into W. Nöth's *Handbook of Semiotics* to get an overall impression of the magnitude of chaos and confusion that reigns as to the definitions of signs and meaning.

Before presenting the view of *cognitive semiotics*, a view that may have a chance to help semiotics clarify the notion of meaning and specify what follows from it as to its own practice, I would like to make a couple of further observations.

Let us again take a look at the current French 'Paris School' semiotics, already

presented and commented in CogSem Notes III. In *Sémiotique. Dictionnaire de la théorie du langage* by Greimas and Courtés (1979) under the heading *Sens* 'meaning', we find (rendered here in my translation):

> 1. Being a property common to all semiotic* organisations (or systems) [toutes les sémiotiques], the concept of meaning is indefinable. […] Prior to its manifestation as articulated signification*, nothing can be said about meaning without introducing metaphysical presuppositions that carry heavy consequences.
> 2. L. Hjelmslev proposes an operative* definition of meaning by identifying it with the raw 'material' that allows any semiotic organisation, as a form*, to be manifested. Thus, meaning becomes synonymous with 'matter' (the English term 'purport' embraces both words), and both are used indifferently when speaking of the two 'manifestants' on the plane of expression* and the plane of content*. The term 'substance' is then used to refer to meaning in so far as it is taken over [pris en charge] by a semiotic organisation; the substance of content is consequently distinguished from the substance of expression.

The second part of this short dictionary article may sound rather strange to readers unfamiliar with glossematic theory; but at least I have prepared mine, above. Still, the conception that appears in the condensed form of these paragraphs is far from being intuitively intelligible. Meaning is considered as in itself indefinable; it is only to be grasped as articulated signification, that is, in short, as a signified or made into a signifier, as a formally organized expression or content of a semiotic function, in Hjelmslev's sense (Dan.: *indholdsmening* 'meaning of content').

In so far as semiotics, aspiring to be a scientific discipline, studies meaning, it has to become, according to Greimas and Courtés, a *metalanguage* superimposed upon an *object language*. Sometimes, in the Dictionary, phrased as 'metasemiotic' and 'object semiotic', respectively. So, meaning must be inscribed in a 'language', or be considered as a language, in order to be studied semiotically and be the object of such studies. A curious consequence of this presupposition is that it is impossible to specify what is here meant by 'object language' (object semiotic) before it is analyzed by semiotics as its metalanguage; the only way to specify what the entire enterprise is about is therefore to describe the (consistent, coherent) metalanguage of semiotics. This takes a meta-metasemiotic approach, of course. And the regress is inevitable. But let us remain at

the first level: the discipline of semiotics thus needs to be a 'language', a 'metalanguage', in order to be described. It needs to be endowed with an internal, immanent coherence, a systematic and logical (non-contradictory) grammar of syntagmatic and paradigmatic articulations, which controls the structure of its propositions. This 'metalanguage' has a form of expression and a form of content, as any other semiotic organization; its content notably contains the object language, which it is 'about'. So, since this metalanguage literally contains its object (substantially and formally), the object is part of it, and describing the metalanguage is by definition describing its object. Can this be true? The description absorbs its object? Describing the description-of-meaning is studying meaning, and is the only possible way to approach meaning?

To my knowledge, no scientific "discourse", including presentations of analyses, theoretical discussions, critical debates, comparisons of contrasting results, etc., can be characterized as constituting an immanent metalanguage. Science instead needs contradiction and competing models in order to critically develop knowledge; it needs a good dose of Cartesian doubt. What instead characterizes a scientific discipline is its empirical field. But here is the conspicuous problem: *the field seems already taken* – by philosophy, linguistics, biology, the humanities and the social sciences. Nothing is left to semiotics; it has to rely on its particular "metalanguage".

1.2 An Alternative View

The alternative view, which is that of cognitive semiotics, is the following. The study of human and animal *cognition* is incomplete if it limits itself to perception. It has to include communication. But the study of human and animal *communication* is incomplete if it limits itself to signs and language. It has to include cognition. The reason for this set of inverse inclusions is that *meaning* is involved constitutively both in cognition and in communication. The mind is communicative and would not be the mind that it is without being communicative.

There are consequently two aspects of meaning that should be distinguished in general semiotics: *cognitive meaning* and *signified meaning*. They should be distinguished and correlated. They are the two complementary ontological modes of manifestation of meaning, so to speak.

By cognitive meaning is understood: projections onto parts of our experienced (perceived) reality that we wish or need to better understand. Example: We see a suffering animal and think that it suffers from an evil spirit that has slipped into its

body; or we think it has been hurt by a car; or that it suffers from an infection. Our explanatory projections are meaning productions. They produce meanings but do not depend on any language. Of course the content of our 'sense-making' projections depends on what we think and remember – the sources of which are manifold and most often chaotic. But the elementary source of cognitive meaning production is the post-perceptual, conceptual operations that make experience possible at all, as 'gestalts' and episodes containing states, events, acts and emotional dramas.

By signified meaning is understood: intentionally communicated information expressed by subjects and interpreted by subjects. Example: musicians in a symphony orchestra interpret the gestures and other expressive acts of the conductor while the conductor interprets the writing of the score, which expresses the intentional musical thoughts of the composer. This example is particularly rich because it shows how signified meaning can be transmitted through (infinitely) multiple instances. Signified meaning is transitive: Sl *shows* to S2 what he thinks S3 *means* to communicate. The example also demonstrates that basic deictic signs, like the signs of the conducting and of the score, consist of two signifying layers, the first of which *symbolically* expresses what the addressee is supposed to do immediately (*here* is the beat, *this* is the rhythm…), and the second of which *iconically* expressively offers an image of an intended content (the desired soundscape, the timbre, the volume…). This is possibly a general feature of human exchanges of signs: an internally ordered string of *symbols* whose signified meaning deictically embeds *icons* of a content.

By contrast, what we call cognitive meaning is *indexically* related to the world in the sense that some salient feature experienced (the 'index') triggers our projections as its possible meaning or explanation. To put symbols, icons and indices in the same classificatory box, as Peircean scholars do, is to ignore the ontological distinction between signified and cognitive meaning.

The scientific task of general semiotics as a general science of meaning is evidently to study *the dynamical relation holding between cognitive and signified meaning*: the ways in which they influence each other, their inter-determination. Whereas the humanities and the social sciences (including classical semiotics) exclusively study signified meaning, and psychology, biology, cognitive science and philosophy of mind exclusively or predominantly study cognitive meaning, the privilege of cognitive semiotics is to study the interaction between cognitive and signified meaning – i.e., to include cognitive findings about semantic structure (categorization, schematization,

narrativization…) in the account of linguistic and textual semantic structures that inherit such semantic structures, and to compare the semantics of discourse to semantic accounts of known forms of causal and intentional thinking, imagination and feeling, for example. Cognitive meaning undoubtedly has a neuro-biological foundation that determines basic informational and integrational operations; but it is nevertheless deeply influenced by signified meanings developed in cultural intersubjectivity, so deeply that communication in some aspects, and over time, changes the neural structure of the brains hosting these communicative minds. The evolutionary *semiotization of the human communicative mind* is an ongoing process that for many researchers constitutes the most fascinating perspective in the study of meaning.

To conclude: Far from being indefinable, the object of semiotic research – meaning – is in fact described by the characterization of the two legs of research on which semiotics walks: cognition and signification. The way it walks in turn determines the way it talks.

2. On Meaning, Mostly on the Cognitive Side

Aarhus University in Denmark is currently the locus of an interesting project on meaning and mind that is taking place at its Interacting Minds Center. I have invited the scientific director of the IMC, Professor Andreas Roepstorff, to present an outline and description of the on-going research there. The following is his generous reply.[1]

INTERACTING MINDS CENTER. An Interdisciplinary Research Center at Aarhus University, Denmark (first funded in 2012–2016).

Interacting minds

The IMC establishes a new, transdisciplinary field of research on human interaction. To understand the richness of this task, consider a simplified example. The behavior of a pharaoh ant foraging for food may be simplistically modeled as governed by two rules: (i) if you find food, mark the trail with pheromone, and (ii) if you find a pheromone trail, travel along it. From this, a positive feedback cycle emerges in which regions rich in food become rich in pheromone, and as a result, rich in ants, until the resource is

1 My own editing of the material appears in square brackets. As well, I have removed five pages of bibliographical references, available upon request by emailing me at pab18@case.edu.

depleted. Thus, even when modeled in their simplest form, interactions are not only social but also fundamentally temporal and material, and a complex social consensus self-organizes and shifts adaptively as pheromone and food concentrations change.

A new research field is needed because specifically human modes of cognition, communication and choice add multiple, interrelated layers of complexity to interactions. Classically, to make the problems encountered tractable to their own fields, researchers have focused much of this complexity through the lens of simplified cases. For instance, people trading in markets have been modeled as though they apply simple rules in the form of behavioral heuristics such as "buy when prices rise and sell when prices fall". From these rules, complex and intrinsically social consensuses can be modeled as self-organizing over time relative to resource and information distributions. While powerful, these models are fundamentally unable to capture central features of human interaction. Although it provides key insights into interactive behavior, the classical disciplinary approach is yet to provide us with an integrated understanding of interacting minds.

Minds: Cognition, communication and choice

Human cognition relies on a particular form of mind, and this critically shapes interactions. Human capacities for representation, evaluation and interpretation of the values and beliefs of other humans are crucial for this. In the case of trading, when people interact on the market, they exchange more than tangible goods and services. The value of virtual resources such as reputation and social recognition interacts with and can even outweigh tangible value. Importantly, value is not simply fixed by external context, but shifts relative to cognitively represented reference points. Humans also have unique modes of communication. Like ants, humans have basic biological signaling mechanisms. These have, however, been augmented, and in many instances supplanted, by cultural systems and technologies. Human communication is more than just social; it is reflexive and therefore recursive. Humans represent and share knowledge of their interactions, and they encode that knowledge in material artifacts and in symbolic systems. Thus minds allow people to use communication to influence the development of their interactions and explicitly reflect on them as part of a tradition, a fundamental aspect of all normal human interaction. This in turn has deep consequences for human choice. The emergence of such higher order signaling, and the fundamental communicative modes of interactions it establishes, means that individual

choices are never made in rational isolation from other minds. Even when persons are left to decide on their own accounts, the salience, meaning, value and even availability of choice alternatives are powerfully shaped by dynamically emergent collective patterns of others. Thus, on the basis of cognition and communication, humans carve out niches that are already material and symbolic. These niches, or so-called worlds, inform the choices that constitute human life – from stock markets, to family relations, to military conflict and to scientific activity itself.

Interacting: Co-ordination and confusion, co-operation and conflict

It is against the backdrop of such niches that interacting minds must be understood. Knowledge of minds is not enough in itself – we must also have a direct understanding of interactions, the conditions that enable them and the dynamics they can take on. Even for relatively simple organisms, this can be very complex. Taking the pharaoh ant again as an example, interactions between ants may be construed as varying along several dimensions, e.g. ranging from more or less confused to more or less coordinated along one axis, and from more or less conflicting to more or less cooperative along another. But even this simplified model hides daunting complexities. On factor that makes pharaoh ant colonies so robust is that their mode of interactions can shift flexibly in response to contextual challenges. When foraging, as more pheromone attracts more ants to a food source, the primary mode of interaction switches from confused cooperation – with scattered explorative activity, to one of coordinated cooperation – with focused exploitative activity. When challenged, one group may break up into smaller, independent units. But as rich and flexibly adaptive as such patterns are, capacities for cognition, communication and choice mark out human interactions as the most complex and adaptive of all. Ants may shift their modes of interaction rapidly in time, but, to the best of our knowledge, the change is in response to external factors. Human interaction is also constrained, but humans can represent the conditions of the interaction and the people with whom they are interacting (i.e., cognition); they are able to share these representations with others to create fields of common meaning (i.e., communication) and they are able to use this information as a context for changing how interaction unfolds (i.e., choice). The environment apparently always determines whether ant interactions are coordinated, conflicting, confused or cooperative. Interacting minds can reflexively affect the nature of interactions. Critically, these shared representations recursively feed back into the interaction, creating the 'looping

effects' characteristic of human kinds.

IMC

We have made important inroads in understanding interacting minds. During the Niels Bohr professorship project Interacting Minds - A Biological Basis (2007-11) with Chris and Uta Frith, we developed novel experimental designs and analytic frameworks, e.g., 1) explored how cultural and social affiliation regulates physiological coupling in religious rituals; 2) shown that the value that perceived experts place on objects influences how our neural reward systems respond to these objects; 3) shown that we can optimally share information to improve our performance when we interact with others to make joint perceptual decisions, and found that these strategies change across contexts; 4) shown how others' opinions of visual size illusions can influence our own movements without affecting our own size perceptions; 5) explored how the movement dynamics of simple motor behaviors converge over time during joint motor actions; 6) explored how objects and symbols combine to constitute social, material and semiotic worlds, which allow for interactions to occur between people "offline"; 7) demonstrated how choice in complex social and political settings may draw on cognitive principles derived from small scale interactions; 8) explored how an explicit understanding of situations shape patterns of interaction 9); and demonstrated that perceived charisma modulates the reception of messages, both at a behavioral and at a neural level. Some of these findings have thrown light on clinical conditions, such as autism, schizophrenia and focal brain damage.

A critical factor in achieving these results has been a focused effort to organize an open, flexible research environment that facilitates continuous dialogue among researchers from different disciplines. We have learned that genuine transdisciplinary knowledge emerges when these dialogues turn into concrete joint research projects. These observations have implications for how we organize the center, structurally and in terms of workflow. We have learned that individual projects must be embedded in an overarching framework. This directs attention to shared problems and it allows two critical kinds of translation of transdisciplinary knowledge: 1) back into the distinct disciplines, and 2) into applied research. As detailed below, meta-reflection and modeling are key supporting elements for these translations, with applications extending into clinical diagnosis and treatment and to the identification of new strategies for learning. Together, meta-reflection, modeling and translation strike a

common chord for IMC activities.

Meta-reflection: Lab-based studies of interactions are typically limited to studying interactions in idealized conditions. Interactions must be highly experimentally controlled to be replicable, and this implies that many temporal, social and cultural aspects are filtered out. Consequently, experiments may miss out on critical aspects in real human interaction: a reflexive, temporal sensitivity and an ability to act in complex situations without a pre-defined, shared interpretation of events. Thus, the knowledge made in experimental interactive paradigms relates in non-trivial ways to the technologies and methodologies applied. Systematically mapping the affordances and limitations of the different research approaches as part of a critical meta-reflection on the transdisciplinary process provides an understanding of the procedures, norms and aesthetics of the research processes, which is important for mapping historical trajectories of knowledge, for translating across the research fields and for understanding the ramifications of the knowledge made. With this in place, we may combine classical methods to studying interactions in the field (ethnographic fieldwork, surveys, register based data) with novel approaches (transportable experimental situations, interactive use of film and other representations) and relate these to understandings derived from lab-based studies of interaction.

Modeling is the other part of the overarching framework. We explore how patterns of practice emerge and continuously develop out of interactions. A key instrument is to "frontload" properties of agents, established in field-based research and lab-based experiments, into simulated systems, where we may explore, manipulate and perturb central parameters. In this way we can examine reflexive agents, where changing beliefs about other agents and the properties of the system shape the dynamics of the interaction; reciprocating agents that establish particular patterns of exchange; embedded agents that build particular physical and symbolic environments; normative agents that construct moral frameworks to live by; and coupled agents that synchronize in different modalities. The agents can be embedded in a spatial world with local neighborhoods of interaction where applied network theory, such as small world networks and cellular automatons may manipulate the spatial field of interaction. Combining modeling and meta-reflection may deconstruct and transcend a dichotomy between the field and the lab to examine how cognition, communication and choice enable interacting minds. In practice, these three concepts form a "hermeneutic circle" in human interaction. This may heuristically be decomposed into parts, which align

with the research foci of key researchers.

Linking choice and cognition: Decision is often modeled in the social sciences as an optimization process with idealized constraints. The decision maker chooses among alternatives to maximize perceived value. For decisions made among interacting minds, game theoretic tools are used to study strategic interaction. Behavioral economics expands the types of utility functions and constraints considered to capture social preferences and biases in decision-making. However, current approaches tend to neglect fundamental cognitive processes, such as emotion, perception, motivation, attention, etc. that exert strong influences in real life interactions. By contrast, cognitive psychophysics captures the intrinsic psychological biases in how people process information when making decisions in interactive contexts. However, this approach neglects the strategic aspects of communication and choice, which are crucial to most real interactions. A synthesis seems feasible within models already used by key researchers, and it provides a key point of convergence. This may be extended to investigate how choices are socially, culturally and institutionally embedded, and how they can bridge somatic-emotional schemas and semantic-cultural schemas to affect cognitive governance and normative control.

Linking cognition and communication: Human communication involves more than cognitive representation and strategic interaction; it also relies on stable and shared semantic systems. It is often thought that the meaning of concrete words relies on bodily experiences. However, these experiences are situated within constantly evolving, flexible systems that develop across individuals, local interactions, cultural context and available technologies. We investigate the dynamics of local, short-term interactions (e.g., dialogical choice paradigms) as well as large-scale structures (e.g., mass media) and long-term societal dynamics (e.g., identity processes). This throws new light on how shared semantics and metaphors stabilize interactions and inform decision-making processes, and frame constraints and options, thus providing important new ways to deepen our understanding of the semantic spaces in which interactions unfold.

Linking communication and choice: Communication is not only a tool for collecting information from others about appropriate choices. It also allows humans to build shared meanings and, subsequently, direct attention to particular subsets of these shared meanings. Hence, while choice contexts are influenced by shared normative understanding, such contexts are often open to multiple interpretations and can be viewed from several interaction modalities. Communication is key in synchronizing

the understanding of what is at stake in a particular situation and which norms to apply. In this way, communication can foster cooperation because of its coordinative power, but also because the mere act of communication (verbally or non-verbally) decreases social distance and increases feelings of connectedness. Yet, the openness of choice to communications also gives rise to strategic uses of communication whereby people self-servingly attempt to influence the choices of others by broadcasting their own private interests as collective interests. Implementing these factors in studies of choice, we may thus examine how the interaction of communication and choice feeds back onto cognition.

Translational research

IMC research may be translated into a number of applied fields. Below, we detail three fields that already have established collaborations.

1) We translate research into design and implementation of interactive learning environments. […]

2) Our research throws light on the effect of organizational structures and decision-making processes in collaborations. […]

3) A number of pathological conditions are characterized by serious problems in capacities for interaction: from autism, where interaction is not seen as a valuable option; to schizophrenia, where interactions are poorly understood and often distorted; to certain brain lesions where interaction is impaired because the necessary basic mechanisms for interaction (e.g., language, sharing of attention and emotions) are simply not there. Several research projects directly engage with clinical research in collaboration […]. We have developed a model to connect researchers, clinicians, relatives, community projects and patients with research on autism (www.autismaarhus.dk). This ensures a bidirectional link between researchers and the patient community. We will extend this model to other disorders.