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Thinking and Language. A view from cognitive semio-linguistics

Abstract:

Cognitive semio-linguistics studies the relations between signs and language, between semiological and linguistic structures, as expressions of, and as causes of, the cognitive activities involved in thinking, here called epistemic activities. This short essay displays a leveled analysis of the relations holding between semio-linguistic and epistemic structures active in the human mind.

1. Semiotic bridges.

Language — spoken, written or signed — is no doubt the main bridge between communication and cognition in our species. At one end of this bridge, we find a display of temporally or graphically linear flows of signs ('strings') grouped into words and sentences that are shared, whether immediately or through mediating devices, by shifting speakers and hearers, as meaningful discourse — as debate, dialogue, monologue, or text. At the other end of the bridge, individual human agents are each in their singular, embodied, and isolated minds attending to concrete or abstract personal or communal matters that call for thinking, imagining, feeling, planning, acting — and also call for being linguistically expressed, instead of being 'acted out' right away. The result is the community of beings that communicate important parts of their thinking and which we call culture, civilization, humanity.

However, the communicational end of the bridge is also a world of traces, signals, and images, that is, of many sorts of non-linguistic but still interpretable and meaningful signifiers that we constantly produce and perceive, and with which our linguistic signs compete and combine. We thus live in a universe of signs, and the linguistic flows of signs are often submerged by other significant semiotic flows, often equally conceptually efficient, and often vitally urgent.

Consciousness famously experiences *itself* as happening *in the outer world* (not 'in the head').[1] This basic phenomenological fact lets our own constant flows of external

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[1] This is the basic point made by Maurice Merleau-Ponty (1960). The essay "Sur la phénoménologie du langage" (1951, in 1960) is particularly important to the present analysis.

expressive doings (equally happening in the outer world) be experienced as directly connected to, and even identified with, the abstract or concrete matters that we think about and attend to. We experience things, concepts, and signs with equally salient force and as given and co-present in the same outer world. Our minds naturally feel that, for example, things, concepts of things, and signs of concepts of things are aspects of the same reality and are real entities. Only an evolutionarily late, historical development of theory (philosophy) has allowed us to distinguish these aspects and understand their relative independence, so that we can ask questions about the relations between signs in general, language, thinking, and the reality that thinking refers to.

There is a particular kind of culturally developed conventional signs that we need to consider: *writing*. We write, in particular, mathematical, musical, and linguistic texts. Such writing is called *symbolic*; it is in general 'digital', that is, performed in finger and hand scale. Additionally, we draw and paint *images*, that is, produce *iconic* representations — usually in arm scale. And perhaps even more interestingly, we use *diagrams* to express our thinking; these diagrammatic, spontaneously half-symbolic, half-iconic forms of graphic activity apparently cover all domains of possible thinking.[2]

The cognitive feedback that our minds receive from external symbolic, iconic, and diagrammatic representations is massive and decisive; it deeply influences our thinking and shapes our views of reality, perhaps even more profoundly than the live experience of the situations we are in.

Most often, language does not express pure thinking, but instead interprets these representations that already represent thinking. Symbols, icons, and diagrams (as well as traces, symptoms, signals, etc.; we will here call the whole of non-linguistic signs *semiological*) are apparently spontaneous productions of the human mind that constitute a shorter bridge between communication and cognition than the one offered by language. These semiological expressions are apparently, and probably, both more directly connected to the process of thinking and more directly shaped by the *structure* of the epistemic activity, the process of thinking. However, it takes a certain amount of transcription, translation, paraphrasis in terms of a human verbal language to make theoretical sense of these more 'authentic' symbolico-iconic signs of our thinking. It

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[2] In view of the immense conceptual range of diagrammatic representations, the study of the natural 'logic' of diagrams is an important task for a cognitive semiotics (see "The Semantics of Diagrams", Brandt 2004, and "The Semiotics of Diagrams", to appear in *Semiotica*, 2018).

takes a linguistic interpretation of our signs to *socially* transmit their meaning; the variations occurring in our linguistic interpretation of our own and each other's non-linguistic expressions may even explain the dynamic and creative character of thoughtful communication — and hence certain aspects of the history of ideas.[3]

Language constitutes a longer, slower, and more complex bridge between communication and cognition; however, since both the shorter (semiological) and the longer (linguistic) bridge offer essential advantages[4], they are both in constant use, and the 'dialectics' — in the sense of competition and conflict, but also of coordination and mutual interpretation — operating between the two semiotic bridges, the linguistic and semiological, determine the main expressive and creative functioning of the mind.

2. Levels of language structure.

Let us consider what is actually and currently known about linguistic structure.[5] We will have to distinguish two general directions: one is productive, mindwise *efferent*, beginning in the cognitive, epistemic process of perceiving and thinking, and ending in expressive, prosodic, and linearized discourse; the other is receptive, *afferent*, starting in the cognitive apperception of the linear string of discourse and ending in a contribution to the multidimensional process of thinking. To understand (decode) linguistic expression, as a hearer or a reader, and to express (encode) one's own thinking, as a speaker or a writer, are distinct things, and we cannot assume that one process is exactly the inverse of the other, sharing all structural instances and mechanisms implied. However, it seems sound to assume that core structures underlying both processes, the efferent and the afferent, are indeed shared, namely the mental architecture of integration.

In so far as we can in principle consider a given linguistic manifestation as an expression of thinking, and thinking as the content of this linguistic expression, we can

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[3] Yuri Lotman (1990) made a similar observation, suggesting that the mutual translation of irreducibly different semiotic systems is a core principle in meaning production.

[4] Linguistic representation of meaning is closely related to intersubjective contact and affective communication, because it offers nuanced emotional information; semiological representation is more closely and directly related to practical thinking, precisely because it generally does not convey such affective information, except in art — where aesthetic intensity appears and can carry emotional values.

[5] We will comfortably ignore the serious strife opposing competing theories of language that has characterized the history of linguistics from its origins in 19th century philology to its present agony in the arms of computer science.

in fact envision the field as a long semiotic bridge allowing two-way traffic between a phonetics (in a large sense) and a semantics of thinking (in a large sense).

I will here boldly present an architectural model of this bridge, or processual network. I will isolate five grounding structural stances or levels that we have to distinguish, as a minimum, and which we have to conceive as connected, locally and transversally, in the 'logo-phonic' articulation of the semiotic bridge.

3. Five logophonic pillars.

The one-dimensional phonetic or graphic expression of language, consisting of phonemes in syllables and the latter grouped in syllabic clusters corresponding to phrases composed of words, and groups of phrases in prosodic ensembles, is a field of highly complex phenomena, acquired procedurally in first language development and (partially, at the cost of a 'foreign' accent) acquired through conscious training in subsequent language learning.

We will call the first level phonetics:

I. *Phonetics*: 'Linear' structure, temporal concatenation of phonemic, syllabic, lexemic and morphemic entities under a prosodic profile. In "1D".[6]

Parsing is the natural process of reading off the string of phonetic manifestations and reorganizing its parts in a grammatical pattern of connected phrases. Linearization is the inverse process of projecting grammatical structure onto a one-dimensional 'string'. The organization of these 'parts of discourse' (French: 'les parties du discours') in networks of interconnected meaningful phrases is known from school grammars using varying descriptive terminologies that simply rely on the learners' intuitions; we all possess such intuitions, to a certain degree, allowing us to find the 'immediate constituents', the finite verb and the main nominal complements in a sentence, and then to interpret some of the morphological and adverbial meanings that let the ensemble make sense. We will call the constituent level grammar:

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[6] 1D: One dimension. The decoding process can be seen as a 'funnel' leading from 1D to 3D and 3D+ structures, through the 2D structures of syntax.

II. *Grammar*: syntactic node-structure ('tree structure'), with semantically significant nodes, accounting for meaningful constituent assembly; verbal networks, or constituent 'trees', will embed nominal networks, and the highest level will present itself as a 'tree of trees', in which embedded phrases and clauses end in a matrix *sentence* carrying the main tone of information conveyed by the utterance.[7]

The format is a network of nodes embedding other networks of nodes according to a canonical node semantics that lets complementation add information to phrase heads. This format is necessarily at least two-dimensional (a node is a bifurcation point). The diagrammatic models are often spontaneously schematized through the verticality of hierarchy, hypotaxis, and the horizontality of coordination, parataxis. Morphological meaning then runs in both directions, sideways (for example, between nouns and determiners) and perpendicularly (for example, from verb to adverb or to subordinate clause).[8] It is "2D".

The advantage of the dimensional shift is evident: meaning is compressed or decompressed between 2D and 1D representations. It is further decompressed into — or compressed from — the third level we will consider.

Sentences are grammatically meaningful units, and their information will constantly refer to larger situational semantic frames structured by complementary information in a more general format. Most situational meaning portions refer to parts of a composition like the following, which we may call a natural proposition: *Agents Accessing Objects and Modifying them in view of some final Destination* (A access O, achieving O –> O*, with goal D), combined with other Agents etc. The classical example is a restaurant 'script' or a selling-and-buying (or teaching-and-learning) frame encompassing multiple interactions of this sort.[9] There simply *must* be a frame-organized semantics behind sentences, since we can paraphrase, rephrase, 'window' in and out components of constructions, expand and contract, and we can

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[7] Tone of information: mode of enunciation — volitive, interrogative, assertive, affective, or other (ironic, quotative. etc.).

[8] My own more special theory of so-called <u>stemmatic</u> grammar is briefly summarized in Brandt 2004 et passim. It builds on the discovery that the *semantics of syntactic nodes* is schematic and canonical: a short list of semantically informed nodes form canonical cascades that allow recursion and thereby establishes our capacity to spontaneously create and immediately grasp even very complex syntactic networks as meaningful. This discovery offers a solution to the problem of defining case structure in a finite and manageable way.

[9] Schank and Abelson 1977, Fillmore and Atkins 1992. Literature on frames and scripts is extensive, although the problem of formatting frames has not been solved.

translate from language to language, sentence by sentence, while changing the source construction; in these cases, while allowing differences between source construction and target construction, we ideally maintain the 'underlying' frame of meaning, the natural proposition that a sentence represents.[10]

We will call this underlying level semantics:

III. *Semantics*: an event or a state is conceptualized in a situational or topological frame structure, and its information is dimensioned in view of accounting for agency, motion, change, and exchange. This level structures semi-equivalences between different constructions, such as active and passive, or verbal and nominal construal of the same event. It integrates lexical entities (words of word classes). Since it is situational, topological, or episodic, it is "3D".[11]

Events and their frames are further, or previously, necessarily understood as meaningful on the background of general knowledge of the domains of experience to which they may belong.[12] We know from conceptual metaphor that semantic *domains* are underlying 'tectonic' regions of experiential meaning that cultures fill with items but which share constitutive boundaries: physical (D1), social (D2), mental (D3), and communicational (D4) experiences are cognized in different conceptual formats. Causality (D1), finality (D2), intentionality (D3), volition (D4), are all versions of *forces* but give rise to separate forms of experience, which then combine in intricate 'higher' order concepts in human cognition.[13] Knowledge is organized in our memory under distinct domain headings; terminologies, lexical root paradigms, differ from domain to domain, which is precisely what allows metaphorical transfers. Natural 'habits' (D1) are

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[10] Croft (2007) and Chafe (2005) refer to semantics, or meaning, as a whole of experience that grammar partializes, and interpretation retotalizes. I consider this view as cognitively insufficient; utterance meaning rather represents situational meaning, which further represents knowledge-based epistemic meaning, which represents the embodied process of thinking itself. Meaning is a stack of representations, inside and outside of language.

[11] Root words that label processual categories are of course linked to level III structure, since they are constant components under variation of possible grammatical constructions, and they are core components of frames.

[12] Meaning through language is thus both 'shallow level' (flat) and still 'deep' and encyclopedic, that is, rooted in long-term memorized knowledge. Hagoort and van Berkum (2007) show that in fact, world knowledge is immediately activated in sentence decoding.

[13] A theory of such semantic or experiential domains, also called ontological domains, is given in Brandt 2004. As mentioned there, *time schemas* (sequential, aspectual, epistemic, and deictic) are different in the basic domains D1–D4, and object categories are essentially different. *Others* are characteristically distinct: everybody (D1), we/they (D2), I myself (D3), you whom I am addressing (D4).

not social deontic 'rules' (D2), and mental items like 'beliefs' (D3) are not assertions or postulations (D4). We will call this basic domain-based level phenomenological:

IV. *Phenomenology*: experiential domains of concepts memorized by speaker or hearer, ideally shared by speakers; offering an *encyclopedic* referential background of semantic frames and articulated into regions of possible or actual, remembered knowledge (physical, social, mental, communicational, and of higher orders).

Finally, we have to acknowledge the relevance of a level of meaning constituted by the thinking itself. The human subject incorporating the agent of thinking is a *person* and is typically having a so-called *problem*, practical or theoretical, to think *about*. In a given context, a part of the mental 'landscape' of the subject is unclear and triggers a quest for clarity. Negations in language refer fundamentally to this phenomenon: a *local lack of clarity* within a larger context of better conceptualized or identified states of affairs and known circumstances. The unclear sub-region can of course be of any domain, or of several connected domains, or still undetermined as to its domain (is the unknown cause of an undesired situation physical, social, mental, communicational, or other?). The thinker or addressee of thinking is typically situated in a real context that allows the fixation and circumscription of the unclear sub-region to take on a special relevance; the subject — first or second person — is, in some sense, 'in trouble'. We think when we are in trouble. Human minds in fact seem to prefer to stay in some forms of 'trouble', to 'worry' about things, in order to stay in the mode of thinking. This mode possesses modal characteristics, for example: what the subject wants or has to do, the subject cannot do; or what the subject wants to do, the subject can but must not do; or what the subject must do, it can but wants not to do. The unrealistic, 'happy' subject, by contrast, would be in the following situation: all it must do it also wants to do, and all it wants to do it also can do; but still it may do things it should not, and thus be 'in trouble'. Modalities and subsequent feelings, including stress, moods, and emotions, are essential aspects of thinking. These aspects of thinking will influence the over-layering structure and eventually turn up as distinguishable properties of phonetic prosody. We know from narratives and human history in general that 'being in trouble' is a core condition of intellectual and epistemic activity. We will call the corresponding, last level epistemic:

V. *Epistemic* structure: the speaker's and/or hearer's actual topic for thinking, related to a narrative that circumscribes the situation of thinking and speaking.

All levels are connected, both serially (I<->II<->III<->IV<->V) and transversally, e.g. II<->V for enunciational modes: volitive, interrogative, assertive, exclamative.

It is difficult to decide where linguistics ends and cognition begins, in this architecture of structures that communicate in complex ways. I<->II<->III form a 'dimensional funnel' 1D through 3D. Processes at III<->IV<-> V anchor mental representations in referential meanings, and the relevance of the latter in thinking as a search for 'clarity' in the sense of substituting conceptual contents for circumscribed voids. To summarize:

I   **Phonetics** (temporal or otherwise linear manifestations of expressions)

II   **Grammar** (networks of functional constituents linked by semantic nodes)

III   **Semantics** (in terms of frames of groups of worded natural propositions)

IV   **Phenomenology** (experience and knowledge organized in domains)

V   **Epistemic** activity (thinking proper, based on problems or 'concerns')

4. Language and culture.

We 'think' when our mind mobilizes internal or external resources to make sense of, or develop, or find ways around, or solve, a present 'problem'. The outcome of thinking is some sort of solution or conclusion or understanding that leads us to either modify our behavior, initiate some action, or just pass on to another, possibly related 'problem'. Again, a 'problem' is, I suggest, a practical or theoretical situation that *inhibits the flow* of our doings or day-dreaming and calls for attention and particular treatment in order to reopen the flow of our doings or dreamings.

Through the levels of language, we communicate and either share or reject each other's thinking (in the broad sense indicated). In the perspective of our cultural evolution, the differentiation of languages might suggest that rejection is the more common outcome; the multitude and diversity of mutually opaque languages in cultures that occupied fertile territories on all continents, before modern civilizations imposed their semiotic regimes, allow us to think that *non*-communication can be a peace condition, whereas communication within a shared language can lead to social fractures, conflicts, and violence — which may be why religion seems to become important for social coherence within a local language community, namely as a local peacemaker. The

paleolithic spreading of our species might be due to the same factors that motivate contemporary migrations, tragical outcomes of mainly intralingual conflicts. We think, and therefore we speak, and therefore we fight; speech acts (such as declarative provocations) are core factors in the eruption of human violence.[14] Religion locally damps down the effects of thinking and speaking; but in large populations sharing language, it invariably again breaks into conflicting sects and beliefs.

We think, therefore we gesture and exchange signs of all kinds; those are, as mentioned initially, more immediate and direct but more laconic expressions of thinking. Symbols in social life are predominantly deontic signals, instructions, that regulate conventional behaviors; they are semantically stabilized (coded) through language. Rituals are frozen behaviors that in turn regulate the use of language, mostly by ruling out unwanted discourse. In religious behavior, minimizing local conflicts, symbols and rituals must therefore be harmonized, and language must therefore be strictly controlled. In secular behavior, symbols and rituals often compete and creatively contradict each other — as in political life, and in the judicial domain. The most intriguing signs are the icons: their relation to affect and memory is so direct that intuitive and still highly abstract communication through images is an everyday phenomenon.[15] Art may be the iconic practice that challenges human semio-linguistics more than any other practice; 'good' art seems invariably characterized by the fact of defying semantic stabilization by language. We find a work of art masterful if it makes us feel that is means more than any commentary can grasp; it then beats language, so to speak, and still it relates directly to the mind's more intimate endeavors. It makes thinking feel personal and yet unending. Unending personal, intimate thinking, or maybe ruminating, in turn leads to our 'infinite' issues, where thinking and feeling become indistinguishable.

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[14] Neigboring tribal cultures that share language fight far more violently than neighboring tribes that speak different languages. In relatively densely populated areas in Africa, the linguistic diversity is considerable. Here is an example: "Cameroon is home to 230 languages. These include 55 Afro-Asiatic languages, two Nilo-Saharan languages, and 173 Niger-Congo languages. This latter group is divided into one West Atlantic language (Fulfulde), 32 Adamawa-Ubangui languages, and 142 Benue-Congo languages (130 of which are Bantu languages)". From a Wikipedia article.

[15] The Danish cartoon crisis (triggered by the drawing of a Muslim with turban-bomb) is a striking example; though it remains unclear what precisely a cartoon is 'saying', its provocative force is empirically proven.

Paradoxically, literature can do what art does against language, but through language. Poetry, fiction, theater, all literary art forms, are in fact iconic uses of language. In literature, language induces thinking as *icons of* thinking, and the latter still feels unending. It may be reasonable to say that language could have 'killed' thinking, by locking it into its idiomatic, formulaic constructions and their semantic frames and domains; but that literature, developed out of art, then saved it from such a sad ideological ending, and handed it over to science and life in general.

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