

# Semiotic Complexities

## Theory & Analysis



# BOOK OF ABSTRACTS

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# IACS4 2022 Aachen

## SEMIOTIC COMPLEXITIES: THEORY & ANALYSIS

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IACS4 2022, which is the 4th conference of the International Association for Cognitive Semiotics (IACS) continues to advance cognitive semiotics as a growing transdisciplinary field of innovative theoretical and empirical research into meaning-making processes across sign systems. IACS was founded in 2013 in Århus (Denmark, see also <http://iacs.dk/>). The biannual IACS conference series brings together senior and junior scholars from semiotics, linguistics, philosophy, art theory, media and literary studies, as well as the cognitive sciences more broadly. Previous conferences took place in 2014 in Lund (Sweden), 2016 in Lublin (Poland), and 2018 in Toronto (Canada).

**Cognitive semiotics** is a growing field of scholarly inquiry which, over the past fifteen years, has developed at various intersections of semiotics and the cognitive sciences. Its primary concern is the study of meaning-making in language and other sign systems by investigating, for instance, how humans perceive, experience, interpret, and intersubjectively exchange signs in diverse socio-cultural environments. Signs and sign use are placed into larger contexts of cognitive, embodied, social, cultural, as well as neurobiological processes. Given that cognitive semiotics is a rather young academic field that has been shaped by various disciplines, it is not surprising that more theoretical and empirical work is needed to sharpen its profile and to consolidate its diverse research foci, concepts, methods, and objectives.

The Aachen **conference theme**, SEMIOTIC COMPLEXITIES: THEORY & ANALYSIS, puts into focus the dynamic complexity of semiosis and the importance of anchoring semiotic analyses in sound theory-building. Core questions include: How do certain theories and methods account for both material aspects and cognitive operations that are typically involved in any given (monomodal or multimodal) sign process? How do such COMPLEXITIES get reduced for scientific inquiry in the different disciplines while factoring in holistic and contextual dimensions? The call for papers encouraged contributions evidencing how theoretical frameworks, semiotic materials, and empirical tools may mutually illuminate each other and thus provide new insights of transdisciplinary significance.

THEORY refers to influential semiotic frameworks as proposed by Eco, Greimas, Jakobson, Lotman, Peirce, and Saussure, but also to concepts from more recent approaches which have proven to be essential to human experience, expression, and understanding (e.g., iconicity, indexicality, viewpoint, embodiment). ANALYSIS encompasses qualitative, quantitative and experimental methods, as well as mixed-methods approaches that are able to account for individual instances of meaning-making, as well as for emerging regularities and patterns in both static and dynamic modalities. (Multi-) modalities of interest include spoken, written, and signed discourses, images and diagrams, but also gesture, dance, film, and video games. A guiding objective is to create a vivid scientific forum and various formats for participants to discuss synergies and new directions for cutting-edge research.

The present abstract booklet contains the abstracts of the plenary talks, the thematic sessions as well as all the papers of the general sessions.

# ABSTRACTS

## Plenary Lectures

## On noticing and articulating traces of Firstness in everyday practice. How would you do it?

**Morana Alač**

UC San Diego

To grasp his phenomenological categories, C.S. Peirce (1894) suggests that we shall discover them by experiencing their instances, as “[t]here is nothing quite so directly open to observation as phanerons” (§1.286). In this talk, I experiment with Peirce’s invitation by turning to everyday practices in a laboratory of neural genetics that studies olfaction by employing the fruit fly as its model organism. As neural genetics participates in the environmental turn that post-genomic science exhibits, it indicates some parallels with not only Peirce’s semiotics but also distributed cognition and cognate contemporary approaches. To get at how practitioners of neural genetics accomplish such a turn, I pay attention to an occasion of designing experimental chambers for an optogenetics study. I follow how practitioners, in response to demands of the sense of smell and going beyond the precision of genetic tools, engage the body’s relationship to space. This brings forth traces of Firstness and suggests a multispecies sensing. I conclude the talk by inquiring how such phenomena – not ordinarily engaged by distributed cognition and related approaches – may be articulated beyond the laboratory.

Headphones are recommended for this presentation.

## Interactive linguistic alignment in perspective: how do we re-use each other’s language to understand each other, solve problem together and learn language

**Riccardo Fusaroli**

Aarhus University

In this talk I will present an overview on a specific form of interindividual semiotic phenomenon: interactive linguistic alignment, i.e. the tendency to re-use one’s interlocutor’s linguistic forms. From an early enthusiastic foray (Fusaroli et al 2012, Coming to terms), I’ll move onto the challenges of building standardized tools to analyze alignment (Duran et al 2019, ALIGN) and the overview that is emerging when applying these tools to a variety of domains: diverse conversational tasks, diverse languages, diverse language acquisition stages and clinical populations.

## Multimodality and its implications

**Pamela Perniss**

University of Cologne

From a cognitive semiotics perspective, meaning making has always been seen as a varied and intricate process involving a multitude of modes and resources, each with its own affordances and based on different ways – symbolic, indexical, iconic – of construing the relationship between form and meaning. In linguistics and the language sciences, language has been traditionally studied as a semiotically more narrowly-defined system, with meaning making residing primarily in the use of linguistic symbols that denote arbitrarily, by convention alone. This contrasts with more broadly defined contexts of “using language” (Clark 1996), where a fuller complement of modes of communication – describing, demonstrating (or depicting), showing – have been taken as fundamental. Recently, an increase of interest in the role of iconicity in language has helped open the doors to a conception of language as a multimodal phenomenon. In this talk, I take stock of the ways different modes of meaning making in language are accounted for. I offer examples of how and why meaning making in language is fundamentally multimodal and argue for a more unified conception of language and communication.

## Gesture meaning and its basis in the meaning of bodily space

**Eve Sweetser**

University of California, Berkeley, Department of Linguistics

In the study of co-speech gesture, the primary elements being transcribed are usually the shape, motion and location of the hands (first of all), followed by changes in gaze, head direction, facial expression, and bodily posture. This situation generally persists in both gesture and signed language studies, despite broader approaches such as that laid out in Bressem (2014). However, it has long been noted that the same hand and handshape may carry different meaning depending on the location relative to the body, perhaps the most-studied contrast being that of the dominant-hand vs. non-dominant-hand sides of the body (Casasanto 2009, Casasanto and Jasmin 2010). A layer of locational and orientational meaning is thus added to the patterns of shape, motion path, etc.

My suggestion is that to a significant extent, we should reverse the ontology. The meaningfulness of gesture starts with the naturally meaningful spatial existence of the body – gestural meaning emerges relative to that. The bodily deictic space – including peripersonal space, attention-direction, front-back differential accessibility, and up-down dimension – is inherently meaningful in (inter)action in space. (And this layer of bodily meaning is at least partly shared with other species.) But human gestural meaning adds to this layers of referential, iconic, metonymic and metaphoric structure, which are also deeply rooted in the meaning of the deictic interactive space. Similar gestures can have quite different meaning depending on their relation both to the (inter)personal deictic space and to the developed meaningful layers of discourse meaning on that deictic space. The semeiosis of gesture is first of all based on the body's meaning in space, without which the gestural motions themselves would not have meaning.

## Can pantomime narrate? A cognitive-semiotic perspective

**Jordan Zlatev**

Lund University

Most would agree that language is particularly well suited for “telling stories” (e.g. Ryan 2012). But what is it that makes it so? And what about other semiotic systems like pictures (single and in sequences, as in picture and comic books), music and pantomime: bodily expressions organized as sequences of whole-body gestures? Which of these can be used for “storytelling without telling” (Sibierska, 2017), in order to communicate “mute narratives” (Sonesson, 1997)? And in which ways do their abilities differ from the narrative potentials of language? I will address these questions with the help of the conceptual-empirical loop of cognitive semiotics (Zlatev, 2015), in part by reviewing and elaborating on a recent experimental study on the capacity of pantomime to narrate (Sibierska et al. submitted). But as one may guess, to answer such questions we must delve into conceptual matters as well, and explicate notions like semiotic systems, pantomime, and perhaps the most controversial of them all: narrative.

## Perception as Controlled Hallucination: Imagination and Narratives

**Claudio Paolucci**

Bologna University

In this talk, I will deal with the relationship between imagination and diagrams in perception. I claim that perception is a form of controlled hallucination, where “hallucination” is the product of imagination controlled by the world. The way in which we match the hallucination of imagination with the control of the world is through diagrams and narratives. The main idea is that hallucination is the model of perception and not a deviant form of it. With “Hallucination”, I mean the morphological activity of production of forms of imagination, which remains crucial both when it is not controlled by the world – as in the case of hallucination, imagination, or dream – and when the world controls it, as in the case of online perception.

## Beuys – Dogwhistling the Wolves?

**Cheryce von Xylander**

Leuphana University of Lüneburg

The documenta fifteen opens in Kassel on the day of this keynote talk. Since its founding in 1955, this global art happening has developed into a semiotic superspreader of extraordinary proportions. Originally, clocked on a 4-year plan – with the distinct culture jamming intent of subverting economic socialism – it now takes place every 5 years. Controversy over the meanings and uses of artworks in relation to the world political order is par for the course. But, as you may have noted, this year’s buildup has proven especially contentious. Accusations of curated antisemitism joust with counteraccusations of targeted racism against an artist collective from the Global South. The average tax payer is left bamboozled. To understand what is at stake in these conflicts, this paper revisits the seminal role of dissent around Joseph Beuys, one of the documenta’s enduring achievements.

# Thematic Panels

## Panel: Complexity in Peirce

**Chairs:** Alin Olteanu, Sebastian Feil

This session addresses the relation between meaning and cognition in Charles Sanders Peirce's semiotics as a source of complexity of human modeling. Recent scholarship suggests that, according to Peirce, cognition and meaning do not simply mirror or map onto each other linearly, but the translation of semiosis into cognitive processes constitutes the complex modelling apparatus of biological organisms equipped with a central nervous system. As such embodied animals, humans can only experience semiosis as cognition, but we can nevertheless infer that semiosis does not necessarily require cognition. The conception of semiosis, in this view, is dedicated to tracing significant relations in the order of ascending complexity, quite literally, through the basic idea that more elaborate signs are vitally related to their precursor signs, the latter giving substance to the former and the former giving purpose to the latter.

This session is, therefore, in part dedicated to those types of Peircean models and doctrines that coordinate the organization of complexity (e.g. symbol, habit, metaphor, rhetoric) as well as the types of signs that are contained in and play a pivotal mediating role in the various forms of the organization of complexity (e.g. diagram, dicisign).

Each individual paper presents one or several Peircean ideas either on their own or in relation to a theoretically, methodologically, or practically relevant concept from an area of study and explicates it in terms of its import to the discipline in question. One central aim is to explore in how far Peirce's ideas pertaining to the organization of complexity are relevant to semiotics in general and how they can contribute to other areas of inquiry.

# The Semeiosis of Problem Solving. A Logico-Relational Account in Light of the Maxim of Pragmatism of Charles S. Peirce

**Tiago Da Costa E Silva**

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**Keywords:** problem solving, pragmatism, semiotics, logic of relatives, logic of abduction

The present paper intends to contribute to the field of theories of problem solving by articulating the maxim of pragmatism of Charles S. Peirce. In architecture, in design, in the various fields of engineering, as well as in many other areas, including the arts and the humanities, problem-solving is used as a heuristic tool-like method for searching for variations and for combinations as to propose a solution to a given problem. The field of problem solving is, however, a very heterogeneous field, with a myriad of theories, methods, and applications.

The maxim of pragmatism is, according to Peirce's definition, a general method underlying all manners of scientific inquiries. As such, it functions as a maxim searching for solutions for pending problems within any given context under scrutiny. The advantage of the maxim of pragmatism is that it is guided by the logic of abduction, that is, by the reasoning that proposes a new hypothesis and introduces new elements into the cognitive process. Moreover, the logic of abduction guiding pragmatism requires that the new formulated hypothesis must be experientially tested.

To propose a contribution to the studies in the field of problem solving, we articulate, in the present paper, the maxim of pragmatism through the scope of the mathematical concept of category-theory applied to the maxim. This furnishes pragmatism with two general and necessary conceptions – that of differentiation and of integration. These two concepts are able to operate once the differentiation of newly perceived semiotic relations, analyzing these through different logical modes, and reframing these newly discovered and analyzed relations into global contexts, thus integrating these elements in different more general contexts. With this approach, we believe, it is possible to put forth a useful concept of problem solving with the necessary category-theoretical, thus contributing to the studies in the field of problem solving and the methodological search for variations, combinations, and discoveries.

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# The complexity of Peirce's reply to the question: what is an idea? From thought-sign to habit-sign.

**Rossella Fabbrichesi**

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**Keywords:** Peirce, Idea, Habit, Sign, Interpretant

In this presentation I argue that Peirce's notion of what an idea is (and how to make it clear) is particularly original and outstanding in the Western philosophical tradition. His notion of idea develops along with his thought in general, always maintaining a distinctively 'non-atomistic' character.

I will begin by

- i) analysing Peirce's 1868 writings on the thought-sign (Peirce EP:11-27): a thought can never be fixed and determined. It is only a reference to another thought, i.e., it is a sign, in an endless chain in which a single idea is a multifarious complex of different ideas, connected together by inference. That is, the meaning of a thought is not in that very thought itself, but it is constantly addressed to a further thought, elsewhere. Every concept is in fact a never-ending process, a semiosis, not at all a strict designation with rigid qualifications.
- ii) In the most important pragmatist essay, How to make our ideas clear (Peirce EP:124-141, 1878), the complexity of Peirce's discourse intensifies and the reply to the question 'What is an idea?' reaches its acme. An idea is a belief that leads to a rule of action, that is to a habit. Any thought can be a clear idea if it produces a habit of action and a relation with other thoughts. The pragmatic maxim says: Our idea of anything is our idea of its sensible and conceivable effects, of the differences in practice it can imply. These minute and unforeseeable consequences are the totality of our conception, a totality that can only be conditionally posed – something never perfectly exhaustible. Concepts are then made clear in light of their results: they expand their effects like a wave, without any clear border or limit.
- iii) Another important locus where Peirce analyses the status of the idea is The law of mind (EP1:312-333, 1892). Here it is reaffirmed that any idea is a complex process of infinitesimal transits, not to be intended as a "substantial thing", absolutely present here and now. An idea is a vague and fallible reference ever-passing, that "swims in a continuum of uncertainty and indeterminacy" (CP 1.171). Continuity and generality – vs individuality – are the laws of both cognition and reality.
- iv) In the end (Pragmatism, EP:398-433, 1907), Peirce definitely deepened the thought-habit identity. In the broad horizon of semiotics, logical concepts are signs with a logical Interpretant. But no logical Interpretant can be Final or Ultimate, except as a habit. Habit is not purely intellectual: it is a way of responding, a readiness to act. Thought is an action (EP1:131), and the concept is always in actu, translated in concrete practices. An idea is not an intellectual content but a (complex) plan for action.

To conclude, Peirce overcomes the representationalist and dictionary view of knowledge and concepts. An idea is 1) a complex relation of inferences; 2) a network of implied consequences, 3) an ever-growing and continuous diversification, 4) a habit of response to a living problem.

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# Information Visualizations as epistemic Tools – Peirce’s concept of diagrammatic reasoning in digital environments

Linda Freyberg

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**Keywords:** Visualization, Iconicity, Diagrammatic reasoning, Epistemology, digital

Visualizations illustrate, substitute, facilitate or even enable the process of reasoning. The focus of this talk lays on the thesis that visualizations create new knowledge on account of their topological depiction of objects and their relations.

The investigation follows the definition of Card, S. K., Mackinlay, J. D. & Shneiderman, B. (1999) of **Information Visualization** as computer-supported, interactive and visual representations of abstract data to amplify cognition in order to analyze the role of visualizations to cope with complexity in digital environments.

In the current age of an information overload, which is reflected for instance by the phenomena of **Big Data** that refers to a state of a huge amount of data, which is too complex or too unstructured and therefore is beyond the ability of commonly used software tools and hardware capabilities to capture, curate, manage and process within a tolerable time (see Snijders C., Matzat, U. & Reips, U-D., 2017) visualizations can act as epistemic tools.

Peirce’s elaborated sign theory in particular the specific role of dicisigns and icons and his concept of **diagrammatic reasoning** (see Hoffmann 2003) serves as a theoretical framework to demonstrate the epistemic potential of visualizations.

The icon is a crucial concept as a gateway to understand thinking in diagrams, which was analyzed in depth by Stjernfelt (2007). Stjernfelt focuses in this context on the aspect of similarity, which constitutes “some sort of iconic relation”, as a source of new ideas (Stjernfelt, 2007, p. 77). According to Peirce “[a]ll necessary reasoning without exception is diagrammatic” (CP 5.162). In light of this notion of reasoning as fundamentally diagrammatic, the relation between meaning and cognition, in particular the externalization of thoughts through iconic and symbolic representation will be further explored in this talk.

The reading of diagrams contains the unfolding of ‘collateral knowledge’ as a disentanglement of complexity. By visualizing a multitude of objects and their diverse relations, complexity is reduced, for instance by compression, clustering or abstraction. ‘Unfolding’ information requires certain cognitive competences. Hence, depending on the design process as well as on the interpretant’s ability of reading visual expressions, more or less collateral knowledge evolves.

Diagrams as hybrid forms are not only iconic impressions, because they include indexical aspects in terms of causal relations to the illustrated objects and could also serve as symbols in terms of generating and applying conventions.

This very broad understanding of visualization and diagrammatic reasoning is applied to different information visualizations. By focusing on some features of their object they reduce complexity, but ideally are still able to represent complex issues in an understandable manner.

In conclusion this contribution aims to demonstrate the epistemic function of visualizations embedded in Peirce’s sign theory and his concept of diagrammatic reasoning by analyzing specific examples from the realm of cultural heritage data.

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# Peirce's triadic diagram as analytical framework for cognition and research in education: thinking with "inquiry graphics"

**Natasa Lackovic**  
Lancaster University

**Keywords:** Inquiry graphics, Peirce's tripartite diagram, method, analysis, education

In this paper, I introduce inquiry graphics, a method for critical visual analysis rooted in Peirce's semiotics. Inquiry graphics was coined to promote a distinct approach to visual and multimodal information in education that aims to inquire represented pictorial messages (rather than only aiming for impactful data visualisation such as the case of infographics), leading to new insights, cognitive effort, and therefore learning. The term graphics represents a range of external representations that leave a trace on a surface or screen. These could be, for example, graffiti, murals, illustrations, words, comics or digital media images. Inquiry graphics are compound signs consisting of external images and abstract disciplinary concepts/research themes/topics, used for inquiry purposes in interdisciplinary and educational pedagogy and research, following Peirce's diagrammatic triad of the sign. The triad builds on Peirce's (1897) definition and one of his 1908 letters to Lady Welby, aligned with contemporary interpretations, including an adapted denotation-connotation aspect from Barthes' (1977;1973) analysis. I provide my triad interpretation with three nodes acting as the anchor for analysis, each having an interpretative value with different analytical roles, mindful of the original interpretation.

This method comes in response to teaching and research across disciplines abounding with abstract concepts that have been traditionally viewed as "higher" level knowledge, namely in the form of abstract and symbolical texts. This approach has constantly privileged logocentric and glottocentric approaches to knowledge development and creation, seeing the image as disconnected from higher-level cognition. Inquiry graphics were developed to challenge such views and persistent dichotomies of mind-body-nature, material-social, concrete-abstract, or individual-collective. Within an inquiry graphics, the image acts as the material/concrete/bodily link to abstractions. It particularly challenges the notion of practice and understanding of cognition as an iconless concept. Inquiry graphics signs bring together concreteness (of representational images) with abstraction (of concepts) to explore existing and open up new pathways of creative insights. They support cognition via learners' or research participants' creative exploration, provision of images and reflection on inquiry graphics as unique interdisciplinary image-concept entities. Examples focusing on photographs within inquiry graphics signs will illustrate my argument.

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# Sheets in the Wild

**Frederik Stjernfelt**

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**Keywords:** Sheet of Assertion, Existential Graphs, proposition, perception

This paper investigates how Peirce's formal idea of a "Sheet of Assertion" from his Existential Graphs may be generalized to cover signs in the wild.

In the EGs a graph is asserted if scribed on a "Sheet of Asssertion". In the wild, we find a lot of different cases where "Sheets", that is, delimited areas within the field of perception, have the same function: signs placed on such a Sheet are cognized as fused together in a proposition, a simple example being the book cover, where the two signs "Homer" and "Iliad" suffice to express the proposition "This book is titled the Iliad, authored by Homer". My claim is that this is an overlooked function with a central role in the cognitive processing of signs able to express propositions.

## Panel: Contemporary Semiotic Fitting

**Chairs: Kalevi Kull, Stéphanie Walsh Matthews**

What makes it possible for an agent to live and behave in a particular taskscape, is not its capacity to reproduce but its semiotic fittedness and a capacity for semiotic fitting. Recently, semioticians and anthropologists have investigated the meaning and possible repercussions of mediated technologies on species-specific abilities. It has been argued, within a biosemiotic and cognitive semiotic frame (Kull, 2019; Walsh Matthews, 2016; Walsh Matthews, 2019; Donald, 2012, etc. ) that the species' ability for adequate interpretation within a specific sphere of reference can be well described by the concept of semiotic fitting. They have also recognised that this is what gave rise to evolutionary traits responsible for species-specific performances. Ironically, what cognitive traits made possible the creation of mediated technologies, may now be put at risk by the very technologies it created.

The session on “Contemporary Semiotic Fitting” seeks to explore observable and measurable claims to the erosion or risk of various human semiotic abilities due to the rise and use of mediated technologies. We also expect to discuss the aspects of semiotic fitting of other species in the contemporary world. The topic of the session includes the problems of evolutionary changes of semiotic fitting, and its possible erosion and ways of exaptation in light of new mediated norms of representation and expression.

# Semiotic Fitting and Ecological Fitting: The open umwelt

**Kalevi Kull**

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**Keywords:** affordances, primary cognition, semiosis, semiotic fitting, umwelt

This paper will discuss the tension between Jakob von Uexküll's concept of umwelt (as interpreted in Kull 2019) and James Gibson's concept of affordance, in particular on the basis of Tim Ingold's description and interpretation of their relationships (according to his recent description in Ingold 2019), attempting to demonstrate that instead of choosing between these we can formulate the concept of semiotic fitting that includes the necessary features of both. The core aspect is the openness of umwelt, which is related to the generalised feature described by Umberto Eco in Open work, to the 'loose ends' described by Tim Ingold, and to the biosemiotic model of semiosis. Our analysis uses a biosemiotic model of cognition, which enables to approach the mediatedness problem of primary cognition.

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# Semiotic brains and the disembodiment of the mind

**Lorenzo Magnani**

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**Keywords:** semiotic brains, disembodiment of the mind, evolution of the mind, model-based abduction, manipulative abduction

Semiotic brains are brains that make up a series of signs and that are engaged in making or manifesting or reacting to a series of signs: through this semiotic activity they are at the same time engaged in “being minds” and so in thinking intelligently. I will illustrate the process of “disembodiment of mind” as an important aspect of this semiotic activity of brains.

The birth of what Mithen calls technical intelligence of early human mind is related to the construction of handaxes and their new semiotic value. Indeed, a big cortex can provide an evolutionary advantage only in presence of a massive storage of meaningful information and knowledge on external supports that only an already developed small community of human beings can possess. Evidence from paleoanthropology seems to support this perspective. Some research in cognitive paleoanthropology teaches us that high level and reflective consciousness in terms of thoughts about our own thoughts and about our feelings (that is consciousness not merely considered as raw sensation), as intertwined with the development of modern language (speech), constitutes an important condition of possibility of the birth of the so-called material culture. The role of material culture is crucial. By making artefacts our ancestor created material artefacts that were able to semiotically anchor various “novel” cognitive representations (for example of supernatural beings). In this perspective we see material culture first of all in its capability to disembodiment thoughts, that otherwise will soon disappear, without being transmitted to other human beings. Secondly, material culture realizes a systematic semiotic delegation to the external environment, also permitting the creation of meanings exactly thanks to the interplay between internal representation and external representations: a kind of primordial “thinking through doing”. Just to make an example, the early human mind possessed two separated intelligences for thinking about animals and people: through the mediation of the material culture the modern human mind can arrive to internally think about the new concept of animal and people at the same time. But the new meaning occurred over there, in the external material world where the mind picked up it. Hence, artifacts as external semiotic objects allowed humans to loosen and cut those chains on our unorganized brains imposed by our evolutionary past. Chains that always limited the brains of other early human beings, such as the Neanderthals. Hence, loosening chains and securing ideas to external objects, thanks to a primitive dense semiotic activity, was also a way to creatively re-organize brains as universal machines for thinking, to adopt Turing’s expression. From this perspective the semiotic expansion of the minds is in the meantime a continuous process of disembodiment of the minds themselves into the material world around them. In this regard the evolution of the mind is inextricably linked with the evolution of large, integrated, material cognitive semiotic systems, from the first handaxes to the recent computational domestication of physical ignorant entities (digital machines), that also originate new unconventional cognitive embodiments (computation on non-digital substrates).

Thanks to the framework I have illustrated above I plan to provide a general description of the centrality to semiotic cognitive information processes of the disembodiment of mind from the point of view of the interplay between internal and external representations. I will stress the role of this interplay as critical in analyzing the relation between meaningful semiotic internal resources and devices and their dynamical interactions with the externalized semiotic materiality already stocked in the environment. Hence, we will conclude that minds are “extended” and artificial in themselves. With the aim of explaining these higher-level mechanisms I will introduce a cognitive/semiotic framework in which model-based and manipulative abduction, together with external representations and epistemic mediators play a central role.

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# Markedness on Trial: The Semiotic Fitness of an Embodied Concept

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**Keywords:** semiotic theory, opposition, embodiment, phenomenology, cognitive linguistics

Is markedness finished? Haspelmath (2006) has rung a death knell for the concept in a masterful critical review that should not go unchallenged. This paper revisits the conditions under which the concept of markedness can or should be dispensed with. Notably absent from Haspelmath's review are treatments of the concept from a semiotic perspective, including, but not limited to, semiotic explorations of language. I offer a re-assessment of markedness relying on polysemiotic data, a blend of Greimassian, Jakobsonian and Peircean semiotics, embodied cognition theory, and Hoffmeyer's concept of "semiotic fitness" as an "optimized organism-environment relationship" (2008: 345; also Walsh Matthews, 2016). In an environment that values digitized, binary relations (primarily based in operations of idealized reflection, grounded in sagittal, left-right phenomenology), markedness becomes unfit – or rather we become unfit for theorizing markedness. In an environment that values complex, blended relations (primarily based in process-oriented operations of transverse, part-whole integration), markedness finds fit – or rather, we find ourselves fit for theorizing markedness. As such, the paper concludes that the fate of markedness, and the meaning-oriented theory building it enables, are tied to the fate of our own embodied awareness.

To justify his dismissal of the concept, Haspelmath cites the term's polysemy, noting that the phenomena it describes can be accounted for in other ways, like "frequency of use, phonetic difficulty, and generalized conversational implicatures", and by using replacement terms such as "abnormality" or "uncommonness". After further review of Haspelmath's critical argument, the paper shifts to a background discussion of domain-general relationships that markedness theory should share with opposition theory, diagrammatization theory, and theories of embodied cognition (following e.g., Heine, 1997; Pelkey, 2018). This involves discussion of the role and nature of markedness in Greimassean, Jakobsonian and Peircean semiotics, with focal attention given to the role of the Peircean "Interpretant" (i.e., functional / intentional habit) in identifying and interpreting marked vs. unmarked relations. After all, perceived relative frequency of occurrence and that which relative frequency prepares one to interpret are necessarily entangled.

As a more general cognitive phenomenon, markedness is irreducible to related dynamics, such as (in)frequency and (ab)normality; and markedness relations are identified as necessarily integrated or "diagrammatic". These insights open new pathways for theory building, addressing the polysemy of the term with plausible grounding in functional structures of embodied phenomenology that inform our most foundational modeling activities, relative to the anatomical planes. Structural marking can be distinguished from (and integrated with) functional marking on this basis. The former can be grounded in sagittal markedness, relying on lateralized opposition, with the right side typically dominant while left is subordinate. Transverse markedness, on the other hand is concerned with the functional marking of paradigmatic relations above or below the waist. The upper limbs are unmarked for manipulation, for example, while the lower limbs are unmarked for mobility. The fitness of the concept for contemporary theory building would then be tied to the semiotic fitness of theorists trained to either value or neglect such sources of evidence.

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# Fitting, Fitness, Firing, and Frailty: How various ecologies of semiotic practice are lost within a third-interpretant exploration of human relations

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**Keywords:** fitness, fittedness, adequation, evolutionary semiotics, third-interpretant

This paper provides an evolutionary overview of semiotic fitness and its sister-terms (fitting, fittedness, “adéquation sémiotique”) to provide a better understanding of the species-specific competencies vis-à-vis semiotic engagements with both the real and the virtual. Providing an overview of the Homo sapiens’ relationship with superstition, narrative, dreams, and the virtual lives lived, we hope to elucidate the role of contemporary mediated technologies and their exaptation on previously evolved traits of “lucidity” (Piette 2019).

We have considered the evolution of semiosis as a process not only ensuring the species ability to fit within its co-evolving environment, but also as providing an understanding about how various other scaffolding processes are responsible for the management and building of the environment. Notions of “fitting” and “fitness” aim to explain the exaptation and relation of species- to- environment on how semiosis co-evolves.

Recently, Albert Piette (Anthropologie et Sémiotique, Colloque à Zurich, 2019) described this particular trait of homo sapiens sapiens as “lucidité”- which he describes as the capacity to both believe and become. Lucidity is the result of the specie’s critical ability to 1) simulate another reality (by way of representation or interpretation); 2) believe that this representation may actually be truly accurate; and 3) accept that one may not actually have understood things properly or purposely suspend critical thinking in the absence of verifiable fact. To this, he adds, that the lucid semiotic animal also accepts the participation of other such lucid beings within their environment. Piette’s description of lucidity is in line with what has previously been ascribed as semiotic fitness, however, it provides new critical insights as it addresses what we describe as “firing” and “frailty” within this engagement with the environment.

Fitness also engages the notion of “fitting”. Whereas “fitness” is the semiotic evolutionary ability to adjust within semiotic environments, fitting refers to not only the specific ability to interpret and interact with and within the world, it specifically ensures that the world fits within its interpretative and interactive systems as well. As we move forward to include within our discussion of “welten” that of mediated landscapes, our conversation on fitting and fitness must now also address the evolutionary aspects of “firing” and “frailty”. It has been shown that semiotic fitness may be eroded by the overuse of third-interpretant within mediated interactions, we propose to continue this exploration to include concepts of fitting and firing, by which we can also address the various frailties our successful traits bring about.

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- Note: A. Piette (2019)’s reference is to a paper presented in Zurich this Fall.

## Panel: Music and Embodied Cognition

**Chairs: Kurt Feyaerts, Paul Sambre**

Apart from its genuine interest in different types of signs and relations as constitutive elements of the process of meaning making in music, recent work in musical semiotics has increasingly stressed the role of the human body, social interaction and the material affordances imposed by the musical event (see selection of references below). This theme session aims at a better understanding of embodied cognition as a central aspect of the semiotics of music. Embodied cognition analyzes musical concepts at the interface of human cognition and bodily practices in the material and social world. We focus on processes of meaning-making in which musical experiences, both in analysis and performance, are multimodally organized, involving different semiotic channels (speech, bodily layers of communication such as gesture, face and gaze, posture) and semiotic modes (iconic depiction, symbolic description and deictic identification), as well as material aspects of the musical setting (artefacts, spaces, props, etc.). Accordingly this session is open to descriptive analyses which may be inspired by theoretical models inhabiting or circling the project of cognitive semiotics. We invite contributions about different social settings, genres, media or types of interaction within the context of musical expression. Papers may focus on different participant roles in this process (performer, instructor, audience, analyst) as they engage with different aspects of musical experience. These aspects may concern traditional theoretical concepts in cognitive science (metaphor-metonymy, blending, stance-taking, etc.) as well as technical issues in musical performance (pitch, tone, dynamics, force, timbre, phrasing, etc.). Through this session we hope to integrate music as an object of multimodal analysis in the encompassing project of cognitive semiotics.

# Embodiment and Multi-level Grounding in Naive Participant Descriptions of Musical Excerpts

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**Keywords:** music, meaning, conceptual blending, grounding, embodiment

Multi-level grounded musical semantics (Antović, 2016, 2021, accepted) starts from the proposal that cross-space interactions motivating new meanings must be controlled by clear contextual constraints. To that end, the theory elaborates on Coulson and Oakley's (2005) "grounding box", the set of background assumptions that interlocutors implicitly share in a conversation. To interpret the counterfactual "If Bill Clinton had been French, there would have been no Monika Lewinsky affair", one cannot just blend the American Clinton with his imaginary French counterpart through the process of identity connection (Fauconnier, 1997). Rather, one must also call layers of context, e.g. marriage or morality-related expectations from politicians in the two countries. In music semiotics, too, blending is ubiquitous, e.g. in the interpretation of one of our participants that the Wagner sword motive is about "gods coming down from Olympus" (Antović, 2016). Here, the inherent structure of the musical stimulus and the cultural knowledge of Greek mythology conceptually integrate to produce new meaning. The process is not haphazard, though. First, not anything goes, so the Wagner can hardly be about "peaceful recollection" (Swain, 1996). Second, descriptions that one does get in the end never come out of thin air: rather, they too are grounded in layers of context, spanning factors from intra- to extramusical, from broad cultural to intimate personal associations.

Multi-level grounding proposes six consecutive grounding boxes hierarchically constraining meaning generation in music: perceptual, causing involuntary tensions and relaxations through the manipulation of musical expectancies; image-schematic, motivating cross-modal correspondences between the musical structure and the listener's physical experience (space, movement, force); connotational, relating the music to non-narrative dynamic sensations, as in emotional states; conceptual, fostering short extramusical narratives; culturally rich, resulting in descriptions based on the listener's cultural knowledge; and personal, providing individual associations. Some such responses by our participants related to Wagner include "tension", "clash of forces", "dramatic sentiments", and "armies struggling", all potentially motivating the highest-tier "gods of Olympus".

The present contribution uses our current database of 1,206 naive participants' descriptions of six musical excerpts to estimate the share of "embodied" concepts across the grounding levels. Out of the seven semantic categories inferred from the material, three encompass "embodied" descriptions: (1) direct mention of living agents or body parts (e.g. "soldiers moving", "the queen's lament"); (2) indirect description of actions performed by bodies, without overtly mentioning agents ("sneaking", "a courtly dance"); (3) description of affective states explicitly causing a bodily reaction ("causes shudders", "creates tension"). Even though these three categories treat embodiment rather conservatively (excluding e.g. descriptions of musical form rather than content, such as "the singer's voice", implicitly embodied affective states, such as "love", or actions that could not be unequivocally assessed as body-produced, such as "curtains moving"), the share of embodied descriptions remains huge: 25% more embodied than non-embodied descriptions overall, passing the statistical significance threshold in four musical pieces out of six, and remaining unchanged upon the provision of various prompts to prime the participants. Results of ongoing work with additional musical excerpts shall also be presented.

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# Emergent coordination of ancillary gestures motivates musical and interperformer engagement during group music-making

**Laura Bishop**

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**Keywords:** music ensemble performance, musical embodiment, interpersonal coordination, body movement, musical expression

Music instrumentalists draw on a repertoire of practiced movements to control different aspects of sound production (e.g., the timing and velocity of note onsets and offsets). Non-sound producing movements, also called ancillary gestures, are produced in parallel, and support performance in a number of ways; for instance, by helping musicians achieve certain acoustic goals (e.g., a change in posture can support more forceful playing), and by facilitating interperformer coordination (e.g., through visual signalling at critical moments). This paper focuses on the role of ancillary gestures in promoting musicians' real-time cognitive engagement with the music and their co-performers. Ancillary gestures are known to reflect some aspects of musical structure, and are often described as expressive of musicians' understanding or interpretation of the piece. However, it is important to recognize that gestures are also fundamental to the real-time construction of that understanding.

During group music-making, while the interpretations of individual group members may diverge, their contributions to the joint performance must be complimentary. Skilled musicians are able to coordinate coherent performances even with little or no prior rehearsal. In such cases, coordination – and musical meaning – emerges as the musicians respond incrementally to the gradually unfolding musical output. Of particular interest in the context of this paper is the tendency for coordination to emerge at the level of ancillary gestures (e.g., in head or upper body sway) as well as at the level of sound. My recent research with piano and clarinet duos has shown that gestural coordination is stronger after rehearsal of a new piece than before, and stronger during temporally irregular passages of music than during regularly-timed passages. It reduces when musicians are unable to see each other, but has little or no effect on the quality of coordination in note onsets. These findings raise the question: does gestural coordination benefit group music-making in some way, or is it simply a byproduct of musicians' visual exposure to each other's movements (i.e., visual entrainment)?

This paper argues that emergent coordination of ancillary gestures does indeed benefit group music-making. I posit that it motivates a) musical engagement, by engaging a sensorimotor feedback loop that brings shared attention to certain features of the musical structure, and b) social engagement with other group members, by providing continuous feedback about each other's attention, raising confidence in the likely success of the performance, and encouraging creative risk-taking. In support of this hypothesis, I present new results from a study with pianists, who perform duets under different visual contact and attention (self- vs. group-directed) conditions. A group-directed focus, paired with the ability to see their partner, is expected to strengthen motor coordination, improve pianists' self-rated experiences of "togetherness", and encourage more divergent musical interpretations across duos.

# Words, music, images, and tears: Cross-modal metaphor and iconicity in Justin Timberlake's song video "Cry me a river"

**Anna Bonifazi**

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**Keywords:** Music, Weeping, Multimodality, Iconicity, Simultaneous cueing

The paper presents results from an empirical analysis of the video of Cry me a river, a song by Justin Timberlake released in 2002. The context of the analysis is an ongoing larger project on multimodality in songs thematizing tears/weeping/crying. This larger study aims at pinning down the links between human cognition, the bodily nonverbal communication of weeping/crying, and musical meaning-making. The objective of the paper is to explore the cross-modal metaphorical, metonymic, and iconic mappings that enable us to make sense of the lyrics, the music, and the video simultaneously. The general framework adopted to inquire into multimodal communication in this video is Conceptual Metaphor Theory and Blending Theory, with the addition of Hiraga's cues on iconicity (Hiraga 2005). A specific idea explored in the analysis comes from Forceville, about simultaneous cueing: "If two things are signaled in different modes, metaphorical identification is achieved by saliently representing target and source at the same time. For instance, a kiss could be accompanied by the sound of a car crash, of a vacuum cleaner, or of the clunking of chains, to cue metaphorical mapping of, say, disaster, domestic routine, and imprisonment, respectively" (Forceville 2009:31-32).

The video in question narrates a story that actually matches the content of the lyrics only partially. Also, the crying of the 'you' heavily evoked in the lyrics (more as a wish than a real state of affairs) is completely absent in the video, at least the literal sense. However, a number of visual cues provide metaphorical correspondences that can be captured only as they simultaneously co-occur with words – such as tears are water, tears are rain. Furthermore, the hyperbolic element evoked by "a river", a metaphorical verbal component in the title, is projected onto equally hyperbolic images of abundant water. In addition, a closer inspection of the musical structure of the piece reveals a pattern of cyclicity suggesting iconic resemblance to the linguistic structure of the lyrics, once again only by virtue of simultaneous cueing. Parallels for the points being made come from the analysis of several further songs and arias showing similar cross-modal features. Analogies and contrasts are suggested also concerning the earlier (and much more popular) lyrics Cry me a river by A. Hamilton (1953). Ultimately, the analysis supports Antović's theoretical insights concerning a multi-level grounding of musical meaning (Antović 2016), and calls for future quantitative explorations of the multimodal patterns and recurrences being pointed out.

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# The complexity of musical dynamics in orchestra conducting

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KU Leuven

**Keywords:** multimodal interaction analysis, embodied cognition, orchestra rehearsals, musical instruction

Orchestra conductors transform musical notations and their own interpretation thereof into bodily movement and spoken instructions, which are then to be integrated into musical performance by the members of the orchestra. In this contribution, we scrutinize embodied multimodal meaning-making through the conductors' instructions during rehearsal. More specifically, we zoom in on the multimodal process of assessing and prescribing aspects of musical dynamics, focusing on (changes in) acoustic volume or intensity produced by the orchestra.

We aim to answer two research questions: (1) How do conductors exploit the gesture space in communicating aspects of musical dynamics? (2) Which semiotic resources, both auditory (speech, non-lexical vocalizations) and visual, (hand and arm gestures, body posture, tension, and movement, or facial expressions) do they tap into?

To investigate this, we selected approximately 10 hours of video material from a corpus of video recordings of 5 conductors instructing their respective wind and brass orchestras in Dutch ([Author], 2020). This selection amounts to one rehearsal per conductor and is annotated using ELAN. For the analysis, we adopt a corpus-based approach, situated at the crossroads of multimodal interaction analysis in musical settings (e.g. Veronesi & Pasquandrea, 2014), interactional linguistics (Bressem, 2021) and cognitive linguistics (Dancygier, 2017).

Our preliminary cross-modal analysis shows that conductors' gestures make use of the three-dimensional horizontal, vertical and sagittal plane to represent musical dynamics. They do this on different axes and scales, e.g. in gesturing and addressing orchestra sections in doing crescendo and diminuendo, sforzando and accent. Within the gesture space, musical instruction elaborates complex multimodal movements in which speech and vocalizations further contribute to representing movement towards requested sound volume and accents. Movements for dynamics throughout the usage-events of the rehearsal process display parts of underlying image schemas and force-dynamic gestalts (Mittelberg, 2018) such as VERTICALITY, GRAVITY, BIG IS UP or large, complex movement patterns and construals for dynamic levels (piano, fortissimo) thresholds (sound volumes to reach or not to trespass), expansion and reduction within the spatial form of these schemas. These patterns are made accessible to the musicians from different visuo-gestural viewpoints, involving not only metaphorical representations of sounds, but also the perspective from which the sound is perceived or produced. The gestural schemas, accordingly, may represent the conductor's own body, or, alternatively, the (performing) body of individual musicians, instrument sections (e.g. in breathing and blowing parts of the score), the ongoing balance between sections, as a composite layering and equilibrium between underlying sound qualities, or the orchestra as a whole.

Using our corpus-based analysis of orchestra conductors describing, indexing and depicting aspects of musical dynamics, we can present a mapping of kinesemiotic co-occurrence patterns exploiting and evolving through three-dimensional space.

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# Embodied cognitive semiotics and trumpet discourse: multimodal representation in music as structure and phenomenon

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**Keywords:** embodiment, multimodality, phenomenology, music, Merleau-Ponty

This transdisciplinary talk is about musical conceptualization at the interface of the mind and the body in musical education. The corpus is composed of a YouTube trumpet tutorial by classically trained jazz trumpeter Charlie Porter talking about and doing embouchure across low and high registers, in which sound is conceived of not as a written instruction (in a trumpet manual or method), nor as a mere air flow through a mechanic amplifier (the instrument), but as simultaneously conceived of and produced by a breathing body and mouth in a real, cultural and digital space.

We have two objectives. On a theoretical level, trumpet tutorials in social media call for reconsidering the project of a musical cognitive semiotics post-phenomenologically in a longer tradition of sedimented speech, i.e. the cultural transmission of a tradition of embodied knowledge about musical performance, and, on the other, as a creative discursive usage act, multimodally displayed online by a speaking and sounding subject and body, as an authentic expert which directly addresses and imagines a global brass-playing community in a new genre, with (dis)connected bodies and shared trumpet concepts. In these trumpet tutorials, empirically, we perceive both the utterance and display of the teacher's individual musical competence and a generalization of less visible learners' problems in a digital format (Bateman et al. 2017), as an addition to non-observational joint body schemas in collective music performance (Salice et al. 2019).

We provide a detailed empirical analysis of an instruction video (Porter 2019) about musical register, which explicitly takes into account the embodied activity of trumpet playing as a linguistic (speech, written scores), sonic (trumpet sounds, music), artefactual (trumpet, mouthpiece, mute), bodily (posture, mouth and lip) and digital multimodal usage act. Faithful to the conference title, we reconsider the possible contributions of fundamental theoretical notions in Merleau-Ponty's early and posthumous work to contemporary cognitive semiotics and philosophy of language: speaking language, lived body and style as they appear in *The Structure of Behavior*, and the relation between Saussurean parole and visible/invisible flesh in *The Prose of the World or Eye and Mind* (Fontaine-De Visscher 1974). Thinking of cognitive semiotics as a project partially based on linguistic theories of semiotics, we descriptively move away from a logocentric approach to musical discourse in favor of a multimodal and digital endeavor, which adds to a more traditional take on multimodality and embodiment as a face to face visual mirroring or representation of conceptualization and the body the idea that sound, bodily production of sound and talk about acoustic information need to be integrated in the contemporary project of a truly embodied yet online semiotics. Potential outcome: as to musical instruction, we hope to show that digital media, as they reach larger and more global audiences, may not lead to conceptual dissipation, institutional sedimentation nor disembodied knowledge, but to another phenomenological window on the accessible multimodal, malleable and more compact internationally shared embodied flesh of trumpet technique (Carbone 2015).

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## Panel: Spaces of Memory

**Chair: Göran Sonesson**

There are in all recent societies some more or less public spaces which are deeply rooted in time, which can be epitomized by monuments but also may involve many other aspects of (urban) space. Since they are imbued with a meaning, they clearly are semiotic objects. They are situated both spatially and temporally. In the spatial respect, they may be considered to constitute a particular kind of distributed and/or extended cognition, in one or other of the senses given to these terms in contemporary cognitive science. They are certainly there to provoke, and assist in, our thinking as we move through the public domain. Temporally, they entertain a relation to memory, on which a lot still remains to be said within a framework of a more venerable tradition, that of the study of collective memory, understood in the sense of Maurice Halbwachs, as the confluence in the individual of the memories pertaining to different social groups. In this sense, collective memory is understood as a knowledge of the past shared by a given community and remembered by individuals. More recent thinkers in this tradition have suggested a distinction between cultural memory (controlled and promoted institutionally and spanning long periods of time) and communicative memory (shared within a family, more private, spanning 3 generations). More empirical studies, as those we will engage in, will no doubt suggest that there are many intermediate cases between these two prototypes.

Halbwachs' own case study was dedicated to the Via Crucis in Jerusalem. In some ways, this example is reminiscent of, but also very different from, the ways in which scene of terrorist acts as marked out in urban space in the contemporary world. In both cases, it becomes important to consider to what extent the meaning of the monument is embodied in space, and to what extent it has to be projected from the time consciousness of the onlooker.

The notion of memory is multiply ambiguous. It can be an event, an act of memory; or it can consist of a structure conserving and organizing a set of facts. In the first case, it may involve the automatic retention of the just evolved moment in the stream of consciousness, or it can be a deliberate act having the purpose to build up, or to search, the space of recorded facts. In the second case, the information can be accumulated in the brain, as an endogram, or in an object independent of the body, an artefact or an exogram. All spaces of memory occupy some position or other on the scale between spatial embodiment and temporal projection.

The act of commemoration is an act which follows upon the event it is meant to commemorate. But this second act is also situated in time and may be perceived later on as a manipulation of memory. Then a third act of de- or re-commemoration may be called for. Whether this concerns monuments erected, and street names given, by a regime whose values are not shared by contemporary powers that be, this gives rise to semiotically intricate acts of memory presentation.

## Streetnames as a semiotic resource

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**Keywords:** city as text, semiotic resource, sign, system, collective memory

This presentation integrates Linguistic Landscape and Cognitive Semiotics. Linguistic Landscape research views city as text (Rose-Redwood et al 2018, Šakaja – Stanić 2018), while Cognitive Semiotics investigates the “the meaning of ... environmental relations” (Sonesson – Sandin 2016). We focus on how street names in their interaction with the urban space create meanings encoding memory and values of its community.

Street naming practices have both spatial and temporal dimensions. The spatial dimension can be observed in the association of importance with city centre and the main thoroughfares leading towards other big cities. The temporal dimension, on the other hand, is at work when “ruptures in political history” (Azaryahu 1997: 481) lead to large scale changes in street names, when old heroes and values are wiped out and new ones are inscribed in the city semiosphere. In cases of massive re-namings, there is often a breach in the cultural transmission of collective memory. Such renaming processes are viewed by the older generations as forms of repressive erasure (Connerton 2007) or recovering repressed memories (Assmann 2010), while for the younger generations their cityscape seems timeless and natural (cf. Fairclough 2003).

Typically, Linguistic Landscape studies theorize these processes in terms of social semiotics (Kress and van Leeuwen 2001, 2006; Scollon and Scollon-Wong 2003), which focuses on the physical representation. In this talk, we will go a step further in an attempt to interpret these patterns of meaning making in terms of semiotic resources, signs and systems. That is the key research question is if and if so, which recurrent patterns of street naming can be considered as semiotic resources and if any of them can be considered signs constituting a semiotic system?

In this talk we will present an analysis of the waves of renamings in two locations in Poland: Zbąszyń and Poznań over the last 100 years. The choice of locations will allow us to explore the similarities and differences in the symbolic resemiotization of streetscapes in a small town (Zbąszyń) and a regional capital (Poznań). The timespan has been selected, as it witnessed the emergence of the Polish state after the Great War (1920-1939), the Nazi occupation (1939-1945), the communist rule (1945-1989) and the post-transformation democracy (after 1989). These changes in the political regimes have also been reflected in the naming practices. They show how street naming is motivated (practical concerns of cost and ease of orientation in the city, ideological control of the public sphere, expression of local identity).

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# The publication of memory as extended cognition

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**Keywords:** monument, collective memory, extended mind, terrorist site, Via Crucis

In the classical sense, as well in several senses more recently ascribed to the term, the monument is a substratum of extended cognition, in ways which correspond (vaguely, because it is vague notion) to how this term is used in contemporary cognitive science (Clark & Chalmers 1998) and, in particular, to how it has been redefined in cognitive semiotics (Sonesson, 2019). It certainly incites you, when arriving at a particular spot, to think about a certain subject, while also informing you to some extent about the subject in question.

But this is exactly the crux: to what extent is this thinking really located in the monument (or in any other object of extended cognition), and to what extent does it have to be supplied by the perceiver? Unlike some other objects of extended cognition, such as Otto's notebook (Clark & Chalmers 1998), the monument involves a publicly conveyed meaning, and thus some kind of collective memory. As the latter is conceived by Maurice Halbwachs (1950; 2008 [1941]), memory is certainly extended from the individual mind, but it remains unclear to what extent it should be located in space, or in some kind of intersubjective structures. In our time of norm criticism, when many officially sanctioned monuments are torn down or at least reinterpreted, this issue becomes particularly salient.

The classical monument, as epitomized by war monuments and monument to the Holocaust, whether situated at the place of the event or not, can be rather clearly circumscribed: it is a physical object, situated in a space which is culturally defined as being public, erected at the initiative of some official authority, while referring to some event (including a life span) in the past. We will see that not all monuments have to fulfil all these criteria – though, in an attempt to generalize, we will suggest that the monument is always a meaning more or less rooted in space and referring to a different moment in time, which is offered to public experience.

While the classical monument is public in the sense of being sanctioned by a public authority, some contemporary monument may only be public in the sense of being available to the experience of the general public. In contemporary society, some objects or places not having been intended as such become monuments because of the dramatical events which have taken place there, such as the concentration camps, which have been officially sanctioned retroactively, as well as artefacts assembled on places where terrorist acts have occurred. Halbwach's (2008 [1941]) own case study involves the Via Crucis in Jerusalem, which, like the contemporary sites of terrorist acts, is only rudimentarily present in space for anybody who does not come armed with the story of the events. While the Via Crucis was publicly sanctioned post factum, thus being a "strategy", in the sense of Michel de Certeau (1980), the terrorist monument may at first appear to be a "tactic" in the same terminology, because it becomes public only due to the concurrence of many individual acts of commemoration. Nevertheless, it might be argued that it receives its sanction from the mass media and/or from the so-called social media.

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## How to represent the irrepresentable. History of a counter monument: Fragmentos by Doris Salcedo

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**Keywords:** Semiotics of Art, Semiotic of Culture, Monument, Counter monument, Colombia, Doris Salcedo

Among the different spaces of memory, monuments occupy a privileged place. At least in our western world, a deep need to commemorate and inscribe in a public space the memory of people and events worth of remembering seems to be a pervasive need as we can see in our cities, where many monuments of various kinds are present.

But what happens when the events to be remembered are terrible traumas that affected an entire society and it seems almost impossible any traditional form of representation? A similar question opens relevant problems at the aesthetic, etic but also cognitive level, in relation to the particular forms of memorialisation involved in traumatic experiences.

Europe had to face the same difficulties after IIWW and the Shoah; more recently many countries in Latin America ended ferocious dictatorships, as it was the case in Chile and Argentina, or long internal wars as it happened in Colombia. In all these cases the issue of how- and even if – it is possible to still have monuments in the traditional forms is an open question. Different answers have been suggested, and so called counter monuments have been developed, as the well known examples realized by Jochen e Esther Gerz in Harbourg, at the periphery of Amburg in 1986, or the fountain of Aschrott-Brunnenby by Horst Hoheisel in Kassel. These counter monuments deconstruct the traditional rhetoric of monumentality and its claim to last forever and suggest a different form of temporality, linked to disappearance. In Latin America counter monumentality took different forms, mainly connected to minimalistic realisations, such as Stolpersteine, murals, graffiti.

My presentation will concentrate on the case of a very interesting counter-monument, Fragmentos by the Colombian artist Doris Salcedo, recently realized in Bogota. This case is different in many ways: the international fame of the artist who did it, the historical and political context, the relevance in the urban landscape and museum system in which it is inserted. Even the name plays an important role, since the artist, Doris Salcedo, wanted to call it explicitly Contro monumento para las victimas. The history of the monument is in itself very significant, since the decision to construct a monument was officially included in the Peace Agreements signed by the State and the guerrilla army of the FARC in 2016. I will analyse in a semiotic perspective the structure of the monument and its meaning effects, as well as question some cognitive issues opened by the monument itself.

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## Panel: Semiotic Approaches to Research Cultures

**Chairs: Alin Olteanu, Phillip Roth**  
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This panel explores semiotic approaches to research cultures, with a focus on complexity and emergence. Gal and Irvine (2019: 113) argue that rethinking scientific disciplines requires a scrutiny of the semiotic processes that establish disciplinary boundaries. Examples are the revealing of scientific constraints through the analysis of representation in artworks (Boetzkes 2010), chemical processes (Weininger 1998), mathematical operations and calculus (O'Halloran 2008, Pantsar 2021), numerical models of climate phenomena (Gramelsberger 2011) or the semiotic analysis of complex digital data (Mikhaeil, Baskerville 2019). Many scholarly approaches to research cultures that are not labelled as semiotic (e.g., Foucault 2002 [1966], Rheinberger 1997, Knorr-Cetina 1999, Kay 2000) draw on the application of semiotic theories or have similar concerns, but use different theoretical concepts. Newer sociological approaches like Actor-Network-Theory (Latour 2005) employ a “material-semiotic” frame, describing the complex simultaneous relations between things and concepts. Particularly, cognitive semiotics can enrich philosophical understandings of science by providing a framework for analysing the epistemological implications of how concepts are represented (May et al. 2017). In this scope, we welcome contributions that highlight the application of semiotic theory to the analysis of research cultures or emphasize semiotic aspects of understanding research cultures, without being dubbed “semiotics”. Below are some suggested topics that papers could address, but are by no means limited to.

### Model and text

Responding to the popular information theory (Shannon, Weaver 1949) and, subsequently, generative grammar (Chomsky 1957) and its applications in computation in the second half of the 20th Century, semiotics has developed as a modeling systems theory. The underlying assumption is that sign systems model (human) environments. In this form, semiotics took a stance against Chomskyan generative linguistics as reductivist. The first such attempt is the cultural semiotics of the Moscow-Tartu school (Lotman 1977, 2021 [1975]), which construed modeling as textual. In contrast, Sebeok (1986, 1991; Sebeok, Danesi 2000) critically expanded this proposal into a semiotic biological theory, in inspiration of Uexküll's (1926) theoretical biology. More recently, semiotics was adopted to propose a notion of scientific model as iconic sign (Kralemann, Lattmann 2013). We are interested to explore possible contributions that semiotics can bring for systems theory and data modeling, as well as vice versa.

## Mind and technology

Peirce defined mind as “a chemical genus of extreme complexity and instability.” (CP 6.101) In inspiration of this, recent semiotic approaches to technology emphasize the need for a shift from reductions to an understanding of causality as emergence (e.g., Hartley, Hermann-Pillath 2018, Gare 2020). Suggesting that the mind-body problem should be replaced by a mind-technology discussion, Fuller (2021) credits Peirce for pioneering the view on humanity as evolutionarily continuous with the rest of the natural world. Kittler (1999) even relates specific forms of perception, cognition and social relation to the emergence of technological media. Arguably, the salience of this proposal can be observed in the adoption of Peirce’s semiotics in the digital humanities (Ciula, Eide 2017). We want to explore such possible applications and how they can help explain the constraints under which research cultures operate.

## Emergence as paradigm

The endeavor to explain life and knowing as semiotic belongs to “the revolution that is taking place in the scientific paradigm from ‘The Age of Reduction’ to ‘The Age of Emergence’.” (Wheeler 2006: 12) From this perspective, biosemiotics considers “the evolutionary processes, in nature and in culture, by the understanding of which humans began to grasp the complex structures through which life itself – and the human knowing of it – are accomplished” (Wheeler 2006: 12-13). This vein of research inspired discussions on, for instance: the emergence of symbols as distinctly human (Deacon 1997, 2012), causality as semiotic (Hoffmeyer 2006), sociocultural emergence as translation (Marais 2018), hypostatic abstraction as specific human cognitive feature (Stjernfelt 2012, 2014) and robot environments (Emmeche 2001).

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# How do we make sense of a robot's behavior?

## An experimental case study

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**Keywords:** Anthropomorphism, Experimentation, Interdisciplinary Research, Human-Machine Interaction, Social Robots

Robots are known to trigger uncanny feelings in humans. Though they are frequently construed by analogy to living bodies, their social presence is difficult to grasp. Their activity engages those who observe them in a meaning-making of game (de Souza, 2005) consisting in both making hypotheses about their expected social qualities and seeking to define their status. Roboticists, through their work on the cognition of human-robot interaction and social robotics have understood this well (Siciliano & Khatib, 2016). Based on the observation that human-machine interaction follows the rules of social interaction between humans (Reeves & Nass, 1996), their work leads to the design of robots which form, behavior and processes invite their users to recognize the human in them. However, despite their continuous efforts, human-robot interaction never appears as natural to us as a peer interaction does. For instance, the status of 'person' that is inferred during an interaction with a robot is characterized by instability and uncertainty (Vidal, 2007). It is also subject to various transformations during the interaction itself. Moreover, objects that do not resemble the human body give rise to social-like interpretations regarding their actions or even their potential intentions (Heider & Simmel, 1940). How do we make sense of a robot's behavior?

Using an example of human-robot interaction, we will see how difficult it is to interpret the behavior of a machine. Leaning on an interdisciplinary experiment crossing the field of anthropology, sociolinguistics and robotics, we will focus on the terms used by a group of human participants to describe and qualify the behavior of a robot that has been initially designed to resist anthropomorphic type of inferences. The aim of this experiment is not to assess the quality of the robot's behavior so that it could carry the same meaning for everyone in further experiments, but rather to see to what extent the various movements produced by this object generate shared interpretations or not. By studying the semantic spaces occupied by the words used to describe the movements of the machine, we will see that the meaning given to its activity is based on various known elements which also depend directly on the very experience of the participants. These elements go far beyond a simple recognition of a human character into the object. We will see that such an interaction, despite obvious limitations, implies that the participants infer on the perceived movement by using a complex set of analogies.

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# The Surd and the De-differentiation of Aesthetic Form

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**Keywords:** surds, mathematical imagination, geoaesthetics, dedifferentiation, multiplicity

“... in the Spiral Jetty the surd takes over and leads one into a world that cannot be expressed by number or rationality. Ambiguities are admitted rather than rejected, contradictions are increased rather than decreased – the alogos undermines the logos.”  
– Robert Smithson, “The Spiral Jetty”

This paper discusses the conceptualization of irrational numbers through art representation, in a consideration of aesthetics and cognition. I begin with a reflection on American earth artist Robert Smithson’s 1972-essay, “The Spiral Jetty,” in which he narrates the experience of his descent from logic into a “surd state”. In mathematics, a surd is the root of a whole number that has an irrational value. When a number cannot be expressed as the ratio of two integers it is a surd. To divide a surd by a square root is to produce a number that divides infinitely into discrete numbers: (for example,  $\sqrt{2} = 1.414213...$ ). Smithson’s invocation of the surd and its experiential implications draws from a rich aesthetic history, including Edward Page Mitchell’s *The Tachypomp* (1874), a science fiction that revolves around the principle of infinite speed; Alfred Jarry’s *Exploits and Opinions of Dr. Faustroll, Pataphysician* (1911) which is organized by a temporal feedback loop that is impossible to engage, and Samuel Beckett’s *Murphy* (1938), which follows a character capable of stopping his heart at will and who is thus capable of mediating a paradoxical condition of survivable cardiac arrest. In this vein, Smithson seized upon the operational force of the surd to initiate the possibility of entering a state of material, perceptual, and cognitive “dedifferentiation”. It enabled a resolution of his dialect of site/non-site that defined his sculptures of the late 1960’s. Instead of staging a polarity between a postindustrial site and its representation as art, Smithson engaged a dynamic predicament in which language and representation collide with geological matter to generate an infinitude of irrational, mineralized fragments.

This paper will address the semiosis of dedifferentiation precipitated by Smithson’s use of the surd in “The Spiral Jetty”. I show how the surd is deployed as an irresolvable problem/solution that brings beings – and ontology proper – to the point of unmanageability. My analysis will ultimately consider the aesthetic condition of the surd – one of sensory obstruction (*sourdit *), cognitive blockage (*absurdity*), and spatial disorientation (*ab-surdity*). I will suggest that the process of dedifferentiation exerted by the surd can be rethought through Fred Moten’s concept of “homotopy”. Moten uses this concept to insist on thinking the multiplicity of planetary places in connection with the irreconcilability of identity and equality. Taking these thoughts into consideration, I argue for the contemporary political and speculative potentials of the surd for a geoaesthetic sensibility that can account for postindustrial places and their postcolonial charge.

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# Criteria for Being Human as a Semiotic Problem

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This paper draws together the following considerations: (1) The Stoics had the most well-developed theory of signs in the ancient world, which was connected to the movement's larger logical, epistemological and metaphysical views. (2) A feature of this theory was the concept of 'criterion', which is still invoked to distinguish true/false in epistemology, though the original Stoic usage was metaphysically broader, also covering judgements of identity and existence. (3) Meanwhile, many alternative criteria for identifying a human being have been proposed down through the ages, Homo sapiens birth has been the dominant criterion for perhaps only the past 150 years. (4) Recovering the Stoic approach to criteria in its fullness may enable us to appreciate the various semiotic dimensions to the question of what it means to be human.

The key general point about the Stoic theory of signs is its focus on the 'signified', which may be known through different 'signifiers'. (This contrasts with, say, St Augustine, whose theory of signs starts with the nature of the signifier.) The Stoic term *lekta* suggests that the signified is something like a proposition that can take many alternative embodiments, ranging from mere words to concrete things, their difference between simply their material granularity. The Stoics repurpose Aristotle's word for 'symbol' (*semeion*) as their general term of signifiers to capture their ambiguous nature vis-a-vis the signified. Both medieval and modern logic's understanding of translation is indebted to this way of understanding signification. Metaphysically speaking, signifiers 'exist', while signifieds 'subsist'.

At a practical level, this means that one asks not 'What is this thing?' but 'Is this thing an X?' The thing under consideration for being X – i.e. the 'candidate' – is the signifier. Thus, one needs a criterion to decide whether that thing is indeed an X. (For our purposes, X = human.) The criterion is a publicly available standard for the judgement that binds the decider and the decided together for all to see. The trial imagery is apt in this context, and ideas about 'testing claims' in epistemology derive from it. Thus, for the Stoics, achieving knowledge is like delivering justice in the courtroom: The standards have been applied fairly to the case to settle the matter. Whether the matter has been settled once for all, or whether a judgement can be overturned in the future, is an open question, with later Stoics like Marcus Aurelius being much more open to reversal. (Of course, modern epistemology has generally sought irreversible criteria; hence, its fixation on 'certainty'.)

Starting with Zeno of Citium, Stoics have advanced a specific procedure for establishing and applying the criterion. It is common nowadays to present it as a kind of mental discipline centered on testing preconceptions. However, this may be anachronistically psychologizing what the Stoics were aiming for. (St Augustine, who was a Stoic before his Christian conversion, may have begun the anachronism.) Stoicism's heavy reliance on classical rhetoric for its terms suggests, once again, that the courtroom is the underlying model. For purposes of establishing criteria for the human being, I shall cast the three general parts of the Stoic method to judgement as follows:

- 1. PROLEPSIS** = The establishment of a 'fair' standard that preempts any suspicion that the judgement will be biased either for or against the candidate under consideration for being X (= human). This does not imply a fixed standard across all cases, only consistency in the application to the case at hand. Once again, the standard is available for all to check if it has been fairly applied. This stage is often misleadingly treated as a form of 'natural intuition'. Zeno compares it to an open hand with fingers spread, which provides a field of possibilities whereby something may remain in the hand or pass through. In this respect, Prolepsis establishes the 'rules of the game'.
- 2. HYPOLEPSIS** = The candidate is literally put 'under' (*hypo*) consideration by the criteria so established, which Zeno represented as the open hand with fingers closed. This image has become the icon in the Western imagination for inspection, suggesting the weighing of the item now held in the hand. This is the trial period, where the aim is to eliminate reasons to disqualify the candidate from being judged X (= human). In metaphysical terms, it is a process of modal narrowing, a removal of ambiguity in the identity of the candidate, as alternative possibilities for interpreting the signifier vis-a-vis the signified are systematically eliminated. Bayes Theorem and Peircean abduction are latter-day ways of executing this stage.
- 3. CATALEPSIS** = Zeno's image here is one of the closed fist, whereby the signifier is formally incorporated into the signified – but only if the candidate has passed the Hypolepsis; otherwise the candidate is released from the hand altogether and deemed 'insignificant' vis-a-vis X (= human).

The paper will apply this model to today's concerns about deciding who/what counts as human, drawing on Kant- and Turing-inspired concerns.

# The Entanglement of Models and Software. Tools and Representations in Computational Chemistry

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**Keywords:** molecular mechanics, paper tools, software, modeling, technology

We propose “molecular mechanics” modeling as a case for studying semantic approaches to research cultures that reveal how representing scientific notions is afforded (evoked and constrained) by technology. Given its focus on modeling, semiotics is a particularly insightful framework to adopt in this inquiry, (e.g. Anderson, Merrell 1993). Molecular mechanics offers an interesting panoply of models for the making of epistemic claims in computational chemistry. Beyond equations, parameterization involves issues such as the intertwining of models with their programming and relationships to software that go beyond programming as such. We show, rather, that molecular mechanics incorporates cultural aspects of various scientific fields and, also, that it is rooted in representations that are culturally and epistemologically linked to how chemists view the world. To do so, we draw on Klein (2003), who employs the notion of “paper tools” to describe from a semiotic, historical and epistemological perspective how the chemical formulas that chemists used in the 19th century acted as productive representations for chemistry. This form of reasoning can be extended to the evolution of chemical graphs, ball and stick models and, eventually, the representation of molecules on a computer screen (Wieber & Hocquet 2020). Our claim is that this evolution in representations of chemical entities is intertwined with the emergence of the graphics computer terminal in the 1970s and 1980s. Molecular models were the ideal attraction to sell this new technology and, as such, they simultaneously evoke new ways of representing chemistry through models and constrain possibilities for its conceptualization. Moreover, we argue that the structure of the computer and its programming lends itself to a sign system enabling the taking into account of an inflation of parameters and enabling the tractability of the modeling method. This can be seen in the application of very large two-dimensional tables that give structure to the parameters within the computational model. Semiotic modeling systems theory (Sebeok, Danesi 2000) is a particularly fitting framework to scrutinize the conceptualization of chemistry concepts through such representations. Drawing on illustrations from the history of computational chemistry, we thus argue that to comprehend the semiotic processes of current chemistry we need to address the entanglement of models and software and reveal the symbiosis between use of (computational) tools and the representation of science.

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# The role of imagination in scientific inquiry: a semiotic approach

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**Keywords:** icon, imagination, abduction, modeling, scientific discovery

I explicate the role of imagination in scientific inquiry in semiotic terms. As a centerpiece of cognitive linguistics, Johnson (1987: 139-140) defined imagination as “capacity to organize mental representations”, arguing for the necessity to “revive and enrich our notion of imagination if we are to overcome certain undesirable effects of a deeply rooted set of dichotomies that have dominated Western philosophy”. As implied here, in both academic discourse and common sense, the word imagination is used in two ways, as: (1) the cognitive capacity to virtually project a thing in the mind and (2) the poetic ability to innovate.

I pursue the direction set by Johnson in a semiotic key by explicating the organization of mental representations in scientific models in terms of sign types. For this, I employ contemporary uptakes of Peirce’s semiotics in modeling theory (Kralemann, Lattmann 2013), allowing for the exploration of imagination in the creation of models, as subject to mediality. Imagining is construed as abundantly relying on schematic signs, the meaning of which relies on a relation of similarity between representation and its object. Peirce referred to these sign types as icons. Hence, the work of imagination is primarily construed as manipulation of icons.

While imagination is at work at every step of scientific inquiry, it particularly consists in abductive inferences (CP 7.202; Pietarinen, Bellucci 2016), the incipient stage of hypothesizing. In brief, proposing a hypothesis requires imagining it. Further, imagination is involved, to various degrees, in deductive and inductive inferences. These types of inferences correspond to what Peirce termed the coenosopic and idiosopic stages of research, respectively. The former consists in drawing predictions from a hypothesis and the latter in comparing these predictions with actual results of experimentation (CP 7.206). As these three stages of research consist in different types of observation, they each rely, from a contemporary perspective, on different media. For example, coenosopic observations “escape the untrained eye precisely because they permeate our whole lives, just as a [hu]man who never takes off [her/]his blue spectacles soon ceases to see the blue tinge.” (CP 1.241) Therefore, extending the senses through instruments such as microscopes or sensitive film, Peirce mentioned, does not help coenoscopy. Rather, such scientific observation relies on media as afforded by human embodiment. Idioscopy, on the other hand, involves “assistance to the senses, either instrumental or given by training” (CP 1.242). Peirce’s theory of science, therefore, is insightful for the contemporary investigation of the transformation that scientific experimentation is undergoing through digitalization. The focus here falls on how imaginative possibilities change according to mediality. This semiotic conceptualization sheds light on the expansion of human embodied imaginative possibilities to simulation techniques as afforded by technological media, among which, most prominent, computers (Gramelsberger 2008).

To develop my argument, I explicate some anecdotes of scientific discovery as icon manipulation, in consideration of medialities of representation: Archimedes’ Eureka moment, Kekulé’s conceptualization of the benzene molecule while daydreaming by a fire and Einstein’s initial understanding of relativity theory in an internal, intimate but non-communicable language.

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# Between ornaments and armaments: Emergent patterns and communication systems in abstract and embodied cellular automata

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**Keywords:** emergence, complexity, enactivism, cellular automata, animal signaling

In the last few decades, the notion of emergence has become increasingly relevant in the description of natural and social complex systems. This paper offers new support for the account of emergence articulated in enactivism (Varela et al. 1993) and adopted in some accounts of cognitive semiotics (Paolucci 2021). This is contrasted to the common idea that “weak” forms of emergence are “ontologically innocent”, i.e., almost epiphenomenal. Bedau (1997), for instance, presents as an example of weak emergence the generation of complex macro-patterns in computational models called Cellular Automata (CA). These models are spatially and temporally discrete dynamical systems composed of regular grids of cells that are characterized by a finite number of possible states. For each temporal step  $t_1, t_2 \dots t_n$ , each cell updates its state as a function of its neighbours’ previous states. Despite the simple local rules governing the micro-level interactions, however, the system can generate complex global macro-patterns characterised by significant properties such as gestalt.

According to Bedau, therefore, weak emergence involves the appearance, in multilevel compound systems, of autonomous macro-properties emerging from the micro-dynamics of the components. Thus, he defines “weak” these phenomena because they are realised by their micro-units and seem therefore to lack genuine and autonomous causal efficacy. My argument is that in virtual CA the ontological relevance of these emergent phenomena cannot be fully understood due to the abstract nature of the model. To grasp this relevance, it is necessary to turn to real-world embodied CA, namely biological processes that work as CA despite being generated by evolution through natural selection.

I illustrate this by discussing the case of a “living” CA, namely the mechanism involved in ocellated lizards colour pattern ontogeny (Manukyan et al. 2017). Analogously to abstract CA, the lizard’s skin is composed of discrete cells (the skin scales) holding a finite number of states (roughly two colours, black or green, in the adults). For each generation  $t_1, t_2 \dots t_n$ , the skin scales update their colours as a function of their neighbour scales’ previous colours. As well as in virtual CA, the rules governing the pigmentation are simple, but the final pigmentation of the animal, which is reached when the lizard is two to three years old, is extremely sophisticated and seems to perform genuine biological functions such as thermoregulation, camouflage, and social signalling. These functions are responsible for the fitness of the individuals, so the emergent patterns have an ontological impact by increasing the chances of survival and reproduction. Moreover, the third function, that of advertising social status, can be viewed as involving the emergence of a genuine communication system able to provide social information to conspecifics (and not only). Emergent patterns, in conclusion, can be “armaments” to face competitors, “ornaments” for attracting mates, or much else. What they certainly are, however, is parts of an unintentionally emerged sign system able to orientate individual behaviours in their natural and social environment.

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# How numeral symbols shape arithmetical understanding

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**Keywords:** numeral symbols, arithmetic, mathematical cognition, philosophy of mathematics, Peirce

Numeral symbol systems are important tools for mathematical cognition, both in the acquisition of mathematical knowledge and the application of mathematical skills. While numeral symbols are concrete physical structures that can be manipulated in space (e.g., in pen and paper calculations), they are also abstract, formal representations of numbers that are largely independent of their phonetic and semantic characteristics (Dutilh Novaes, 2013). In arithmetic, numeral symbols and their spatial arrangement have enabled procedures, such as long multiplication and long division, that would be difficult or impossible to carry with only our natural cognitive capacities (Jones, 2020). In this, different numeral systems have different characteristics. It is often thought, for example, that Roman numerals are inherently inferior representations of numbers compared to Hindu-Arabic numerals. However, as argued by Schlimm and Neth (2008) in their analysis of addition and multiplication with both Hindu-Arabic and Roman numeral symbols, there are good reasons to think that the difference is more in the kind of cognitive and motor processes involved rather than in their facility.

In addition to numeral symbols, also numeral words have been shown to play role in the developmental trajectory of arithmetical abilities. Cultures using the same number symbols associate them with different numeral words. The simpler numeral word system of Mandarin compared to English, for example, has been associated with Chinese children learning to count faster than their American counterparts (Miller et al., 1995). Thus our ability with numbers is shaped both by the kind of symbols and the kind of words they are associated with. As a consequence, our understanding of arithmetic, although seemingly concerning the same abstract objects, depends on the kind of symbols and words we have used in learning it. In this paper, we use Peirce's (e.g., 2010) semiotics and philosophy of notation to make sense of this phenomenon.

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# Abstracts General Sessions

# Comprehension of linguistic and visual narratives: an empirical study in children with typical development

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**Keywords:** central coherence, linguistic narrative, narrativity across different media, Theory of Mind, visual narrative

The talk aims at presenting an empirical behavioral study that investigated the comprehension of narrative with reference to global coherence, i.e., the global representation of story meaning and connectedness (e.g., Glosser and Deser, 1990; Trabasso et al., 1995), across two different expressive modalities: stories conveyed through written language and stories conveyed through sequences of images. Two cognitive abilities possibly underpinning such a comprehension were evaluated: Central Coherence (CC) and Theory of Mind (ToM).

Two groups of Italian speaking children with typical development aged between 8 and 10.11 years and matched on gender, chronological age, level of formal education, and IQ level were included in the study: 40 children received a narrative comprehension task in the linguistic modality (Linguistic Narratives Group: LNG); 40 children received the narrative comprehension task in the visual condition (Visual Narratives Group: VNG). They were shown six stories, each of which consisted of six sentences (for the LNG) or six pictures (for the VNG) corresponding to the constituent events of the story. The semantic content of the narratives was the same for the two conditions. For each story, the sentences and the pictures were presented in a fixed random order. Children were asked to correctly rearrange the narratives. They received 1 point for each story that had been correctly ordered for a maximum of 5 points (the first item was a trial).

From the statistical analyses no significant differences emerged between the two groups on ToM [ $t(78) = .19$ ;  $p = .849$ ], CC score [ $t(78) = .75$ ;  $p = .455$ ], CC response time [ $t(78) = -1.59$ ;  $p = .117$ ], and narrative comprehension score [ $t(78) = -.83$ ;  $p = .408$ ]. The association between ToM, CC, and narrative comprehension was investigated by using Pearson's correlation coefficient on the two groups of participants. In the LNG no significant correlations emerged. In the VNG, the narrative comprehension score positively correlated with CC ( $r = .47$ ;  $p = .002$ ) and ToM ( $r = .38$ ;  $p = .015$ ). As in the VNG the narrative comprehension score positively correlated with CC and ToM, a multiple regression analysis that included the narrative comprehension score as dependent variable and ToM and CC as predictors was performed ( $r = .53$ ;  $r^2 = .28$ ;  $r^2_{adj} = .24$ ;  $F(7,30) = 7.26$ ;  $p = .002$  SE = 1.02). Only CC score significantly predicted the narrative comprehension score ( $\beta = .39$ ; SE = .15;  $t(37) = 2.64$ ;  $p = .012$ ), while ToM score resulted not significant ( $\beta = .25$ ; SE = .15;  $t(37) = 2.64$ ;  $p = .094$ ).

Our results showed that: 1) the use of a different expressive code conveying narratives did not affect the overall comprehension performance; 2) the cognitive skills recruited to comprehend the stories in the two modalities were different. Although previous studies have shown that the understanding of visual narratives and the processing of linguistic stories share important cognitive abilities (e.g., West & Holcomb, 2002; Magliano et al. 2016), our research highlights that the two tasks do not completely overlap.

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## Emergence of meaning in reading: evidence from cross-level interaction from marginalia

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**Keywords:** Semiotic theory, Peircean sign, Modality-specificity and crossmodal principles of meaning-making, Reading, Narrativity across different media

Traditionally, narratology has described three pairs of narrative levels in which intersubjective interaction takes place, i.e. enunciator/enunciatee, narrator/narratee and lastly the interaction between and among characters (Genette 1980, McCleary & Viotti 2014). But, what happens if interaction is approached from the perspective of a real situated human being reading a work of fiction? How do their interactions come about, and how can this complex semiotic process be described?

The study of marginalia reveals interactions undertaken by the reader with the author, the narrator, and also with the characters, showing that interactions run through the three narrative levels, and not just within each one of them. In order to shed light on how these kinds of interaction can be understood, the notion of Peircean sign as adapted by Kockelman 2013, 2017 will be used. Marginalia is treated as a series of reactions on the part of the reader that emerge during, and for the successful completion of, the reading work. In this sense, the writing on the books' margins is taken to be interpretants by the reader in reaction to a sign, which, in a broad sense, is the text being read. The interpretant integrates the semiotic process as a new sign available for interpretation. Readers are agents (cf. Kockelman) and are able of sensing signs and instigating interpretants, and getting involved in an agency that is distributed among them and other agents (author, narrator, characters) during the reading work. The task of reading is being understood as work in the sense that it, like every other ordinary activity, requires attention. The reader must be engaged in the process of reading and has to actually work in order to successfully complete the task he has undertaken (Garfinkel 1967, Livingston 1995). This work arises from co-operative action (Goodwin 2018) between several agents and systems entangled in a Ecology of Composition (Syverson 1999), and its dynamic properties become evident in the analysis of the annotations left by the reader during their interaction with the text and other agents in this ecology.

A corpus was built from 421 annotations in English, Spanish and Portuguese, made by 6 readers in seven fictional books written in the same languages. The study of the data, including comments, questions, exclamations, intertextual references, arrows and emojis, informed the creation of a few analytic categories which served to organize the material.

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# Emergent sign-action: classical ballet as a self-organized and temporally distributed semiotic process

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**Keywords:** semiosis, emergence, distributed cognition, classical ballet, C.S.Peirce

Semiosis emerges (Queiroz et al., 2006). The emergence of a sign in action is the emergence of an autonomous, or self-organized, habit. Self-organization is a process that leads a complex system towards dynamically stable states of increased redundancy and reduced variability. In our description, stability is not absence of change (stasis), but regularity through change. Peirce's theory is compatible with the notion of self-organization, especially when we consider how semiotic habits stabilize communication within a system (a community) of utterers and interpreters, through self-correcting dynamics and circular relations within that community (Queiroz et al., 2011, 2010). In our approach, semiosis is a temporally distributed process in which a regular tendency towards certain future outcomes emerges out of a history of sign actions. Emergence is a ubiquitous condition in this process: the translation of signs into signs cannot be inferred from the properties of the components of a semiotic triad alone, but has to take into account a complex interaction between a micro-semiotic and macro-semiotic level of description. This interaction can be understood as an interplay of potentialities and tendencies, or upward constitutive determinative relations and downward selective determinative relations. According to this view, emergence is a central defining condition of processes of meaning.

We explore Peirce's pragmatic conception of sign action, as a distributed and emergent view of cognition and exemplify with the emergence of classical ballet. Ballet is a sign in action. The emergence of classical ballet is a self-regulatory process, in which a system of different kinds of cognitive artifacts (musical, bodily/motor, spatial/architectonic) and agents obtained a stable semiotic relation throughout many phases of development between the 16th and the 19th Century. One case is the development of the verticality of dance in classical ballet as a semiotic relation connecting proscenium arch stages, dancing bodies, and audiences. This development is micro-semiotically determined by the spatial constraints of the proscenium arch stage, and macro-semiotically determined by a historical construction of the dancing body as a sign within a network of semiotic chains, such as the intersemiotic regulation of body of the dancer by principles coming from painting. This is not only the emergence of actual meaning, but also the emergence of an open-ended field of potential and general meanings, an autonomous tendency of development. To say that ballet, as sign action, emerges, is to say that cognitive artifacts such as dancer's bodies, stages and audience's point of view, musical compositions, costumes, all sorts of supporting institutions, etc, constitute a niche for sign action, interacting according to tendencies of development that didn't exist before.

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# Bio-Virtualization. The biological footprints of Visual Reasoning on Memorizing Techniques. An empirical Study Supported by Video-Gaming.

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**Keywords:** Visual Reasoning, embodied interaction, experimental semiotics, technosemiotics, cognitive anthropology

The ability of humans to visualize their surroundings and internalize them can vary and may have different levels of sustainability. Therefore, research focusing on finding utilitarian means to ascertain the value and extent of impact that visualization may have on memorization is essential, not only to get a deeper understanding of perception-induced memorization, but also to use that understanding to develop effective training and learning strategies and tools. Based on Peirce's theory of Relational Reasoning, our study seeks to contribute to this quest for deeper understanding, by exploring the possible impact of video game activity on players' body visualizations.

The selection of video game activity as a relevant tool to study perception and body visualization impact is valid, driving from the extensive information available in the literature regarding the motivational potential of such games, since motivation is the driving force behind the acquisition and sustenance of perceptions. Video games have the potential to hold user interests for long periods, as well as provide them with learning experiences that may not be easily available, or not at all, in a traditional, non-dynamic educational setting. A tangible result from the ongoing study is the suggestion that players may have the ability to develop and locate an own body image outside the game's context.

The findings not only support, but also add new dimensions to the scope and influence of Connectivism principles on user experiences and education. In particular, they magnify the veracity of two principles, namely that learning can reside in non-human appliances and that learning is a process of connecting specialized nodes or information sources. Additionally, learning is the outcome of information node manipulation that can alter networked information (Siemens, 2018). "Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing" (Siemens, 2018, np). In the context of the study, memorizing was achieved through the participants' connectedness to video games. However, the connectedness did not remain stationed in the at-play time but extended beyond to visualize representations of their full or partial body. This is a significant addition to the current research on the implementation dynamics of Connectivism (Atay & Sumuer, 2021; Pecina & Marinič, 2021; Vas et al, 2018) and indicates that connections between humans and non-human environments can surpass time induced memory mortality.

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## Representing actions through sign language and co-speech gestures by deaf and hearing Italians

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**Keywords:** gesture and sign language, modality-specificity and crossmodal principles of meaning-making, representational strategies

Action verbs, namely predicates referring to physical actions, play an important role in the composition of the high-frequency lexicon in many spoken languages (Moneglia 2014). The project IMAGACT has identified 1010 distinct action concepts following a bottom-up procedure from English and Italian corpora and has represented them through prototypical filmed scenes. This ontology of action concepts has been used to investigate action verbs in spoken Italian as well as in Italian Sign Language (LIS).

To investigate the expression of actions in LIS and in Italian, a test for elicitation of action verbs was designed through the visual scenes provided by the ontology. The present study compares data collected in LIS from 10 deaf signers and in Italian from 15 hearing speakers.

All participants were asked to watch 45 videos one at a time and to describe what happened, all descriptions have been video recorded for a total of 1125 videos.

Spoken Italian was analyzed considering both vocal productions and co-speech gestures (Kendon, 2004; McNeill, 2005). Sign languages and co-speech gestures give the possibility to represent actions incorporating the verb arguments and/or the modality of execution in a mimic way producing different signs/gestures for different action concepts. The different symbolic representational strategies used by participants have been coded according to the following categories: own body, hand as object, hand as hand, size and shape, and double strategies (e.g., the use of two strategies to describe the action).

Results suggest that the use of different representational strategies in signs and gestures is influenced by different factors, first of all by the semantic of the action performed in the video. In fact, videos referring to the action of “taking” have been described by LIS signers and Italian speakers using the hand as hand strategy, reflecting the prominence of the agent in the action types. On the other hand, in the videos referring to the action of “attaching”, both hand as hand and the hand as object strategy were adopted by signers and speakers. The use of the strategy may depend on the participants’ tendency to focus on the agent or on the theme/patient of the action. In the first case, a character viewpoint is adopted, whereas in the second case an observer viewpoint is adopted.

Qualitative differences between gestures and signs concern the degrees of consistency in the articulators performing the strategies used (handshape, movement, location, orientation) and the level of complexity of the iconic constructions in the action description. Overall, the comparison of signs and gestures shows a similar use of representational strategies across different action types reflecting the interconnection between actions, gestures, and signs.

The similarity between actions, gestures, and signs is in line with several studies that highlight how both spoken and signed languages have common origins from actions and gestures (Volterra et al. in press, Capirci et al. in press) and provide evidence for a multimodal approach which would consider language not only speech but rather a gesture speech integrated system rooted in the action since the very beginning.

# Embodied cognition and endo-exosemiotics: Alloreognition in non neural organisms

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**Keywords:** 4E, endo-exosemiotics, alloreognition, slime molds, biotext

During these last years, the problem of cognition has expanded beyond the neuronal border. More and more, we consider cognition as a process that depends on functional teleodynamics, and not on neural specificity. Biosemiotics is currently understanding this foundation and studies it from a new perspective of the semiotic threshold. Our goal is to unite biosemiotics with 4E (embodied, embedded, enacted, and extended cognition) in the further development of endo-exosemiotics as the meta-scientific apparatus that describes adaptive behaviors that resort to cognitive tools. The example we are going to show for this biosemiotic description of the 4E will be the alloreognition with a capacity of self/non-self recognition and self / Umwelt (spatial memory) in non-neural organisms such as slime mold and immune cells.

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# Hemispheric dominance of metaphor processing for Chinese-English bilinguals: DVF and ERPs evidence

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**Keywords:** Metaphor processing, Chinese-English bilingual, Hemispheric dominance, Divided-visual-field, Event-related potential, Familiarity

The hemispheric advantage has received considerable attention in cognitive metaphor studies. And the Fine-Coarse Semantic Coding theory (Beeman, 1998) which emphasizes the role of Right Hemisphere in coarse language processing is widely examined. However, it remains unclear about the hemisphere laterality of metaphor processing in bilinguals. Are the theories of monolingual processing suitable for bilingual? Moreover, there is still uncertainty whether the linguistic factors that control monolingual metaphor comprehension, such as familiarity, plausibility, and conventionality, similarly control bilingual comprehension, especially two languages with large linguistic distance.

From an interdisciplinary perspective, the current study aims to investigate the hemispheric dominance of bilingual metaphor processing in native (Chinese) and second (English) language, by taking both metaphoricity and familiarity into consideration. An experiment using brain event-related potentials (ERPs) and a divided-visual-field (DVF) paradigm was designed to study the role of metaphoricity (metaphorical vs. literal) and familiarity (familiar vs. unfamiliar) of the expressions on metaphor processing and its hemisphericity. Twenty-five Chinese-English bilinguals participated in this experiment. They were asked to perform a plausibility judgment task on sentence materials in different experimental conditions. The experiment applies a four factorial within-subject design. And there are two conditions under each factor which are metaphoricity (literal vs. metaphorical), familiarity (familiar vs. unfamiliar), language (Chinese vs. English), and visual field (left-visual-field vs. right-visual-field). Experimental materials of each condition include 50 sentences, with the sentence form of "A is B."

The behavioral results show that participants consume longer time when understanding unfamiliar metaphoric sentences than unfamiliar literal sentences, which are both longer than familiar literal and familiar metaphorical sentences in both languages. Moreover, it takes longer to understand English expressions than Chinese in all sentence conditions which shows a L1 advantage. Meanwhile, the EEG results obtained using parameter-free cluster permutation statistics suggest a different pattern of brain responses for metaphor processing in L1 and L2, and that both metaphoricity and familiarity have an effect on the brain response pattern of both Chinese and English metaphor processing. However, the brain responses were distributed bilaterally across hemispheres, suggesting no clear evidence for lateralization of processing of metaphorical meanings.

Altogether, the results of the current study demonstrate a complex hemispheric processing mechanism for metaphoric meanings. Both metaphoricity and familiarity had a clear impact on the N400 response pattern. In addition, the results show different semantic processing patterns in L1 and L2, and L2 showed less clear processing patterns and the significant differences appeared later than those in L1, indicating a difficulty for the participants to process semantic meanings in L2.

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# On Limits and Relations. The Esthetics of Transgressiveness and the Limits of Semiotical Inquiry

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**Keywords:** semiosis, logic of relatives, inquiry, esthetics, phaneroscopy

The present paper focuses upon the cognitive process from the perspective of relations that can enter cognition in order to advance knowledge. Here, we argue that cognition is limited in scope and highly dependent upon perception and certain forms of phenomenological study, as well as upon “pre-cognitive” operations. It is well known, as the maxim goes, that *nihil est in intellectu, quod non prius fuerit in sensu*, i.e., nothing is in the cognition, which has not previously been in the senses. It is through perception and perceptive experiences that new elements enter cognition. The metabolization of the perceptive experience creates the groundwork for qualitative perceptions, for self-control, for action, and for action of thought to take place. Hence, it follows, that these “pre-cognitive” studies are of great importance for they engross the attention and the amplitude of cognitive operations. Focusing upon the possibility of knowledge achievement and production and taking into consideration the limitations of the scope of cognition itself and its dependence upon perception and pre-cognitive experiences, we propose in this paper a theoretical scaffold of cognitive operations as semiotical inquiry. We argue, moreover, that through the influences of perception and experiences preceding cognition, semiosis can transgress its initial limits. Considering cognition to be self-controlled and normative, the end of the cognitive-semiotic process is not an infinite series of cognitive processes, but that of a deliberate change of habit in form of action.

Although the present paper considers cognitive operation as semiotic operation in a very broad manner, we follow the lead of the logician, mathematician, and chemist Charles S. Peirce in the consideration of the term cognitive operation as an active part of logic, also considered as semiotics. As suggested by Peirce, logic, or semiotics, investigates the conditions of the advancement of knowledge and attainment of truth, as well as into the necessary laws of thought, studying the general conditions of signs as signs – for thought always takes place by employing signs and the necessary conditions of the transmission of meaning from mind to mind and from one state of mind to another by means of signs. According to Peirce, logic depends upon the principles furnished to it by ethics, for logic is a special determination of the inquiry of ethics whose object of inquiry is the formation of deliberate habits of conduct in relation to an ideal of conduct previously discovered and determined. And, by the same principle, ethics is a special determination of esthetics, which is responsible for the discovery of a state of things that reasonably recommends itself in itself aside from any ulterior determination, being, therefore, an admirable ideal having the only kind of goodness that such an ideal can have namely esthetic goodness (cf. EP2:201). These sciences form what Peirce called Sciences of Discovery, or Heuristic Sciences, and create the fundament for his theory of inquiry. And this theory of inquiry informs the proposed inquiry into the limits and relations of cognitive processes.

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## Towards a deictic “vocation” of dance gestures. The example of the sketch and marking in Argentine tango

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**Keywords:** Argentine Tango, Cognitive Semiotics, Dance Gestures, Deictic Function, Practical Enunciation

This talk is part of a broader project of questioning and understanding the semiosis produced by and through the danced gesture, especially the gestural forms and figures of Argentine tango, conceived as inseparable both from the practices that make it emerge and from other semiotic regimes contributing to the overall meaning of its semiotic form. In particular, we will try to understand if, and to what extent, certain dance gestures can cover a deictic function as identified in both verbal language and co-verbal gestures. The identification of possible concrete analogies – namely a deictic capacity – between language and a specific type of gesturality – such as that of dance – raises other general questions about the relationship between gesture, language and practice, which are both before and after any investigation or analysis: upstream because they determine the very possibility of making the hypothesis of the presence of deictic elements, downstream because they have repercussions not only on how one constitutes one’s observables but also on how one conceives the semiotic function of the gestures generally heard. Wondering if there are deictics in social dances – such as tango – that are improvised and both culturally transmitted and incorporated by different media and practices, implies questioning:

- i) on a presumed narrativity in the absence of prior dramaturgy and choreography, as well as in the absence of a more or less “rigid” codification of minimal elements of the danced movement,
- ii) on how the dancing gesture signifies both when it is captured in its course of action and its folds in terms of values instituted on other levels of meaning,
- iii) on the epistemological (and semiotic) nature of this operation itself, namely on the hypothesis, among other things, of an intersemiotic translation that would be at work between language and dance gesture and, consequently,
- iv) on the very way in which language and gesturality are conceived, and (dancing) gesturality as language.

Since it is impossible to detail the implications of each of these questions here, we prefer to focus on specific aspects that reveal the overall theoretical and epistemological orientation of our approach. First of all, we will highlight the contributions of research on co-verbal gestures, while pointing out the demarcation points of the dancing gesture. Secondly, we will explain the hypothesis of a deictic “vocation” of certain danced tango gestures based on a double-sided dynamic of sketching and marking that occurs both in learning and in dance. Thirdly, thanks to a brief look at the Bühlerian theory of language, as well as recent suggestions in cognitive semiotics, we will draw a more general proposal on the semiosis of dance that proceeds from this deictic vocation and leads to the more encompassing notion of motive for action.

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# Gestures are sensitive to information structure in discourse

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**Keywords:** Gesture and sign language, Gesture distribution, Gesture referentiality, Information structure, Speech-gesture relationship

For spoken languages, it is a well-established fact that speakers use gestures and speech jointly, as different resources, in order to construct their utterances for communication. However, the reason for why speakers use gestures at particular moments in the flow of discourse, and if so how, is still mostly unclear. It has been suggested that information structure might play a key role (McNeill, 1992). Some dimensions of information structure, such as referent accessibility, have already been studied. There is evidence that gestures vary in terms of their presence and mode of representation, depending on how accessible a referent is (introduced, maintained, reintroduced) and/or how it is expressed (lexical noun phrase (NP) vs. pronoun) (Debreslioska et al., 2013; Perniss et al. 2015; Debreslioska et al. 2019). However, other information structural dimensions such as ‘aboutness’ (topic vs. comment elements of the clause) and how they influence gesture use remain largely unexplored. This study therefore focuses on gestures’ sensitivity to ‘aboutness’, in addition to referent accessibility and referential forms, in the production of connected discourse.

We analyzed a data set consisting of 30 video-taped narrative retellings by 10 native German speakers. We divided the narratives into clauses (predicate + its arguments), identified all referential expressions, coded them for form (lexical NP vs. pronoun), referent accessibility (maintained vs. (re) introduced), and ‘aboutness’ (whether a referential expression was part of the topic or comment element of the clause). For gesture, all strokes that co-occurred with referential expressions were identified and classified as referential or non-referential (Kendon, 2004).

We analyzed the data from three perspectives. Analysis 1 examined how likely different types of referential expressions are accompanied by gestures (dependent variable: presence/absence of gesture). Analysis 2 took the gestures as starting point and examined how they pattern with the different properties of the referential expressions (dependent variable: number of gestures). Analysis 3 examined gesture referentiality in relation to ‘aboutness’.

Preliminary results for analysis 1 showed that gestures are more likely to occur with lexical NPs and (re)introduced referents. However, there was no relationship between ‘aboutness’ and the presence/absence of gestures. Analysis 2 showed that more gestures are produced with lexical NPs, (re) introduced referents, as well as referents that are part of the comment element of a clause. Analysis 3 showed that non-referential gestures associate with topics whereas referential gestures pattern with referents that are part of the comment.

The findings provide new insights into the speech-gesture relationship in the production of discourse. They suggest that, if we take speech as a starting point, topic-comment structures cannot predict gesture production (in contrast to referential form and referent accessibility). However, if we start with gestures, that is, if we come across a gesture in discourse, it is highly likely that the co-occurring speech will be part of the comment element of a clause. Furthermore, the findings suggest that gesture referentiality co-varies with ‘aboutness’, which highlights the importance of information structure for our understanding of gesture functions. Implications for linguistic theories on information structure will also be discussed.

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# On the Semiotic Models of Social Actions and Institutions

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**Keywords:** habits, iconicity and indexicality, phenomenology, semiotic theory, social semiotics

My presentation is devoted to modelling and systematization of a social actions and social institutions drawing on the concepts of semiotics, as well as on Ch. S. Peirce's cenopythagorean categories. One of my tasks in this study is bridging Peircean semiotics with systemic functional social semiotic tradition (Halliday, 1978; Hodge & Kress, 1988).

The starting point of the study is the idea that any social action can be modeled as a process of semiosis, i.e. as a purposeful (teleodynamic) mechanism of functional cycle – connecting social actors' perception of the world and their doing something with the world. In other words, social action is the process of bringing doings into conformity with perceptions.

At the same time, each social action as a whole can be built into other more complex semiotic processes as a sign Vehicle. In this aspect, it can be subject to interpretation and can have three different kinds of effects (Interpretants) (Peirce, 1910). In Peirce's terms, each action can have (1) an Immediate Interpretant (a merely subjective, "vague determination of the consciousness" effected by the action), (2) a Dynamical Interpretant (an "actual event" that the action brings about by virtue of acting as a sign vehicle), (3) a Final Interpretant (a Habit, "a general rule" that is produced by the action). To put it differently, we can speak about three different aspects of social actions: (1) Actions per se (meaningful purposeful doings), (2) Events (actions causing other actions), (3) Institutionalizations (actions precipitating institutions).

Institutions, being Habits in Peirce's terms, can also be analyzed into three aspects, based on the cenopythagorean categories of Firstness (the mode of being of that which is such as it is, without reference to anything else), Secondness (the mode of being of that which is such as it is, with respect to a second but regardless of any third) and Thirdness (the mode of being of that which is such as it is, in bringing a second and third into relation to each other). If applied to institutions, this system of categories allows to distinguish between 1) institutions per se (institutions as Habits (general rules) that operate within social actors), 2) logonomizations (institutions as Habits that are actually reproduced in actions), 3) institutionalizations (institutions as Habits that mediate between past actions and future actions).

Logonomizations and institutionalizations can also be distinguished into three aspects, similar to the triad of icon, index and symbol. In particular, 1) iconic (memetic) logonomizations and institutionalizations are the ones that function by a replication of similar actions; 2) indexical logonomizations and institutionalizations are the ones that function by a factual causal connection of actions; 3) conventional logonomizations and institutionalizations are the ones that function by convention.

In my presentation I am discussing the proposed systematics in the relation of the long-pending challenge of convergence of semiotic and social (Halliday, 1978, p.1; Heiskala, 2014; Hodge & Kress, 1988; Morris, 1938, p.2).

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# Construction, shmonstruction: A multimodal corpus study of English shm-reduplication

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One of the key theoretical developments that has led to a closer integration of linguistics and semiotics in recent years – and arguably also contributed to a fuller understanding of the “semiotic complexities” of language – is the recognition of gesture and multimodality as integral parts of human communication. In the framework of Construction Grammar, this has led to the concept of multimodal constructions, i.e. form-meaning pairs that are characterized by the conventionalized co-occurrence of a verbal and a non-verbal, e.g. gestural, element (Zima 2014). This can also shed new light on constructions that have previously only been investigated from a monomodal perspective.

In this talk, I present a corpus-based analysis of English shm-reduplication, a pattern in which a word is immediately repeated, but the initial consonant or consonant cluster (if any) is replaced by /ʃm/ (McCarthy & Prince 1996), as exemplified in (1) (examples from TV News Archive).

- (1) a. debate, shmebate.  
b. comfort zones, schmumfort zones.

So far, most research on shm-reduplication has mainly focused on its phonological properties (e.g. Nevins & Vaux 2003, Kołtątaj 2016). The present study adds a pragmatic and a multimodal perspective, drawing on data from the TV News Archive (archive.org/tv) and the UCLA NewsScape Archive available via the Distributed Little Red Hen Lab (redhenlab.org). Both databases were searched exhaustively for words starting with <shm> or <schm>. Instances of shm-reduplication were semi-automatically identified by calculating edit distances between each keyword and the two preceding words (to take compounds as in 1b into account).

Two predictions are tested: The first is that the construction is often accompanied by a dismissive gesture such as a member of the away gesture family (Bressem & Müller 2014), thus qualifying as a multimodal construction in the sense of e.g. Steen & Turner (2013), Zima (2014), or Cienki (2017). The second prediction is that the construction tends to occur turn-initially, taking up cues from the interlocutor's previous utterance. According to a preliminary pilot study using the TV News Archive data (N = 54), the first hypothesis is substantiated by the data: In the vast majority of all cases, the shm-reduplication construction is accompanied by a dismissive hand movement or head gesture. As for the second hypothesis, however, the data show that matters are more complex: Seemingly prototypical usage cases such as (2a) are rare. Instead, shm-reduplication tends to occur in what could be called “fictive quotes”, adopting the concept of fictivity put forward by e.g. Talmy (2000) and Pascual (2014), among others: An attitude ascribed to a person, e.g. Donald Trump in (2b) and (2c), is conveyed by a quote attributed to said person either via a quotative (2b) or without an overt quotation marker (“zero quotative”, see e.g. Mathis & Yule 1994) as in (2c).

- (2) a. that's the principle. >> principle, shminciple. (Jimmy Kimmel Live)  
b. donald trump says debate shmebate. (Action News at 6:00 AM)  
c. there they [= Donald and Melania Trump] are. look how happy. stormy daniels  
shmormy daniels. (Jimmy Kimmel Live)

In many ways, then, the pattern is a prime example for a creative and “extravagant” (Haspelmath 1999) construction that is strongly connected to specific communicative contexts and characterized by a fairly complex set of discourse-functional properties. A closer investigation of this and other expressive constructions can help understand the social and interactional aspects of constructions in more detail. In addition, a multimodal perspective can help us understand how gestures emphasize and enhance the “extravagant” character of such constructions.

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# The ontology of image schemas and the artificial mind

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**Keywords:** Image schemas, conceptual metaphor, artificial intelligence, conceptual blending, spatial information theory

Image schemas were introduced as mental “patterns of our perceptual interactions [...] that gives structure to our experience” [1].

Often described as spatiotemporal relationships between objects, agents and their environment, image schemas take the role of a conceptual skeleton of objects, abstract concepts, and the mental construction of events. Thus, they play a central role in metaphors, analogical transfer and novel generation through conceptual blending [2]. For instance, a concept like a “career ladder” can be broken down into the conceptual metaphor “UP is GOOD”, in turn, based on the spatial relationship underlying the image schema Verticality.

While cognitive linguistics and developmental psychology have investigated these conceptual primitives for decades [3,4], the possible impact they have for computer science, in particular artificial intelligence and cognitively-inspired robotics, is less investigated with few exceptions [5].

In the past few years novel work has focused on bridging this gap by formally structuring the abstract image-schematic notions into families of hierarchies. This helps not only their formal representation but aims to solve some of the inconsistency issues regarding terminology for the linguistics and psychology disciplines. To use these for computational purposes in computational conceptual blending, analogy engines and robotics, moreover the image schema logic (ISL) was introduced, a formal language that can represent each individual image-schematic notion. Preliminary results demonstrate how this method can formally model the conceptualization of (to computers) complicated events and take part as heuristics for the construction of novel concepts in blending.

We report on these and further findings which show that the introduction of image schemas is a possible step to improve computational problems in commonsense reasoning, natural language processing and computational creativity.

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# Ambiguous Text in Painting: Psycholinguistic Aspects of Making Meaning in the Visual Arts

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**Keywords:** Art, Ambiguity, Linguistic/Pictorial context, Cross-modality, Default meanings

This lecture deals with the Graded Salience Hypothesis (Giora, 1999, 2003) with regard to whether the processing of an ambiguous text in a pictorial context (cross-modality processing) is similar to its processing in a linguistic context. The research aims to examine how ambiguity is processed in works of art that incorporate ambiguous language; In what order are the meanings activated? Is one of the meanings of the text more salience (prototype, conventional), in a way that influences the processing? Are the two or three meanings retained rather than suppressed, in order to activate a multi-layered interpretation, so essential to works of art?

In order to deal with the questions we will integrate research tools from two disciplines: the field of art research with emphasize on the semiotic view of the pictorial/linguistic signs (Marin, 2001 [1994]), and the cognitive field – specifically the psycholinguistic, while using empirical methods. We will focus on the Graded Salience Hypothesis and the Defaultness Hypothesis, which assert in contrast to other views (Direct Access View and Modular View), that the salient meanings cannot be inhibited, not even when inappropriate. All the meanings are therefore activated automatically upon encounter of the linguistic stimulus, regardless of context. The activation of the various meanings is governed by their degree of salience/defaultness, resulting in serial access. Initially, a default, salient meaning will be accessed, followed by activation of a non-default, less-salient meaning.

We will present 3 experiments that examined the questions: Using Read-Aloud Protocols, Experiment 1 tracked spontaneous processing of artworks that incorporate ambiguous words. Using a naming task, Experiments 2 and 3 examined the processing speed of ambiguous probe words, following a linguistic or pictorial prime, supportive of the non-default meaning. The prime presentation was either limited to 350 ms (Experiment 2) or self-paced (Experiment 3).

Findings support the Graded Salience Hypothesis and the Defaultness Hypothesis, showing that default meanings were activated initially even when context, whether linguistic or pictorial, was strongly biased toward the non-default meaning. Thus, the affect of linguistic and pictorial contexts is similar. Moreover, these findings are highly relevant to our understanding of the processing of works of art, which involve ambiguous words text, whose salient meanings are activated initially, despite contextual support of the less-salient alternative. Facilitating and retaining these multiple meanings allow their interaction with each other and widens the artwork interpretation.

According to these findings, we will discuss a set of case studies consisting of contemporary Israeli artists, whose work highlights an integration between the ambiguous text and the image with regard to the pictorial and linguistic context.

We will also examine these works in the light of Marin's concepts "narrative" and "discourse" while relating them to the Defaultness Hypothesis.

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# An integrative approach to capturing iconicity in co-speech gestures produced in interaction

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**Keywords:** iconicity, co-speech gesture, coding reliability, construal, multifunctionality of gestures

Even though the canonical gesture types (McNeill's "iconic-metaphoric-deictic-beat quartet") were introduced as dimensions rather than discrete types, the idea of self-contained iconic or representational gestures is still to a certain degree used as a convenient label by some researchers. Such a practice is fairly common in psychological or neurolinguistic works on gestures, however, even in the field of linguistic study of gestures this view has shaped influential psycholinguistic models of gesture-speech processing.

Recently, the awareness of how problematic such a crude categorization may be has grown: more attention has been paid to, e.g., multifunctionality of gesture (Kok, Bergmann, Cienki, & Kopp, 2016, Hassemer & McLeary, 2019) on the one hand, and rethinking of the very notion of iconicity on the other (still-growing number of papers, most recently the special issue of *Language and Cognition*). Insights from sign language linguistics are particularly helpful for gesture studies in this regard, as iconicity in sign languages has been treated as a gradual and construed phenomenon for some time now.

In our paper, we propose an integrative annotation scheme for capturing various levels of representation in co-speech gestures. The core idea of the annotation scheme is that various aspects of the form-meaning mapping are treated as (scalar) dimensions that may interact with each other – the dimensions we include in our annotation are, i. a., the degree of perceived iconicity based on rating (Occhino, Anible, Wilkinson, & Morford, 2017); scope of iconic mapping between gesture phrase and linguistic constructions; type of form-meaning association (handling, object, contour, tracing, according to Kimmelman, Klezovich, & Moroz, 2018); or a character of the form- and meaning-construal mapping (focusing on cognitive processes that the gesture may be seen as a manifestation of (cf. Hassemer & Winter, 2019)).

The proposed annotation scheme will be demonstrated on an extract taken from a developing multimodal corpus of Czech. The 10-minute extract captures 3 speakers interacting during a business meeting. Three independent coders annotated (in ELAN) gesture strokes, accompanied speech (also at the prosodic level) and various contextual information (including inter-speaker gesture alignment, environmental coupling of gestures etc.). Proposed annotation scheme will be presented as a work in progress (pilot results) with reliability measures for each annotation tier.

Based on our previous evidence gathered in the studies of gestures in spontaneous interactions, the aim of the present study is to demonstrate that, in highly ecologically valid conditions, all gestures should be viewed as inherently "variably iconic" and the actual iconicity construal depends on context much more complex than just semantics of an accompanied word. Such a view appears to be more useful than a clear-cut division between representational and other kinds of gestures, that often leads to exclusion of a bulk of gesture production from analyses. This small-scale demonstration will serve as a preliminary stage for further studies focusing on predicting iconicity in gesture using quantitative methods.

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# Measuring the efficiency of pantomime in event representation

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**Keywords:** pantomime, multimodality, iconicity, intersubjectivity, event structure

The essential role of gesture in human communication of various type has been depicted by Kendon's continuum (Kendon 1988) according to which pantomime, a rather unsystematic wordless production based on the intersubjective alignment of meaning, is situated in the middle between sign language and co-speech gestures.

Recent theoretical and experimental research on pantomime is mainly interested in questions of linguistic evolution (e.g., Zlatev et al. 2020), or in performance strategies (e.g., van Nispen et al. 2017). What they have in common is that they only make limited use of the expressive potential of pantomime. First, they tend to focus on simple concepts or events, and second, the intersubjective nature of communication, and thus the pursuit of understanding, is rarely supported. Nevertheless, as Goldin-Meadow et al. (1996) have shown, when gesture loses its integral relationship with spoken language, it is able to manifest grammatical and other systematic elements and express complex situations. Building on previous research, we designed an experiment that addressed the communicative effectiveness of pantomime versus spoken production when used in expressing event construals. More specifically, we asked under what conditions the pantomime can serve as a more effective or successful communication tool than spoken language and what aspects of a depicted event get highlighted by the speaker in both conditions.

We chose to base our experiment on the concepts of event (represented by 36 Czech deverbative nouns). 32 people (16 females and 16 males) with an average age of 25 years were paired and instructed to verbally or pantomimically describe to their partner particular events such as sewing, twilight, traveling, escape etc. While in the first part of the experiment the words and the means of depiction were given to the participants, in the second part they could choose which of the words to depict in pantomime and which to depict verbally. In addition to quantitative comparisons of success rates for each word, the effect of various formal and semantic parameters such as number of frame elements, iconicity, aspect of movement, agent and patient liveliness, etc., on both production and comprehension was also investigated.

By treating pantomime as a multimodal semiotic system per se and directly comparing it to spoken language, our investigation not only confirmed the pantomime's potential to express complex or abstract situations (travelling, lighting), but also to make significant use of cultural references (twilight as a movie). Moreover, in performing events that are iconic or contain an iconic object within their frame (walking, howling, ticking, sewing, for example), pantomime achieved similar, even better, success rates in comprehension, thereby proving its prominent role in exploring the multimodality of meaning construal.

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## Transformations of the everyday lifeworld: an enactive-embodied perspective

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**Keywords:** everyday lifeworld, affordances, phenomenological sociology, The Skilled Intentionality Framework, ethnographical research

In my presentation I make an attempt to provide an empirically based theoretical contribution to the investigation of connections between the structure of everyday lifeworld and the cognitive, situated and embodied, activity of human beings. Specifically, I address the question concerning how transformation of people's day-to-day routine ways of acting is possible. My point of departure is one of the basic assumptions from phenomenological sociology: in everyday lifeworld, as long as they are effective, people perform their tasks in a highly routine, semi-automatic manner. There are, however, certain situations in which we stop treating our everyday lifeworld as something taken for granted and independent from us. Sociology provides tools to identify the key circumstances which accompany such change; in this context Alfred Schutz talks about experience of shock or a "leap" to a different finite province of meaning. However, studies concerning the actual influence of such shocking experience on everyday lifeworld, are limited (e.g. Ayaß, 2017; Liberati, 2018) and do not address the question concerning the ways in which this influence actually takes place. I believe that this gap can be addressed with the Skilled Intentionality Framework (SIF; Rietveld, Denys, van Vesten, 2018). SIF defines affordance as a relation between possibilities for action provided by the sociomaterial environment, and an ability of a human to act on this affordance (Rietveld, Denys, van Vesten, 2018: 45). Importantly, these abilities are acquired in a history of interactions in sociocultural practices, or, as sociologist would say, in a process of socialization towards becoming a fully-fledged member of a certain collective. SIF seems particularly apt for integrating analyses of concrete cognitive activities with a socio-material-cultural context at focus. Overall, I believe that, on the one hand, SIF can fill the gap that phenomenological sociology has left, on the other, that phenomenological sociology can provide an incentive to investigate the mutual relationships between cognitive activity of human beings and the reproduction and transformation of social order.

Additionally I will illustrate the key points of my presentation with results from an ethnographic research conducted in 2018 in one of most popular, outdoor cultural festivals in Lublin, Poland. The space of Night of Culture can be considered a specific cognitive environment that forces the audience, on the one hand, to process a great amount of stimuli, and on the other, to suspend the habitual ways of thinking and acting. Thus the Night of Culture experience can trigger transformations in the ways that urban space is perceived and used on a daily basis. The things that one can learn from the Night of Culture are the following: 1/ that some places exist at all; 2/ that city is not a completely defined space – one can think of it and act in it in a way that way not even thinkable a moment earlier; 3/ "it's possible (incredible as it may seem)" – that the effects presented here are achievable here and now, locally, with relatively restricted resources.

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# Mapping, coupling, interdependence? On a cognitive-scientific view on multimodality

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**Keywords:** General Systems Theory, Enactive-embodied approach, Multisensoriality, Polysemioticity, Multimodal analysis

## 1. Multimodality

The term “multimodality” is used in various ways. My suggestion is to consider the phenomenon of multimodality as constituted by the two meaning-making phenomena: multisensorial perception (Pink 2011) and polysemiotic communication (Louhema 2018). The goal of my presentation is to address the problem of the relationship between these two phenomena in actual, cognitive activities of a meaning-making subject, from cognitivist, dynamic and enactive-embodied perspectives.

## 2. A multimodal system

The point of departure is Bertalanffy's (General Systems Theory; 1968) notion of an (open) system as a self-regulatory complex of interacting elements embedded in its environment. The most crucial observation is: “The whole is more than the sum of its parts” [...] The characteristics of the complex, therefore, appear as new or emergent... (von Bertalanffy 1968, p. 55). My claim is that not only functioning of multisensorial perception and polysemiotic communication should be considered in terms of systems, but also the relationship between these two systems should be framed in terms of one, two-aspectual, complex, dynamic, ‘multimodal’ system. Bertalanffy's notion of a system allows us to focus on holism of a multimodal system (rather than on reduction to ‘modes’) and on organization of such a system (rather than on intra-systemic mechanisms).

## 3. Cognitive science(s) & multimodality

Cognitive semiotics stresses the need for addressing meaning-making phenomena in terms of cognitive frameworks. The main part of my presentation is devoted to discussion on multimodal systems (understood in the sense presented above) within the three cognitive-scientific frameworks: cognitivism, dynamic approach and enactive-embodied view on cognition. The questions to be asked here include:

- what kind of system should be assumed here: an active/dynamic, self-regulatory one (Wiener, van Gelder) or a passive/computational, algorithmically-driven one (e.g. Marr)?
- what is the scope of a multimodality-capable system? Mind, +brain, +body, +environment?
- how to understand perception and action of a multimodal system: – as a bottom-up (perception) and top-down (action) neural computation (again, Marr) or as a set of embodied – organismically bounded – processes (Gibson) or even extended ones (Clark&Chalmers)? – as two (more?) separate processes or two (more?) aspects/stages of one process?

Cognitivist-functionalist view sees these two phenomena (perceptual processing and subsequent motor processing) as interconnected, but – in principle – separable ones. The dynamic approach would stress continuous, dynamic interactions between activities of a perceptual system and polysemiotic communication – they are to be considered as coupled systems. Enactive-embodied approach – motivated by Gibson's and Noë's view on “perception in action” and phenomenological view on embodiment (Merleau-Ponty 1962) – stresses the fact that these two systems work in coordination – bodily activity is the unifying principle.

The above considerations will be illustrated with results of a multimodal analysis of episodes from the “Lost in Translation” film – seen from both: multisensorial and polysemiotic perspectives.

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# Semiotics of Sculpturality in Shared Perceptual Spaces

Gerriet Krishna Sharma

gksh

**Keywords:** Electroacoustic music, multimodal spatial sound phenomena, shared perceptual space, sculpturality, mediatised spaces

In electroacoustic spatial sound-composition we are dealing with sound phenomena and their spatial dimensions like proliferation, width, height etc. forming diverse sound masses that can penetrate, layer, move around each other and define by their properties – space itself. Edgar Varèse has lively described these phenomena in his statement from 1936 [1], multiple publications in the fields of musicology and computer music dealt with their causes and technical prerequisites [2]. However, to date with different projection techniques and devices existing, and software solutions discussed, it is virtually unresolved what different listening groups hear where in the created spaces. Moreover, how they experience multimodal artefacts as “plastic sound objects” and how they would describe them is rather unsolved. Electroacoustic music hosts two diametrically opposite cultures: We find the exact sciences of acoustics, informatics, and engineering all of which define conditions of sound production, the very instruments of executing any compositional design. And we find the culture of music appreciation by the ear. Whereas the first aspect is loaded with well-defined verbal, and thus semiotic concepts shared among a community of specialists, the aural, musical aspect embodying musical thought and communicating it to the audience, is almost devoid of consistent terminology. However, for an aesthetic debate we need additional and another kind of knowledge, a certain typological consolidation not only of “craft skills”, but also the perceptive phenomena and these at a preferably high degree of generalizability. The intersubjective space where the perception of composers, scientists, and audience intersect has been described as shared perceptual space (SPS) [3]. Developed as an aesthetic tool for the delineation of the field, SPS has been investigated in a series of listening experiments at the Institute of Electronic Music and Acoustics (IEM) at the University of Music and Performing Arts Graz with the icosahedral loudspeaker (IKO). Incorporating artistic experience and psychoacoustic research, listening experiments had been conducted providing evidence for a common, intersubjective perception of spatial sonic phenomena created by IKO. Experiments were designed on the basis of a hierarchical model of spatio-sonic phenomena exhibiting increasing complexity, ranging from a single static sonic object to combinations of multiple, partly moving objects. The highest grade of complexity was related to terminology from scholarly writing on artistic plastic. So called “body-space relations” were composed as stimuli. Participants were responding to their listening impressions caused by the stimuli into the graphical interface of a touchscreen. “Sculpturality” [4] was proposed as an interdisciplinary multimodal model for the description of spatio-temporal phenomena in loudspeaker environments. Thereupon, at IEM a proposed set of sculptural quality attributes – directionality, contour, and plasticity were investigated in a further series of listening experiments. Employing documented beam layouts using a selected set of sounds as conditions, recognisability, perceivable grading, and discernibility of sculptural qualities have been evaluated [5]. The results enable us to develop a basic, comprehensible, problem-specific terminology for verbalisation and description of certain characteristic multimodal sound phenomena as a shared semiotic that incorporates the prerequisites of these phenomena from room acoustics, psychoacoustics, musicology and computer music.

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# Multimodal markers of irony. Yeah, right. Tell me about it!

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**Keywords:** verbal irony, multimodal markers of irony, ironic tone of voice, gaze, multimodal construction grammar

While the past three decades have seen an intense interest in unraveling verbal irony from a pragmatic perspective, research on multimodal markers thereof has been sparse. In spoken face-to-face interactions, though, marking these utterances can be quite crucial. Consider, e.g., the following conversational extract:

- participant 1    the – the pressures are so extreme now  
                          for kids getting into college  
                          it's harder and harder
- participant 2    tell me about it
- participant 1    I mean my gosh  
                          my friends that have kids taking these exams

Note that the transcription is deliberately free of any transcription conventions giving away prosodic or nonverbal aspects of speech delivery. This serves the purpose as to illustrate that the syntactic string Tell me about it in this extract is ambiguous once these aspects are removed. One reading is the compositional one which requests information from the interlocutor (referred to as the non-ironic reading in the following). The other one is the ironic reading which has the function of reinforcing an assessment made by another interlocutor right before. This paper argues that this ambiguity is resolved in spoken face-to-face interactions with the help of multimodal markers, in particular gaze.

Previous empirical studies on multimodal markers of irony show that there is a pronounced difference between spontaneous and non-spontaneous irony. Non-spontaneous irony is prosodically marked by a slower tempo, a greater intensity (Rockwell, 2000) and several patterns in pitch movement (Rockwell, 2000; Attardo et al., 2003). Nonverbally it is often marked with the so-called “blank face” (Attardo et al. 2003). Except of a slower tempo (Bryant, 2010), none of the other markers could be found for spontaneous irony. Given the relative nature of the perception of prosodic differences, Bryant (2010) compares instances of verbal irony in spontaneous discourse with their surrounding material. The present paper, though, significantly adds to this by using a methodology that allows a comparison between an ironic utterance with its non-ironic counterpart while leveling idiosyncrasies.

For that matter, it analyzes one particular syntactic string, Tell me about it, using a corpus-based approach. This string was searched for in the NewsScape Library of Television News Broadcasts (Steen & Turner, 2013), resulting in 2936 hits. The resulting videos have already in parts been annotated for reading (ironic vs. non-ironic), type of data (spontaneous vs. non-spontaneous), prosodic features (including pitch variation, intensity and duration) and nonverbal features (including gaze, manual gestures and head movements). Preliminary results suggest that gaze plays a central role in distinguishing ironic from non-ironic Tell me about it: while the speaker of the non-ironic use is addressing the recipient, such a pattern is missing for the ironic construction. Moreover, a slower tempo can be attested for the ironic construction, albeit only for its non-spontaneous variant.

The paper will eventually argue that these findings are best explained by Multimodal Construction Grammar (MCxG, e.g. Zima & Bergs, 2017). MCxG assumes that syntactic constructions consists of formal features, including multimodal aspects, and a meaning component, associated by convention. Both constructions are summarized along these lines.

## Symbolicity in pictures

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**Keywords:** Rhetoric, expectations, lifeworld, realism, sign meaning

Rhetoric and semiotics are two humanistic traditions in kinship. This presentation discusses an analysis model for the rhetoric in pictures based in semiotic theory. A semiotic analysis on pictures should deal with how pictures make meanings in different ways and situations. A semiotic analysis brings up and investigates the qualities of the picture as a visual artifact, and as a sign. Moreover, the semiotic analysis may show and examine the underlying and supporting mechanisms that enable or affect the meanings of pictures in different contexts. With a rhetorical claim, the analysis also says something about the means to achieve different communicative effects or impacts in communication with pictures. In this presentation, Sonesson's suggestion on a phenomenological model in visual rhetoric will be discussed in the framework of cognitive semiotics. The model is made up of four dimensions for analysis (types of expectations), each of them focusing specifically on a type of semiotic meaning relation but which together form a whole. The four dimensions concern meanings by indexicality, iconicity, symbolicity, and finally a sociocultural dimension linked to the complexity of meanings from making and using pictures for different means and in different contexts.

This presentation takes a particular focus on what Sonesson refers to the third dimension for pictorial meanings. The third dimension analyses the axis of symbolicity and concerns conditions for pictures having the quality of being signs. Based on a definition of what is a picture, having for instance primary iconic meaning, this dimension elaborates a rhetoric potentiality that draws from perceivers' expectations on realism and symbolism in pictures.

# Keeping track of manner focus in static locative event descriptions by Dutch speakers

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**Keywords:** Lexicalisation patterns, linguistic relativity, eye-tracking, cardinal posture verbs, static locative events

Languages have been shown to reveal drastically different lexicalisation patterns for the encoding of space, i.e. what aspects of a location or motion event are expressed overtly and where they are expressed in the linguistic code (Talmy 2000, Ameka & Levinson 2007). For static locative events, Dutch, as most Germanic languages, expresses the manner in which the object is located via the use of a Cardinal Posture Verb (CPV) 'SIT', 'STAND' or 'LIE' (Lemmens & Slobin, 2008). Thus, a vase in its canonical position is said to 'stand on the table'. French, in contrast, hardly ever uses such manner specification, which often is even unidiomatic. English seems to straddle the middle, as it uses these CPVs, but generally prefers the neutral verb *be*. Our project addresses the question of linguistic relativity (Whorf 1956): does habitual attending to different aspects of a same locative event change the speakers' mental representations of this event (also in the non-verbal domain)? This question is addressed drawing on experiments involving both verbal and non-verbal tasks.

This presentation will be restricted to the Dutch verbal descriptions of our project as obtained through a matching game. In this experiment, two speakers are sitting back to back; one of the participants, the describer, has a picture of a playmobil setting (either an indoor or an outdoor scene) in front of them with static locative events to be described such that the other participant, the matcher, can place a number of objects in the real playmobil scene where these object were missing. During this interactive linguistic task, we use eye-tracking; we thus have access to both the linguistic descriptions and the concurrent eye-movements. Importantly, our stimuli comprise canonical events (e.g., a vase normally placed on the table) and non-canonical events (e.g, a pan upside down on a bed). This presentation reports on how Dutch speakers deal with canonical vs. non-canonical events both linguistically and visually. A first analysis shows that Dutch speakers do not rely exclusively on the use of CPVs but tend to add more information on Manner both for canonical and non-canonical events, contrary to what has been suggested by Lemmens and Slobin (2008). Also, the results show that while for canonical events, Dutch speakers agree on which CPV to use, less agreement is found for non-canonical events, confirming the findings in Van Geenhoven and Warner (1999: 68ff). As for the eye-movements, Dutch speakers reveal orientational scanning of the events, looking at a 'standing' object scanning it from base to top, an eye behavior that is not expected to be found for French or English speakers. Also, our pilot analyses suggest that eye-movements can be expected to differ for canonical and non-canonical events: while for canonical events Dutch speakers focus more on the base of the object (if present), their orientational scanning increases for non-canonical events, a behavior that links up with their difficulty to pick up the right CPV. Our presentation evaluates these suggestive tendencies against the full analysis of the data for 30 dyads of Dutch participants (N=60).

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# Buddhist phenomenological steps to an intercultural cognitive semiotics: A Yogācāra view on the bio-cybernetic complexities of living systems

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**Keywords:** Peirce, cognitive semiotics, Abhidharma theory of cognition, Yogācāra Buddhist phenomenology, cybersemiotics

Starting from the cognitive triad of “sense” (indriya), “object” (viṣaya) and “consciousness” (vijñāna), this paper is going to reconstruct in Peircean terms the way in which a bio-cybernetic interpretation of (“scholastic”) Abhidharma Buddhist theories of cognition and their Yogācāra developments can serve us as a basis for integrating classical and current theories in an intercultural cognitive semiotics (Davis & Thompson 2013). Taking into account the functioning of Buddhist conceptions within their original systematic context, the philological “data” for this study is going to be gleaned from Buddhist textual corpora in Sanskrit: the Abhidharmakośa-bhāṣyam (“Treasury of the higher teaching” and commentary) by Vasubandhu (5th cent. CE), which sets out the Vaibhāṣika (“direct realist”) and Sautrāntika (“representationist”) epistemological positions, as well as texts of Yogācāra philosophy, i.e. the Buddhist phenomenological approach par excellence (Lusthaus 2002). Just as Peirce’s philosophical framework is ideally suited for bringing into view the relationship between the immediacy of “feeling” (phenomenal consciousness) and “thought” or “reason” as a habitual faculty of recognition, the relationship between minimal phenomenological constituents (“dharmas”) and higher-order representational complexities is a core topic of Buddhist epistemological analysis. The broad range of elaborate terminology (vijñāna, i.e. momentary “cognitive awareness” or “pure consciousness”; citta “thought”, caitta [pl.] “thought concomitants”, manas “mind”, mano-vijñāna “mental cognitive awareness”, saṃjñā “apperception”/ “conceptual identification” etc.) can be exploited for capturing phenosemiotic nuances of cognitive states encountered in meditation as well as metalinguistic complexities. By mapping the Abhidharma model of “sensory bases” (āyatana) with its six modalities of sensory (or cognitive) awareness (vijñāna) onto Peirce’s model of semiosis, we can develop an “impersonal” model of cognition along the lines of Peirce’s semiosis. According to the Buddhist cognitive arising of the world (Waldron 2002), the “elements” (dhātu) of consciousness simply appear under certain conditions without requiring any notion of permanent self or (transcendental) subject. By contrast, the classification of dharmas into the “five aggregates” (pañca-skandha) of empirical personality allow us to view living systems in terms of feedback loops between more immediate forms of “cognitive awareness” (vijñāna) and latent evolutionary dispositions (saṃskāra). In the hypercomplexity of reality and its flux of constantly changing phenomena both cognitions and disclosed “objects” can be seen to exist only as aggregated phenomena of experience (Coseru 2012). The attempted analytic progression beyond the cognitive closure of self-made (subjective) “minds” and sensorially condensed “objects” is hoped to come full circle by inverting the observational trajectory: for digging cybersemiotically within the self-organising dynamics of cognitive emergence that arises from structural couplings between the organism and its environment through complex patterns of autopoietic closure (Brier 2008). Exploring such current formations of cognitive activity in terms of the Yogācāra innovation of “store consciousness” (ālaya-vijñāna) we can seek assistance from Peirce’s notion of consciousness as a “bottomless lake”: just as in Buddhist terms residual traces (vāsanā, lit. “scents”) of past experiences are understood to mature until their actualisation, in Peirce’s view “our whole past experience is continually in our consciousness, though most of it sunk to a great depth of dimness” (CP 7.547).

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# The poetry of language acquisition: autocommunication and crib talk

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**Keywords:** autocommunication, crib talk, egocentric speech, language acquisition, language functions

Vygotsky's (1986[1934]) studies of egocentric and inner speech gave autocommunication a special role in the development of thinking in children, as he showed that differentiation of speech for oneself from communication for purely social purposes entails the child's organisation of his or her own entire behaviour with the aid of socially shared symbols. Later, Jakobson (1971[1962]) suggested that autocommunication is also distinct in what Ruth Weir (1962) observed as "crib talk". While Jakobson didn't develop the idea further, it appears that the phenomenon of crib talk puts autocommunication at an age earlier than that of egocentric speech par studies by Vygotsky and his followers, and is consequently common already before the internalization of "verbal thinking" begins, bringing this presentation to the question of the function and purpose of crib talk in the development of children's thinking.

Both crib talk and egocentric speech often appear as child play, and as something that comes out within the performance of the activity – for its own sake, both involving organization of one's own activity by introducing secondary means within linguistic expression. While crib talk has been studied later as well (e.g. Nelson et al. (Ed) 1989), the analyses of semiotic devices used within it has been largely forgotten.

Jakobson was perhaps a little more concerned with how in autocommunication, instead of transfer of signs from one mind to another, there is transfer of signs from one state of mind to another. But then, in Lotman's (1990) analyses, another type of autocommunication is outlined as well, that of textual devices within the text guiding the interpretation in relation to the text itself, particularly characteristic to poetry. In this presentation, it will be shown how this second type of autocommunication distinctly finds its early appearance in crib talk. Corresponding to the appearance and formation of various linguistic structures in children's speech described by Jakobson and Weir, the two types of autocommunication will be traced by applying Lotman's analyses of autocommunication.

It will be shown that crib talk has a very particular role and function in language acquisition, bringing speech itself to the fore, while by its structural composition and play-like character, it appears to belong in the sphere of poetry also. In crib talk, an intricate poetry of language acquisition is revealed.

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# Mutual meaning-making processes in an open world

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**Keywords:** Semiosphere, Pluriverse, Nature-culture entanglement, Biosemiotics, Tim Ingold's anthropology

The problem of nature-culture relations and entanglement has been widely discussed in the field of humanities recently. There are a lot of approaches and authors dealing with this issue. Starting from anthropologists, sociologists and philosophers to semioticians. What needs to be stressed here very strongly is that the semiotic approach to the issue already mentioned and selected trends in contemporary anthropology seem to have surprisingly much in common and, what is even more interesting, seem to cross each other. To be more precise, I refer here to some ideas presented by Yuri Lotman, Paul Copley, Frederic Stjernfeld, Kalevi Kull – when talking about the semiotic field, and to selected concepts introduced by Tim Ingold – when it comes to anthropology.

The main axis of my proposed talk is going to be the so-called nature-culture entanglement. I would like to juxtapose and compare selected ideas of above-mentioned authors and discuss the convergences which may arise during the study. What I would like to pay special attention to is the Ingold's concept of an open world and one world (pluriverse) considered as a universe consisting of various corresponding agents and environments rather than a summation. This statement seems to be parallel to the Lotman's notion of the semiosphere recognized as a semiotics space (in analogy to Vladimir Vernadsky's biosphere) where different languages interact (not just a set of languages). When taking into consideration the term "correspondence" and "interaction" we may encounter the first main common point of approaches discussed. Following this path I would like to point many more parallels out. Considering semiosphere as a pluriverse I am going to focus on the nature-culture relations emphasizing the meaning-making process which is a fundamental issue for cognitive semiotics. First of all I am going to refer to the Jakob von Uexküll's terms: Umwelt and function circle based on the assumption that agents exist and act responding to selected stimuli (perception-action). Stjernfeld proposed to call this the "meaning circle" as totally semiotic-like process. Introducing anthropological concept of an open world which – as Ingold writes – results in an ontogenetic turn and the entanglements of life, i.e. life-as-a-whole: lived by humans as well as by animated and nonanimated nature, the author refers to this Uexküll's idea. Existing in an open world and living our lives in the frame of life-as-a-whole we constantly make meanings. Responding to the environment, humans, animals, plants, objects create meanings and, analogically, so does the environment. The world consists of bindings and these bindings are the results of mutual interactions based on the meaning-making processes. Ingold introduces the ecology of life to refer to the life process itself – being alive in the world – and the life itself with its meanings and sign processes is the central subject of research in the field of biosemiotics.

To conclude, what I am going to discuss during my talk is the theory of the nature-culture relations, based on acting and meaning-making processes, considered from two, not so different as they may seem to be, perspectives: the perspective of semiotics (Lotmanian and biosemiotics approach) and in the view of contemporary anthropology represented by Ingold.

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## Analysis of the Diaries of Franz Kafka: a cognitive semiotic approach

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**Keywords:** Infinite Semiosis, literature, inner world, Interpretant, writing process, Diaries

Diaries written by Franz Kafka in German in the time period 1909-1923, till the time shortly before his death, have mainly been regarded as the secondary reading material for understanding his other primary works, like *The Trial* (*Der Process*, 1925). Often it is ignored that the Diaries of Kafka contain certain expressions, for example, "Vollste Blick" (fullest view), "Halbe Zufriedenheit" (half satisfaction) which suggest unconventional use of the German language and thereby characterize the literary nature of the Diaries. My hypothesis is that these expressions result from an internal meaning-making process that is sensible only within Kafka's inner world. The cognition involved in associating a word to its idea does not come from the social environment in the Diaries. Even when an expression like "Freies Gefühl" (free feeling) appears meaningful, it does not function at a denotative level (where it might mean a feeling of freedom). This implies that the context lies not in the environment in which Kafka moved but rather it is constructed through other diary entries. This form of writing is produced through fluctuating states of mind as Kafka changes the topic of his writing without completing the previous thought. The frequent change of the topics within the same diary entry causes Kafka to think in several directions. This exponential production of thoughts not only compels the Diarist in Kafka to write but also blocks him from writing further because there is a mismatch between the degree of thought process involved and the ability to integrate those thoughts with the language. This results in the style of writing which produces an enigma.

The basis of my analysis lies in Peirce's theory of Infinite Semiosis and Umberto Eco's idea of Interpretant. I attempt to investigate Kafka's problems with the writing process, by analyzing expressions picked up at random from the Diaries. The analysis will focus on understanding the cognitive processes which are occurring while Kafka associates words to their ideas while in a certain state of consciousness. This state is represented further through yet other words and the descriptions of the problems associated with the body. Therefore, body-centered expressions which are written in the Diaries also form the part of Infinite semiosis.

# Manufacturing Bias: A Cognitive Semiotic Analysis of Political Reasoning within Highly Mediated Political Discourse

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**Keywords:** Algorithms, Machine-learning, Blending, Viewpoints, Mimesis

As we continue to engage with the world through our digital devices, the human mind is becoming increasingly exposed to political content and automated affordances generated by algorithmically animated code, also colloquially known as bots. Bot-generated activity simulates human dialogue in ways that mimic inter-social discourse online, which compels the mind to interpret machine generated content as a natural component of social activity. In accordance with Merlin Donald's (2010) observation that human knowledge develops as it travels from mind to mind, at times with the support of mind-extending exograms (e.g. external digital devices), and premised on research findings demonstrating that communication alignment (e.g. alignment within linguistic constructions, syntax, and semantics, and sentiment markers) takes place between social interlocutors within both in-person and simulated discourse (Branigan, Pickering, Pearson, and McLean, 2010), this paper contends that political dialogue generated collaboratively between humans and algorithmically-animated bots within highly mediated environments induces cognitive alignment to bot-generated communication. Such alignment, it is argued, incites adaptive adjustments within cognition, which influences the way that we think about critical political issues. In theoretically framing the argument above, this paper borrows from Zlatev et al.'s (2018) conception of mimetic schemas, Dancygier and Sweetser's (2012) viewpoint theory, and Fauconnier and Turner's (2003) theory of conceptual blending in asserting that political viewpoints form within blended mental spaces as the mind is exposed to, and aligns with computational communication and affordances while collaboratively generating political discourse. Guided by Sonesson and Dunér's (2015) assertion that experiments in cognitive semiotics are best informed by a phenomenological method as put forward by Husserl, this study tests the hypothesis stated above by first extracting linguistic content from "tweets" (n = 5,000) containing the hashtag #SNCLavalin, which represents a contentious political issue in Canada. From this body of data, bot-generated Tweets are identified and extracted from the main corpus using the computational tool Botometer (2016). Bot-generated tweets are compiled into a separate corpus from human-generated Tweets. Borrowing from Dr. Jeff Hancock's (Stanford Social Media Lab) computational model for detecting patterns within linguistic structures to reveal underlying psychological and social dynamics, the two corpora are assessed independently for generalized patterns in syntax, semantics, sentiment markers, sentence structure, and tokenization. This is accomplished using Python programming language to modify the automated natural language processing tool, spaCy (2019). The results are cross-tabulated to measure for alignment between the two corpora and the results are tested for statistical significance. To contextualize the results, this paper presents a cognitive semiotic analysis of cognitive alignment with bot-generated activity within digitally mediated modes of political argumentation. Using cognitive semiotics, this study presents new insights into how our right to freedom of thought and conscience, as outlined by the UN Charter of Human Rights, may be challenged by algorithmically automated affordances that interactively prime the human psyche to align with political ideologies, which disrupts efforts to conduct fair and democratic elections.

## An agency hierarchy: a cognitive semiotic model for understanding and experimenting with agentic phenomena

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**Keywords:** Cognitive semiotics, Phenomenology, Semiotic Hierarchy, Enhanced agency, Phenomenological triangulation, Conceptual–empirical loop, Cognitive neuroscience

I will present a model of six levels of agency, an agency hierarchy, based on fundamental theoretical and methodological principles of cognitive semiotics (Mendoza-Collazos & Zlatev, in press). The model aims to expand the scope of cognitive neuroscience, improving the way in which agency is construed. Neuroscientists are proficient at measuring neural activity in relation to simple bodily movements, and they have been providing valuable findings for understanding the lower layers of agency, at least from the anatomical point of view. Nevertheless, the findings are difficult to understand beyond the biological mechanisms, and to integrate them within a more situated, ecological approach. I propose that a cognitive semiotic approach to agency fits well with previous and emerging paradigms of cognitive neuroscience, while an additional contribution is methodological: a phenomenology-laden triangulation mediating the loop between conceptual analysis, intersubjective-validated explanations, and brain imaging experiments. The loop potentially allows higher correlational reliability of neuroscientific approaches to agency by triangulating the findings with multiple perspectives of analysis.

# Temporal phenomenology in the Memory System Framework: five levels of complexity

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**Keywords:** Memory System Framework, Episodic Memory, Mental Time Travel, temporal phenomenology, biosemiotics

The Memory System Framework (MSF) is a theoretical scaffolding essential in the contemporary study of memory (Squire & Dede, 2015 p.11). Namely, it accounts for the fact that memory orchestrates neurocognitive sub-systems performing in a relational fashion, such as Working Memory (WM), Semantic Memory (SM) and Episodic Memory (EM).

When it comes to Mental Time Travel (MTT) – our capacity for retrospection and prospection – experimental research suggests that EM is the main modelling system at stake. However, some of the current research gaps in MTT studies concern temporal phenomenology and the roles of representational vehicles of EM (Michaelian, Klein & Szpuna, 2016 p.13).

Moreover, EM is fairly well understood in terms of the neural substrates that underlie its efficient causation, but more discussion is needed on the mental representations as a final causation in “the sophisticated and subjective experiences of episodic memory, such as recollection versus familiarity, and true versus false memory” (Xue, 2018 p.558).

Resuming such background, this presentation will discuss the ostensible causal role of semiosis in temporal phenomenology. In other words: how the action of signs influences the way we phenomenologically encode and retrieve neurocognitive information related to temporal experiences? In order to tackle this question, I will explain and discuss five aspects of memory that, according to the MSF, should be taken into account when discussing MTT:

- 1. Diversity:** temporal experiences can be discussed as a combination of living, pre-lived, and re-lived images; with respect to actual (experienced), probable (verisimilar), and imaginary (fictional) scenarios.
- 2. Duality:** MTT is an inseparable and bidirectional interplay between 1) declarative (conscious) and non-declarative (unconscious) processes; 2) short-term retention, and long-term retention; and 3) past-oriented (retrospective) and future-oriented (prospective) capacities.
- 3. Flexibility:** memory is adaptable and may fulfill the same task in different ways, and depending on the available brain structures.
- 4. Seriality:** the loss of ‘lower’ thresholds implies the loss of ‘upper’ thresholds. Namely, the loss of SM causes loss of EM, but not the other way around.
- 5. Creativity:** rather than just processing, encoding, and retrieving raw information, memory is a re-creative modelling system that ‘completes’ our experiences, and is highly sensitive to context.

Some of these features have already been discussed by cognitive semiotics and biosemiotics. Namely, West (2019) has discussed the relationship between auto-noesis – a phenomenological component of MTT –, virtual habit, and indexicality; and Kull (2018), has taken into account chronesthesia – another feature of MTT – and mental narratives in relation to symbolic thought.

Resuming the above neurocognitive premises, and semiotic approaches, it is expected to sketch out a semiotic characterization of temporal phenomenology. For instance, we may find theoretical grounds for arguing that EM is a semiotic mediation (inasmuch interpretant), where episodic images (inasmuch representamens) stand for spatiotemporal scenarios (inasmuch objects) in some capacities or intentions (inasmuch ground), to the actor (inasmuch interpreter). In short, this presentation will speak about lived time or biotemporality as a semiotic memory-based system of teleodynamical complexity.

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# Metaphorical Experience of Time: Literary Resignification for Sociopolitical Resistance

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**Keywords:** Iconic Metaphor, Peirce, Literature, Time, Sociopolitical Resistance, The Shahnameh

Charles Sanders Peirce's concept of iconic metaphor allows the understanding of one experience in terms of another through parallelism. Legendary and mythological literary narrations happen and evolve in spiral timing in which events, characters and structures are meant to repeat and reappear although with altered superficial representation. A literary narration of these characteristics invites the readers into an experience of time drastically different from the apparent lineal life we live. The readers/interpreters are enabled to involve in thoughts, words and actions rooted deep in the past, as if they were happening at the present time. This capacity allows them to re-signify the narrations and experience them as their own.

Epic legends and myths construct the perfect hero-antagonist dichotomy. When re-signified, the dichotomy evolves into more collective concepts and characters, for example the place of the hero is taken by a whole society and that of the villain by an authoritarian State. Epic narration has the potential of taking in social resistance and vice versa. However this does not happen only in terms of the mentioned dichotomy. The experience of spiral time implicated in the epic narration creates both hope and awareness. Hope, because each and every cycle has a beginning and an end, so no dark era or tyranny is to last forever. Awareness, because the spiral repetition of events points to uncertainty: bright and peaceful periods can be substituted by tyrannies again and one must stay aware not to permit that too soon.

A good example can be found in how the epic poem of Persian Book of Kings (Shahnameh) functions in Iranian sociopolitical resistance inside the country and abroad. One specific passage is analyzed in this paper: the story of Zahak and Fereydoun, that defines who a tyrant is and how people can confront him.

In the present paper, I will focus on this passage and trace some of its multiple resignifications through time and in contemporary Iran. My hypothesis is that what makes this appropriation possible is not only a matter of narrative elements and resources but also the possibility of experiencing time metaphorically. To confirm that, I will render a structural analysis of the Shahnameh as a whole, identify the place the mentioned passage has in it and how these facts affect the experience of time. Then I will offer examples of how this experience is connected metaphorically to other experiences related to sociopolitical resistance since the Iranian Constitutional Revolution to the present time.

For the structural analysis I will use Bahman Sarkarati (1979) and Shahrokh Meskoub's work (2005). For the semiotic conceptual theory, I will work with Peirce's notion of metaphor, and for its application to literary narrative, I will recover theoretical proposals I developed in a previous work about iconicity in literature (2016).

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# Experiential and linguistic investment in choice making

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**Keywords:** Consciousness, Phenomenology, Cognitive Linguistics, Choice Blindness, Awareness

When we make a choice in everyday life, we assess the motivational weight of the various alternatives and position ourselves in the present by committing ourselves to one particular future and not to another. Some of these choices matter more for us than others: we are more invested in them. In experimental settings, the goal is often only the execution of the assigned task, leading participants to degrees of indifference. In an ongoing study, we investigate participants' investment in an artificial choice-task where participants were susceptible to various manipulations of their choices.

We argue for consilience between experiential choice investment and its manifestation in language and hypothesize that the experimental conditions, namely, type of stimulus (i.e., human faces and abstract figures) and task instructions ("who do you find more attractive" and "which figure do you find more aesthetically pleasing") will have a different impact on the "mattering" of choice making, influencing the linguistic imprints of it accordingly. To examine it, we assess participants' verbal motivations for actual and manipulated choices (i.e., "choices" participants were tricked to believe they had chosen) against eleven specific linguistic dimensions and their internal categories, as potentially suggestive of experiential investment. To form these operational definitions, we combined theoretical ideas from cognitive linguistics and phenomenological philosophy with empirical insights from the data, in an iterative way.

The preliminary results show that experiential choice investment vary across the different experimental conditions with participants being a) more strongly invested in choices concerning faces than figures; and b) linguistically manifesting investment differently for actual vs. manipulated choices. Moreover, we expect to find a correlation between choice investment and manipulation recognition (i.e., detected/non detected), which would provide counterevidence to prevailing overgeneralizations about our unreliability as conscious agents (Nisbett & Wilson, 1977; Johansson et al., 2005). Thus, the current findings suggest that choice investment is a factor underestimated in choice making research, especially in the so-called "choice blindness" experiments (e.g., Johansson et al., 2005; Hall et al., 2012).

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# The Curious Incident of the Dog and Predictive Processing: Drawing some Semiotic Consequences of Allostatic Approach to Cognition

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**Keywords:** Predictive Processing, Embodiment, Social Cognition, Semiotic Theory, Intersubjectivity

In Conan Doyle's *Silver Blaze*, there is a famous passage where inspector Gregory asks Sherlock Holmes if there is any other point the detective wishes to draw his attention to. Holmes replies: "To the curious incident of the dog in the night-time". Gregory responds: "The dog did nothing in the night-time". To which Holmes, in turn, replies "That was the curious incident". The anecdote shows two mindsets: on the one hand, Gregory does not expect something he has never thought of. On the other hand, Holmes does. Gregory's cognitive economy is mobilized when something extraordinary happens. In this sense, it is a response to a non-anticipated stimulus. Holmes adapts his cognitive economy to each situation by anticipating what would have happened and will happen, extraordinary, common, or trivial.

This fictitious anecdote shows Holmes' outstanding skills in formulating anticipations (predictions from abductions): had the dog not known the culprit, it would have barked unceasingly.

This Holmesian predictive capacity is an idealized special case of a broader cognitive and bodily capacity, that is not exclusive of consultant detectives, but is present and available to all human beings (and other animals): allostasis or regulative anticipation (Schulkin & Sterling, 2019). In other words, regulation through change – as opposed to 'homeostasis' or regulation through constancy. Allostasis consists in the systematic predictions we continually make while sensory inputs indicate prediction error/confirmation. Allostasis is, allegedly, more efficient than homeostasis, insofar as preventing an error is less expensive than correcting it.

As far as brain function is concerned, this capacity has been explored in processes of emotion construction (Barrett & Simmons, 2015), language alignment (Pickering & Garrod, 2011); and even in cases of mental disorders such as depression (Neemeh & Gallagher, 2020). In philosophy of mind allostasis has been thought to play a role in the extended mind, and social cognition (Clark, 2019); among many others.

This presentation aims to explore the consequences of allostasis in meaning-making processes, as accounted for in the interdisciplinary field of cognitive semiotics, particularly, in relations to its affective, temporal, inferential, and intersubjective (social-communicative) aspects.

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# Prolegomena to social cognitive semiotics: Critical Realism in the World of Finance

**Todd Oakley**

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**Keywords:** semiotic theory, social theory, cognitive linguistics, phenomenology, ecological approaches to meaning making

A nagging question for cognitive semiotics is, “What is the relationship between social structure and agency?” Answers to that question are as elusive as they are essential for explaining the social cognitive facets of meaningful interactions. Elusive in the sense that the social sciences have traditionally lacked ontological rigor in the investigation of social structures and their relationship to individuals. Indeed, the very idea of a social structure is a hotly contested ground. Critical in the sense that many participants within the cognitive semiotics programme aim to explain meaning-making as an emergent property of normative institutions and organizations. All of which is to say there is an obvious need for a social-cognitive semiotics.

This article aims to provide ontological rigor to social-cognitive semiotics from a critical realist (Bhaskar 1978; Elder-Vass 2010, 2012) perspective. Semiotic theories must offer “proof of concept” plausibility through analysis, which I do here with respect to a prevalent social practice endemic to capitalist economies: the act of taking a private company public. I offer a realist ontology of social structures that avoids the untenable reductions of methodological individualism (Weber) and methodological collectivism (Durkheim). Human agency always operates within normative structures, which are real; they possess emergent properties with causal powers. At the same time, individual humans operate as “morphogenetic” agonists and antagonists capable of creating, altering, or destroying those structures.

After a brief introduction of critical realism, I describe emergence as an ontological description and argues that any scientific rigor necessitates a clear understanding of entities, their parts, and their causal mechanisms. I then proceed to discuss the significance of a critical realist social ontology to the cognitive semiotics programme, paying particular attention to 1) the ontology of the sign (Parker 1994) and 2) to the distributed nature of cognition (Hutchins 2010). These two strands form the basis of a cognitive semiotic metatheory – a general ontology plus methodology.

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## Diagram/analogy and cognition: contributions from Peirce and Deleuze – Semiotic Theory

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**Keywords:** Peirce, Deleuze, Cognition, Diagram, Analogy

The potential of the diagram for the cognition, considered as a sign process, in the perspective of Charles Sanders Peirce's semiotics or logic is the object of study of this article. The concept of diagram, the various modalities of diagram and the analogy inherent in each of them will be treated from the perspective of both semiotics or logic proposed by the american philosopher and logician Charles Sanders Peirce and the french philosopher Gilles Deleuze. What modalities of analogy are engendered by diagrams and what is the role of this mental operation in cognitive processes given that they involve three types of reasoning: abductive, deductive and inductive? is the guiding question of this article. Thus, contributing to the understanding of the role of the diagram for cognition is the general objective, while making explicit the concept of diagram, beyond simple taxonomies from the perspective of both Gilles Deleuze and Charles Sanders Peirce; identifying the modalities of analogy inherent in diagrams and highlighting the importance of analogy in the constitution of the three types of reasoning are specific objectives. Thus, initially, we present part of the taxonomy of the signs contained in the speculative grammar – one of the three divisions of semiotics or logic proposed by Peirce – mainly the iconic signs; then we enter the critical logic to present the three types of reasoning and the role of analogy in their constitution; then we deal with Deleuze's path that seeks painting to explain the concept of diagram and three modalities of analogy and finally we argue about the approximation of diagram theories elaborated by Peirce and Deleuze and suggest a classification for the diagram with emphasis in kind of analogy that it involve, which also leads you to think about the relation iconicity/indexicality, considering the relation of the sign (diagram) with the object that it suggests or presents. The article is relevant for communication and for education, since it treats the diagram as a sign that becomes the present object, that is, the diagram is a synonym of presence, which characterizes its potential to possibly trigger off the cognition.

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# What does it mean that gestures are intentional?

## A comparison of adaptors and beats in children's narratives

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**Keywords:** adaptors, beats, referentiality, intentionality, children's language

The main focus of this study is on investigations regarding the distinction between two types of body movements, namely: 'adaptors' and 'beats'. The examination of these body movements leads to questions about distinctions between gestures and other kinetic behaviors. One important distinguishing criterion seems to be intentionality. The term adaptor was described in a systematical classification for the first time by Ekman & Friesen (1969, p. 86): In their psychological approach they outline adaptors, inter alia, as body movements that are usually performed with little awareness and no intention to communicate. In the subsequent period many authors use the term adaptor and the philosophical term intentionality to distinguish between gestures and other idiosyncratic movements or rather to define the term gesture: "gestures are produced as part of an intentional communicative act (unlike adaptors)..." (Goldin-Meadow, 2003, p. 5). In contrast to 'adaptors' the class of 'beats' are associated to the category of gestures. 'Beats' and 'adaptors' still share several common properties such as heterogeneity and elusiveness, in addition, both groups are non-meaningful in the sense that they neither do refer to a specific object nor they represent a referential content. 'Beats' also known as 'batons', 'rhythmic gestures' etc. are described as biphasic gestures that display the rhythmic behavior of prosody in speech (McNeill, 1995). The investigated corpus described below showed also many similarities between adaptors and beats that challenge the frontiers of these categories. The findings relate to the corpus of children's narratives from primary school. Especially leg-movements that are often depicted as motor discharges (Rögels, Roelen, & van Meel, 1990) occur often during children's narrations. These leg-movements as well as 'beats' can display a range of meaningful pragmatic and discursive functions in speech more specifically in narrations, even if they do not refer to a referential content. Diverse examples from the data show that leg-movements and other 'adaptors' have a discourse structuring potential that is similar to the discourse structuring moments of 'beats'. Investigations on 'adaptors' are worthwhile. This can be seen on completed studies on 'adaptors' relating to their function as a supporting mechanism for the turn-taking, for example (Żywicznyński, Waciewicz, & Orzechowski, 2017, p. 296). The supporting function of 'adaptors' can be seen as pragmatic or discourse structuring effects during narrations, too. Additional to other lexical or visual information 'adaptors' can provide support with regard to interpersonal information in the interaction as well as intrapersonal assistance or help while speech production.

The investigated corpus consists of 181 narrations of 76 German speaking participants in the age between 6 and 10. Narrations are divided in two different types: retellings of animated movies and self-experienced narrations. Videos are recorded with a 360 degree camera in a face to face situation at one elementary school in Germany.

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# Iconicity with(in) Ekphrasis: Images, diagrams, and metaphors

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**Keywords:** cognitive poetics, ekphrasis, figurative language, iconicity, poetry

This paper examines the relationship between iconicity and ekphrasis from the viewpoint of cognitive poetics and investigates how readers may process and mentally reconstruct literary descriptions of objects of art. Cognitive poetics draws on cognitive linguistics, literary linguistics, psychology, and neuroscience to explore the relationship between the creation and interpretation of literary texts and the workings of the human mind. I focus my analysis on two ekphrastic poems, W.D. Snodgrass's "Van Gogh: Starry Night" and X.J. Kennedy's "Nude Descending a Staircase", in which the poets expertly reconstruct the paintings both linguistically and visually.

In Snodgrass's poem, I focus on diagrammatic iconicity to explore the tension between order and disorder that underlies the poem's structure. Examples of phonological, syntactic, and graphological iconicity illustrate how the poem reflects the explosive imagery of the night sky and juxtaposes it with the serene atmosphere of the village. Disorder is reflected in the fragmented syntax and the quick succession of figures that attempt to impede the readers' ability to form a complete iconic portrayal of the painting. Conversely, the extensive use of repetition and parallelism mirror the calm life of the village. In X.J. Kennedy's poem, I turn my attention to the interrelation between iconicity and metaphor. C.S. Peirce identified metaphor as one of the three elements of iconicity along with image and diagram; more recently, other theorists (e.g. Hiraga, 2005; Elleström, 2017) have elaborated on the gradability of iconicity and have described metaphor as the most complex manifestation of iconicity characterized by intricate cognitive operations. I examine various figurative expressions and constructions such as similes, image metaphors, and conceptual metaphors, and discuss their use in conjunction with other manifestations of iconicity. The analysis reveals how Kennedy employs figurative language together with diagrammatic iconicity to achieve "the semblance of felt life" (Freeman, 2017, p. 100). In other words, iconicity is used to not only reconstruct artworks linguistically and visually but also recreate the visual and aesthetic experience of seeing them come to life.

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# What is a dead metaphor, and when is a metaphor truly dead?

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**Keywords:** metaphor, dead metaphor, literal meaning, Conceptual Metaphor Theory, Conceptual Spaces Theory

By both conventional and Conceptual Metaphor Theory (CMT), albeit by different routes, a dead metaphor is one that has ceased to function metaphorically. Consider the word “haven”, where the metaphorical meaning (remaining such in the Nordic languages, from which it derives) has become the “literal” meaning, and the former “literal” meaning has disappeared.

Such an account is problematic in a number of ways, not least because no one can agree on which metaphors properly are labeled “dead” (see e.g. Allan, 2007); but also because there is no agreed decision procedure for separating metaphorical from literal – and it is literal meaning that dead metaphor is generally meant to have become.

CMT holds that dead metaphors are ones that have ceased to play any “interesting” role in cognition, qua metaphors. This paper goes a step further in claiming that dead metaphors have ceased to play any “interesting” role in cognition at all: that is to say, they retain form but lack content. They are as empty shells.

CMT holds that what is metaphorical in language – and, by implication, semiosis of any kind – is metaphorical first in thought. The Conceptual Spaces Theory (CST) of concepts (Gärdenfors, 2004) is inclined to agree. One of the central claims of the Unified Conceptual Space Theory (UCST) (Parthemore, 2013) – derived from CST – is that concepts are in constant if often only incremental (and so largely undetectable) motion (Parthemore, forthcoming, 2014) and, indeed, must be, to function as concepts – reflecting a world that itself is perceived to be in continuous motion, never really standing still. The ability of concepts to stand perfectly still – for our conceptual understandings of anything to become fixed – is, it argues, an illusion. Every moment of experience sends ripples throughout our conceptual understandings of the world, leaving no corner completely untouched. The appropriate metaphor is of a spider’s web, where a disturbance in any thread is felt throughout the web. Metaphors, as expressions of our conceptual frameworks – in thought or semiosis – are by extension taken to reflect that same dynamic. In place of any sharp line between “literal” and metaphorical, one has a continuum from primary (i.e., most “literal”) to secondary, tertiary, and altogether creative senses, with the caveat that if the usage becomes too creative, the metaphor is once again lost (Parthemore, 2016). Consider “Trump is a pig” vs. “Trump is a gazelle”. The former will be readily understood by most English speakers, the latter likely not.

Even historical concepts that primarily or exclusively have meaning in a historical context (e.g., phlogiston) change and are changing, because our understanding of the past changes and continues to change. When a concept dies – because it fails to apply any longer, or has evolved into something unrecognizable from what it was – then all meaning is lost. One has, at most, a memory of meaning: at one time, that meant something, but one cannot say what. In semiotic terms, we can at most recognize them as having been signs or having been intended as signs.

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# Viewpointed semantics: Spanish verb-complement compounds as fictive interaction constructions

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**Keywords:** word formation, skeletal meaning, viewpoint, grammaticalization, intersubjectivity

The semantics of lexical units can involve complex conceptual processes far beyond the establishment of a straight-forward signifier-signified relation. Semantically opaque compounds like hot dog or coffee headache pose a challenge for compositional accounts of meaning. Particularly complex are compounds involving a multi-word specifier, which share formal and functional characteristics with clauses or even utterances, as in 'stick it in your ear attitude', 'bring-and-buy sale', or 'not happy, money back guarantee' (e.g. Carroll, 1979; Marqueta, 2006, 2014). Such complex nominal compounds are productive and relatively frequent in Germanic languages, whereas they are much more marginal in Romance languages, in which they generally appear as phrases or clauses modifying the head noun (Marqueta & Królak, 2018).

Despite undeniable morphological constraints, we claim that Spanish verb-complement compounds (henceforth 'VC'), one of the most productive patterns of compound formation in most Romance languages, involve similarly complex semiotics. Examples are 'limpiabotas' ([cleans+boots], 'boot polisher'), 'rascacielos' ([scraps+skies], 'skyscraper'), or 'pintalabios' ([paints+lips], 'lipstick'). Based on a self-compiled corpus of 200 compounds (Pascual, 2019), we argue that the skeletal meaning of all such compounds invariably involves the same viewpointed construction as in the aforementioned English multi-word compounds. Indeed, Spanish VC compounds are not formed by a phonetically reduced infinitive or verbal stem, but rather prototypically contain a verb in the third person singular of the present indicative tense (Menéndez Pidal, 1940; Val, 1999). This is clearly seen in compounds created from verbs whose third person indicative form is phonetically different from the corresponding infinitive or verbal stem:

- (1) a. abrebotellas [opens+botella], 'bottle opener' vs. \*abribotellas (infinitive: abrir)
- b. cuentagotas [counts+drops], 'dropper' vs. \*contagotas (infinitive: contar)

The vast literature on Spanish VC compounds mostly acknowledges that the verbal part is conjugated, and thus carries viewpoint information as an utterance does, but largely treats them as lexical and morphological anomalies (Val Álvaro, 1999; Moyna, 2011). We show that all Spanish VC compounds can be parsimoniously accounted for as involving a grammaticalized fictive interaction construction, that is, a non-actual, ontologically conceptual enunciation (Marqueta, 2006, 2014). We show that, whereas the prototypical VC compound constitutes a verb in the third person indicative, compounds involving a verb may occur in different persons and illocutionary forces:

- (2) a. Indicative: metomentodo [I+meddle+me+into+everything], 'meddler'; bienveo [well+I see+you], 'passerine bird'
- b. Imperative: tentempié [hold+yourself+on+foot/standing], 'snack'; hazmerreír [make+me+laugh], 'laughingstock'
- c. Interrogative: el quédirán [the+what+will+they+say]; 'what people may say'; los quehaceres [the+what+to-do+s], 'chores'
- d. Exclamative: vivalavida [long-live+the+life] or vivalavirgen [long-live+the+virgin], 'overly laid[EPO1] back person'

Spanish compounds may even involve coordinate or subordinate structures, as in:

- (3) a. correveidile [run+go+and+say(it)+to him/her], 'gossiper'; quitaipón [remove+and+put(on)], 'removable'
- b. matalascallando [kill+them+shutting up], 'hypocrite'; lavatiquevoy [wash+yourself+that+I come(to you)], 'go-getter'

We will present an account of such Spanish nominal compounds that does not result from the sum of the meanings of their parts, but is instead embedded in a dialogic theory of linguistic meaning as emergent from situated interaction (Sandler, 2016, Sandler & Marqueta, 2019). Indeed, we view intersubjectivity as central to referential semantics.

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# Embodied Pattern Grammar in the Tibetan Wheel of Life

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**Keywords:** embodiment, logic, phenomenology, visual analysis, evolution of mimesis

The Tibetan Wheel of Life (or Bhavacakra) depicts six realms of samsara or 'rebirth' between the spokes of a wheel, situated according to an internal, geometric logic that has gone unexamined in the literature, in spite of being non-random and non-trivial. The model is organized into distinctive patterns of vertical/transverse and lateral/horizontal oppositions based on experiential reference to the kinesthetic midlines of upright posture, as indicated by the hands and feet of Yama, the monster of impermanence. Since the Bhavacakra is an overtly body-based visual model that originates as a pedagogical mnemonic or hortatory aid for a (formerly) pre-literate, non-western population, it offers robust empirical evidence for theory building and hypothesis testing grounded in a non-WEIRD context (non-western, educated, industrialized, rich, democratic). Because of this, I argue that the model has important implications for cognitive semiotics, including the study of embodied cognitive grammar, conceptual blending theory, the cognitive structure of ideology, the origins of semic logic, and the study of intersubjective mimesis. To demonstrate this potential, I use the Bhavacakra model to test the embodiment hypothesis for the semiotic square. In search of statistical, structural, and logical evidence, I draw on a working database of more than 100 visual examples and discuss coding results from visual content analysis of the dataset.

The semiotic square is a diagram of logical and oppositional relations. I have argued that these relations are fundamentally embodied in memories of kinesthetic experience (Pelkey, 2017a; 2017b), making a case that the square of opposition is grounded in the reorganization of the anatomical planes made possible by the evolution of upright posture, along with the reflexive differentiation and relation of the upper and lower limbs that ensued. This is a complex hypothesis. Can it be tested and refined? At least three criteria would need to be satisfied for such a model to qualify as a valid test (and potential validation) of the embodied grounding thesis for the semiotic square. (1) For purposes of general theory building, the model should emerge from a non-western cultural context. (2) For purposes of testing the embodiment hypothesis directly, the model would itself need to be overtly body-based in some way. (3) Given the potential for skewing biases introduced by writing direction, this non-western, body-based model would preferably be intended for a pre-literate population for whom the visual/pictorial medium. Traditional representations of the Tibetan Wheel of Life fit each of these criteria. As such the model should be taken seriously as valid empirical evidence for testing and refining the embodiment of semic logic, further facilitating in the process its theoretical development into embodied pattern grammar.

The relative placement of each of the six realms to each other, and to the inverse alteroceptive image of Yama as interlocutor (à la Bråten 2009), are theoretically non-trivial and phenomenologically non-arbitrary in ways that further support the embodied grounding thesis for the semiotic square, laying further groundwork for a theory of embodied pattern grammar in the process. Further theoretical developments enabled by this analysis include enhanced accounts of cognitive grammar (Heine 1997), enhanced continuity between cognitive linguistics and structuralist semiotics, and enhanced accounts of intersubjective mimesis in the semiotic hierarchy (Zlatev 2018).

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# Association, Sedimentation and Passivity: A (New) Phenomenological Approach to Image Schemes and Basic Level Categories

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**Keywords:** Phenomenology, Embodiment, Image Schemes, Basic Level Categories, Passivity

Although Mark Johnson presents his thesis on image schemes as a reformulation of Kant's schematism (Johnson, 2005), some authors within the field of cognitive semiotics have drawn their attention to the relevance of Husserlian phenomenology in understanding Johnson's proposal from a philosophical point of view (Zlatev & Blomberg, 2016; Sonesson, 2017). In my presentation I will go deeper in this last direction, but I will do it trying to link phenomenologically two of the central theses that define Lakoff and Johnson's proposal about embodiment: Basic Level Categories and Image Schemes. Thus, first, I will make an interpretation of basic level categories following Husserl's concepts of type and sedimentation as presented in *Experience and Judgment*, as well as the opposition between near association and distant association, as developed by Husserl in his *Analyses on Passive Synthesis*. Then, I will defend an interpretation of the image schemes as body types, also following Husserl's descriptions in the *Analyses* and the characterization of the temporality of the experience in the *Bernau Manuscripts*. My aim is to provide philosophical tools that contribute to the vacuum that exists regarding the definition itself of the image schemes (Zlatev, 2005; Grady, 2005), taking into account the role of temporality, sedimentation and corporality. I will defend the theoretical relevance of differentiating three phenomenological strata in the sedimentation process: the level of the experience of the body at the pre-attentional and pre-affective level; the level of the experience of the body-in-interaction; and a third level of typified contents.

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# Metacognition and diagrams in marking-for-self

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**Keywords:** Metacognition, Marking, External Representation, Semiosis, Diagrams

Metacognition (“thinking about thinking”) depends on language and representation. Those who investigate metacognition have approached language and representation as internal knowledge structures, rather than as external-oriented semiotic processes (see Ref 1). It is difficult to avoid being deceived into seeing language as symbolic words and discrete sentences. According to our view, semiosis (action of sign), in a rich, physically and culturally distributed multimodal form, is crucial for metacognitive tasks. We based our approach on Peirce’s mature semeiotic (Ref 3). Metacognition is treated as semiosis – the communication of a “habit” from an Object (first-order cognitive process) to an Interpretant (effect on the interpreter) through a Sign (second-order cognitive process), so as to constrain the interpreter’s cognitive behavior. By applying Peirce’s model of semiosis, the phenomenon of metacognition is observed as essentially triadic, interpreter, and situated (context-dependent). It connects Sign, Interpretant, and Object, where the communicated form in the first-order cognitive process is embodied as a constraining factor of interpretative behavior. We explore how multimodal patterns of semiotic activity (not monomodal symbolic-based processes) can provide a more accurate description of metacognition. To develop our ideas, we examine the phenomenon of marking in dance, with a focus on marking-for-self (see Ref 2). To mark is to perform a dance phrase in a simplified, schematic, or abstract way. When marking, dancers use their bodies in motion to represent some aspects (properties, dynamics, or structures) of the complete phrase they are thinking on. Marking-for-self is a type of sign in which the dancer marks in his own idiosyncratic manner, a process that potentializes real-time reflection through the manipulation of external signs. We explore the idea of marking as an embodied diagrammatic semiosis. Diagrams signify through the relations between their parts, the analogous relations between parts of their objects; a diagram relates to its object by means of sharing an analogous arrangement of relations. As such, the object of a diagrammatic icon is always an intelligible relation.

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# Semiotizing distributed cognitive systems

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**Keywords:** Distributed Cognition, Cognitive artifacts, Semiosis, Semiotic externalism, C. S. Peirce

Distributed Cognition (Hutchins 1995; Davies and Michaelian 2016) shifts the focus of cognitive science from the heads of individuals to distributed cognitive systems (DCSs) of agents and artifacts. A cockpit of a commercial airliner can be seen as a single DCS for the purposes of flying the airplane (Hutchins 1995b), including the crew (pilot and co-pilot), the flight instruments, and other external media of representation (such as plastic cards), all used according to conventionalized procedures. A biomedical research laboratory can be seen as a DCS (Nersessian et al. 2003) composed of several researchers, various different pieces of equipment, books and online reference material, etc. In these examples, some cognitive processes essential for how the system operates happen outside of the heads of individuals, and involve more than one individual. The thesis that some cognitive processes can happen outside the head, through the use of resources external to the body of an organism is called cognitive externalism. These external resources are cognitive artifacts that aid, support, enhance or improve cognition. Cognitive artifacts are a constitutive part of our cognitive lives: we are able to alter conscious states and attention by using pharmacological drugs, we “freeze” reasoning and communicate it through the use of alphabets and notation systems, we organize, compare and calculate the world through numbers, graphs and diagrams. Finally, the most impactful cognitive artifact that shapes human cognition is language: a deeply ingrained scaffolding device that radically augments what our cognitive systems can achieve in terms of categorization, memory, inference, learning, attention, as well as in building social relations and institutions (Clark 2006).

We explore here the relation between semiosis and cognition, as conceived by C.S. Peirce’s cognitive semiotics, and in relation to the notion of distributed cognitive system (DCS). Our approach to distributed cognition is pragmatic and action-oriented, and focuses on sign action, as conceived by Peirce’s pragmatism. We propose a semiotic externalist approach that takes cognition as semiosis, gives central importance to the notion of temporal distribution, describes the elements of DCSs as signs, and identifies the DCS itself as a system that enacts a sign. This is a semiotic-centered, and thus a non-agent-centered account of DCSs. In order to develop and illustrate our argument, we describe an example of DCS – the Brazilian verbo-musical improvisational tradition of *repente*, or *repentismo*, – considering it first as embodiment of the formal structure of a cognitive task, and then as embodiment of a semiotic process. The latter corresponds to a semiotization of the description of *repente* sessions as DCSs, that focuses on how the DCS can embody a metasemiotic process, i.e., semiosis that supervenes on, and determines, distinct types of smaller-scale semiotic process. In our example, the temporally-distributed tendency towards enacting the *repentismo* sign is the factor that organizes the DCS as a system that performs metasemiotic experiments on the use of natural language.

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# A tooth that is a chair: On the problem of concept combination

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**Keywords:** Concept combination, weights, compositionality, cognitive science, conceptual blending

An elephant is a mammal of the family Elephantidae and the largest existing land Vertebrate. Or, it is a big, heavy, grey pachyderm with four legs, a trunk and two tusks. Or, it is the beautiful animal you saw during your safari in Africa.

There exist different views of concepts. The logic-based, or classical view, aims to represent concepts in term of definitions, more precisely, as sets of individually necessary and jointly sufficient conditions. In order to be categorised as an instance of a concept, an item must then exhibit all the features that contribute to the definition of that concept. In knowledge representation this view presents some advantages, mostly because it offers a compositional and well-understood semantics as well as mainstream reasoning systems. Unfortunately, empirical evidence in psychology and cognitive science has shown that many common-sense concepts lack such precise definitions. Namely, categorisation presents a certain degree of indeterminacy and is subject to context dependency. Moreover, a number of cognitive phenomena linked to concept combination are difficult to reconcile with compositionality. Data suggest [1], for instance, that understanding the concept ‘a sport which is also a game’ is quite different from taking the simple set-theoretic intersection of extensions of the concepts ‘sport’ and ‘game’. E.g., being a very good game (but hardly a sport) may be enough to enter into the combination of the two concepts. This leads to the phenomenon of overextension [1]. How to handle such kinds of concept combinations formally is not trivial.

In [2] a formal analysis of the work of psychologist James Hampton [1] was proposed. The work was mostly directed at providing an abstract and formal setting for the representation of different phenomena linked to complex concept formation, as e.g. overextension. These phenomena are difficult to be handled in a classical logic setting. To deal with them, the general strategy of [1] (extending the work of [3]) was to introduce weights into the formal language, thereby expressing the relative importance of the different features of the concept.

Here we would like to extend this line of research further. Specifically, we will analyse the case of “creative” combinations, following the extensive research on conceptual blending [5] and the work on hybrid products [4]. When people combine/blend/fuse concepts creating novel ideas, these are often characterised as “hybrid”, “impossible”, “humorous”, and so on. However, when simply considering them in terms of extensions, the novel concepts understood as an intersection will often be empty (consider ‘a tooth that is a chair’, ‘a flower that is a pet’, etc.). Still, people use different strategies to produce creative non-empty concepts: additive or integrative combination of features, alignment of features, partial negation, instantiation, etc. All these strategies involve the ability to deal with conflicting attributes and the creation of new properties (or attribute emergence). We will discuss the contribution of formal approaches based on weighted logic to the elucidation of the cognitive and linguistic mechanisms of concept combination.

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# How returning to a cognitive model clarified surprising results on children's gesture comprehensibility

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**Keywords:** Gesture, semantic saliency, cognitive model, language disorder, development

Children and adults with language difficulties sometimes spontaneously use hand gestures as a compensation strategy. The quality of these gestures may be assessed by evaluating their comprehensibility through silent gesture (pantomime) tasks. While studies that included children with language disorder showed a positive relation between these children's pantomime comprehensibility and their expressive language skills (Botting et al., 2010; Wray et al., 2016, 2017), cognitive models do not indicate a relation between pantomime comprehensibility and expressive language. Taub's widely used model (2001) considers gesture production as a four-step process: (1) the concept and its semantic features are retrieved from long-term memory, (2) this conjures up a realistic visual mental image of the concept, (3) this visual mental image is abstracted into a linear scheme, and (4) this linear scheme is translated onto hand movements. Purely based on this cognitive model, expressive vocabulary plays no role in pantomime production. In contrast, long-term memory and semantic processing as well as visualization seem instrumental. Based on Taub's model (2001), we hypothesized that semantic processing skills, which are interrelated with expressive vocabulary skills, underlie the relation between children's gesture comprehensibility and expressive vocabulary.

Twenty-five children with severe, resistant language disorder aged between 7 and 10 years, 25 age-matched children with typical development, and 14 children/adolescents with Williams syndrome performed an explicit gesture elicitation task. They produced silent gestures to act out 20 pictures of objects we presented them one by one on a screen. Four researchers independently rated each pantomime's comprehensibility on a Likert scale from 1 (not clear) to 5 (very clear). Semantic saliency for each pantomime was scored using a self-developed scheme. Finally, the children's expressive vocabulary skills (Clinical Evaluation of Language Fundamentals), semantic processing (Semantic Association Test), and visualization skills (Perceptual Organization Index, Wechsler Intelligence Scales for Children III) were measured. We explored relations between these cognitive measures, pantomime comprehensibility, and semantic saliency using partial Spearman correlations.

In line with Taub's model (2001), pantomime comprehensibility correlated significantly and positively with children's visualization skills. Furthermore, the correlation between comprehensibility and expressive vocabulary skills disappeared when we controlled for the children's semantic processing skills. Surprisingly, semantic processing skills were not directly related to pantomime comprehensibility. Nevertheless, semantic processing was positively related to semantic saliency, which in turn was strongly related to gesture comprehensibility. There was no significant correlation between visualization skills and semantic saliency.

Semantic saliency and visualization skills each shaped pantomime comprehensibility. As children encoded more distinct semantic features, gesture comprehensibility rose. Even though the children had pictures to start from, their ability to mentally manipulate visual information strongly affected gesture comprehensibility. These findings show that returning to theoretical models helps to clarify empirical findings even when empirical findings initially do not seem to support the theory.

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# Answering Eco's Objections to Kant's Categories

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## Semiotic Complexity

1. Kant's Categories of Judgment
2. Eco's Critique
3. Preliminary attempt to answer Eco: Monomyth as Primal Schema
4. Campbell's monomyth
5. Vogler's 12-stage approach (which structurally resembles the Categories)
  - a. 3 sets of 4, more than just a heuristic
6. Narreme Theoretical approach
  - a. By running sense data through the monomyth, the mind generates empirical categories by seeing which types of narrative roles data can logically occupy
  - b. An example

Bundles of narremes that are "black boxed" and whose qualities are never disjoined from one another throughout the course of an entire story-cycle, the internal structure of which represents an actor's essential logic which differentiates it from a different kind of actor.

Narremes are always passing into and out of actors in narrative programs; the extent to which an actor remains "black boxed" is the extent to which its component narremes are recognized as essential to its categorical identity and become embedded in consciousness as A THING.

"Residue" of sensory experience vis-à-vis narremes accumulate inside the structure of the monomyth (primal schema) and at some arbitrary point are delivered to the unconscious (i.e. Categories of Judgment) as an empirical concept. Always subject to revision and iteration by successive contact with the world, but at some point generally becomes cemented.

My main contribution is the relationship within story, particularly the monomyth. The fact that the monomyth is structurally similar to the Categories is what allows it to operate as primal schema.

# Two plus two is not four: the complex interplay of semiotic modes in multimodal meaning-making practices

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**Keywords:** Peircean semiotics, multimodal-specificity and crossmodal principles of meaning-making, multimodality in education, embodied interaction, situated multimodal practices

With the advent and development of new technologies multimodality has taken an important place in everyday communication and is increasingly prevalent in education. When it comes to educational practices, however, a common ambiguity linked with the idea of multimodality persists: that of multimodality being linked with technology-mediated learning. However, although the notion of multimodality goes hand in hand with that of multimodality, one should be careful not to reduce the former to the latter. In a similar stance, Shipka (2011) has critiqued the way multimodality is conflated with digitality. Indeed, in view of the relatively recent development of multimodality research, the terms mode and modality still lack precision. Kress and Van Leeuwen (2001: 21-22) define modes as 'semiotic resources' that 'can be realized in more than one production medium'. In a more socio-cultural view, Kress (2010: 79) defines mode as 'socially shaped and culturally given semiotic resource for making meaning'. However, as Prior (2005) argues, while addressing the notion of multimodality Kress's focus on artifacts rather than practices is problematic. As he points out (Prior 2013: 523) 'A striking feature of [...] multimodality studies in general, is the almost exclusive focus on texts and other semiotic objects. Multimodality studies rarely involve close attention to how people make, distribute, or use multimodal texts and objects.'

Indeed, multimodal meaning-making practices as such have still not received sufficient attention in the field of multimodality research. This conceptual paper advocates the need for such studies and attempts to contribute to the field of multimodality research by placing multimodal practice at its core. By doing so its purpose is twofold. First, to refocus multimodality research attention to situations of use and the complex dynamics of situated semiotic activity involving the choice and combination of semiotic resources in designing multimodal representations in order to communicate. And second, to understand how situated multimodal practices can open up new opportunities for learners to actively and naturally engage in learning-processes. While addressing multimodality issues, the potential of Peircean semiotics has been explored by scholars (cf. Bateman 2018; Mittelberg 2019). Likewise, drawing on Peirce's account of signs and meaning-making, the paper addresses multimodality not as an approach to analysis (resulting in Multimodal Discourse Analysis), but rather as an approach to meaning-making and learning thereby adopting a broader cognitive perspective. Modality specific affordances are explored to throw light on the complex interplay of semiotic modes in multimodal meaning-making practices of language learners.

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# What do schemas, signs and icons have in common?

## The viola joke!

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**Keywords:** humor, Saussure, schema theory, semiotic theory, cognitive linguistics

Humor is a core aspect of social interactions between humans and it can be used to enhance or challenge interpersonal and social relations. A characteristic feature of jokes is targeting a certain group that holds some stereotypical qualities, which are subject to humorous treatment. In the orchestra, this group is usually the viola section.

An orchestra, like any other professional group, has its own in-group humor, which is very often only comprehensible within the confined circle of its members or members of the profession (musicians). Understanding the relationship between a lexeme/signifier related to the nature of the professional group, and the signified/concept can be a challenge to an outsider, especially if specialist vocabulary or musical knowledge is required. Viola jokes often work with icons, where the signifier resembles the signified. This is especially true for the German versions of these jokes, which often play around the German word for the viola (Bratsche).

**(1)** Why is a viola called Bratsche in German? – Because that is the sound it makes when you step on it.

Other viola jokes play around with signs that have one identical signifier, but different (signified) concepts and understanding the ambiguity creates the humor (Attardo&Raskin 1991).

**(2)** What do a viola and a lawsuit have in common? – Everyone is happy when the case is closed!

They are similar to the last category. Many viola jokes play with the concept that viola players are lazy, slow and/or dumb and these jokes are often based on two opposing scripts or schemas (3) (Simpson 2004, Raskin 1985). In the beginning of the joke, a specific cognitive schema is activated which constructs expectations, e.g. terrorists hijacking a plane. These expectations however, clash when the second schema is activated, because they stand in incongruity to each other (e.g. hostages are released instead of shot).

**(3)** A group of terrorists hijacked a plane full of violists. They called down to ground control with their list of demands and added that if their demands weren't met, they would release one violist every hour.

This study aims at two complementary aspects, one the one hand, it will look at the way we use very specific signs to create humor. On the other hand it will look at social aspects. According to humor studies, the targeted group (viola players) is the out-group which is made fun of by an in-group (joke teller), however, in many orchestras, out-group and in-group are the same people, creating a new group constellation that has so far been ignored. Focusing on the incongruous, humorous idiosyncrasies of humor deployed by and among musicians, this study aims to shed some light on the contents and forms of humor produced by and about this specific group.

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## Semiotic antimafia fieldwork in the wild: maximalist social cognition after Foucault

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**Keywords:** social cognition, cognitive anthropology, antimafia, multimodality, ecological approaches to social space

Italian 'ndrangheta is a powerful global mafia crime syndicate born in Southern Italian Calabria. In this talk I provide an analysis of recent fieldwork I did in the Italian LIBERA civil antimafia grassroots movement, where activists set up social activities in so-called mafia seized assets restituted to civil society. Since mafias focus on control of a territory through violent intimidation, the public activities of LIBERA heavily rely on providing local and national actors such as workers, volunteers and occasional bystanders with a networked symbolic and post-Gramscian counterhegemonic discourse, based on concrete action, as an alternative to mafia domination, social isolation and the law of silence, not only in public manifestations but also in private and more hidden acts of everyday resistance such as training or agricultural work. In such discursive acts words, bodily action and geographic places meet in the performative construction of a performative cognitive semiotic space.

The general objective of my talk is to reconcile abstract work in cognitive semiotics with the rich data of interpretive ethnography traditionally less present in abstractions and highly theoretical scholarship. On an empirical, descriptive level, I focus on two short video recordings of my ethnographic field work in which activists rephrase their symbolic action and physical work in the former mafia olive yards where the antimafia movement gains new territory. I show two examples in which a worker and educator connect their working experience within the olive yard with while their work is perceived from the outside by mobsters and bystanders. A central notion is the relation of regained control on the ground (*terreno*), to be situated at the crossroads between the land or field (*terra*) as the geographic and agricultural setting in which farm work such as pruning and weeding takes place, and, on the other hand, the territory (*territorio*) in which mafia dominion and antimafia presence is constantly challenged materially and symbolically contended. In this ongoing struggle both concrete and symbolic work action display (a) physical bodies in the anti-mafia space, (b) different intersubjective layers of visual control over the territory as well as (c) evolving agricultural artefacts such as access paths, tree structures lines of planting, technological innovation, before and during antimafia struggle, and the (d) linguistic narratives in which old and new hegemonies and genealogies of physical and symbolic violence are made available to interpretation (e) by in- and to outsiders, imagined and real mobsters, silent bystanders and the ethnographer himself, who as a visible addressee may become part of the act of resistance while video recording in (f) the public space.

The analysis of complex counterhegemonic acts goes beyond a representational take on cognition and requires maximalist theoretical models and analytic semiotic tools open to bodies and the environmental world (Lindblom 2015). Theoretically, our analyses draw inspiration from the interdisciplinary field of socially extended cognition (Hutchins 2014), Foucaultian discourse studies, with analytical notions such as post-panopticism and materiality in surveillance and governmentality (Rampton 2016, McIlvenny et al 2016), cognitive ecologies and collaborative ethnography (Lamphere 2014).

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# Agency, memory and visualization in architectural planning. The case of a large scale science facility in Lund Sweden

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**Keywords:** Semiotics of culture, dialogue, vision design, theme park planning

Theme parks erected in the outskirts of cities which purport to commemorate typical cultural values embodied in these cities can be considered as a class of monuments in the sense that they represent a presumed common heritage. In this paper, the construction of cultural identity is discussed, with reference to a Scandinavian Theme Park proposal made in cooperation between American design consultants and a local Swedish team of planners and visionaries. The image production in this design proposal, which never came to be realised in architectural production, shows "Scandinavia" as a two-some dialogic construction that adopts stereotyped cultural identities. The visionary images used in this preliminary design proposal can be described as a blending of the most well-known, even clichéd, typology of Scandinavian heritage, conveyed through vikings, fairy tales and cars, but also an aesthetic that borrows features from Disney type amusement parks and Universal Studios style of scenography, i.e. an architectonic culture that the consultants in this case were already heavily part of. This two-some planning dialogue went on for several years as a more or less secret deliberation that "kept to itself" in the sense that the content was not brought to any wider public dialogue, nor even to the usual local spatial planning departments. The theme park proposal became a kind of obsolete monument over phantasies involving Scandinavian stories, whereas current culture, or more thoroughly investigated heritage was left out. In a semiotic account of this architectural decision-making, models of culture are discussed in terms of the tripartite model of culture into Ego-culture, Alter-culture and Alius-culture proposed by Göran Sonesson, considered as a basic abstracted backdrop of what is meant by cultural difference, and cultural exchange. In this paper it is suggested that this tripartite view on culture, can be further discussed in reflection of post-colonial studies, notably through terms such as "mimicry" and "subalterity". The model of culture can furthermore be discussed through Peirce's distinction between different stages and carriers of representation, adding to the cultural model an understanding of what it means, over time, for a culture to relate to an admired as well as to a neglected other cultural actor. The input from the semiotic perspectives of Lotman, Sonesson, Cabak-Redei, Peirce and others, here combined with the power-related perspectives raised by Bhabha and Spivak, show a possibility, then, to contribute to the understanding of "dialogue", not only as a smooth and positivist phenomenon in cultural exchange, but as controversy. This is done here both in a theoretical sense, but also, by proposing dialogue as a more profound part of planning practice.

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# Intersemiosis in Film and New Media

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**Keywords:** semiotic theory, multimodality, crossmodal meaning making, intersemiosis, transposition

The notion of intersemiosis can be used effectively to describe the fundamental elements and processes of complex semiotic systems such as cinema and the new media. By new media I mean contemporary interactive computerized displays, or 'screens', in which multiple kinds of semiosis are at play. Intersemiosis also helps understand some of the complexities surrounding the very notion of semiosis. As Umberto Eco (2008) writes, "the variety of semiosis gives rise to phenomena whose difference is of the maximum importance for the semiologist" (p. 73).

By the term intersemiosis I refer broadly to the semantic encounter, interplay, and varying levels of integration between systems with different kinds of semiosis. It concerns the particular properties of the intervening systems, their modes of interaction, and the supplementary meanings generated by these encounters. Instances of intersemiosis resulting from markedly asymmetrical (semantically dissimilar) systems often produce unexpected forms of meaning that extend beyond the limits of translatability. It is at the boundaries between asymmetrical systems where we can find, as Yuri Lotman (1990) writes, "the hottest spots for semiotizing processes" (p. 136).

It is interesting to consider this wide notion of semiosis in the context of Peirce's famous definition of meaning as "the translation of a sign into another system of signs" (CP 4.127). Responding to Emilio Garroni's observation that "reformulation" (the translation of one form of semiosis into another) is never adequate and therefore never completely symmetrical, Eco (2010) points out that "semiotics doesn't become interesting when the process of reformulation leaves no residue, but rather at the very moment in which one reflects on these residues" (p. 14).

Intersemiosis is perhaps most evident in cinema, where the simultaneous interaction of multiple registers – images, spoken language, written texts, sound effects, and music – offers the opportunity to generate powerful new forms of meaning. The variety of semiosis that intervenes in film presents a laboratory and a playground for exploring the universe of meanings sparked by the de-automatized interaction of some of the principal systems of human communication. My paper identifies and studies a range of these interactions and illustrates them with examples.

Here we also find a point of departure for exploring the question of intersemiosis in new media. 'Screens' have become today a major intermodal channel for artistic and cultural expressions. As Lev Manovich (2001) observes, "cinema, along with other established cultural forms" is a code in the new media" (p. 333). Cinema is in fact the primary modeling system for many of the intersemiotic processes in 'screens'; there are also, however, some remarkable differences in the kinds of semiotic phenomena and expressive possibilities that are present in new media.

My paper explores some of these correspondences and differences from the perspective of intersemiosis. It points out some of the implications of this approach for a closer understanding of the diversity of semiosis in present-day forms of multimodal communication, in particular, and of semiosis, in general.

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# Embodied Aesthetic Experiences as Cognitive Modelling Processes

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**Keywords:** Aesthetic Experience, Embodied Cognition, Ideomotor Approach, Inverse Modelling, Epistemic Action

Cognitive Semiotics is not identical with and not limited to cognitivist semiotics, since the cognitivist approach underestimates the constructive dimensions of cognitive processes as well as expectations (which are derived from a pragmatic perspective) – and therefore tends to a positivistic worldview. This is crucial for aesthetics and semiotics as well, because in both domains there is a tradition of analyzing artefacts in detail and simultaneously disregarding cognitive and microcognitive processes. This is a central problem for Empirical Aesthetic as the focus on static artefacts offers a deficient approach to evolutionary, ontogenetic and situative dynamics. Hence, the cognitive microgenesis of perception and action planning against the backdrop of an embodied agent in specific situation. Aesthetic experience must be reconsidered due to embodied/enactive cognition. Linear cognitivist schemes (input-processing-output) do not suffice. The “ideomotor approach” (where action is “epistemic action”) offers a wider range of validity than the “sensorimotor approach” (where a passive observer is just reacting to sensory stimuli). Aesthetic experience can be interpreted as an evolutionary reinforcement of learning processes (from enactive interoceptions via external Gestalt perceptions up to purely mental operations): “Pragmatic action” works also as “epistemic action”. Any goal-driven action additionally induces sensory input for optimizing cognitive models to predict action effects. Thus, even the most simple Gestalt perception has to be understood as a cognitive model of action options, which is constructed by the observer (who uses his or her former experiences in order to extrapolate the given to expectations which again extend the cognitive space from the given to the possible or probable). An aesthetic experience appears when the agent evaluates the quality of modelling processes (efficacy and efficiency). Intensional models are sparse (with relief of neural resources), and the model’s range of validity is larger than the extensional data’s. This enables the agent to dissolve occlusions (“decentering”) and to model expectations (“forward modelling”) and/or hypotheses about earlier states (“inverse modelling”). Both qualities (“relief of resources” and “decentering”) are evaluated by biological systems. The outcome of these evaluations are aesthetic experiences – signifying successful modelling processes (positive aesthetic experiences) or failing processes (negative aesthetic experiences). What is maximized is not the external world but the cognitive model (in its range of validity and its capability to minimize prediction errors). Hence, the observing system must be active in order to maximize aesthetic experience. Due to our ideomotor approach the pragmatic dimension is the basis for a successive development of the embodied agent from enactive patterns via iconic Gestalt perceptions to symbolic communication (where all three domains are Gestalt phenomena of different kinds). Aesthetic experiences can be found in different modes and granularities as well as in a variety of complexities. All aesthetic experiences are based on cognitive modellings in different range, although they are more relevant in higher-order levels of larger scale. Finally, the “possibility space of aesthetic experience” is developed which is able to explain incompatible aesthetic preferences within a common theoretical framework (e.g. enactive, iconic, and/or symbolic operations).

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# Constructing Temporality: from Activity Theory to the Semiotics of Present, Past and Future

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**Keywords:** enaction, time-consciousness, action-thought, experientialism, phenomenology

Ecolinguistics of temporality, grounded in the basic layers of human sense-making, challenges Newtonian absolute time model which dominates today's folk psychology of time. Husserl's famous phenomenology of the 'extended now' has done a lot to explain our experience of time, but it still deals with the perception of external events abstracted from their real-life context and is limited to passively observing subjects. Although a number of authors already explored action-based approaches to temporality, the discovery of the roots of the human sense of time in active and embodied involvement with the world has just started.

In this research we focus on basic concepts of present, past and future. We interpret these fundamental categories in terms of action-thoughts, understood as elementary units of activity as well as of actional thinking and imagination. Action-thoughts conceptualize the fundamental unity of thinking and activity postulated by the champions of action-based approach in psychology, from Vygotsky and Rubinstein to today's enactivism. Action-thoughts both bring forth and represent actions and are also evoked in their covert rehearsal. The action-thought is an instrumentum studiorum, which enables us to view from common perspective the phenomenology of the present as well as the enactment of past and future.

We argue that the temporal reality of an acting agent is sustained by the experiential flow of 'absorbed activity'. An action being an indivisible unit of activity is thus also a unit of 'actional' time. A flow of time is thus constructed of and through actions. This experiential time is determined by the rhythm of activity, whereas 'objective' time measurements appear as external constraints (such as deadlines) and can even be viewed as foreign intrusions.

Both past and future are consciously and reflectively constructed in the plane of the lived present and make sense only in this plane. Past is re-presented by action-thoughts which abstract some part of our present and re-focus our attention on its experience. Future is also an action-thought, and it takes this abstraction even further to the new levels of reflection, so that it becomes yet a new modulation of our experience of the present. This experience changes the way we live and act and it modulates our cognitive living. If past builds up on attentional re-focalizations, future is constructed through focalizations of another kind, allowing for an increased sense of relevance and actuality. In fact, both past and future are merely abstractions from the present.

It is emphasized that the construction of temporal sequences is possible only in linguistic semiosis, and the triad 'present-past-future' is an instance of the 'epistemological trap of language': past and future are mental constructs that belong to the present just as any other act of thinking.

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# The Lifeworld Foundation of Metaphors

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**Keywords:** Metaphor, Lifeworld, worldview, semantic domains, asymmetry

While Conceptual Metaphor Theory (CMT) has been highly successful in inspiring abundant empirical studies into the semantics of numerous languages, it does not repose on firm phenomenological grounds which are better captured by the classical study of metaphor from Aristotle to Black and beyond. According to Aristotle, the metaphor is a figure which serves to discover a similarity never imagined before between two items. Following up on this suggestion, Black (1962) claims that there must be a tension between the two items compared.

Many examples adduced in the CMT-model fail the Aristotelian test, but for different reasons. What Lakoff and Johnson, following Grady's suggestion, later on call "primary metaphors", such as "ACTIONS ARE MOTIONS", cannot make any human being, however unfledged, discover anything new, because they are part of our embodiment, a phenomenological given, and thus prior to any other kind of meaning-making. On the other hand, it is conceivable that small children, who do not yet know how deeply sedimented is the notion of "LIFE IS A JOURNEY" in (their) culture, may experience statements based on this notion as affording some new information. But, even so, it doesn't follow that there is a tension between "life" and "journey". To adults, the journey is a part of life, so it remains unclear in what sense they form different domains, let alone semantic fields whose identification creates a tension. If we except these basic experiences, cross-domain transfers do not usually take place between two passive lexical entities, where the first (the source) would have the role of assuring the structure of the second (the target), but rather both terms contribute in different proportions and with different content to the metaphoric process (ZZZZ 2021). To clarify these issues, we will suggest, we need to have recourse to socio-phenomenological notions of general principles of the Lifeworld and of systems of relevancies – first formulated by Alfred Schütz, which can be given more substance by being integrated with Umberto Eco's idea of an encyclopaedia (XXXX 2018).

Any phenomenological investigation must start out from the invariants of the common human Lifeworld, but, as soon as society is involved, the investigation gradually shades into an inquiry into, in Gurwitsch's terms, different socio-cultural lifeworlds. In the present paper, we will approach this problem by considering the extreme case of what Sharifian (2017) has called "worldview metaphor", a kind of metaphor which only makes sense within the worldview of a particular traditional culture (such as sayings, legend and proverbs of Australian and African aboriginals; also cf. the 19th century idea of "primitive thinking", e.g., Lévi-Bruhl 1925 [1922]). It seems to us reductionist to qualify such statements by a member of a community as, "twins are birds" or "the blue whale is my grandfather", or "I am Asimpi the Bush Cow", as metaphors. A theory of metaphor which is consonant with the fact of embodiment and our situatedness in the Lifeworld must account for the difference between different layers of semantic mapping, only some of which should count as metaphors.

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## Conceptual metaphors in the reuse of Classical myths in Rita Dove's work: *The Darker Face of the Earth*

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This paper presents a study of the metaphorical re-use of Greek myth in Rita Dove's works with the aim to investigate the creative process involved in the reception and interpretation of ancient myth and literature as well as in the production of literary texts. I discuss specific literary works that rely upon explicit intertextuality and clear similarities with respect to individual characters, plot, specific dramaturgies and events.

The research work will be based on recent cognition theories applied to literature and linguistic analysis, demonstrating how a cognitive linguistic approach, such as the conceptual metaphor model, can shed new light on the relation between experiences and characters of modern and urban world and features of ancient myth and literature.

Ancient myth and Greek Tragedy in African-American literature becomes a metaphorical tool to explore and unveil modern and urban experiences embedded with race and gender issues (e.g. hegemony, female oppression and the struggles against power). They have been adapted by black women writers to present, define and even understand their identity within African-American history. Through this adaptation, often achieved by powerful change, the audience and the reader can perceive something new in something old. New meaning emerges, such as a tragic vision of modern and contemporary problems.

Different levels of adaptation are noticeable: sometimes the use of ancient material is limited to allusions and recollection; other times there is an exact one-to-one correlation, codified through ad hoc metaphors, between original and new texts. In particular, I will analyze metaphorical mappings in passages from Rita Dove's work *The Darker Face of the Earth*. In this play, for example, incest becomes a metaphor for racial miscegenation, while the slave Augustus embodies a black Oedipus chained by fate and by the force of history.

## Inferring Ears: Cognitive Semiotics and Musical Anthroposemiosis

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**Keywords:** Music, Jazz, Peirce, Davis, Hendrix, Inference, Abduction, Embodied Cognition

This talk draws attention to two important and fruitful anecdotes from history useful for the development of a cognitive semiotic approach to music. The first is from Peirce's writings, describing a complete structural change of understanding, perception and listening to music. Peirce describes the invention of a specific cognitive pidgin and the emergence of new social, embodied and cerebral habits. This emergence is shown in the example of Peirce's friend who allegedly lost his sense of hearing but still enjoys music – no thanks to his ears. The second case study considers the “inferring ear” of Jimi Hendrix and his cooperation with Miles Davis, who taught Hendrix how to codify what he heard. Hence these anecdotes open pathways into the problem of the nature of musical perception, useful for exploring the codification and learning of music in particular. The nature of these abilities may be seen as intersubjective mimetics that are mediated through suprasubjective, triadic, embodied relations (signs). The article analyzes these topics from a point of view of a Peircean framework (with detours into the work of T. Deacon, V. Colapietro and G. Deleuze), aiming to show the interconnections between such perspectives and some examples of contemporary neuroscientific research in this field.

# Viewpoint and the multimodal construction of semiotic spaces in video games

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**Keywords:** Viewpoint, Semiotic Spaces, Multimodality, Video Games

Viewpoint is a powerful construal mechanism in multimodal spoken and signed discourse, as well as in various other modalities and genres (Sweetser 2013; Thiering & Mittelberg 2022). Langacker (1987: 122) defines viewpoint as follows: “For many types of conception – particularly those grounded in visual experience – the importance of viewpoint is self-evident. We can look at a physical object from different sides (front/back, top/bottom, etc.), and what we actually see varies accordingly.”

In this paper, we investigate embodied viewpoint strategies as they have been observed when speakers combine various modalities of expression to describe their interaction with spatial artifacts such as paintings, buildings, architectural models (e.g., CAD), imagined spaces, and video games. The analyses focus on multimodal viewpoint strategies whereby speakers submerge into their mental representation of an artifact, thus perceiving and experiencing it from an internal viewpoint construction. The different knowledge systems at work during such processes are understood as underlying categorization patterns of spatial orientation processes.

This study’s main aim is to identify different viewpoint strategies (Schwingeler 2019) in the multimodal data (e.g., verbal descriptions of spatial orientation), as they tend to be adopted when language users talk about their own previous or newly imagined experiences of spatial artifacts. First, the study surveys viewpoint shifts in dynamic visual scenes as they occur in 1st/3rd person shooter, strategic computer games or puzzles. It is argued that the human capacity for constructing and relating objects in space depends not only on objectively given features, but also on subjective encoding and multimodal decisions based on the stage metaphor (Langacker 1987; Talmy 2000). There is no neutral or absolute construal of a situation; rather, human beings deal with construals that either encode or do not encode the speaker’s viewpoint. Hence, the speaker’s perspectives are expressed through different viewing strategies.

The analyses elucidate spatial viewing mechanisms of orientation and navigation in different virtual realities, considering different cognitive parameters such as spatial frames of reference, geometry, viewpoint and perspective, and figure-ground asymmetries (Levinson 2003; Talmy 2000). First/third person games (BioShock Infinite, Doom, Half Life 2, Halo) or VR puzzles (Moss, Ghost of a tale) endorse different viewpoints not only applied by the person playing the game (i.e., the player holds a tool and takes on this perspective), but also provided by specific affordances of a given game, e.g., orienting oneself in a labyrinth using a compass, map, clock-based orientation or an unknown house gathering different gadgets, following sounds or symbolic references. When experiencing this kind of dynamic semiotic contexts, the player’s viewpoint shifts from egocentric to allocentric and from bird’s-eye view to hodological perspective accordingly.

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# Investigating collective, creative exploration

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**Keywords:** creativity, social interaction, abstractness, exploration

Creativity is a fundamental yet ill understood cognitive phenomenon. While creativity is typically thought of as an individual process, it often unfolds in socially interactive settings where individuals jointly explore and manipulate their environment to discover novel, interesting and useful meanings, solutions, or experiences. Inspired by e.g. Hills et al. (2008), we characterize the creative process as a search through a possibility space, relying on mechanisms similar to those observed in animal foraging behavior (Buchanan, 2008). This framework allows us to study how a creative process balance exploitation of more accessible local solutions and meaning potentials and exploration of less accessible, but perhaps more creative, distal meaning potentials. We hypothesize that social interaction is conducive of creativity. That is, while individuals are better at exhausting the local solution space (= exploitation), they will tend to get stuck and fail to discover more distal ideas. In contrast, through social interaction, partners might cue, push and prime each other to ideas and solutions that none of them would have found had they worked on their own (= exploration) but might miss out exploitative solutions in their near vicinities because they jump too much or too early.

We test these hypotheses in a game-like environment, The Collective Creative Foraging Game, which is a modified version of the Creative Foraging Game (CFG, Noy et al., 2012; Noy et al., 2017). The CFG is designed as a playful and open-ended setup in which participants freely explore a well-defined space of visual shapes. The motivation is to simulate (albeit in a reduced setup) the creative exploration process of artists and designers. The experimental task consisted in creating interesting and original figures by moving ten adjacent square tiles around on a giant 70" touch screen. Once an interesting figure is discovered, the participants can choose to save it to a "gallery". Based on a number of metrics, we characterize the resulting series of gallery figures in terms of their 'distance', predictability and originality, etc. We tested 240 participants divided in four conditions following a 2-by-2 factorial design. The conditions would either have individuals working alone or collaborating in pairs, and they either got a running score indicative of the relative originality of their figures (based on their frequencies in a corpus) or they did not get feedback.

With analyses still ongoing, preliminary results suggest that while individuals and pairs made equally original figures, pairs of participants working together had a propensity to stay for shorter durations in states of exploitation than individuals (who on average made more tokens of each visited category) and generally pairs made more abstract figures.

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# The cultural route to conceptualization of urban space

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**Keywords:** Spatial cognition, conceptualization, cultural evolution, experimental semiotics, affordances

Our experiences of the surrounding cultural and physical environment are largely shaped by conceptualizations originating in social interactions (Tylén et al., 2013; Latour, 1996). Through social interactions we align and conform our attentional profiles and representational construal of space (xxxxx et al. In Review). This has the implication that aspects of experience of the environment can potentially differ as a function of the cultural group with which we have a history (Majid et al. 2004). We hypothesize that there is a dynamical circular causality between environmental affordances and cognitive construal enhanced through cultural transmission.

In this experimental project, we used Virtual Reality to study the interactive processes shaping these affordances and their implications focusing on the case of urban environments. In the experiment, 72 participants performed a navigation task first following and later creating instructions to find a target object in an urban environment. In each session, a participant would search a virtual urban space for a target, return and make written instructions for the next participant about where to go and look for the target. The same procedure repeated in a transmission chain of 8 “generations”, where the instructions of the last participant (=generation) was passed on to the next. In order to investigate the contingencies between environmental affordances, conceptualization and linguistic interaction, half of the participants did the task in an urban space characterized by winded streets and salient colorful building textures (henceforth the “Barcelona” condition), while the other half did the task in an urban space characterized by straight perpendicular streets and buildings with desaturated color/texture (the “Manhattan” condition). Number of houses, street crossings and their relative position was kept constant between the condition.

In support of our predictions, preliminary analyses suggest that route descriptions differed between conditions and the differences increased over generations, with participants in the Barcelona condition being increasingly reliant on local salient landmarks while participants in the Manhattan condition relied more on global cardinal cues. We take this to suggest that the navigational cues provided by a participant in her instructions is an expression of enhanced attention to certain types of cues as a result of the instructions that this participant herself received in early part of the session. In other words, the linguistic instructions a participant receives biases the attention towards certain aspects of the environment when she later makes instructions for someone else, and this effect is cumulatively enhanced through the transmission chain, thus simulating processes of the emergence of cultural cognition.

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# Managing Abductions in the Working Memory System: Reliance on the Episodic Buffer

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**Keywords:** Peirce, episodic buffer, double consciousness, Baddeley, abduction

This inquiry explores how different kinds of abductions are processed in working memory, considering distinguishing between deliberative hunches, as opposed to flashes of insight. The more deliberative kind of hunches arise in a two-sided mental process which Peirce refers to as double consciousness (1903: 5.53). Double consciousness is characterized as the outer world impinging on the inner world: "...a two-sided consciousness of an ego and a non-ego" (1904: 8.330). What remains unexamined is whether hunches deriving from double consciousness are processed more slowly in working memory than are instinctual hunches. The dialogic character of double consciousness requires apprehending the legitimacy of each of two opposing states of affairs, and proposing a viable resolution for future courses of action/belief. As such, resolving hunches through double consciousness requires binding memory units into episodes and separating units consequent to their epistemic conflicts. This form of double consciousness processing supplies a forum where alternative propositions/arguments can be scrutinized. To effectively scrutinize, the conflict must be limited to two alternatives; otherwise, the contrast is unlikely to result in sufficient vividness for efficacious processing. Well recognized working memory models (Baddeley, 2000/2007) support the need for Peirce's double conscious regime to advance abductive rationality. Baddeley (2000/2007:157-169) posits that the episodic buffer is a limited (spatially, temporally) storage system responsible for binding phonological with graphical information in short-term memory – which is the entry-point and reservoir for new knowledge). The episodic buffer likewise affords a synthesis between information within STM and old information shunted from long-term memory. Baddeley (2007: 157) determines that the binding process within the episodic buffer when handling memory span is both active and passive, depending upon the degree of automatic versus deliberative processing. The upshot regarding conflicts arising in double consciousness, be they perceptual/propositional/arguments is the necessity to contract the semantic/syntactic units vital to the conflict (orchestrated in chunking representations). The episodic buffer is the mechanism to best hasten chunking, given the need to fit conflict-based units into an on-line limited storage system. Similarly, resources to manage the units are limited. In short, the structure of Baddeley's episodic buffer constitutes a perfect host to compel interpreters to further chunk disparate units of deliberative hunches into more potent meanings – providing evidence that instinctual hunches are privileged in working memory given automatic processing with fewer units. In other words, the more concentrated the meanings within a single sign vehicle, the more automatic and more rapid/effective is the processing. For Peirce, the interpretants consolidated into a single (chunked) sign vehicle may well best facilitate abductive rationality.

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# On the /pol/itics of Transgression: An Analysis of Language and Identity-Formation in Digital Space

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**Keywords:** Language and Identity, Iconicity and Indexicality in Language and Other Semiotic Resources, Multimodality, Intersubjectivity, Textual and Visual Analysis

This presentation will engage with two general themes: the first, in which ways the ontological distinction between ‘virtuality’ and ‘actuality’ (or, ‘online’ and ‘offline’) informs particular ways of ‘being-in’ technologically mediated contexts – that is, how meaning-making practices take shape in accordance with the semiotic resources available to users in digital space; and second, how these processes come to be deeply interwoven with ideological categories of human distinctiveness (e.g., race, class, gender, sexuality) that are enacted in everyday life within, and between, these ontological distinctions. This paper exemplifies an increased scholarly attention in the social sciences towards examining identity-formation processes from a critical lens. I aim to explore how these ideologies can manifest themselves online and, subsequently, come to reinforce (or call into question) particular categories of human difference through discourse in everyday life.

As such, I will explore here how ideologies of both language and media are enacted in the production of highly oppositional identities in the online context of 4chan.org – an American-hosted website that attracts a range of users from around the globe. Using data collected from online fieldwork in the wake of the U.S. 2016 Presidential election, I examine how anonymous users – ‘Anons’ – harness the multimodal dimensions of 4chan’s interface in constituting themselves as highly transgressive subjects on “Politically Incorrect” – simply, /pol/ – 4chan’s board dedicated to the discussion of political topics and current news. With access to an ‘indexical field’ of meanings made possible by both text and visual resources, ‘Anons’ discursively situate themselves within the cultural logics of the ‘far-right’ in presenting a sharp discursive contrast between themselves and ‘others’ in the ‘outside world’ – a world that they frame as exploited by the nefarious intentions of Jewish powers and their efforts to destroy White, (cis)hetero-masculine ways of life.

This paper calls upon traditions within the subfield of linguistic anthropology, which broadly emphasizes an understanding of language as both a “non-neutral medium” and a “socio-historically defined resource for the constitution of society and the reproduction of cultural meanings and practices” (Duranti 2012:12, 2011). I focus on an analysis of language and identity that draws upon Peircean semiotic frameworks, that of language ideologies (Kroskrity 2015) and media ideologies (Gershon 2010). These intersecting frameworks are necessary to demonstrate how particular “tactics of intersubjectivity” come forth in the production of ‘self’ and ‘other’ (Bucholtz and Hall 2004).

Data collected on /pol/ is a product of ten months of online ethnographic fieldwork; ‘ethnographic fieldwork’ in this case is referring to the qualitative methodological tradition linked to the field of anthropology, and of which requires myself as the researcher to take up an active ‘participant-observer’ role. Using examples taken during my ‘residence’ on 4chan, I demonstrate how ‘Anons’ invert the perceived norms of a “politically correct”, mainstream society using transgressive language informed primarily by three ideological frameworks – race, anti-Semitism, and gender/sexuality – in constituting themselves as hyper-White and hyper-masculine re-activists in stark opposition to the ‘false realities’ of the world outside.

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# Spectators' experience of watching dance without music: A cognitive semiotic exploration of kinesthetic empathy

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**Keywords:** qualities of movement, emotional arousal, phenomenology, cognitive consciousness

How do we experience dance as spectators? One proposal is that we do this through kinesthetic empathy – our ability to experience observed movements through our own bodies (Warburton 2011). However, research on the topic has been relatively one-sided, only using third-person, “objective” research methods. It is therefore unclear what kinesthetic empathy encompasses on an experiential level. In a cognitive semiotic study, we explored the nature of kinesthetic empathy in connection with how spectators experience movement – the core element of dance – by combining first- and second-person methods of phenomenological analysis and interview, with third-person methods, based on an experiment and a questionnaire.

Twenty participants, grouped as either relatively familiar or unfamiliar with dance, watched a short dance performance in classical ballet and another one in contemporary dance. The two dances differed in terms of qualities of movement (Sheets-Johnstone 2015). The movements in the contemporary dance were, for example, more unpredictable as the dancer's body was continually bending, while in the classical ballet her body was mostly straight. The participants' skin conductance and respiration were measured as they watched the dance performances. After that, they answered a questionnaire and were interviewed about their feelings and attitudes towards the performance and the dance movements.

The results showed, above all, that the participants' psychophysiological responses across the two dances differed, but also that the difference depended on the degree of familiarity that they had with dance. The correlations between skin conductance and respiration and the results from the introspective part of the experiment were stronger for the spectators who were familiar with dance than for those who were not. This finding suggests that familiarity indeed plays a role in kinesthetic empathy.

Based on the results, we propose a two-level model of kinesthetic empathy in terms of degree of conscious awareness, and propose that the pre-conscious level is manifested in psychophysiological responses, and the conscious level in imagined movements, reflected in explicit introspections about feelings and attitudes. Dance familiarity appears to affect the second of these levels, as well as how well-connected it is to the pre-conscious level. With that, the study makes a contribution to cognitive semiotics, the transdisciplinary science of meaning making, because it highlights the importance of phenomenological methodological triangulation (Zlatev 2009; Pielli & Zlatev 2020) and it illuminates the nature of dance as a semiotic system. Kinesthetic empathy, as explicated by our model, can explain how affective meaning can be communicated through dance and how this communication is influenced by the degree of the spectator's dance experience.

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# Philosophy as therapy: A cognitive rhetorical analysis of the Socratic elenchus in an early Daoist text

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**Keywords:** elenchus, mental simulation, viewpoint alignment, self-persuasion, the Zhuangzi

Elenchus, conducted through question-answer sequences, is a rhetorical form frequently employed by Socrates in Plato's early dialogues. It involves the protagonist first examining a thesis believed to be true by his interlocutor and then showing how the thesis contradicts a set of beliefs held by the same interlocutor (Lee 2015: 140). Intriguingly, similar use of this technique of refutation is also found in the Zhuangzi (4th c. B.C.), an early Daoist text abundant in non-genuine dialogues between real or fantastic discourse characters. In this presentation, we aim to explore how the philosopher Zhuangzi (c. 369-c.286 B.C.) convinces prospective readers of his therapeutic philosophical ideas by adopting such a particular mode of philosophizing. Consider:

- (1) 'Zhuangzi and Huizi were strolling along the dam of the Hao River when Zhuangzi said, "See how the minnows come out and dart around where they please! That's what fish really enjoy!" Huizi said, "You're not a fish – how do you know what fish enjoy?" Zhuangzi said, "You're not I, so how do you know that I don't know what fish enjoy?" Huizi said, "I'm not you, so I certainly don't know what you know. On the other hand, you're certainly not a fish – so that still proves that you don't know what fish enjoy!" Zhuangzi said, "Let's go back to your original question, please. You asked me how I know what fish enjoy – so you already knew that I knew it when you asked the question. I know it by standing here beside the Hao.'" (Watson [1968] 2013: 137-138)

In (1), Zhuangzi and his friend, the Sophist Huizi are enacting a conversation about 'the happiness of fish', in which he shows how his interlocutor's initial premise self-contradicts his other assumptions. The questions and their subsequent answers in the above dialogue and indeed elsewhere in the Zhuangzi represent different viewpoints and are used to induce self-persuasion in the readers given the "cognitive therapy" characterizing the text as a whole (Carr & Ivanhoe 2010; Combs 2005). This requires the readers to mentally simulate the act of questioning and come up with their own answers before aligning their viewpoints with that of the writer and also the discourse characters (Author1 & Author2 2016).

The corresponding use of the elenchus in Plato's dialogues and the Zhuangzi suggests that these highly influential texts are interactionally structured, through which meaning emerges. Integrating recent research on mental simulation (e.g. Markman et al. 2012) and Burke's (1969) key concept "identification", we propose a simulation-based model of rhetoric. Through mental simulation, an identification relationship can be established between the sensorimotor representations activated in the recipient and his or her embodied experience (Adolphs 2006). This constitutes the basis for the establishment of cognitive identification, namely the alignment of the possibly different viewpoints of the rhetor and recipient (cf. van Krieken et al. 2017), thereby leading to self-persuasion in the recipient. Our study complements Candiottio's (2019) extended cognition account of the Socratic elenchus and more generally contributes to a cognitive theory of persuasion.

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# A Study on the Semantic Network of Preposition “of” in the English Learners’ Graduation Theses Abstracts under The Principled Polysemy Network Model Taking “NP1+of+NP2” in CCLA and CALA as examples

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**Keywords:** semantic network, preposition “of”, English learners, graduation theses abstract, the Principled Polysemy Network Model

The application of preposition use has recently gained much attention though preposition serves as the simplest word class. The spatial relation the preposition has displayed attracts many scholars, thus pushing the understanding of prepositions into the field of cognitive linguistics. “of”, as one of the common words, has been employed under different occasions which are exposed to different spatial scenes. Therefore, in order to find out the spatial relations of “of”, this thesis adopts the research method of building two corpora, namely The Corpus of Chinese Learners’ Abstract (CCLA) and The Corpus of American Learners’ Abstract (CALA), so that the meanings of “of” can be covered in a wide manner.

This thesis, based primarily on The Principled Polysemy Network Model proposed by Tyler and Evans (2003), probes into the semantic network the preposition “of” has exhibited in CCLA, and draws its specific figures derived from the semantic network. Through the data collection and analysis of SPSS22.0, the study can obtain the results that there are 1 proto-scene and 11 senses, including containment, In-situ, attachment, belong-to, from, quantifier, focus, subjoin, boundary, purpose and cause, in the spatial meaning of “of” in CCLA. Furthermore, these senses can be concluded as five sense clusters, Location Source Cluster, Elemental Source Cluster, “on” Cluster, Segmentation Cluster and “for” Cluster. After the comparison, the difference between CCLA and CALA can be clearly stated: in terms of the sense cluster, there is a difference existing in the Location Source Cluster and Segmentation Cluster; as for the specific sense, two corpora only shows similarity in the proto-scene, in-situ sense and quantifier sense. According to those disparities and similarities, the phenomenon of preposition substitute, meaning extension and cultural background play a significant role in the spatial relation of “of”. How to teach English learners the proper application of preposition “of” remains the important issue for the preposition teaching. This thesis, hence, attempts to provide a unique interpretation for “of” so as to make English learners mastered in a easier manner.

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# The principle of contrast and the emergence of semantic complexity

**“If we want to study complexity, we must start out simplifying.”**

(Sonesson 1999: 11)

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**Keywords:** Cognitive linguistics, semiosis, perspectivization, (inter)subjectivity, narrative discourse

**Context and objectives:** The principle of contrast and opposition has been one of the most essential components within semiotic theories (Nöth 1994: 37) and has even been assumed to build the foundation of a “theory of language, mind, and culture” (Danesi 2009: 12). On the other hand, recent years have seen an increasing focus on the investigation of linguistic units beyond the sentence whose semantic complexity seems to elude a binary analysis. It has thus become a vital question how we can model the emergence of linguistic complexity in semiotic terms, and which is the status of the binary principle of contrast and opposition in such a model.

**Framework and methodology:** In order to examine this question, the paper adopts a multidimensional approach that investigates the principle of contrast and opposition from different perspectives, i.e. traditional semiotic accounts, Gestalt theory, cognitive linguistics, functional grammar, language acquisition, (inter)subjectivity, and narrative analysis.

**Argumentation and results:** The investigation is pursued in two steps. Starting from the discussion in Dahl 2004, the paper provides first a classification of different conceptions of complexity in general and linguistic complexity, in particular. In a second step, an analysis of the concepts of ‘contrast’, ‘opposition’ and ‘difference’ in the approaches by Saussure, Jakobson, and Peirce lead to a more fine-grained differentiation of contrastive relations in semiotic terms. Against this theoretical background, three examples of semantic complexity on different linguistic levels are discussed, i.e. (i) grammatical epistemicity within the A(spect)-T(ense)-M(odality) complex (e.g. the epistemic usage of modal verbs like *This topic must be complex.*), (ii) syntactic embedding in propositional attitudes (e.g. *I think that he thinks that the topic is complex.*), and (iii) narrative discourse structure. It is argued that the three examples are comparable in the fact that their complexity is based on a viewpoint asymmetry, i.e. they involve ‘contrastive’ perspectives that cannot be captured in terms of ‘either – or’ but require an integration of viewpoints under a third reference point. Combining this result with cognitive research on (inter)subjectivity (Zlatev et al. 2008), a multi-stage model of degrees of perspectival complexity (i.e. viewpoint shift, viewpoint embedding, and viewpoint integration) is proposed, in which the most complex tasks in both language and cognition are characterized by a three-point constellation that integrates contrasting perspectives under a superordinated monitoring viewpoint.

**Evaluation:** The emergence of semantic complexity within the discussed examples can thus be seen as a consequence of contrastive viewpoints that evoke asymmetrical oppositions and the dissolution of binary relations. This result is discussed against the background of semiotic approaches of cosmogenesis, where complexity is seen as the consequence of the breakdown of initial symmetry and the increase of asymmetrical relations (Nöth 1994: 47). It is also compared to Toyota’s 2009 evolutionary perspective of language which presumes the breakdown of binary opposition as a presupposition for the development of hierarchical relations. Paradoxically, it thus seems to be the binary principle of contrast itself which leads to the emergence of asymmetrical oppositions and, as such, to semantic complexity.

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# Demystifying the Mind of Ancient Chinese Diplomats: Legitimation and Representation of Strategies in Zhanguo Ce

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**Keywords:** Cognitive linguistics, persuasion, legitimation strategy, ancient Chinese diplomats, Zhanguo Ce

With the notable body of literature about legitimation centered on contemporary discourses, this study addresses an underexplored type of political persuasion discourse, the Pre-Qin shuo, as recounted in the Zhanguo ce (战国策, Stratagems of the Warring States) under the umbrella of the combined arena of Critical Discourse Analysis and Cognitive Linguistics. It seeks to investigate the persuader-diplomats' discursive strategies and cognitive biases during the Warring States Period (WSP, 481-221 BC) as recorded in the Zhanguo ce. For this aim, an integrated analytical framework combining Critical Metaphor Analysis (CMA, Charteris-Black 2011), Conceptual Blending Theory (CBT, Fauconnier & Turner 2002), and Proximization Theory (PT, Cap 2013) is constructed. Each of these theories illustrates a different aspect of the conception of covert political ideologies and biases. However, they share a common theme of embodied cognition and complementarity of their elements so that they complement one another by illuminating different facets of political persuasion conceptualizations. The data for this study are volumes of Qin (秦策) in the Zhanguo Ce (Miao et al. 2016), which include 18 texts (totaling 8996 characters).

The analysis reveals that war as hunting, as exemplified below, is a new metaphor for political legitimacy, and that state as container was in use in the third century BC, far earlier than previously believed (the sixteen century). Also, metaphorical mapping, conceptual blending and fear activation all play a role in the ancient persuader-diplomats' persuasion discourse. Additionally, the discourse type of Pre-Qin shuo is persuasive in nature and exerted considerable influence on the interstate system during the WSP.

大王之国...以秦卒之勇，车骑之多，以当诸侯，譬若驰韩卢而逐蹇兔也...  
(战国策·秦策三)

As for the state of Your Majesty...with the valor of your troops and the legions of your chariots and cavalry, attacking other states is like driving Han Lu to chase a lame hare.

(Volume 3 of Qin, Zhanguo ce)

As the first cognitive-pragmatic analysis of the ancient Chinese political persuasion discourse in the WSP, this study makes several contributions to discourse and society research. First, the cognitive patterns of discursive persuasion enable us to understand the nature of the ancient political discourse. Second, it develops an interdisciplinary framework based on critical-cognitive-pragmatic theories. Thus, the study provides a deeper understanding of ancient China's political persuasion discourse in the context of a democratic environment and ever-changing interstate relations.

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