College of Arts and Sciences

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Department of Cognitive Science (https://cognitivescience.case.edu/)

Past Colloquia: 2009

Cognitive Science Capstone Presentations. Wednesday, 16 December, 3-4:30pm, Crawford 618.

Emily Lipham. Factors in Second Language Acquisition: Primary Influences on Learning.
Richard Eaton. Unconscious Effects on Gesture Type.
Joseph Amick. Lie Low: How Deception Affects Gesture Rate.

Mike Lewicki. Wednesday, 2 December, 4-5pm, Crawford 618. Computational Models of Vision. Mike Lewicki, recently of Carnegie Mellon University, is Associate Professor in the Department of Electrical Engineering and Computer Science at CWRU.

Abstract: What are the underlying computational principles that biology uses to transform the raw sensory signal into a hierarchy of representations that subserve higher-level perceptual tasks? One hypothesis is that biological representations are optimal from the viewpoint of statistical information processing, and are adapted to the statistics of the natural sensory environment. In the initial stages of sensory coding, information has to be coded in a way that makes best use of the available resources. I will show how the optimal solution to coding natural images with a population of noisy neurons predicts many properties of retinal coding. I will also show that the same approach can be applied to natural sounds to explain many aspects of the auditory code at the cochlear nerve. Finally, I will present work that extends this general principle to higher levels of visual processing. I will show that efficient representations of the statistics of local image regions can form stable, invariant representations of edges, contours, and textures. These results also provide a novel functional explanation for non-linear effects of complex cells in the primary visual cortex.

Zhengjun Lin. Wednesday, 9 November, 4-5pm, Crawford 618. Meaning Constructions of *LIAN* (Face) in Chinese.

Abstract: This paper studies how nonce senses and conventionalized meanings are constructed from their conventional meaning of Chinese FACE. The Zhengjun Lin argues that meaning construction is an inferential process. The potential range of inferences is constrained by the linguistic expressions that serve as prompts, and cognitive principles, contexts, as well as the language users' individual factors. In this paper, the meaning constructions of FACE in Chinese are explicated with the Chinese corpora from http://ccl.pku.edu.cn/Yuliao_Contents.Asp (http://ccl.pku.edu.cn/Yuliao_Contents.Asp) and the data from Chinese dictionaries. In this study, we find metonymy-metonymy chains, metonymy-metaphor continua, and metonymy-metaphor combinations in Chinese FACE meaning constructions. Also, the principles of metonymy and metaphor are involved in the conceptual blendings of FACE meaning constructions. Context and individual language users' factors are the other two variables, without which meaning constructions are impossible.

Mohamad Z. Koubeissi, M.D. Monday, 2 November, 4-5pm, Crawford 618. Connectivity: From Functional Segregation to Functional Integration. Mohamad Koubeissi is currently Assistant Professor of Neurology, University Hospitals Case Medical Center. He earned his Bachelor's Degree with honors in mathematics and his medical degree from the American University of Beirut. He then spent a year as a postdoctoral research fellow in the neuro-pharmacology laboratory where he investigated the effect of seizures on the rat's brain, before pursuing his clinical training in neurology at NYU in New York. He completed his clinical and research epilepsy fellowship at Johns Hopkins University in Baltimore. During, and after, his training, Dr. Koubeissi has started new lines of research projects in epilepsy. Dr. Koubeissi has lectured on the medical and surgical treatment of intractable epilepsy all over the Unites States as well as in Europe, Latin America, and the Middle East. He has published numerous papers in esteemed medical journals, and is currently editing a book on epilepsy surgery. He also is a reviewer for a large number of major journals. He is on the review committee of Masters and PhD students, and is the program director of epilepsy fellowship at University Hospitals Case Medical Center.

Tim Adamson. Wednesday, 14 October 2009, 4-5pm, Crawford 618. Cognitive Approaches to Ritual: Outline of A Research Program. Tim Adamson is Associate Professor of Philosophy at Iowa Wesleyan College and a member of the editorial board for *Cognitive Semiotics.*

Abstract: Given the emphasis in cognitive linguistics on the centrality of embodied, human-scale meanings in cognition, ritual would seem a natural area for cognitive analysis. Where metaphor and conceptual blends employ imagined scenarios of action and perception in order to work out more abstract meanings, ritual brings these scenes back to life, as it were, playing them out in the flesh at the human scale. In this sense, ritual would seem to be one more expression, now enacted, of the embodied cognition at the heart of cognitive linguistic theory. How far can we take this line of thought when dealing with ritual? To what extent is ritual "metaphor in the flesh" and to what extent does it resist such an analysis? In this presentation I attempt to outline a cognitive approach to ritual, showing where the categories of cognitive linguistics may apply and where different tools are needed.

Some of the issues I will address include:

> To what extent can we see ritual as a metaphor or blend? In what sense does ritual merge different conceptual spaces, and in what sense does it involve other kinds of spaces, e.g., performance, perceptual, kinetic, etc? Ritual is conceptualâ€"but what does a conceptual approach miss?

> What are the implications of the fact that ritual is lived, enacted, and not merely imagined?

> Given the clear conceptual links between many myths (i.e., blends) and rituals, what does the performance of a ritual add or change to its meaning?

> What is the status of body and perception in ritual, since they are at once enacted *and* imagined?

> How does the audience, human or superhuman, shape ritual meaning?

> What is the significance of the repetition and formality characteristic of many rituals? How might we view these features from a cognitive (i.e., embodied, human-scale) perspective? I will emphasize the aesthetic dimension of such repetition.

Many rituals are performed to achieve something, not merely to retell or reenact a story. How does this pragmatic context affect the ritual's meaning?

Peter Hanenberg. Monday, 12 October 2009, 4-5pm, Crawford 618. The Power of Tacit Knowledge. Peter Hanenberg is a member of Faculdade de Ciências Humanas Universidade Católica Portuguesa and Co-Director of the Center for Cognition and Culture in Lisbon, Portugal.

Abstract: The most famous definition of tacit knowledge is not exactly a definition but just a paradoxal sentence by Michael Polanyi: "We know more than we can tell". What is tacit knowledge? Is it something that is not tellable, something that is not at hand or explicit? Tacit knowledge appears in consciousness, but we do not fully understand why. Tacit knowledge is something that we know without notion of this knowledge. Nevertheless we are prepared to act on it. We will try to develop a clearer definition of tacit knowledge and its importance for cognitive culture studies in three steps:

First we will observe some examples of "gut feelings" that lead us to the power of 'problem solving before or beyond knowing'. Then we will deal briefly with the idea of a geography of thought and with cognitive aspects of tacit knowledge for cultural diversity. We will try to relate PolanyiÂ´s ideas on tacit knowledge with Leonard TalmyÂ´s "Cognitive Culture System" in order to prepare three conclusions: tacit knowledge is based on experience, it is shared (and not just individual) and, thus, imparted through education. These conclusions may allow us finally to discuss challenges for tacit knowledge in media society.

Cristóbal Pagán Cánovas. Thursday, 8 October 2009, 3:30-5pm. The Cogsci Forum (612C Crawford). Title: The Cultural Genesis of the Arrows of Love: Blending, Schemata, and Erotic Emissions in Greek Poetry, Rituals, and Art.

Dr. Cánovas is a Marie Curie Postdoctoral Fellow. He will be in residence in the Department of Cognitive Science at CWRU for the 2010-2011 year. This small colloquium will be provided by one-way Skype transmission to the Cogsci Forum from the Conceptual Integration Research Group at UC San Diego.

Abstract: The arrows of love are one of the most frequently used symbols from ancient Greek mythology. Some classical philologists have proposed that they were invented by a specific literary author, Euripides or Anacreon. In cognitive linguistics, image-metaphor has been employed to link this particular cultural model to metaphor systems in everyday language. I argue that neither of the methodologies employed so far are sufficient for two reasons: their diachronic scope is not wide enough and their conceptual analysis lacks detail. The sheer intertextuality of the traditional approach is scientifically problematic and does not address the conceptual intricacies of the symbol. On the other hand, conceptual metaphor theorists often claim universality for metaphoric patterns without engaging in a detailed cultural study. I use Conceptual Blending Theory (the Grim Reaper blend) and image-schemata (the EMISSION schema) to link Love the archer to pre-existing imaginative products: Apollo the Archer as a personification of deadly disease, a group of conceptual blends for erotic emissions, the conceptual link between love and illness, and possibly also the arrows of glance metaphor. The conceptual structure of the arrows of love and their diachronic development offer some keys for the symbol's long success in posterity. Beyond its hypothesis about the genesis of the arrows of love and its claims about the relevant literary texts, the major interest of this research is methodological. I intend to find a common ground in which classical studies and cognitive linguistics can benefit from each other. I also make suggestions about the generalization of conceptual patterns and their study in literature and culture, and I try to achieve relevant theoretical conclusions on the framing of mental spaces through schemata.

Emergence of Mathematics Workshop. Monday and Tuesday, 11-12 May 2009. 618 Crawford. Sponsored by the Institute for the Science of Origins (http://www.case.edu/origins/sciences/emergenceofmind.html). Participants include James Alexander, Per Aage Brandt, Marcel Danesi, Gilles Fauconnier, Brendan Foreman, Reuben Hersh, Doug Hofstadter, Greg Huber, Ed Hubbard, Anthony Jack, Rafael Núñez, Todd Oakley, Arnaud Viarouge, Glenn Starkman, Lee Thompson, and Mark Turner. A gallery of photographs from the workshop:

The Cogsci Colloquium is pleased to publicize the Spring 2009 Allen and Constance Ford Distinguished Lecture (http://www.case.edu/events/ford/), in partnership with the Department of Biomedical Engineering: Jeff Hawkins, Tuesday, 31 March 2009, 4:30-5:30pm. Wolstein Auditorium. Title: Hierarchical Temporal Memory: How a theory of the neocortex may lead to truly intelligent machines. Jeff Hawkins is a co-founder of Palm, Handspring, and Numenta and the author of *On Intelligence.* Seating is limited. Register by clicking on the link above.

Roland Posner. Wednesday, 25 March 2009, 4-5pm. 618 Crawford.t Title: Polysemy in Gestures. Roland Posner is Director of the Research Center for Semiotics, Technische Universität Berlin.

Abstract: Emblematic gestures are body movements that carry conventional meanings. These meanings are semantically based either on a body reflex or on the utilization of an artifact. The artifact is presented either by direct embodiment (such as the hand shape imitating a mobile phone in the gesture 'Phone me!') or/and by operating on it (e.g., by holding the hand in this shape at the cheek, as in real phoning). The lecture shows that in normal gestures these sources of meaning can be applied to convey a multiplicity of meanings that are connected by metaphors and metonymies just like in the meanings of verbal expressions.

Kristina Woolsey. Saturday, 14 March 2009, 12-12:45pm. Cleveland Museum of Art. Title: Learning and Teaching From Objects. Kristina Woolsey is adjunct professor of cognitive science at Case Western Reserve University. Her talk is hosted by the Cleveland Museum of Arts and the Baker-Nord Center for the Humanities (http://artsci.case.edu/bakernord/doku.php). For details, seehttp://cma.org/events/conference.aspx (http://cma.org/events/conference.aspx) and the flyer (http://case.edu/artsci/cogs/WoolseyLearning.pdf). Admission is free but registration is required. Click here (http://artsci.case.edu/bakernord/registration_LearningTeaching.php) to register.

Jessica Gerard. Wednesday, 25 February 2009, 4-5pm. 618 Crawford Hall. Title: The Reading of Multiword Items in L1 and L2: A Corpus Informed Eye-Movement Analysis. Jessica Gerard is Lecturer in the English Department and Coordinator of ESL for SAGES at Case Western Reserve University. Her Ph.D research is in the psycholinguistics of idiom processing in non-native speakers of English.

Abstract: This study contributes to the growing body of formulaic language research indicating that formulaic sequences (e.g., idioms, collocations, metaphors, and other conventionalized multi-word items) facilitate comprehension by reducing processing load (Wray, 2002). Expanding on Underwood et. al. (2004), this study combines corpus analysis and eye-movement data to assess the contribution of formulaicity to the comprehension of a whole, authentic text. Information regarding grammatical, lexical, and contextual conventions for each formulaic item in the text was obtained via the Collins COBUILD Online Corpus and the British National Corpus. Additionally, using an Applied Science Laboratories Eye Tracker, the eye movements of two native speakers and one non-native speaker of English were recorded and the fixations for formulaic sequences were compared. All eye movement data was interpreted in light of Goodman's Transactional model of reading (2003). Specifically, eye movements for each participant were compared across two conditions: 1) a condition comprised of the formulaic sequences in the text and 2) a baseline segment from the text which was free of formulaic items. Paired t-tests were performed for each participant to determine whether or not the eye movement behavior differed significantly in the two conditions. Data analysis indicates that both native and non-native readers of English showed significant differences in the eye movement patterns for the two conditions. However, these significant differences were reversed for the two participant groups. In the case of the native readers, the predictable nature of formulaic sequences facilitated the processing of written text, as evidenced by a significantly lower percentage of words fixated in the formulaic sequences in comparison with the percent of words fixated in the baseline condition. However, for the non-native readers, 1) lack of experience with the formulaic items and 2) their opaque nature appeared to hinder comprehension, resulting in a significantly higher percentage of words fixated in the formulaic condition than in the baseline, non-formulaic condition. This dissertation has implications for the fields of first and second language acquisition, particularly literacy theory and instruction.

David Pincus. Wednesday, 11 February 2009, 4-5pm. 618 Crawford Hall. Title: The Social Brain: the Neurohormones of Attachment and Intersubjectivity. David Pincus, D.M.H., is Director of the MindBrain Consortium at Summa Hospitals in Akron, Assistant Clinical Professor of Psychiatry and Psychology at the Case Western Reserve University School of Medicine, Assistant Professor in Psychiatry at Northeastern Ohio Universities College of Medicine, and Adjunct Professor at the Medical University of South Carolina. He has been inducted as an Honorary Lifetime Member of the American Psychoanalytic Association

(APsaA) because of his contributions bridging neuroscience and psychoanalysis. Pincus is a member of the editorial boards of Psychoanalytic Psychology, Contemporary Psychology and Science and Consciousness Review. He is the founder and director of the Cleveland MindBrain Group which convenes on a monthly basis at the Cleveland Psychoanalytic Center. He is also a psychotherapist in private practice in Cleveland Heights and Akron.

Abstract: The neurohormones of the opiod system and oxytocin/vasopresin largely underwrite bonding, attachment, personality development and later adaptation or psychopathology. David Pincus will discuss theoretical and empirical literature connecting early bonding with personality development, ongoing relationship patterns, and tendencies for psychiatric difficulties. The speaker will discuss research he is involved in, including:

> (1) an fMRI study of depressed individuals administered oxytocin (looking at depression as a social and phenomenological disconnection syndrome)

> (2) a study looking at social responses to friends or romantic partners after intranasal oxytocin administration

(3) a newly approved study of the effect of a synthetic opioid on treatment refractory depression

D. Fox Harrell. Wednesday, 21 January 2009, 4-5pm. 618 Crawford Hall. Title: Imagination, Computation, and Expression: A Cognitive Approach to Digital Media Arts. Fox Harrell is Director of the ICE (**I**magination, **C**omputation, and **E**xpression) Laboratory/Studio and Assistant Professor of Digital Media in the School of Literature, Communication, and Culture at the Georgia Institute of Technology. His Ph.D. is in Computer Science and Cognitive Science, from the University of California, San Diego. Website (http://silver.skiles.gatech.edu/~dharrell3/).

Abstract: Fantastic blends of ideas, rich metaphors, social hierarchies, and cultural identities all exemplify the diverse power of imaginative cognition. Harrell's work constructs creative computational systems with bases in imaginative cognition. Such systems include interactive and generative narratives and poetry, games, social identity/networking sites, and, most important, new hybrid forms unanticipated by any of the above. The foundations for his approach are based in cognitive semantics theories of how concepts are generated and mapped to each other (Fauconnier & Turner, 2002; Lakoff, 1987; Lakoff & Johnson, 1980; Lakoff & Turner, 1989), formal approaches to semiotics and cognition from computer science that acknowledge critical perspectives on artificial intelligence and do not attempt to reduce human cognition to computation (Goguen, 1998; Harrell 2005), and cross-cultural and media-theoretic approaches to expressive multimedia narrative, poetry,

and other imaginative discourse forms (Gates Jr., 1988; Harrell, 2006, 2007b, 2007c; Murray, 1997). An original key method arising from this framework is that formal representations can be leveraged with understanding a system designer/author's expressive intent and the affordances provided by the system for user interpretation. Core to Harrell's work is the development of theoretical tools that allow authors, programmers, and artists to (1) enable digital media authors/artists to "add meaning to media," i.e. construct ontologies (formal descriptions of knowledge structures) as metadata for their media elements (graphics, animation, text, etc.), (2) generate meaningful text and multimedia discourse compositions dynamically, and (3) blend multimedia structures to generate new content dynamically for use in interactive narratives and related works. This approach enables the creation of digital media technologies within which meaning can be reconfigured and generated on the fly. Examples of recent systems will be discussed.

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