

Abstracts and Readings

The Neuroscience of Literary Time-Travel: How Literary Works Cross Historical Distance

Prof. Paul B. Armstrong, Brown University

The dead seem to come alive again when we read a literary work from the past and feel the strange but intimate presence of other subjectivities inhabiting our consciousness and our bodies. The power of literary works to speak across historical distance may seem mysterious, even mystical, but it must have a material basis in our neurobiological equipment for making sense of the world. What is often referred to as the “life” of a literary work calls for an explanation that goes beyond formal or historical categories. Elucidating this complex, contradictory state of affairs requires a neuro-phenomenological analysis of the relation between aesthetic experiences and their neural correlates, an analysis that integrates phenomenological theories of reading with neuroscientific research on embodied simulation, brain-to-brain coupling, and the anti-entropic organization of “free energy” in predictive processing. Reading is a process of doubling whereby we simulate cognitive processes held ready in a text, awaiting reactivation through our participation as we fill in its absences and make its world present. Because embodied brains can oscillate rhythmically together, we can interact with the activity embedded in a literary work and respond to the opportunities that these afford for reciprocity and collaboration. We speak with the dead by unbinding and binding cognitive energy, and the liveliness of their voices is a consequence of how our interactions with their patterns of meaning-making activate and sensitize our arousal systems.

Readings

Armstrong, P (2020) *Stories and the Brain*. Johns Hopkins University Press. (Prologue, Chapter 3 and Epilogue)

Cognitive Formalism: How Presence Machines are Built

Prof. Karin Kukkonen, University of Oslo

Literary texts present a sensory flow to readers through their written text. This sensory flow is designed, but it is designed to confront readers with unexpected elements across multiple levels of meaning-making. Characters move in unpredicted ways, focalisation changes suddenly and surprising events occur. Language itself can be used to draw attention to the very process of creating, shaping and destroying a fictional world. In my talk, I will develop 4E approaches to literature with an eye on the artificiality of literary texts. If literary texts are a designer environment that extends the cognitive capacities of readers, then these designer environments are built to establish coherence on the one hand and to break with it, systematically, on the other hand. Texts are machines that generate both a sense of presence *and* the possibility for abstract reflection. This article argues therefore for another twist in the account of entanglements between brain and world: literary texts work as special designer environments that mediate between our mind/bodies and the life-world, because of their artificiality (and not despite of it). I propose to approach this twist conceptually through a combination between (embodied) predictive processing and the critical tradition of Russian Formalism. These first steps to a cognitive formalism are taken in a discussion of Gunnhild Øyehaug’s novel *Presence Machine* (2018), Inger Christensen’s poem *alphabet* (1981 / 2000), and her novel *Eternity Machine* (1964).

Readings

Kukkonen, K (2020) *Probability Designs*. Oxford University Press. (Part 1)

Literature, the Brain, and the End of the World

Prof. Marco Caracciolo, Ghent University

"The neuronovel in its present form presents the experience of a cognitive defeat," writes Marco Roth in an influential article on contemporary literature's engagement with neuroscience. For Roth, the "defeat" is conceded by literary writers as they realize their cultural authority has shifted towards scientific thinking, and particularly neuroscientific models of the brain. This paper aims to reconceptualize the neuronovel in light of another kind of cognitive defeat, one experienced when attempting to imagine and predict the future in times of climate change. As the specter of the end of the world (or at least the world as we know it) looms larger and larger, feelings of anxieties come to the fore and are increasingly recognized as jeopardizing the mental health of (especially) younger generations. Uncertainty thus becomes a central dimension of our temporal and affective experience. This paper argues that the contemporary neuronovel maps such climate-related uncertainty onto the uncertainty that is inherent in the scientific understanding of the brain. The result of such mapping is twofold: on the one hand, fiction draws attention to "patterns"--as discussed by Stephan Besser--that connect, mysteriously, the inner (the brain) and the external world (the nonhuman environment); on the other hand, the conflation of neuroscientific and climate uncertainty is what one may consider a narrative sleight of hand, a vague resonance that seeks to manage uncertainty in affective terms without resolving it. Richard Powers's recent novel *Bewilderment* serves as my main touchpoint in this discussion.

Readings

- Besser, S (2017) How Patterns Meet: Tracing the Isomorphic Imagination in Contemporary Neuroculture. *Configurations* 25(4), 415-445. [doi:10.1353/con.2017.0027](https://doi.org/10.1353/con.2017.0027).

- Roth, M (2009) The Rise of the Neuronovel. *N+1* 8. URL: <https://www.nplusonemag.com/issue-8/essays/the-rise-of-the-neuronovel/>

Cultural Physics of Defamiliarization, Learning and Reading

Prof. Pablo Valdivia, University of Groningen

In this presentation, I investigate the role of defamiliarization/familiarization dynamics in literary informational processing. These complex dynamics will be discussed in light of four inter-related theoretical frameworks, i.e. the Threshold Concepts Theory, the Revised Bloom Taxonomy, my previous scholarly work on Regimes of Metaphor and Metaphor Field-Loop Theory (MELT Model), as well as Hameroff and Penrose's 'Orchestrated Reduction' model. More specifically, I explore the configuration of Regimes of Metaphor and Cultural Narratives in relation to pre-cognitive thought as both categories play a key-role in sense-making and behavioural priming. As an example to illustrate these dynamics, I will focus on the notion of "financial crisis" present in a corpus of 915 items of Spanish news, cross-validated by representative key fiction and non-fiction production published under the same diachronic and synchronic conditions which hold a strong Pearson correlation coefficient.

Readings

- Fay, N, Walker, B, Swoboda, N and Garrod, S (2018) How to Create Shared Symbols. *Cognitive Science* 42, 241-269. <https://doi.org/10.1111/cogs.12600>
- O'Mara-Shimek, M, Guillén-Parra, M and Ortega-Larrea, A (2015) Stop the bleeding or weather the storm? Crisis solution marketing and the ideological use of metaphor in online financial reporting of the stock market crash of 2008 at the New York Stock Exchange. *Discourse & Communication* 9(1), 103–123. <https://doi.org/10.1177/1750481314556047>
- OPTIONAL: Katsumi, Y, Kamona, N, Zhang, J, Bunce, J, Benjamin Hutchinson, J, Yarossi, M, Tunik, E, Quigley, K, Dickerson, B, Feldman Barrett, L (2021) Functional connectivity gradients as a common neural architecture for predictive processing in the human brain. *BioRxiv* 2021.09.01.456844. doi: <https://doi.org/10.1101/2021.09.01.456844>

Bios

Paul B Armstrong is Professor of English at Brown University. His most recent book is *Stories and the Brain: The Neuroscience of Narrative* (Johns Hopkins UP, 2020). This neuro-phenomenological analysis of our embodied cognitive capacity to tell and follow stories is a sequel to his book *How Literature Plays with the Brain: The Neuroscience of Reading and Art* (Johns Hopkins UP, 2013; Slovenian translation, Arabic and Chinese translations in progress). His Norton Critical Edition of E. M. Forster's novel *A Passage to India* was published in 2021; he previously published two Norton Critical Editions of Joseph Conrad's novella *Heart of Darkness* (2006 and 2017).

Karin Kukkonen is Professor in Comparative Literature at the University of Oslo. She leads the research and teaching initiative "Literature, Cognition and Emotions" (2019-2023), an interdisciplinary hub that brings together literary studies, linguistics, psychology and neurosciences in a new conversation about literature. She has published extensively in the field of cognitive literary studies, including the books *Probability Designs: Literature and Predictive Processing* (Oxford University Press, 2020), *4E Cognition and Eighteenth-Century Fiction: How the Novel Found its Feet* (OUP, 2019) and *A Prehistory of Cognitive Poetics. Neoclassicism and the Novel* (OUP, 2017).

Marco Caracciolo is Associate Professor of English and Literary Theory at Ghent University, where he coordinates the ERC Starting Grant project "Narrating the Mesh" (NARMESH). His books include *Narrating the Mesh: Form and Story in the Anthropocene* (University of Virginia Press, 2021), *Strange Narrators in Contemporary Fiction: Explorations in Readers' Engagement with Characters* (University of Nebraska Press, 2016) and *The Experientiality of Narrative: An Enactivist Approach* (De Gruyter, 2014; honorable mention for the Perkins Prize of the International Society for the Study of Narrative). Together with Karin Kukkonen, he also authored *With Bodies: Narrative Theory and Embodied Cognition* (Ohio State UP, 2021).

Pablo Valdivia is Professor of European Culture and Literature at the University of Groningen, and Associate in Applied Physics at the Harvard Paulson School of Engineering and Applied Sciences. From 2014 to 2018, he was president of the Steering Committee of the H2020 European Commission Marie Skłodowska-Curie RISE project "Cultural Narratives of Crisis and Renewal" (CRIC). His current research focuses on active learning, cultural narratives and conceptual metaphor at the intersection between neuroscience, Artificial Intelligence and literary theory.