

Editorial introduction

Cinematic Minds in the Making: An Investigation into Subjective and Intersubjective Experiences of Storytelling



Guest Editors

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Stories in films and other audiovisual media rely on a shared understanding of situations in people's lives in complex ethical, political, and cultural contexts (Hjort, Nannicelli 2022). They constitute a means to learn from protagonists – from their examples and successes, but also from their mistakes, false motivations, and blind desires that may lead to dramatic situations, sometimes even disasters. Contextual situatedness is the constitutive essence in stories. They not only entertain and educate, but also serve scientific studies of the human mind and human behavior.

In retrospect, around the turn of the millennium, film studies were sucked into a turbulent Kuhnian paradigm shift. Many disciplinary silos in natural sciences, in social science and within the humanist fields in general started to open up to other scientific domains that seemed to promise explanatory value or application. For example, many proponents of cognitive sciences reached out to fields that embraced phenomena such as emotion, embodiment and subjective experiences, exemplified by the seminal book *Embodied Mind*, by Francisco Varela, Evan Thompson, and Eleanor Rosch (1991), or the anthology *Naturalized Phenomenology*, by Jean Petitot and colleagues (1999). By proposing the research program of neurophenomenology, Varela gave strong impetus to the efforts of integrating the phenomenological ideas of William James, Edmund Husserl, and Maurice Merleau-Ponty to neurophysiological study methods (1986). By that time, the cognitive linguist George Lakoff and his philosopher colleague Mark Johnson (1980) had already famously proposed that metaphors actually constitute the grounds for shared communication and are more than merely ameliorative additives of language. Another game-changing theory was that of embodied simulation by Vittorio Gallese (2005). It proposed sensorimotor imitation as the basis of social interaction. Elsewhere, within the study of film arts, some researchers, among them Pia Tikka in her *Enactive Cinema: Simulatorium Eisenstein-ense* (2008), took steps to adopt dynamic

systems theories and cognitive mind models into their explanatory framework of the filmmaker's creative processes. Further, around those times, cognitive neuroscientists would start distancing themselves from conventional, highly controlled laboratory settings in favor of more "naturalistic" settings by adopting films as the optimally designed stimulus material for simulating complex life situations inside brain scanners (see Jääskeläinen et al., 2021, for review). While several filmmakers disagree with the notion of films as "naturalistic" stimulus due to their artifactual design nature (Lotman, 2016; Fingerhut, 2021; Rosic, this volume), for the present topic this is significant because the knowledge accumulated from neuroscientific experiments has, without doubt, increased not only scientists' but also filmmakers' understanding of film viewers' cognitive dynamics when engaged with films.

With few exceptions, however, neurocinematic studies have so far focused almost exclusively on mapping the correlations between narrative events and observed physiological behaviors of uninitiated test viewers (e.g., deBorst et al., 2016; Andreu-Sánchez et al., 2021). That being the case, the results do not give much insight into the embodied dynamics of cinematic minds, the experts of audiovisual storytelling. We are entertaining the idea that the field of cinematic storytelling can open the broad contexts of the film materials used as stimuli and refer to the full significance of meaning-making and the storytelling they address. Out of this setting emerged the cross-disciplinary paradigm of "neurocinematics", a term first coined by Uri Hasson and colleagues (2008).

This special issue gathers together these interdisciplinary efforts to understand the embodied cognitive processes of professional storytellers. The fundamental question addressed here is what constitutes the shared ground of cinematic storytelling. How can the filmmaker make reference to such an abstract and hidden code? Instead of taking cinematic storytelling as something guaranteed and

self-evident, this special issue turns the focus to the prerequisites of that communication within the cinematic mind in the first person's experience. Cinematographer Elen Lotman uses the term "experiential heuristics" (2021) to describe the embodied, practice-based knowledge accumulated by cinematographers. One way to regard this is to assume that the cinematic mind is not a closed system but has the embodied capacity of *simulating* others' lives and situations, as Tikka (2008), and later, Vittorio Gallese and Michele Guerra (2012, 2019) have suggested. Hence, embodied heuristics could be assumed to play a part, for example, during the creative simulation process of a screenwriter, when trying to imagine how future viewers of the film might simulate the experiences of the fictional protagonists. Such a dynamic simulation system of three (writer, protagonist, and viewer) constitutes what Tikka has elsewhere referred to as "enactive second-order authorship" (2022). Another question that merits further understanding is how the embodied decision-making of filmmakers leads to the creation of dynamic embodied structures in the cinematic form. Appealing to the shared embodiment of both the filmmaker and the film viewer, Maarten Coëgnarts (2017, 2019) has argued that pre-conceptual patterns of bodily experience, or "image schemas," play a significant expressive role in the representation and communication of meaning in cinema.

The follow-up question is how to study first-person experience as a simulation of others' experience? Phenomenological first-person reports might well show traces of empathy, for example, but what is it that makes this possible? Maybe the prerequisites of first-person experience, including the previously mentioned capability of simulating the other, are embodied and traceable within the body of the mind? All contributors to this Special Issue relate to this idea, many of them discussing ways to relate the cinematic mind to its physiology. Some of the contributions constitute achievements within *practice-based research*, but some can also be described

as *research-based practice*, a dichotomy discussed by Tikka (2008), or even better, the complementary epistemic interaction between the two.

In the big picture, what we envision will emerge is a triangulating epistemology that seeks to study explanatory mappings and references between three distinct manifestations of film: (1) as first-person experiential reports, (2) neuro-physiological observations of that experience, and how these map onto (3) descriptions of the contents and contexts of the cinematic experience. The promising methodological avenue towards this epistemology arises from the fact that all of these can be time-locked and synchronized.

The questions we hoped the contributors would address from their own disciplinary perspectives relate to these manifestations. What we received in total creates the impression that we really are gradually stepping up towards this higher-level multidisciplinary and multiperspectival understanding of the cinematic mind. We are proud to present ten articles from contributors who represent a broad range of disciplines. All focus on film experiences in one way or another.

In his artistic research project, filmmaker **Carlos Lesmes** explores memory as an ever-transforming embodied experience of affective contact with the world. His one-time performance piece, *Remember by Erasure*, forms the basis of a practice-based inquiry into how both in film and in performance, time, narrative and memories (or the lack of them) interact. As one of the most personal and directly practice-based artistic research reflections of this special edition, Lesmes' paper is both conceptual and visual, transcending words and inviting the reader to travel through one's own subjective memories. It serves as a contribution to memory studies in general and also pulls back the curtain on an artistic process, which oftentimes relies on tacit knowledge requiring hindsight and meta-analysis to make the gained knowledge explicit and shareable. Without publishing artistic research, these insights would

remain a secret between the artist and their process.

Production designer **Katriina Ilmaranta**'s goal is, through artistic research practice, to study film production design with the help of examples from her own work as a production designer. She views her practice through the Conceptual Metaphor Theory (CMT), as a filmmaker's aim in production design elements is to interpret and represent something other than the elements themselves. Filmmaker and one of the founding fathers of Estonian film education Jüri Sillart used to tell his students, "In films, even the crows don't fly without a reason." This rings true especially in production design, as Katriina Ilmaranta shows with her comparison of visual and linguistic metaphors. Ilmaranta's paper serves as a substantial addition to the currently rather scarce analysis of production design in cinema (something often overlooked in the aesthetic analysis of films), through the lens of a practicing filmmaker, the agency that often seems to be diminished in the larger body of film theoretical work.

Cognitive scientist and film editor **Jelena Rosic** offers an insightful contribution at the crossroads of empirical phenomenology and neurocinematics. With the aim of overcoming the limitations of so-called "just look" methods (classical questionnaires with predefined categories), the author sketches out a promising alternative method for describing a first-person viewer's subjective lived experience of film-viewing. This method, which draws on recent advances in micro-phenomenology (MP) and which consists of in-depth subjective reports, has the potential to yield more fine-grained descriptions of the participant's viewing experience. Thus the author adds a welcome new perspective to the field, especially since neurocinematics generally tends to focus too narrowly on brain data while ignoring the experiential and introspective side.

In her pilot study, professional screenwriter **Kirsi Reinola** adapts a novel interview method of micro-phenomenology to

open a window into the mechanisms of emotional transportation, identification, and "eureka" moments in screenwriting practice. For Reinola, screenwriting serves as a platform for systematic experimentation and a reflection of new ideas, insights, and hands-on experience related to the writer's processes. The extensive literature review on a range of theories that explicate transportation, identification, and eureka moments within narrative studies allows a comprehensive background for the study, simultaneously revealing the lack of such studies within the field of professional screenwriting. The proposed study method for uncovering tacit knowledge about screenwriting practice promises a significant contribution to the field and allows for further exploration of the writer's affective and cognitive dynamics.

Cognitive film scholar **Maria J. Ortiz** explores the effects of embodied visual metaphors in *Mr. Robot*, an American TV series applauded for its rendering of characters' emotional states through unorthodox framing techniques. Providing one of the first eye-tracking studies on the topic, the author convincingly demonstrates how these unusual compositional patterns play a pivotal role in facilitating the connection between the minds of fictional characters and viewers through shared bodily experiences. Empirical evidence for this is offered in the way these embodied visual metaphors tend to correlate with the phenomenon of attentional synchrony, the tendency for similar gaze patterns between multiple viewers of the same scene.

Brad Jackson, a PhD candidate in cognitive film studies, engages with various strands of research to understand the ways in which viewers use cinematic cues to gauge character affective experience. Like Ortiz, the author is keen to show how filmmakers facilitate character understanding by integrating bodily expressions with cinematic techniques such as lighting, framing, and editing. To this aim Jackson draws upon extant literature to introduce a novel theoretical framework, which he dubs "embodied affective cues," that usefully

categorizes the cinematic cues that viewers use to gain access to a character's subjective experience.

Cognitive film scholar **Maarten Coëgnarts** continues his theoretical work on embodied cognition and cinema by stressing the significant role of dynamic embodied schemas at three levels of mental activity: perception, the filmmaker's creative act of conceiving cinematic representations, and the viewer's mental act of making sense of those representations. We do not just passively perceive our worlds, we actively generate them, so the author argues – just as filmmakers (authors) do not merely reproduce reality but equally impose body-based structures onto the parts of a film in order to express meanings. Moreover, Coëgnarts is keen to stress that these patterns, as embedded in the cinematic form, may serve as embodied markers, allowing viewers a privileged look into the embodied creative-thinking processes of filmmakers.

Film scholar **Mircea Deaca** draws upon the theoretical tools of Ronald Langacker's cognitive approach to language to understand the structural and conceptual features of film language. Treating the juxtaposition of shots as language structures, the study identifies recurring schematic patterns across expressive instances. Focusing on grammatical constructions, it delves into the connections between shots, especially in sequences involving a character's point-of-view. By means of rich illustrations, including a case study on the Kuleshov effect, the author argues for the existence of a shared conceptual mechanism for understanding the images of cinema and their embedded meanings.

Filmmakers **Elen Lotman** and **Pia Tikka** collaborated with computer scientist **Mati Möttöus** to explore how the embodied perceptual learning processes of cinematographers evolve from novice to professional and how filmmakers can contribute to the area of cognitive film studies with their professional insight. Assuming that the developmental process, which the authors term "perceptual professionalization", can

be measured in the way humans observe moving images, they conducted a eye-tracking case study in which participants were instructed to view the trailer of Sam Mendes's *Empire of Light*. Interestingly, their findings reveal striking differences across the different groups scanning the trailer. The authors interpret these variations as being consistent with their hypotheses and suggest an experimental design that could be used to unravel the experiential heuristics of film professionals more definitely.

In the sole contribution on virtual representations, ethnographic filmmaker and expert in United States law **Robert MacNamara** addresses the ethical implications of artificial intelligence and human-like computer-generated characters in the representation of vulnerable groups. The author explores fundamental questions: Who has the right to tell certain stories? Is it ethical to change the medium of a narrative and the identity of a protagonist? Do such changes, or technological mediations, affect whether a vulnerable group will be fairly and accurately portrayed? And what are the implications, either way? While using these questions as a framework to examine the ethical implications of application of artificial intelligence and computer generated characters, the author is also keen to point to the potential of virtual representation as a meditative tool for moral and social change.

Let us end this editorial note with some cogent advice from renowned neuroscientist Eric Kandel (2012: 506): "It is essential to bear in mind that dialogues are most likely to be successful when fields of study are naturally allied, as are the biology of mind and the perception of art, and when the goals of the dialogue are limited and benefit all of the fields that contribute to it." With the diverse sample of multidisciplinary insights of this Special Issue on "Cinematic minds in the making" we hope to foster a broader and deeper understanding of cinematic and digital storytelling and to inspire further conversations between film practitioners, film theorists and experiential scientists.

REFERENCES

- Andreu-Sánchez, Celia; Martín-Pascual, Miguel Á.; Gruart, Agnès.; Delgado-García, José María. 2021. "The effect of media professionalization on cognitive neurodynamics during audiovisual cuts". – *Frontiers in Systems Neuroscience*, 15: 598383. <https://doi.org/10.3389/fnsys.2021.598383>
- Coëgnarts, Maarten. 2017. "Cinema and the embodied mind: Metaphor and simulation in understanding meaning in films". – *Palgrave Communications*, 3, 1, 1–15. <https://doi.org/10.1057/palcomms.2017.67>
- Coëgnarts, Maarten. 2019. "Embodying the Meaning: The Role of Image Schemas, Metaphors, and Metonymies". – In *Film as Embodied Art: Bodily Meaning in the Cinema of Stanley Kubrick*. Academic Studies Press. Accessed in <https://doi.org/10.1515/9781644691137-005>
- De Borst, Aline. W.; Valente, Giancarlo; Jääskeläinen, Iiro P.; Tikka, Pia. 2016. "Brain-Based Decoding of Mentally Imagined Film Clips and Sounds Reveals Experience-Based Information Patterns in Film Professionals". – *NeuroImage* 129, 428–438. <https://doi.org/10.1016/j.neuroimage.2016.01.043>
- Fingerhut, Joerg. 2021. "Enacting Media. An Embodied Account of Enculturation Between Neuromediality and New Cognitive Media Theory". – *Frontiers in Psychology* 12:635993. <https://doi.org/10.3389/fpsyg.2021.635993>
- Hasson, Uri.; Landesman, Ohad; Knappmeyer, Barbara; Vallines, Ignacio; Rubin, Nava.; Heeger, David J. 2008. "Neurocinematics: The Neuroscience of Film". – *Projections*, 2, 1–26. <https://doi.org/10.3167/proj.2008.020102>
- Hjort, Mette; Nannicelli, Ted (Ed.). 2022. *The Wiley Blackwell Companion to Motion Pictures and Public Value*. Wiley-Blackwell Press.
- Jääskeläinen, Iiro. P.; Sams, Mikko; Glerean, Enrico; Ahveninen, Jyrki. 2021. "Movies and narratives as naturalistic stimuli in neuroimaging". – *NeuroImage*, 224, 117445. <https://doi.org/10.1016/j.neuroimage.2020.117445>
- Kandel, Eric. 2012. *The Age of Insight: The Quest to Understand the Unconscious in Art, Mind, and Brain from 1900 to the Present*. New York: Random House.
- Kuhn, Thomas S. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Gallese, Vittorio. 2005. "Embodied Simulation: From Neurons to Phenomenal Experience". – *Phenomenology and the Cognitive Sciences* 4 (1): 23–48. <https://doi.org/10.1007/s11097-005-4737-z>.
- Gallese, Vittorio; Guerra, Michele. 2012. "Embodying movies: Embodied simulation and film studies". – *Cinema: Journal of Philosophy and the Moving Image* 3:183–210.
- Gallese, Vittorio; Guerra, Michele. 2019. *The Empathic Screen: Cinema and Neuroscience*. New York: Oxford University Press.
- Lakoff, George; Johnson, Mark. 1980. *Metaphors We Live By*. University of Chicago Press.
- Lotman, Elen. 2021. *Experiential Heuristics Of Fiction Film Cinematography*. PhD Diss. Tallinn University.
- Lotman, Elen. 2016. "Exploring the Ways Cinematography Affects Viewers' Perceived Empathy towards Onscreen Characters". – *Baltic Screen Media Review* 4, 1, 88–105. <https://doi.org/10.1515/bsmr-2017-0005>
- Petitot, Jean; Varela, Francisco J.; Pachoud, Bernard; Roy, Jean-Michel. (Eds.). 1999. *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*. Stanford University Press.
- Tikka, Pia. 2008. *Enactive Cinema: Simulatorium Eisensteinense*. PhD dissertation. Aalto University Press.
- Tikka, Pia. 2022. "Enactive Authorship Second-Order Simulation of the Viewer Experience – A Neurocinematic Approach". – *Projections: the Journal for Movies and Mind*, 16, 1, 47–66. <https://doi.org/10.3167/proj.2022.160104>.
- Tikka, Pia; Kaipainen, Mauri. 2018. "Triadic Epistemology of Narrative Experience". A talk at Third Renewable Futures Conference: Hybrid Labs Symposium, Aalto Studios. Aalto University, and Leonardo Art-Science Network.
- Varela, Francisco. 1986. "Neurophenomenology". – *Journal of Consciousness Studies* 3, 4, 330–49.
- Varela, Francisco; Thompson, Evan; Rosch, Eleanor. 1991. *The Embodied Mind: Cognitive Science And Human Experience*. Cambridge, Mass.: MIT Press.