

CINÉMA&CIE

INTERNATIONAL FILM STUDIES JOURNAL

VOL. XIV, NO. 22/23, SPRING/FALL 2014

MIMESIS
INTERNATIONAL

**THE
BRAIN
THAT WOULDN'T
DIE**



NEUROFILMOLOGY

AUDIOVISUAL STUDIES AND THE CHALLENGE OF NEUROSCIENCE

EDITED BY ADRIANO D'ALOIA AND RUGGERO EUGENI



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vol. XIV, no. 22/23, Spring/Fall 2014

CINÉMA&CIE

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Neurofilmology. Audiovisual Studies and the Challenge of Neuroscience

Edited by Adriano D'Aloia and Ruggero Eugeni

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Cinéma & Cie is promoted by
International PhD Program “Art History and Audiovisual Studies”
(Università degli Studi di Udine, Université Sorbonne Nouvelle – Paris 3)
Dipartimento di Storia e Tutela dei Beni Culturali
Università degli Studi di Udine

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Single issue: 16 € / 12 £ / 18 \$
Double issue: 20 € / 15 £ / 22 \$
Yearly subscription: 30 € / 22 £ / 34 \$

No shipping cost for Italy
Shipping cost for each issue:
EU: 10 € / 8 £ / 11 \$
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Journal website
www.cinemaetcie.net

© 2015 – Mimesis International
www.mimesisinternational.com
e-mail: info@mimesisinternational.com

isbn 9788869770227
issn 2035-5270

© MIM Edizioni Srl
P.I. C.F. 02419370305

Cover image
The Brain That Wouldn't Die (Joseph Green, USA 1962)
Poster by Reynold Brown

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**Neurofilmology. Audiovisual Studies
and the Challenge of Neurosciences**

Neurofilmology: An Introduction

*Adriano D'Aloia and Ruggero Eugeni,
Università Cattolica del Sacro Cuore*

Abstract

Over the last two decades, discoveries made in the field of cognitive neuroscience have begun to permeate the humanities and social sciences. In the context of this intersection, *Neurofilmology* is a research program that arises at the encounter between two models of viewer: the *viewer-as-mind* (deriving from a cognitive/analytical approach) and the *viewer-as-body* (typical of the phenomenological/continental approach). Accordingly, Neurofilmology focuses on the *viewer-as-organism*, by investigating with both empirical and speculative epistemological tools the subject of audiovisual experience, postulated as embodied, embedded, enacted, extended, emerging, affective, and relational. This introduction is divided into three parts. Firstly, it compares the classic filmological approach of the 1940s-50s with contemporary audiovisual media studies devoted to the analysis of viewer experience. Secondly, it outlines an epistemological and conceptual framework for the research: in this sense, it illustrates the theoretical model of the *viewer-as-organism*, and sketches a general outline of audiovisual experience that allows researchers to rearrange different kinds of research within a unitary framework. Thirdly, it briefly summarizes the contributions to the special issue.

This special issue of *Cinéma & Cie* focuses on major conceptual and epistemological arguments arising from the dialogue between audiovisual studies and neurosciences developed over the last twenty years. In fact, the contributors share the conviction that such a dialogue can be fruitful if and only if it is conducted within a common and consistent framework, including both epistemological and conceptual aspects. Such a framework should allow each of the research programs to contribute to a shared understanding of that particular and complex phenomenon that is the film and audiovisual media viewing experience. Therefore, this introduction will both illustrate the main difficulties involved in the dialogue between audiovisual studies and neurosciences, and propose a methodological and conceptual framework for underpinning and girding interdisciplinary research projects.

In doing so, we assume a twofold orientation. On the one hand, our proposal looks to the contemporary research fields crossing film theory and experimental sciences – such as “psychocinematics,” “neurocinematics,” “neurocognitive film and media theory,” or “film neuroaesthetics.” The framework we propose is integrative, rather than alternative; more exactly, we intend to overcome some oppositions between different conceptions of audiovisual experience, underlying and undermining the dialogue between audiovisual theory and experimental sciences. On the other hand, our proposal looks to the past and more particularly to Filmology, the research program that during the 1950s and the 1960s intersected for the first time theoretical and empirical approaches within a systematic investigation of film viewing experience. Although largely forgotten by current psychocinematic studies, Filmology nevertheless constitutes a key anticipation of current issues and debates – as well as of contemporary limits and problems of interdisciplinary collaborations. We will label our epistemological and theoretical framework *Neurofilmology*.

The first part of this introduction is dedicated to an analysis of both the classic filmological approach and the contemporary landscape of interdisciplinary studies on audiovisual experience. The second part illustrates our proposal both in epistemological and in conceptual terms, and outlines a theoretical model of audiovisual experience. The third part briefly presents the individual contributions to this special issue.

The (problematic) heritage of classic Filmology

*Cette diversité des thèmes traités dans notre Revue marquera utilement, non pas le limites, mais l'étendue du champ des études filmologiques et rendra sensible la nécessité, pour ces études, de méthodes d'investigation très diverses, et par suite d'équipes de travailleurs multiples et variées, et la mise en jeu d'outillages complexes et spécialisés. Notre discipline exigera, pour que soit réalisé son programme, que nous ne saurions encore définir et limiter, la convergence de ces méthodes et l'harmonisation de ces curiosités.*¹

Reading Mario Roques' *Introduction* to the *Revue Internationale de Filmologie* issue no. 16 (January-March 1954), entirely devoted to *Études expérimentales de l'activité nerveuse pendant la projection du film*, one can say that, even after exactly sixty years, things have changed little. The dark fascination of the brain and the nerves still tempt audiovisual studies, constantly in search of empirical evidence to solve the ineffable mystery of film viewing. The yellowed pages of that issue, equipped with figures of the mu rhythm (i.e. a type of brain wave that can be measured via electroencephalography) of the experiments reported, are a

* The authors would like to thank Warren Buckland for his helpful advice and comments on various arguments in this Introduction.

¹ *Revue Internationale de Filmologie*, no. 16, “*Études expérimentales de l'activité nerveuse pendant la projection du film*,” January-March 1954.

sort of archaeological evidence – the fossil witness of a past age in which methodology, prior to even phenomena, was a field of experimentation.

The Filmology manifesto was experimental in itself, due to the intrinsic interdisciplinarity that characterized the filmological research project as a whole. According to Gilbert Cohen-Séat's *Essai sur les principes d'une philosophie du cinéma*,² a serious and systematic study of cinema and a comprehensive analysis of the “cinematic fact” and “filmic fact” were essential to found an autonomous and specific discipline, accountable for the complexity of the film “enterprise” as both a social and a psychological object. The co-operation of sociologists, aesthetologists, philosophers, experimental and developmental psychologists, and physiologists was the very revolutionary specificity of the new discipline, established on the integrated contribution of different perspectives and methodologies.

However, as several commentators recognize today, this project lacked an adequate methodological and conceptual framework that would have been able to unify and coordinate the different scholars' efforts and accordingly to shift from a *pluri*-disciplinary to a real *inter*-disciplinary setting. As a consequence, the positivist premises of Filmology pushed it towards a predominance of experimental sciences (as opposed to philosophical and culturalist disciplines) and of a behavioural approach (as opposed to phenomenological and even psychoanalytical ones).³ Issue no. 16 of the *Revue de Filmologie*, introduced above, is a perfect example of this overall trend.

Indeed, that issue consists of the report of three experiments conducted by three different teams (only Gilbert Cohen-Séat is accredited in the all three),⁴ as the outcome of the work of one of the four *domaines d'études* promoted at the Institut de Filmologie (founded by Cohen-Séat at Sorbonne University in 1947).⁵

² Gilbert Cohen-Séat, *Essai sur les principes d'une philosophie du cinéma*. Tome I. “Introduction générale. Notions fondamentales et vocabulaire de filmologie,” PUF, Paris 1946.

³ See particularly Martin Lefebvre, “L'aventure filmologique: documents et jalons d'une histoire institutionnelle,” in *Cinémas: revue d'études cinématographiques / Cinémas: Journal of Film Studies*, vol. 19, no. 2-3, “La filmologie, de nouveau,” sous la direction de François Albera et Martin Lefebvre, 2009, pp. 59-100; and Laurent Jullier, “‘L'esprit, et peut-être même le cerveau...’ La question psychologique dans la *Revue internationale de filmologie*, 1947-1962,” *Ivi*, pp. 143-167. See also Zbigniew Gawrak, “La filmologie: bilan de la naissance jusqu'au 1958,” in *Ikon*, no. 65-66, 1968, pp. 111-118; Christian Metz, *Langage et Cinéma*, Larousse, Paris 1971 (*Language and Cinema*, Mouton, The Hague-Paris 1974, pp. 9-21); Edward Lowry, *The Filmology Movement and Film Study in France*, University of Michigan Research Press, Ann Arbor 1985, particularly pp. 157-170; Francesco Casetti, *Theories of Cinema, 1945-1995*, The University of Texas Press, Austin 1999, pp. 94-106; David Rodowick, *Elegy for theory*, Harvard University Press, Cambridge (MA)-London 2014, pp. 112-130.

⁴ Gilbert Cohen-Séat, Henry Gastaut, Jacques Bert, “Modification de l'E.E.G. pendant la projection cinématographique,” in *Revue Internationale de Filmologie*, no. 16, cit., pp. 7-26; Gilbert Cohen-Séat, Jacques Faure, “Retentissement du ‘fait filmique’ sur les rythmes bioélectriques du cerveau,” in *Ivi*, pp. 27-50; Georges Heuyer, Gilbert Cohen-Séat, Serge Lebovici, Monique Rebeillard, M.lle Daveau, “Note sur l'électroencéphalographie pendant la projection cinématographique chez des adolescents inadaptés,” in *Ivi*, pp. 51-64.

⁵ The four domains were: études psychologiques, directed by Henri Wallon; études techniques, directed by Gilbert Cohen-Séat, filmologie générale et philosophie directed by Raymond Bayer,

The aim of these innovative – for that age, at least – studies was to demonstrate and measure viewers' psychophysiological response to “experimental” films – made specifically for these studies – or short sound films, by means of electroencephalograms (EEG). Differently from the investigation of “latent consequences of the cinematographic projection,”⁶ the EEG

*permet au moins de déceler, par la manifestation objective des variations du potentiel de l'électricité somatique, l'existence de certaines réactions. Elle peut donc offrir une méthode concrète pour comparer certains états au cours de la projection filmique.*⁷

Rather than anything that they might reveal, what was so innovative about these experiments was the existence of the responses, and that they could be measured objectively by means of a relatively new instrument. The main discovery of the use of EEG was the fact that desynchronization of mu waves occurs not only during active movements of the subject, but also while the subject observes actions executed by someone else, even when this someone else is not a real person, but a film character.

This “concrete method,” however, is subject to the same scepticism that empirical methodology raises today when applied to humanities. Roques himself, in fact, notes two critical aspects. First, the uncertainty of the EEG techniques forces researchers to “hide behind” descriptions and anatomical-neurological hypothesis that make interpretation “insufficiently clear.”⁸ Second, the fact that these studies seem not to refer directly to filmological aspects or to have applications to filmological dynamics. The main problem – Roques comments – is the difficulty of introducing in the laboratory a set of stimulus equivalent to that normally specific to real life. These experiments were recreated in a context that nor fully correspond to the “cinematographic situation,” i.e. the spatial and psychological conditions that make the film experience powerfully “empathetic.”

The words “real” and “empathy” are not used by chance or in their general sense; rather, they implicitly refer to two key essays published in the *Revue* by Albert Michotte in previous years. In *Le caractère de 'réalité' des projections cinématographiques*⁹ the Belgian experimental psychologist explained that the strong impression of reality provided by the film depends on movement, i.e. a factor that gives “life,” a body, to the onscreen objects and that is perceived as real in itself. In *La participation émotionnelle du spectateur à l'action représentée*

and études comparatives directed by Mario Roques.

⁶ Mario Roques, “Introduction,” in *Revue Internationale de Filmologie*, no. 16, “Études expérimentales de l'activité nerveuse pendant la projection du film,” cit., p. 3.

⁷ *Ivi*, p. 4.

⁸ *Ivi*, p. 5.

⁹ Albert Michotte, “Le caractère de 'réalité' des projections cinématographiques,” in *Revue Internationale de Filmologie*, no. 3-4, 1948, pp. 249-261 (*The character of "reality" of cinematographic projections*, in Georges Thinès, Alan Costall, George Butterworth [eds.], *Michotte's Experimental Phenomenology of Perception*, Hillsdale [NJ], Erlbaum 1991, pp. 197-209).

à l'écran. *Essai d'une théorie*¹⁰ Michotte completed his theory of *participation by perception*, suggesting an intimate and mutually dependent relation between motor and emotional responses of the viewer to the motor and emotional activity of the film character.

Whereas Michotte's background was in Gestalt theory and causalism, the behaviouristic character of Cohen-Séat's EEG experiments is undeniable. The behavioural foundation of these studies was to justify, theoretically, the filmological thesis that the cinema affects and modifies the modes of perception and judgement; and, strategically, to stress the "conditioning" potential of the film: "Le film peut également être considéré comme un agent conditionnant, capable de modifier les réponses aux événements à venir."¹¹

In conclusion, Filmology established a dialogue between empirical sciences and humanities in order to both conceptualize and analyze the film viewing experience; however, the inadequacy of its epistemological foundation condemned Filmology to a theoretical and practical *impasse*. In our opinion, it is necessary today to recover the filmological challenge, while avoiding filmological errors. Accordingly, the contemporary dialogue between hard sciences and humanities should develop within a shared and consistent epistemological framework. Therefore, the construction of such a framework will be the first aim of a contemporary "neurofilmological" enterprise.

The (problematic) landscape of contemporary neurological-oriented audiovisual studies

Although the filmological tradition has remained largely unknown until recent times, a "new" dialogue between audiovisual theory and neurological sciences has nevertheless been progressively arising over the last twenty years. We cannot here reconstruct in detail the events that led to such a "neurological turn" in film

¹⁰ Albert Michotte, "La participation émotionnelle du spectateur à l'action représentée à l'écran. Essai d'une théorie," in *Revue Internationale de Filmologie*, no. 13, 1953, pp. 87-96 (*The Emotional Involvement of the Spectator in the Action Represented in a Film: Toward a Theory*, in Georges Thinès, Alan Costall, George Butterworth [eds.], *Michotte's Experimental Phenomenology of Perception*, cit., pp. 209-217).

¹¹ Gilbert Cohen-Séat, Gilbert Lelord, "Étude expérimentale des procédés cinématographiques comme agents de conditionnement," in *Revue internationale de filmologie*, no. 34, 1960, p. 11. As Massimo Locatelli notes, "It is striking [...] the fact that the results of EEG-research could coherently answer different needs exactly at the same time. It responded to a widespread fear of modernity, which could be thus technologically mastered; the pedagogical apprehension for a changing, mediatized juvenile lifeworld; and the scientific anxiety to classify and sort out bodily experience, including the old, fascinating and mysterious experience of dreaming" (*Filmological Fallacies. EEG-Research and the Sleeping Beauty*, in Alberto Beltrame, Giuseppe Fidotta, Andrea Mariani [eds.], *At the Borders of (Film) History. Temporality, Archaeology, Theories*, Forum, Udine forthcoming). It is not by chance, therefore, that, as Lefebvre reconstructs, in the 1950s-60s this was a notable aspect in the field of theory of mass communication and that attracted the attention of state governments (Martin Lefebvre, "L'aventure filmologique," cit., p. 75).

and media studies; rather we will limit ourselves to outlining the two different theoretical perspectives that have been primarily responsible for such a trend.

The first perspective focuses on the spectator's experience as *mental activity*. Departing from linguistics, semiotics, psychoanalysis (the so-called "Grand-Theory"), American psychologists and philosophers proposed to adopt a post-computational cognitivist perspective to describe the ways film is mentally understood by the spectator. In the 1990s, this focus on a disembodied, mental experience of film has been consolidated, although the specific focus has shifted from narration to those of emotions and visual perception, the latter under the ecological perspective.¹²

A second, alternative model of spectatorship has been developed by authors who refer the description of aesthetic experience to phenomenological philosophy, with particular reference to Maurice Merleau-Ponty's notion of *embodied perception*.¹³ To Bordwell's lapidary statement, "the spectator thinks" through a mind, phenomenologists would reply that "the spectator feels" through a body intended as the site of perceptual synaesthetic fluxes of both affections and thoughts. In this direction, the "Deleuzian turn" in film studies, focusing on the "logic of sensations" implied in the spectator experience, produced rich theoretical insights.¹⁴

¹² References in this field are too many to be mentioned in detail. We limit to signal a number of both "classic" and recent readers: David Bordwell, Noël Carroll (eds.), *Post-Theory: Reconstructing Film Studies*, University of Wisconsin Press, Madison 1996; Carl Plantinga, Gregory M. Smith (eds.), *Passionate Views: Thinking about Film and Emotion*, Johns Hopkins University Press, Baltimore 1997; Richard Allen, Murray Smith (eds.), *Film Theory and Philosophy*, Clarendon Press, Oxford 1997; Thomas E. Wartenberg, Angela Curran (eds.), *The Philosophy of Film. Introductory Text and Readings*, Blackwell - Wiley, Malden (MA) 2005; Noël Carroll, Jinhee Choi (eds.), *Philosophy of Film and Motion Pictures. An Anthology*, Blackwell, Malden (MA) 2006; Joseph Anderson, Barbara Anderson (eds.), *Narration and Spectatorship in Moving Images: Perception, Imagination, Emotion*, Cambridge Scholar Press, Newcastle 2007; Paisley Livingston, Carl Plantinga (eds.), *The Routledge Companion to Philosophy and Film*, Routledge, London-New York 2009; Amy Coplan, Peter Goldie (eds.), *Empathy: Philosophical and Psychological Perspectives*, Oxford University Press, Oxford - New York 2011; Ted Nannicelli, Paul Taberham (eds.), *Cognitive Media Theory*, Routledge, New York - London 2014; Michael J. Grabowski (ed.), *Neuroscience and Media. New Understandings and Representations*, Routledge, London-New York 2015.

¹³ The main reference is Vivian Sobchack, *The Address of the Eye: A Phenomenology of the Film Experience*, Princeton University Press, Princeton 1992. See also the work of – among others – Laura Marks and Steven Shaviro.

¹⁴ See Gilles Deleuze, *L'image-mouvement. Cinéma 1*, Minuit, Paris 1983 (*Cinema 1. The Movement-Image*, The Athlone Press, London 1986); Id., *L'image-temps. Cinéma 2*, Minuit, Paris 1985 (*Cinema 2. The Time-Image*, The Athlone Press, London 1989); Id., *The Brain is the Screen*, in G. Flaxman (ed), *The Brain is the Screen: Deleuze and the Philosophy of Cinema*, University of Minnesota Press, Minneapolis 2000, pp. 365-373 and the works of – among others – Raymond Bellour, David N. Rodowick, Brian Massumi. See also Robert Pepperell, Michael Punt (eds.), *Screen consciousness. Cinema, Mind and World*, Rodopi, New York 2006; Jérôme Game (ed.), *Images des corps/corps des images au cinéma*, ENS Éditions, Paris 2010. On the epistemological problems implied by an integration of Deleuzian approach within the phenomenological framework, see Elena del Rio, *Cinema*, in Hans Rainer Sepp, Lester Embree (eds.), *Handbook of Phenomenological Aesthetics*, Springer, Dordrech-Heidelberg-London-New York 2010, pp. 111-118.

The cognitivist and the phenomenological perspective set up a dialogue with neurosciences in relatively different ways and without a strict reciprocal confrontation; as a consequence, we find today different and not-immediately compatible models of film spectatorship.

Within cognitivist studies of film, the development of neuroscientific-based models for the study of spectatorship is part of the project of “psychocinematics”¹⁵ as a natural evolution of the centrality attributed to attention, simulation, empathy/sympathy, intentionality and emotions by cognitivist film scholars. Psychocinematic studies show that processing of film is firmly rooted in psychological and biological characteristics of our species, and favours empirical research. However, as Charles Forceville notes in his review of Arthur P. Shimamura’s book, included in this issue, “the volume convincingly shows how cognitivist approaches and psychocinematics are natural allies, and demonstrates fine opportunities for collaboration between film scholars, psychologists and brain researchers,” yet it “has actually less to say (*pace* Shimamura) on the aesthetics of film viewing than on how film is understood.”¹⁶

Phenomenological studies meanwhile argue that the fundamental (and controversial) insight behind neuroscientific findings is that the complex processes of the human mind find in the brain’s architecture and functioning their *neural correlates*. This correlation is based on a functional link between observation of goal-directed actions or emotions and sensorimotor activation of the observer.¹⁷ In particular, the philosophical and psychological implications of the function of so-called “visuomotor neurons” have caused a breakthrough in the understanding of the mind-body relation and of phenomena such as human consciousness, empathy, intersubjectivity, affect, and aesthetic response to works of art. Unity of action and perception is allowed by an *embodied simulation*, a basic functional mechanism by means of which our brain-body system models its interactions with the world.¹⁸ This proposal falls fully within the paradigm of *embodied cognition*, according to which cognition depends upon those experiences “that come from having a body with various sensorimotor capacities [that] are themselves embedded in more encompassing biological, psychological and cultural context.”¹⁹ In turn, this paradigm is based on both a phenomenological ac-

¹⁵ Arthur P. Shimamura (ed.), *Psychocinematics: Exploring Cognition at the Movies*, Oxford University Press, New York-Oxford 2013.

¹⁶ See *infra* in the book reviews section.

¹⁷ Giacomo Rizzolatti, Corrado Sinigaglia, *Mirrors in the Brain: How Our Minds Share Actions and Emotions*, Oxford University Press, Cambridge (MA) 2008; Marco Iacoboni, *Mirroring people: The Science of Empathy and How We Connect with Others*, Picador, New York 2009.

¹⁸ See Vittorio Gallese, Alvin I. Goldman, “Mirror Neurons and the Simulation Theory,” in *Trends in Cognitive Sciences*, vol. 2, no. 12, 1998, pp. 493-501; Vittorio Gallese, “Embodied Simulation: From Neurons to Phenomenal Experience,” in *Phenomenology and the Cognitive Sciences*, no. 4, 2005, pp. 23-48; Id., “Mirror Neurons, Embodied Simulation, and the Neural Basis of Social Identification,” in *Psychoanalytic Dialogues*, no. 19, 2009, pp. 519-536.

¹⁹ Francisco J. Varela, Eleanor Thompson, Evan Rosch, *The Embodied Mind: Cognitive Science and Human Experience*, MIT Press, Boston 1991. See also George Lakoff, Mark Johnson, *Philosophy in*

count of the body and human experience and on the ecological approach to visual perception. Phenomenological film theory still seems to harbour some resistance to *neurophenomenology*,²⁰ although the search for a post-dualistic neurological foundation of the film experience could allow it to overcome continental philosophy's rejection of natural science. The study of the neural substratum of the film experience arises as a terrain of encounter and dialogue between cognitive and phenomenological film studies.²¹

A first outcome of the dialogue between audiovisual theory and neurosciences is thus the forced cohabitation of different models of film viewer. A second outcome is a forced "naturalization" of the film viewing situation as the result of the anti-culturalist trend unifying cognitivist and phenomenological perspectives, as well as of theoretical premises implied by empirical research methods. Indeed, some neuroscientists not only consider cinema as a metaphor for the human mind,²² but also carry out neuroimaging tests on audiences, aiming to outline a "neurocinematics."²³ For instance, in his pioneering study Uri Hasson *et al.* acknowledge that neuroimaging methods may serve as "an objective scientific measurement for assessing the effect of distinctive styles of filmmaking upon the brain, and therefore substantiate theoretical claims made in relation to them,"²⁴ despite the fact that they cannot provide an aesthetic judgment on the cinematic style from a "naturalistic" point of view. More broadly, neurocinematic approach promises a naturalistic account of a series of phenomena (from film style to film genre system) previously explained by culturalist tools.

In conclusion, in the wake of its dialogue with neurosciences, the contemporary landscape of audiovisual studies appears today to be split by a twofold antinomy: on the one hand, we find an opposition between *viewer-as-mind* and

the Flesh: The Embodied Mind and its Challenge to Western Thought, Basic Books, New York 1999.

²⁰ See Francisco J. Varela, "Neurophenomenology: A Methodological Remedy for the Hard Problem," in *Journal of Consciousness Studies*, no. 3, 1996, pp. 330-349.

²¹ See for example Vittorio Gallese, Michele Guerra, "Embodying Movies," in *Cinema: Journal of Philosophy and the Moving Image*, no. 3, 2012; Adriano D'Aloia, *Cinematic Empathies. Spectator involvement in the film experience*, in Matthew Reason, Dee Reynolds (eds.), *Kinesthetic Empathy in Creative and Cultural Practices*, Intellect, Bristol 2012, pp. 91-108; Id., "The Intangible Ground: A Neurophenomenology of the Film Experience," in *Necus*, no. 2, 2012, pp. 219-239; Id., *La vertigine e il volo. L'esperienza filmica fra estetica e neuroscienze cognitive*, Fondazione Ente dello Spettacolo, Roma 2013; Maarten Coëgnarts, Peter Kravanja (eds.), *Embodied Cognition and Cinema*, Leuven University Press, Leuven 2015.

²² Antonio R. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain*, G.P. Putnam/Avon Books, New York 1994; Id., *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*, Harcourt Brace, New York-San Diego 1999.

²³ Uri Hasson, Orit Furman, Dav Clark, Yadin Dudai, Lila Davachi, "Enhanced Intersubject Correlations During Movie Viewing Correlate with Successful Episodic Encoding," in *Neuron*, vol. 57, no. 3, 2008, pp. 452-462. See also Uri Hasson, Ohad Landesman, Barbara Knappmeyer, Ignacio Vallines, Nava Rubin, David J. Heeger, "Neurocinematics: The Neuroscience of Film," in *Projections. The Journal for Movies and Mind*, no. 1, 2008, pp. 1-26.

²⁴ Uri Hasson *et al.*, "Neurocinematics: The Neuroscience of Film," cit., p. 1.

viewer-as-body models; on the other one, a contrast between a naturalistic-oriented versus a culturalist-oriented vision of the film viewing situation is evident.

An epistemological toolbox

From this section, we start the second part of the introduction, devoted to the proposal of a neurofilmological perspective. As we said, Neurofilmology aims to establish a unified and consistent framework for both theoretical and empirical current research programs on the film viewer experience. To achieve this objective, and on the basis of previous considerations and statements, we need to take four steps. First, we have to highlight a set of epistemological principles, with the aim of promoting and governing the exchange of theories and models between theoretical and empirical disciplines; second, we have to tackle and try to overcome the opposition between a *mental* versus an *embodied* model of viewer; third, we have to cope with and try to bridge the gap between a *natural* versus a *socio-cultural* model of the viewing situation; finally, we can sketch a model of audiovisual experience as a conceptual framework for both actual and possible research projects.

As we have seen, the dialogue between the “three cultures”²⁵ – i.e. natural sciences, social sciences and humanities – is a key problem for both classical filmology and contemporary film theory.²⁶ Our position in this regard is that of an *epistemological pluralism*, that is, a not necessarily ontological anti-reductionism. The same states-of-things (i.e. the film viewing situation) can be described, and the same phenomena (i.e. viewer’s perceptual, cognitive, emotional, etc. processes) can be understood and explained by different research programs at different levels (i.e. neurological, psychological, phenomenological, etc.) without necessarily implying a determining relationship between these levels. Such coexistence of different research programs should be governed by three principles.

The first principle is a *common operational mechanism* of different research programs. Indeed, the methods of theoretical disciplines and those of the empirical sciences are closer than it seems at first glance. On the one hand, experi-

²⁵ Jerome Kagan, *The Three Cultures. Natural Sciences, Social Sciences, and the Humanities in the 21st Century*, Cambridge University Press, Cambridge (MA)-New York 2009. In this Introduction we will leave aside the problem of a dialogue with social sciences, which was nevertheless a central issue of classic Filmology.

²⁶ See for instance the discussion on the “naturalization” and “scientism” of film theory in David N. Rodowick, *Philosophy’s Artful Conversation*, Harvard University Press, Cambridge (MA) - London 2015; for a survey see Ted Nannicelli, Paul Taberham (eds.), *Cognitive Media Theory*, cit. Two updated accounts of the problem of reductionism are Jennifer Lackey, *Testimonial Knowledge*, in Sven Bernecker, Duncan Pritchard (eds.), *The Routledge Companion to Epistemology*, London - New York, 2011, pp. 316-325; and Sven Walter, Marcus Eronen, *Reduction, Multiple Realizability and Levels of Reality*, in Steven French, Juha Saatsi (eds.), *The Bloomsbury Companion to the Philosophy of Science*, Bloomsbury, London-New Delhi 2014, pp. 138-156. In the aesthetic field, see Joseph Margolis, *The Cultural Space of the Arts and the Infelicities of Reductionism*, Columbia University Press, New York 2010.

mental procedures of the hard sciences proceed from backgrounds composed of theories, models, taken-for-granted assumptions (which in turn depend on experimental protocols, technical constraints, and sometimes utilitarian interests); these backgrounds are highly responsible for final results, while in turn these findings can confirm, deny or modify the original theoretical background. On the other hand, theoretical reflection is also based on experimental processes: the researchers test their hypotheses on their own experience, and therefore uses themselves as objects of experimentation, through a chiasmic oscillation from first to third person and back.

The second principle is that of *declarativeness*: every scientific approach to the cinema viewer should set and state their premises, i.e. their models, methods, the technologies being used, the level of state-of-things that will be analysed, the time and space scale of the phenomena approached and accordingly the time and space windows investigated.²⁷

The third principle is that of *shared hermeneutics*: each of the different research programs should be willing to redefine its own theoretical background on the basis of pertinent findings reported by other programs. In this respect, we can find three possibilities:

1) The theoretical backgrounds, the models and the results of a research program are *incommensurable*, and therefore neither *compatible* nor *incompatible* with those of another program. This possibility typically occurs when research programs investigate different time (or space) windows. For example, the findings of neurological research relating to perceptual narrower time windows and subconscious mechanisms can neither be confirmed nor denied by a phenomenological approach, which works on a conscious (or bearable to consciousness) level.

2) Theories, models and results from different research programs are *commensurable*, yet *compatible*. For example, the findings of neurological research on connections between visual perception and motor and pre-motor neurons activation, match with ecological and enactive theories of visual perception (see above). In these cases, evidence from one research program intersect with evidence from other programs, in a sort of “triangulation” that both corroborates the findings and illuminates not immediately obvious aspects of each level.²⁸

3) The third possibility, which is the most interesting for the advancement of

²⁷ We think on the one hand to a “rational reconstruction” of research programs, on the model of Warren Buckland, *Film Theory. Rational Reconstructions*, Routledge, London-New York 2014; and on the other hand to a consideration of the programs as forms of “science in action” (see Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society*, Harvard University Press, Cambridge [MA] 1987) within a well-defined social, cultural and political world, on the model proposed for neurosciences by Suparna Choudhury, Jan Slaby (eds.), *Critical Neuroscience. A Handbook of the Social and Cultural Contexts of Neuroscience*, Wiley-Blackwell, Malden (MA)-Oxford-Chichester 2012.

²⁸ Murray Smith, *Triangulating Aesthetic Experience*, in Arthur P. Shimamura, Stephen E. Palmer (eds.), *Aesthetic Science. Connecting Minds, Brains, and Experience*, Oxford University Press, Oxford-New York 2012, pp. 80-106.

research capable of causing the “scientific revolutions,”²⁹ is that theories, models and findings of a given research program appear *commensurable* but *not compatible* with those of another one. As a consequence, the research community has to make a choice, whose policy is to prefer the theoretical framework that has a greater explanatory and predictive power, and that is at the same time as simple as possible. This theoretical framework could be either one of those in play, or a third one able to recover the results of both previous theories. We are going to find an example of this situation in the next section.

A model of filmic viewer

As we mentioned in the first part of this introduction, the encounter between film theory and empirical sciences implies convergence of research programs whose models are often commensurable but not always compatible; as a result, we detect the occurrence of conflicts that could undermine the project of a unified framework, and that should be consequently overcome by applying the epistemological principles introduced above.

A first point of conflict is the *model of viewer* assumed and implemented by research programs. On the one hand we find *viewer-as-mind* models whose centre of gravity is represented by cognitive processes, related both to perceptive and emotional ones (the latter enhanced by the models of “hot cognition”). On the other hand we find *viewer-as-body* models, whose centre of gravity is constituted by sensitive, affective and motor processes. Moreover, *viewer-as-mind* models tend to highlight top-down mental mechanisms, while *viewer-as-body* ones accentuate the role of bottom-up processes.

In our view Neurofilmology should solve this opposition by assuming the model of the *viewer-as-body*, yet radicalising it in a new model that we call the *viewer-as-organism*.³⁰ The key difference compared to both the previous models is that *viewer-as-organism* are not already given before and independently from the film experience as a well defined entity, but constitute themselves in the course of this very experience, in complex, dynamical and provisional forms.

Indeed, the *viewer-as-organism* handles simultaneously many processes of different nature (sensory, perceptual, cognitive, emotional, motor, active, mnemonic), within different time windows; they are constantly striving to coordinate the

²⁹ Thomas Kuhn, *The Structure of Scientific Revolutions*, 4th ed., with an Introductory Essay by Ian Hacking, The University of Chicago Press, Chicago-London 2012.

³⁰ We could say that the 4EA model of subject, intended as “embodied, embedded, enacted, extended, and affective” (John Protevi, *Political Affect: Connecting the Social and the Somatic*, University of Minnesota Press, Minneapolis 2009, p. 4) should be replaced by a 5EAR model, envisioning the subject as embodied, embedded, enacted, extended, emerging, affective and relational. For a survey of the debate on these issues we refer to Shaun Gallagher, Dan Zahavi, *The Phenomenological Mind. An Introduction to Philosophy of Mind and Cognitive Science*, Routledge, London-New York 2008.

first and synchronize the latter. To achieve these goals, they produce progressive synthetic configurations, following a spiral-shaped dynamic: both perceptual input and already owned resources are used to constitute new configurations that in turn become resources potentially available for new processing.³¹ We can call “interpretation” this ongoing and unfolding dynamic. Configurations gradually produced are *homeodynamic*, since they tend to stable forms of self-organization yet constantly open to redefinition; some of them are related to the very subjects, which are therefore not given a priori but *emerging* from this process.

The assumption of the *viewer-as-organism* model allows Neurofilmology to overcome the opposition between the *viewer-as-mind* and *viewer-as-body* models. Indeed, the different processes in which the viewer is involved within different time windows (whether they are sensitive, perceptual, cognitive, emotional, motor-active, and so on) are to be considered on the same plane, while the focus shifts from the singular processes to the logic and patterns of their interactions within the interpretative dynamic. As a consequence, the alternative flows of top-down and bottom-up processes are reconfigured as a network of reciprocal determinations between current and memory resources within the “on line” dynamic of interpretation.

A model of filmic situation

The second opposition threatening the filmological project concerns models of the film viewing situation; in this case, we find a competition between a socio-cultural and a naturalistic definition of such situation. There are two accounts of this opposition, a radical and a moderate one.

The *radical* version addresses the *ontological foundation* of the film viewing situation. Indeed, the culturalist position states that the set of capacities, dispositions and preferences of the film viewer result from cultural transmission and social learning: consequently, the filmic situation is essentially socio-cultural. Conversely, the naturalist position argues that perceptual, cognitive and affective capabilities as well as dispositions and preferences necessary for film viewing, emerged under natural selection in the Pleistocene era: therefore, they are part of film viewer's biological heritage, and as such they are completely innate and universal; consequently, the vision of the film is an essentially *natural* situation.

The naturalistic account can be understood as a reaction to the strong domain of culturalism represented by the Grand-Theory during the seventies.³² How-

³¹ The term “configuration” does not refer to a “representation” of states-of-things, and it rather implies a reciprocal relationship between *affection* and *expression*: the viewers experience directly a certain state-of-things, express it to their selves, and through this expression they change and reconfigure in turn their very experience.

³² A reconstruction of these reasons is Joseph Anderson, Barbara Anderson, *Introduction*, in Id. (eds.), *Narration and Spectatorship in Moving Images: Perception, Imagination, Emotion*, Cambridge Scholar Press, Newcastle 2007, pp. 1-14.

ever, naturalistic scholars do nothing but recover and reverse the culturalist argument, without exceeding an abstract opposition between nature and culture. On the contrary, it seems clear today that the genetic makeup and, consequently, the physical and mental conformation of individuals, are not absolute constraints; rather, they must be conceived of as fields of possibilities well defined but open to multiple forms of adaptation, exaptation, learning, invention and reinvention, on the basis of the encounter of the organism with the world and the possible technological manipulations of the latter. In this respect, cinema is an excellent example: a technological device for delivering moving images and sounds becomes a dispositive that, starting from the physical and psychological capacities of the subjects involved, allows them to experiment with the limits and possibilities of those dispositions, within specific cultural and historical conditions.

In a different way, the *moderate* version of the opposition between naturalism and culturalism focuses on *the degree of continuity or discontinuity between filmic situation and those of ordinary life*: in this case, the culturalist position accentuates the discontinuity, while the naturalist one tends to read the filmic situation as an “extension by other means” of ordinary life experience.

On the basis of our previous argument, we cannot help taking on this point a position that tends toward the culturalist. On the one hand, we must admit that ordinary life dispositions and capabilities (such as the sensory and perceptual grasping of objects and spaces, the recognition of events and their narrative organization, the understanding and sharing of mental and emotional states of other subjects, and so on) are re-enacted during the film experience. On the other hand, however, there is no doubt that this is done within a technological and cultural dispositive and through the use of stylistic and narrative forms linked to specific historical periods; that this very dispositive was and is subject to transformations and “relocations” (visions of film on television sets, PCs, tablets, mobile phones, and even film viewing situations within neurological laboratories);³³ and finally that the filmic experience is not simply guided, contrived and constrained by the audiovisual materials provided by the dispositive, but it is far more radically *designed* on the basis of whole project.

We can therefore speak of a (relative) discontinuity of filmic experience from ordinary life experience; this statement is relevant for two epistemological reasons. First, this issue entails the *raison d'être* of film studies as specific research program: indeed, if we assume that the filmic situation represents an entirely natural kind of experience, without any pertinent gap from ordinary life, then film studies would be reabsorbed in a general examination (whether neurological, psychological, phenomenological, and so on) of the human experience.³⁴ Second, if we assume that filmic experience is not just contrived, but more radically designed by the movie materials, we should integrate neurofilmological studies

³³ Francesco Casetti, *The Lumière Galaxy*, Columbia University Press, New York 2015.

³⁴ A similar argument has been advanced (in a more specific context) by Malcolm Turvey, *Evolutionary Film Theory*, in Ted Nannicelli, Paul Taberham, *Cognitive Media Theory*, cit., ch. 3.

with a discipline that would be able to rebuild the projects of experience on the basis of a close analysis of filmic materials: we are thinking to a *neo-semiotics*, no longer tied to topics such as signs, language, text or discourse, but rather radically reconfigured as an analysis of the filmic experience design.³⁵

A model of filmic experience

Previous considerations on the models of film viewer and situation converge within a *model of filmic experience*. We intend to suggest that such a model, though simplified, should constitute a conceptual framework for Neurofilmology: therefore, it should allow us both to frame current trends of research, and to highlight new areas of interest currently uncovered (or scarcely covered) by research activities.

The construction of our model is based on two basic assumptions. First, the experience in general is based on three levels of configurations: the sensory scanning and qualification of inputs, the narrative scanning and sorting of perceived events, the relational scanning of and tuning with other subjects. In fact, we can notice a logical progression between the three levels; in particular the transition from the first to the second level introduces a distinction between the subject and a field of entities (i.e. objects and subjects composing a world). Second, the filmic experience entails not only one field of entities (as ordinary experience) but three distinct fields of objects and subjects: the world directly perceived (i.e. the “ordinary world”), the field of sensory materials provided by the dispositive (i.e. the “discourse”), and the world perceived indirectly (i.e. the “diegetic world,” whether fictional or factual). On this basis, the model of film experience will be articulated in seven joints, each of which corresponds to a relatively autonomous, whether actual or possible, research area.³⁶

The (multi)sensory scanning and the qualitative notation of the sensorial input: the viewers “feel” a series of sensations without a clear distinction neither between the inner and the outer world, nor between the different sensory modality. We can retrieve here the research findings regarding the “multi” and “inter-sensorial” aspects of film experience (including proprioceptive and interoceptive modality: see for instance Maarten Coëgnarts and Peter Kravanja’s essay in this issue), as well as philosophical suggestions from the Deleuzian “logic of sensations” and its neurological and psychological counterparts.

The narrative sorting of the diegetic world: on the basis of the recognition

³⁵ Ruggero Eugeni, *Semiotica dei media. Le forme dell'esperienza*, Carocci, Roma 2010. The presence of a design of the experience does not entail the assumption of its automatic and deterministic effectiveness within filmic situations: on this sensitive problem see both Temenuga Trifonova’s and Maria Poulaki’s contributions to this issue.

³⁶ Given the impossibility of a full account of different research areas, we refer to the readers signaled in the first part of this Introduction.

of different fields of objects and subject, the viewers notice and follow what's happening in the indirect world by gaining a living experience of it. While the viewer's perception is already a well developed object of film studies, new models of online narrative experience based on the concepts of "event recognition" and "nowness" are still emerging (see for instance Pia Tikka and Mauri Kaipainen's essay in this issue).

The narrative sorting of the discourse: viewers give sense to the presence of sensory materials provided by cinematic devices by articulating them in (a) a flow of ongoing discursive production, (b) a plot unfolding and re-working the story line and (c) a format with a material extension into the space and time. This is a relatively new and poorly covered field of research, but recent studies on the perception of filmic stylistic figures are producing very interesting findings (as Vittorio Gallese and Michele Guerra show in their essay for this issue).

The narrative sorting of the ordinary/surrounding world: viewers check and detect the existing relationships between their own situated activity and the diegetic world: these relationships can be of continuity (in the case of factual media experience) or discontinuity (in the case of fictional media experience), with many intermediate solutions (like for instance the different forms of "diegetisation of the dispositive"). In this field we can find new studies on spatial perception and on the managing of spatial situatedness by the viewer (for instance in the case of videogames and the viewer's immersiveness implied), as well as a focus on the "ecological" role of dispositive within the media experience.

The relational tuning with the subjects of the diegetic world: viewers notice the presence within the diegetic world of other subjects (i.e. entities developing and manifesting a living experience comparable to the viewers one), and the possibility of understanding them and in case sharing experiences with them. This is one of the most covered fields of neurofilmological studies, with a great extent of studies about "sympathy," "empathy" and other "relational emotions;" more recently a number of scholars outlined the strict relation between cognitive and emotional/embodied processes in this regard (see Patricia Pisters's and Enrico Carocci's essays in this issue).

The relational tuning with the subjects of discourse: viewers feel the presence of an ongoing activity of audiovisual "writing," recognize the style of "speaking" subjects, and establish a relation of trust and confidence (or distrust and lack of confidence) with them. This is a less considered research area, partially covered by the studies mentioned at the point E. We can however retrieve on this point the "neuroaesthetical" approaches to cinema (see for instance Temenuga Trifonova's essay in this issue).

The relational tuning with the subjects of the ordinary/surrounding world: the viewers feel the presence of other subjects around him, or in any case located within the same ordinary world; film experience becomes the living experience of the spring of social bonds (Georg Simmel's "sociability"). We find occasional reference to this potential area of interests – which is in any case implied by the research on intersubjective correlations/synchronization of audience members'

neural activity (see for example Maria Poulaki's essay in this issue) – but we still lack strong investments.³⁷

An overview of this special issue

This special issue aims to evaluate, from a multidisciplinary and critical perspective, both the relevance of the neurological approach for the psychology and the aesthetics of the film experience and, more generally, the epistemological consequences of this approach in the humanities, assuming that the borders between these models are permeable and that a convergence would be desirable and of advantage for audiovisual studies.

A first group of contributions critically discuss neurocinematics. In her essay, Temenuga Trifonova argues that, although rooted in neuroscience (i.e. a quantitative assessment of the impact of different art and film styles on viewers' brains) rather than in ideological, linguistic and psychoanalytic models (i.e. subject-positioning "Grand-theories"), neurocinematics is an extension of apparatus theory for its positioning the subject in function of the architecture of their brains. Accordingly, even what the subject *unconsciously* experiences of a film is part of the interpretation process of visual stimuli. In this sense, neuroaesthetics bridge the "hermeneutic gap" between (low) perception and (high) interpretation of stimuli.

Although she adopts a different (cognitivist) theoretical framework, Maria Poulaki also gives salience to notions of *control* and *attention*, i.e. the "effectiveness" of the film in predicting and driving the mental activity of the viewer. Adopting a complex-system theory, the author discusses the ISC (inter-subject correlation) experimental method – that helps to assess the similarities/differences in brain activity *across viewers*, looking at common patterns of response time courses in different brain regions. Nevertheless, in the end Poulaki departs from cognitivist hypotheses of a unique interpretation of film meaning and claims that the notion of control indicates that also the stimulus can be multiple, not only the interpretation.

A second group of essays share the attempt to conciliate of the opposition between cognition/emotion, or mind/body. Patricia Pisters offers an application of her own notion of "neuro-image" to television series *Dexter* and convincingly describes Neurofilmology as a terrain of fertile encounter between apparent distant perspectives such as analytical philosophy/cognitivist film theory and continental philosophy/phenomenology of the film experience. As Pisters writes, "Since important branches of contemporary neuroscience emphasize the significant role

³⁷ Obviously the seven areas, still relatively autonomous, are nonetheless mutually interrelated and determined: for example there is a close link between the understanding of characters mental states (E) and the modulation of situations and events (B); or between some set of recurring sensory patterns (A) and the recognition of an "author" (F).

of embodiment in any kind of processes of the brain,” it is time to overcome the classic division between mind/cognition *versus* body/phenomenological.

On the same line of thought, Enrico Carocci argues that the tensions between the quantitative and qualitative approaches corresponds to the clash between the third-person – empirical – perspective and the first-person – phenomenological – perspective. In order to overcome this bias, the author relies on Jaak Panksepp’s notion of selfhood and focuses on *affective neuroscience* as a valuable framework for empirical investigations of the *qualities* of cinematic emotional experience, for its providing important theoretical insights and empirical evidences for the study of the subjective (or first-person) dimension of emotional experience from a naturalistic point of view.

The relevance of an embodied approach to the mental experience of audiovisual media inspired also Maarten Coëgnarts and Peter Kravanja’s essay. Departing from a cognitivist “disembodied” perspective, and relating recent neuroscientific evidence from cognitive linguistics, the authors claim that the sensory-motor system plays a constitutive role in the cinematic characterization of abstract concepts, as well as in language. Two of Stanley Kubrick’s films serve as case studies for underlying conceptual and metaphorical design which is inherently embodied.

The project of a new multidisciplinary approach to the film experience would remain unproductive if not concretely applied to film aesthetics and viewer participation. More than metaphorically conceivable as an experimental laboratory setting, the film experience offers a space for testing narrative and formal solutions that provide, control and regulate sensory-motor activation and emotional involvement. A third group of contributions in this special issue reports empirical experiments and discuss their relevance for new approach to film style, narration, and spectatorship. In their essay – based on Husserl’s concepts of retention and protention and on Francisco Varela’s neurophenomenological exploration of time consciousness – Pia Tikka and Mauri Kaipainen argue that film narratives are intrinsically time-dependent designs. Their contribution proposes a model of “nowness” relating this to the neural epiphenomena of narrative experience, in connection with other researches conducted by the group aivoAALTO at University Finland on *enactive cinema*, a model that assumes changes in the psychophysiological reactions of participants (enactors) to represent implicit and unconscious reactions of the mind and determine the changes made to the narrative presentation in real-time.³⁸

The empirical studies reported in Vittorio Gallese and Michele Guerra’s essay describe an innovative experiment that uses a combined behavioural and high density EEG experiment to determine whether various types of camera movements, more or less simulating an observer’s own movement toward the observed

³⁸ Pia Tikka, Aleksander Väljamäe, Aline W. de Borst, Roberto Pugliese, Niklas Ravaja, Mauri Kaipainen, Tapio Takala, “Enactive Cinema Paves Way for Understanding Complex Real-Time Social Interaction in Neuroimaging Experiments,” in *Frontiers in Human Neuroscience*, vol. 6, Art. 298 (2012), pp. 1-6.

acting agent, might modulate observers' mirror mechanism. Their findings provide evidence that the *steadicam* determines stronger viewers' brain activation in respect to other camera movements (e.g., dolly or zoom-in). This contribution provides empirical ground to the notion of the capacity of the camera to *simulate* the virtual presence of the viewers inside the movie.

We would also like to invite readers to consult the *Projects & Abstracts* section, in which PhD projects in the field of Neurofilmology are presented.

Neuroaesthetics and Neurocinematics: Reading the Brain/Film through the Film/Brain

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Abstract

This article offers a critique of neuroaesthetics and neurocinematics. Neuroscientific research aims at a quantitative assessment of the impact of different art and film styles on viewers' brains through functional magnetic resonance imaging (fMRI) and inter-subject correlation (ISC) analysis. Advocates of neurocinematics, in particular, believe the turn to neuroscience will help film theory go beyond ideological, linguistic and psychoanalytic models, i.e. subject-positioning theories (SLAB theory: Saussure, Lacan, Althusser, Barthes), which draw a pessimistic picture of the subject as "split" and "positioned," "trapped" both internally (by unconscious forces) and externally (by various ideological discourses, including the film apparatus itself). I argue that by positing a *looping effect* between the brain and the screen, neurocinematics shows itself to be an extension of apparatus theory, although one rooted in neuroscience rather than in SLAB theory. Furthermore, although "the New Materialism" – of which neuroaesthetics and neurocinematics are two representative instances – positions itself as "post-human" in its commitment to granting the non-human agency and vitality and to acknowledging its affective, ethical and political potential, it covertly carries on some of the assumptions and beliefs fundamental to post-structuralism even as it claims to "de-anthropomorphize" philosophy, aesthetics, and film theory.

The history of empirical aesthetics is usually said to begin with Fechner's *Primer of Aesthetics* (1876), in which he called for a "bottom up" approach to aesthetics – in opposition to the idealistic, metaphysical concept of aesthetic judgement prevalent at his time – that would be grounded in the scientific study of elemental perceptual features.¹ Despite some positive developments – e.g., a shift from an original preoccupation with the visual properties of artworks (object recogni-

¹ Arthur P. Shimamura, *Toward a Science of Aesthetics*, in Arthur P. Shimamura, Stephen E. Palmer (eds.), *Aesthetic Science: Connecting Minds, Brains, and Experience*, Oxford University Press, Oxford 2012, p. 15.

tion) to an increasing emphasis on the emotions triggered by artworks (with a special focus on empathy and mirror neurons) – neuroaesthetics continues to suffer from serious methodological problems. In one representative fMRI study of brain responses to artworks, participants were presented with realistic and abstract paintings they had previously rated as ugly, neutral or beautiful. The experiment showed that the orbitofrontal cortex was more active when subjects were presented with paintings they had rated as beautiful compared to those they had rated as neutral. The scientists concluded that the orbitofrontal cortex is involved in the evaluation of beautiful works of art.² The researchers involved in this study sought to understand *what part of the brain responds to the work* and “discovered” that beautiful works of art stimulate the orbitofrontal cortex. They then went on to argue that the particular part of the brain isolated in step 1 is responsible for *attributing* the quality of “beauty” to the artwork, i.e. they “pretended” at the preliminary step – the participants rating, *before* the fMRI, the paintings as beautiful, neutral or ugly – never took place. In the first step, the point of reference was the work of art: a particular aesthetic quality (beauty) was found to elicit a response from a particular part of the brain, i.e. the artwork (the known part of the equation) was used to reveal something about the brain (the unknown part of the equation). In the second step, however, *the point of reference was the brain, not the work of art*: a particular part of the brain was said to be responsible for registering a particular quality of the artwork (its beauty), i.e. the brain was used to reveal something about the work of art.

Neuroscientists propose mapping hedonic responses to art *and* non-art onto psychological processes such as motivation, arousal, and pleasure. They treat all objects that provoke hedonic responses as objects of aesthetic experience, and they conceive of hedonic responses (linked to evolutionary factors) simplistically in terms of emotional and/or conceptual *preferences*:

*We will err on the side of inclusion rather than exclusion and consider aesthetics as any “hedonic” response to a sensory experience. A hedonic response refers to a preference judgement: an object may be preferred or not, liked or not, interesting or not, approached or avoided.*³

However, as George Dickie reminds us, aesthetic properties and aesthetic judgement are a matter of *convention* rather than *psychological causation*.⁴ Preference-ordering studies tell us nothing about aesthetic experience: what matters are *the criteria* for aesthetic judgement, not the agreement of a random group of novices. Neuroaesthetics does not take into account the fundamental distinction

² *Ivi*, p. 22.

³ *Ivi*, p. 4.

⁴ Quoted in Noël Carroll, Margaret Moore, William Seeley, *The Philosophy of Art and Aesthetics, Psychology, and Neuroscience*, in Arthur P. Shimamura, Stephen E. Palmer (eds.), *Aesthetic Science: Connecting Minds, Brains, and Experience*, cit., p. 33.

between humanistic and scientific kinds of thinking and approaches to the arts. As Irving Massey puts it,

*subjective reports about attributes of one's own consciousness...are indeed data for the scientist, but the contents of those reports are not. [...] Only events that can be verified from a third-person perspective can have the status of scientific data.*⁵

Neuroaesthetics approaches the brain the way medium specificity theories approach the concept of medium: through the notions of “constraints” and “possibilities.” Medium specificity theories posit that each medium is defined by certain inherent properties that constrain, and at the same time determine, the range of potential aesthetic effects produced by works within that medium. Similarly, neuroaesthetics assumes that the architecture of the human brain constrains our perception and cognition in specific ways, either forbidding or obliging us to respond to artworks in (equally specific) ways. The problem with both medium specificity theories and neuroaesthetics – a sort of “brain-specificity theory” – is that they have no way of closing the gap between theories of explanation (statements about the ontology of a medium or the physical make up of the brain) and theories of interpretation (aesthetic judgements). The question of value – both aesthetic and moral – falls outside the scope of neuroscience.

These methodological problems account for the flagrantly *tautological* nature of neuroaesthetic studies: all they seek to demonstrate is that the data collected about our response to artworks – construed as stimuli intentionally designed to trigger ordinary perceptual, affective, and cognitive responses – *confirm* our aesthetic judgements about the artworks in question. Neuroaesthetics cannot tell us anything about what makes art “art.” Advocates of neuroaesthetics assume that

*since artworks are intentionally designed to direct attention to their artistically salient features, studies of how visual artworks work as perceptual stimuli can contribute to our understanding of how they work as artistic stimuli.*⁶

This attributes a mysterious “meta-function” – the ability to direct attention to what makes them artworks – to *all* artworks. It's one thing to ask how an artwork *directs attention* to what makes it an artwork but it's another thing to ask what *makes an artwork an artwork* in the first place. From a neuroaesthetic point of view, every artwork foregrounds the perceptual and cognitive skills necessary for its designation as an artwork: the artwork is just the means through which the brain represents itself to itself. However, as Gopnik argues, “the central function of the brain [...] is not to contemplate or analyze its own inputs, precepts, affects and states.”⁷

⁵ Irving Massey, *The Neural Imagination: Aesthetic and Neuroscientific Approaches to the Arts*, University of Texas Press, Austin 2009, p. 23.

⁶ Noël Carroll, Margaret Moore, William Seeley, *The Philosophy of Art and Aesthetics, Psychology, and Neuroscience*, cit. p. 49.

⁷ Blake Gopnik, *Aesthetic Science and Artistic Knowledge*, in Arthur P. Shimamura, Stephen E.

Since neuroaesthetics cannot explain how the mere processing of visual stimuli gives rise to aesthetic judgement, I find that it treats an artwork's "artistically salient effects" and its "semantically salient features" as equivalent: to register the work's visual properties is *already* to interpret the work. The conflation of the work's visual and semantic features is made possible by the mobilization of a 19th century concept that has recently resurfaced both in aesthetics and film studies: attention. The concept of "attention" was central to the re-conceptualization of sanity and insanity at the *fin de siècle*. In *Degeneration* (1892) Max Nordau located insanity in the realm of ideation, specifically in *the separation of the realm of ideation from the realm of action*.⁸ Degeneracy is a form of *inattentiveness*, a break in the psychic-motor apparatus of stimulation and response. The "degenerate" brain works *inefficiently*: it stops acting as a screen for external stimuli, i.e. it fails the test of attention.⁹ However, by the time Nordau's book was published the established hierarchy of attention and inattention, consciousness and unconsciousness, was already beginning to be reversed, as evidenced by Theodore Ribot's influential study *The Psychology of Attention* (1890).¹⁰ Attention (and consciousness), Ribot argued, is an inhibitory mechanism: "The normal state of consciousness supposes diffusion, with the work of the brain diffused. Attention supposes concentration, with the work of the brain localized."¹¹ Following Ribot, Hugo Münsterberg – hailed as a predecessor of neurocinematics – also aligned attention with conscious perception, positing it as an inhibitory mechanism.

How does neuroaesthetics engage with the *fin de siècle* idea of attention as an inhibitory mechanism? As we saw, neuroaesthetics defines artworks as "attentional strategies that carry information sufficient to enable viewers to recover their content from their perceptible surfaces."¹² Here "attention" fulfills a mediating function: it mediates between bottom up and top-down processing, and between unconscious and conscious processes. Indeed, neurocinematics has gone as far as to *relocate attention to the unconscious*, thus no longer considering it "an inhibitory mechanism." One instance of the relocation of attention to the unconscious is Murray Smith's discussion of Flanagan's study of "auditory splitting," a phenomenon demonstrating that subjects register and process information even though they don't have a conscious memory of doing so.¹³ Thus, it is possible to be attentive to something without being conscious of it. Similarly, Patricia Pisters distinguishes between "feedforward sweep" (bottom-up cogni-

Palmer (eds.), *Aesthetic Science: Connecting Minds, Brains, and Experience*, cit., p. 136.

⁸ Max Nordau, *Degeneration*, Heinemann, London 1920 [1892], p. 183.

⁹ *Ivi*, pp. 52, 56.

¹⁰ Theodore Ribot, *The Psychology of Attention*, The Open Court Publishing Company, Chicago 1890.

¹¹ *Ivi*, p. 119.

¹² Noël Carroll, Margaret Moore, William Seeley, *The Philosophy of Art and Aesthetics, Psychology, and Neuroscience*, cit. p. 57.

¹³ Murray Smith, *Triangulating Aesthetic Experience*, in Arthur P. Shimamura, Stephen E. Palmer (eds.), *Aesthetic Science: Connecting Minds, Brains, and Experience*, cit., p. 85.

tion), largely unconscious, and “feedback processing” (top-down cognition), in which recurrent interactions and resonances with past memories and perceptions are initiated. Like Smith, Pisters argues that it is possible for something not to catch our attention – in the sense that we cannot report on it – either because feedforward processing gets stuck or because recurrent processing is not sophisticated enough.¹⁴ Relocating attention to the unconscious, neuroaesthetics attempts to bridge the “hermeneutic gap” between the perception and interpretation of visual stimuli by suggesting that in perceiving visual stimuli we are actually “processing” a lot more than we think we are, that we are always already interpreting stimuli, including those we are not attentive to (cannot report on). Pisters’s reading of the significance of the locket in *The Illusionist* (to which I shall return later) illustrates my point.

Neurocinematics inherits some of the problems I identified with neuroscientific approaches to art. In one representative study Uri Hasson’s team measured the similarity in brain responses of a group of viewers to different types of films. When they watched an excerpt from Hitchcock’s *Bang! You’re Dead*, 65% of the frontal cortex, the part of the brain involved in attention and perception, responded in the same way across all viewers, whereas only 18% of the cortex showed a similar response when viewers watched a more free-form footage from the sitcom *Curb Your Enthusiasm*. Another study measured fMRI response times across different subjects (inter-subject correlation, inter-SC) and compared response times within the same subject by repeated presentations of the same stimulus (intra-subject correlation, intra-SC). Advocates of such methods believe inter-SC and intra-SC methods can be used as a “social-neuroscience” tool to distinguish neuronal processes shared by all people from those unique to a given sub-group or an individual.¹⁵

A more recent study promises to make literal Münsterberg’s notion of cinema as the externalization of our mental functions. In *The Photoplay: A Psychological Study*¹⁶ Münsterberg argued that technological apparatuses, such as the film camera, are capable of reproducing our *mental* functions in the absence of the essential *material* conditions for perception: e.g., the close up objectifies the mental act of attention while the flashback objectifies the mental act of remembering. Film simply takes advantage of one of the constitutive aspects of our normal psychic function – its reproducibility. Münsterberg saw the psychic mechanism utilized by film as lying dormant in the *normal* structure of our psychic apparatus: it is because the *normal* mind obeys its own laws, rather than the laws of the outside world, that film is possible in the first place. Our psychic ap-

¹⁴ Patricia Pisters, *Illusionary Perception and Cinema: Experimental Thoughts on Film Theory and Neuroscience*, in Mark Poster, David Savat (eds.), *Deleuze and the New Technology*, Edinburgh University Press, Edinburgh 2009, p. 233.

¹⁵ See Uri Hasson, Rafael Malach, David J. Heeger, “Reliability of Cortical Activity during Natural Stimulation,” in *Trends in Cognitive Sciences*, no. 1, 2010, p. 46.

¹⁶ Hugo Münsterberg, *The Photoplay: A Psychological Study*, D. Appleton & Co., New York-London 1916.

paratus (which includes our mental functions of attention, memory, and causal thinking) is naturally “set up” to interface with technological apparatus, such as film, i.e. the film apparatus can reproduce our mental functions and project them back to us as if they existed “outside” us, disembodied. UC Berkeley researchers seem to have provided visual evidence in support of Münsterberg’s argument. Combining fMRI and computational models, researchers at Jack Gallant’s lab have succeeded in reconstructing movie clips – of Hollywood movie trailers – people have already viewed.¹⁷ Gallant and his team hope to use the new method to reconstruct internal imagery such as dreams and memories.

What studies like these demonstrate is that neurocinematics is more interested in the brain than in cinema: cinema is just a means of studying the brain. *However, explaining how the brain works is not the same as explaining what the mind thinks or why it thinks that way.* It is here that we see neurocinematics falling short of its grand ambition to supplant older theories of film. Studies of inter-subjective correlation in brain responses are said to have two important implications: 1) some films have the power to “control” viewers’ responses – a mere mechanical reproduction of reality of a random, unstructured real life event, fails to produce a shared brain response – where by “control” scientists mean simply that “the sequence of neural states evoked by the film is reliable and predictable, without passing any ethical or aesthetic judgement as to the desirability of the means to such control”; 2) “assuming that mental states are tightly related to brain states... controlling viewers’ brains is the same as controlling their mental states, including percepts, emotions, thoughts, and attitudes.”¹⁸ Ironically, neurocinematics construes the spectator as “positioned” on a much more fundamental level than it is in SLAB theory (Saussure, Lacan, Althusser, Barthes). Instead of being “positioned” by an ideologically suspect apparatus, or by various ISA (ideological state apparatus), spectators are “positioned” by the architecture of their own brains. Linear narratives and canonical stories are, thus, no longer “ideological Western inventions;” instead, they are said to “reflect” basic features in the brain’s architecture. Neurocinematics simply replicates, in a different form, the denial of agency for which it criticizes subject-positioning theories. For instance, writing from a neurocinematic perspective, Murray Smith insists that our

*traditional conception of selfhood is misleading in two ways: it is neither as internally unified [as evidenced by neuroscientific experiments demonstrating that one’s bodily self-image can be extended to, even relocated in, another subject] nor as spatially contained as we are inclined to think.*¹⁹

¹⁷ Yasmir Anwar, “Scientists Use Brain Imaging to Reveal the Movies in Our Minds,” in *UC Berkeley News Center*, September 22, 2011.

¹⁸ Uri Hasson, Ohad Landesman, Barbara Knappmeyer, Ignacio Vallines, Nava Rubin, David J. Heeger, “Neurocinematics: The Neuroscience of Film,” in *Projections. The Journal for the Movies and Mind*, no. 1, 2008, pp. 1-26.

¹⁹ Murray Smith, *Triangulating Aesthetic Experience*, cit., p. 101.

In neurocinematics, then, the decentering and fragmentation of the SLAB subject are made “functional,” hard-wired into our brains in the form of “specialized” processing capacities. Instead of being “positioned” by unconscious forces or ideological discourses we are “positioned,” in an even more pernicious way, by our own sub-personal cognitive capacities:

We do not exist as persons – that is, as more or less coherent, goal-oriented, conscious entities – but the capacities we recognize as typical of persons are built up from a host of sub-personal processing capacities, capacities whose investigation is the province of physiology and psychophysiology, using such techniques as eye-tracking (saccadic eye movement), electromyography (muscle movement), GSR, and, not the least, fMRI and other kinds of brain imaging.²⁰

Furthermore, neurocinematics borrows the methodology of the very same linguistic models it disavows. Torben Grodal opposes linguistic models since they overemphasize cultural differences and de-emphasize “our shared embodied nonlinguistic experiences [which] provide a background for transcultural understanding.”²¹ Many of the mental processes through which we engage with a film, he argues, bypass language. However, one could argue that linguistically-inflected film theories, which seek to identify the smallest possible unit of meaning in film, find their analogy in neurocinematics’ revival of the 19th century doctrine of cerebral localization, the idea that higher cortical (mental) processes may be broken down into distinct functional units and correlated with discrete areas of the brain, i.e. there is a parallel between the concept of *film grammar* (breaking down larger units of meaning into the smallest possible units of meaning) and, on the other hand, the concept of *cerebral localization* (breaking down mental processes into distinct functional units and “locating” specific affective responses in different parts of the brain) or the method of *cognitive subtraction* (subtracting one brain response from another so as to arrive at (allegedly) more accurate experimental results, and decomposing the artwork into a collection of individual visual stimuli). As Irving Massey puts it, however, the meaning of an artwork does not “trickle down to the level of the neuron.”²²

Neurocinematics fails to offer a dynamic and holistic account of film spectatorship, a failure that results, at least in part, from its privileging of bottom-up over top-down cognition, i.e. its reduction of “aesthetic response” to “motor response.” To explain film viewing Grodal proposes what he calls the PECMA (perception, emotion, cognition, and motor action) flow, a model heavily biased toward sensorimotor responses: films are not “signs to be read” but “visual cues for simulating action” (I see this as neurocinematics’ version of neuroaesthetics’

²⁰ *Ivi*, p. 100.

²¹ Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture and Film*, Oxford University Press, Oxford 2009, p. 11.

²² Irving Massey, *The Neural Imagination: Aesthetic and Neuroscientific Approaches to the Arts*, cit., p. 179.

conflation of “artistically salient effects” with “semantically salient features”). Given the privileging of goal-oriented, action based narratives – which reflect the motor bias of the brain – it is not surprising that Grodal identifies video games and virtual reality narratives as the ideal media forms inasmuch as they do not impede the PECMA flow (while art films do). He even suggests that different genres can be “located” in specific parts of the brain or at specific stages of the PECMA flow: some genres “cue an intense focus on perceptual processes” (abstract or experimental films), others “evoke tense, action-oriented and goal-oriented emotions” (action films), and still others “elicit relaxation through laughter” (comedies).²³ Like Grodal, Gallese and Guerra identify the motor mechanisms subtending and directing vision – simulated motor behaviour, what they call Embodied Simulation (ES) – rather than scopophilia, as essential to cinema. The brain, they argue, serves primarily one purpose – to move us around – and the basic stories we know best are stories of events in space. The mirror mechanism functions both in real life and in film viewing: “ES constitutively shapes the content of perception, characterizing the perceived object in terms of motor acts it may afford – even in the absence of any effective movement.”²⁴ Murray Smith’s explanation of what he calls “anomalous suspense” (experiencing anxiety and suspense about the outcome of a narrative even though we know the outcome in advance) provides another example of the subordination of aesthetic response to motor response. If we think of suspense only in relation to top-down cognition anomalous suspense cannot be accounted for; however, if we think of suspense as largely the product of bottom-up processes, we can account for it. What actually happens in cases of anomalous suspense, Murray claims, is that empathy outweighs suspense since the experience of empathy is subtended by bottom-up processes (the firing of mirror neurons).²⁵ Murray’s explanation simply assumes what it wants to prove: bodily reactions such as fear, horror or disgust are subtended by bottom-up cognition and *this is why* prior beliefs or knowledge play no role in them.

One of the interesting aspects of neurocinematics is its appropriation of Deleuze, whose conflation of the ontology of the film image with historically specific genres/movements (Italian neorealism and 1960s modernist cinema) finds its own counterpart within neurocinematics, most prominently in Grodal’s evolutionary theory and Patricia Pisters’s cinema of the “neuro-image.” The embodied brain is “not only a body driven by excesses and mysterious Freudian traumas and perversions,”²⁶ Grodal asserts, but also by “the practical problems that have faced our ancestors” in their struggle to adapt to the environment. One genre in particular – the action or adventure film – reflects “core elements

²³ Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture and Film*, cit., p. 151.

²⁴ Vittorio Gallese, Michele Guerra, “Embodying Movies: Embodied Simulation and Film Studies,” in *Cinema: Journal of Philosophy and the Moving Image*, no. 3, 2012, p. 186.

²⁵ Murray Smith, *Triangulating Aesthetic Experience*, cit., pp. 80-106.

²⁶ Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture and Film*, cit., p. 5.

in the emotional heritage that enhanced human survival in the past,”²⁷ which explains its continuing appeal. Reversing Deleuze’s hierarchy, Grodal posits the cinema of the movement-image – the action film, in particular – which stimulates sensorimotor processing, as aesthetically superior to (“more pleasurable than”) the cinema of the time image, whose unpopularity Grodal attributes to its evolutionary irrelevance. Grodal thus proposes to account for the birth of genres and for their subsequent development and popularity in terms of their appeal to “innate emotional dispositions,” which automatically privilege certain types of emotional responses (adaptive i.e. motor-based ones) over others. On this account it is impossible for genres to fluctuate in their popularity: once the “innate emotional disposition” toward physical action has been posited as primary, action-oriented genres are automatically “guaranteed” a privileged place, while “art films,” which violate basic emotional and cognitive schemas, are doomed to the low ranks of the cinematic pantheon.

Contrary to Grodal, who identifies the “essence” of cinema with the type of film that matches most closely the motor bias of our brain, Pisters identifies “the neuro-image” – the image that inaugurates our entry into “other minds,” thereby proving their existence – as fulfilling cinema’s potential. Sometimes she discusses the “neuro-image” as a third type of image, one that follows the movement-image and the time-image, or as an “intensification” of the time-image. However, at other times she explicitly calls the cinema of the neuro-image simply another “genre,” identifies the genre’s most prominent characteristics, and even distinguishes a few sub-genres.²⁸ Like Deleuze, who offers a historical explanation for the emergence of the time-image – the failure to adapt to, and respond in a meaningful way, to post-World War II reality – Pisters traces the “origins” of the neuro-image to recent advances in neuroscience. Although Deleuze does not explicitly refer to neuroscience, Pisters feels that the film-philosophical concepts he develops “do relate the brain and the screen in an immanent way, mainly due to the Bergsonian inspiration of Deleuze’s cinema books.”²⁹ Pisters doesn’t acknowledge Bergson’s well-known critique of attempts to ‘map’ mental life onto the brain. Bergson invokes the photograph to explain the brain-mind relationship, comparing the brain to a frame and the mind to a picture:

The frame determines something of the picture, by eliminating beforehand all that which has not the same shape and size. [...] So also with the brain and consciousness. Provided the comparatively simple actions – gestures, attitudes, movements – in which a complex mental state would be materialized, are such as the brain is ready for, the mental state

²⁷ *Ivi*, p. 6.

²⁸ Patricia Pisters, *The Neuro-Image: A Deleuzian Film-Philosophy of Digital Screen Culture*, Stanford University Press, Stanford 2012, p. 25. Neurothrillers (like Andrea Arnold’s 2006 *Red Road*) and delirium cinema (which dramatizes the powers of the false and illusionary perception) “can be considered a subtype [subgenre] of the neuro-image [genre]” (p. 113).

²⁹ Patricia Pisters, *Illusionary Perception and Cinema: Experimental Thoughts on Film Theory and Neuroscience*, cit., p. 226.

*will insert itself exactly into the cerebral state. But there are a multitude of different pictures, which would fit the frame equally well; consequently the brain does not determine thought and, at least to a large extent, thought is independent of the brain.*³⁰

Pisters's misreading of Bergson initiates an equally problematic reading of film spectatorship. Referencing Münsterberg's studies of optical illusions, which showed perception to be a mental act with only a partial relation to reality, Pisters wants to argue that puzzle films, like *The Prestige* and *The Illusionist*, (re)mobilize Münsterberg's insight that optical illusions throw perception into question, but she erroneously assumes that optical illusions are equivalent to "mind games." She provides several examples from the two films above, but none of them have anything to do with optical illusions; rather, they illustrate the filmmakers' manipulation of point of view. Optical ambiguity (being unable to determine which properties of an image are "true") is not the same as hermeneutic ambiguity (being unable to decide which interpretation of an image – which we actually see unambiguously from an optical point of view – is true). Her reading of the significance of the locket in *The Illusionist* is exemplary of this conflation of optical tricks with mind-tricks. The locket appears several times throughout the film, in close up, but it is only later in the film that we understand its real significance: from an object of attention it becomes an object of awareness. Rather than proving that the locket is both an "optical illusion" and the object of a "mind game," this reading simply restates the importance Aristotle attributed to "recognition" (and "reversal of fortune") in the *Poetics*.

Pisters reads the decentering of the (SLAB) spectator at the neural level as *liberating*: yes, the images of contemporary culture operate directly on our brain (the screen can no longer "protect" us); however, the "benefit" of mapping the mind onto the brain, and then dividing the brain into regions, each with its own specific function, is that the subject thus conceived cannot respond to reality (or cinema) in a coherent way and thus cannot be "interpellated"/"positioned." Pisters reinterprets the potentially pessimistic idea of the subject as positioned on a neural level as emancipatory: *the autonomy of affects and percepts* now comes to signify a secret "schizoanalytic power," which lies precisely in the subject's vulnerability to the "realities of illusion." She refers to neurological findings about the nature of schizophrenia – that schizophrenia is a brain disorder related to abnormal synaptic connections and plasticity – to redeem the schizophrenic brain as a positive force of "resistance" precisely because of its plasticity. The schizophrenic brain becomes a sort of a "poster brain" for the digital age: its failure to operate through "normal" synaptic connections promises to "liberate" us from the "tyranny" of the left hemisphere and the trap of the psychoanalytic family triangle.³¹

³⁰ Henri Bergson, *L'énergie spirituelle. Essais et conférences*, Les Presses Universitaires de France, Paris 1919 (Eng. ed. *Mind-Energy*, Palgrave Macmillan, New York 2007, pp. 42-43).

³¹ Patricia Pisters, *The Neuro-Image: A Deleuzian Film-Philosophy of Digital Screen Culture*, cit., p. 45.

But does the “neuro-image” even exist? Pisters’s primary example of “the neuro-image” is the opening sequence of *Fight Club*, which literally features ‘a ride through the brain’: “We no longer see through characters’ eyes, as in the movement-image and the time-image; we are most often instead in their mental worlds.”³² What makes possible this mapping of brain processes onto mental states? Special effects! Pisters emphasizes the fact that artists of the visual effects department and the neuroscientists consulted for this sequence discovered they had very similar digital visualization techniques. For her *the mere analogy between techniques for representing the brain and special effects techniques* (“nested instancing”) is sufficient to equate the brain with the mind. She takes the development of film technology (special effects), which allows the visual representation of the brain, as “evidence” that such images of the brain are, actually, images of the subject’s mental world.

Neurocinematics claims the turn to neuroscience will help film theory go beyond ideological, linguistic and psychoanalytic models i.e. subject-positioning theories (SLAB theory), which draw a pessimistic picture of the subject as “split” and “positioned” (trapped) both internally (by unconscious forces) and externally (by various ideological discourses, including the film apparatus itself). For instance, Torben Grodal attacks subject positioning theories for failing to explain how *cultural discourses*, which are supposed to “position” the subject, are psychologically realized in *individuals*.³³ Neurocinematics promises to reinvest the subject with agency and yet, ironically, what most fMRI studies are known for is the “material” evidence they claim to provide of a similarity in brain response among viewers, especially in the case of Hollywood films, “proving that our brain-response *is not as individual as we might like to think*.”³⁴ That neurocinematics fails to return agency to the subject is not that surprising given that it inherits some of the SLAB assumptions – assumptions about the relationship between the apparatus and the aesthetic object – it purports to critique: the subject of neurocinematics is “positioned” by the apparatus of her own brain rather than by various ideological apparatus or by the film apparatus itself. Scholars following in the steps of Antonio Damasio, a prominent figure in what came to be known as the “affect revolution,” as well as those promoting a “New Materialism,”³⁵

³² *Ivi*, p. 14.

³³ Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture and Film*, cit., p. 10.

³⁴ Karin Badt, “Mirror Neurons and Why We Love Cinema: A Conversation with Vittorio Gallese and Michele Guerra in Parma,” in *Huffington Post*, online 5 October 2013, http://www.huffingtonpost.com/karin-badt/mirror-neurons-and-why-we_b_3239534.html.

³⁵ Some of the most prominent works seeking to go beyond post-structuralism by promoting various versions of “the New Materialism” that coalesced as a result of the re-discovery of Deleuze and Spinoza include: Antonio Damasio, *Looking for Spinoza: Joy, Sorry, and the Feeling Brain*, Vintage, New York 2003; Heidi Morrison Ravven, “Spinozistic Approaches to Evolutionary Naturalism: Spinoza’s Anticipation of Contemporary Affective Neuroscience,” in *Politics and the Life Sciences*, no. 1, 2003, pp. 70-74; Diana Coole, Samantha Frost (eds.), *New Materialisms: Ontology, Agency, and Politics*, Duke University Press, Durham 2010; Jane Bennett, *Vibrant Matter: A Political Ecology of Things*, Duke University Press, Durham 2010; Ian Bogost, *Alien Phenomenology, or What*

claim Deleuze and Spinoza as their predecessors insofar as they anticipated some of neuroscience's most important recent discoveries. As I hope to have shown, however, the "New Materialism" – exemplified here by neuroaesthetics and neurocinematics – which positions itself as "post-human" in its commitment to granting the non-human agency and vitality and acknowledging its affective, ethical and political potential, in fact covertly carries on some of the assumptions and beliefs fundamental to post-structuralism even as it claims to "de-anthropomorphize" philosophy, aesthetics, and film theory.

It's Like to Be a Thing, University of Minnesota Press, Minneapolis 2012; Estelle Barrett, Barbara Bolt (eds.), *Carnal Knowledge: Towards a 'New Materialism' through the Arts*, I.B. Tauris, New York 2013. The "New Materialism" has been criticized for its reductionist and anti-humanist tendencies. Sarah Ahmed has argued that "the New Materialism" posits matter as an "it-like fetish object" while also strategically ignoring previous theoretical work on body and matter, e.g., phenomenological studies and feminist work on embodiment. For a critique of Deleuze's philosophy, see Vincent Descombes, *Modern French Philosophy*, Cambridge University Press, Cambridge (MA), 1980; Alain Badiou, *Deleuze: The Clamor of Being*, University of Minnesota Press, Minneapolis 1997 and Alain Badiou, *Cinema*, Polity, New York 2013; Jacques Rancière, *Film Fables*, Berg Publishers, Oxford 2006; Slavoj Žižek, *Organs without Bodies: On Deleuze and Consequences*, Routledge, New York 2004. Among the most important critiques of "the New Materialism" and neuroscience are: Raymond Tallis, *Aping Mankind: Neuromania, Darwinitis and the Misrepresentation of Humanity*, Acumen Publishing, Durham 2011; Thomas Nagel, *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False*, Oxford University Press, Oxford 2012; Sally Satel, Scott O. Lilienfeld, *Brainwashed: The Seductive Appeal of Mindless Neuroscience*, Basic Books, New York 2013; Robert Burton, *A Skeptic's Guide to the Mind: What Neuroscience Can and Cannot Tell Us About Ourselves*, St. Martin's Press, New York 2013; Nikolas Rose, Joelle M. Abi-Rached, *Neuro: The New Brain Sciences and the Management of the Mind*, Princeton University Press, Princeton 2013. For a more balanced view of neuroscience, see Patricia S. Churchland, *Touching a Nerve: The Self as Brain*, Norton, New York 2013.

Neurocinematics and the Discourse of Control: Towards a Critical Neurofilmology

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Abstract

This article offers a close reading and a critique of Hasson *et al.*'s *Neurocinematics*, focusing on its treatment of the notion of control, meaning a predictable neural and cognitive activation triggered by film stimuli. In the first part of the article I suggest that the use of control in neurocinematics on the one hand relies on a similarly problematic – but still more nuanced – use of the notion in cognitive film theory, and on the other hand reflects a unidirectional model of communication which brackets out noisy cases that diverge from predictable behavior. In the second part, I argue that these “noisy” cases are exactly the ones that pertain the most to a complex and dynamic view of brain activity and film-mind communication. The dialogue between film studies and neuroscience can become more complex too, escaping from a problematic definition of film effectiveness with regards to predictable viewer reactions.

Neurocinematics, a term proposed by a research group in the Psychology Department of New York University to synthesize cognitive neuroscience and film studies, is the study of films through the use of functional magnetic resonance imaging during film watching under experimental conditions. The fMRI technology produces a time-series of 3D images (very much like a digital “film”) picturing brain activity in specific brain regions of the subjects/spectators. Higher neural activity in particular brain regions, manifest from the increased blood flow, results in a change in the image intensity of the fMRI. Since film viewing is hard to control under experimental conditions due to the complexity of film stimuli, which approximate natural vision, neurocinematics researchers have applied the method of inter-subject correlation (ISC). ISC helps to assess the similarities/differences in brain activity *across viewers*, looking at common patterns of response time courses in different brain regions.

Neurocinematics, control and attention

In 2008 a research group led by psychologist Uri Hasson published a summary of neurocognitive cinema research so far, led by Hasson and colleagues in the journal *Projections*. The article was written in an accessible way to appeal to humanities/film scholars as well as to the wider public.¹ In this article the authors make the assumption that some films can control the viewers' neural responses, in the sense that "the sequence of neural states evoked by the movie is reliable and predictable."² This "brain control" that some movies can effectuate is also, according to the authors, a form of "mind control," since neuroscience presupposes that there is a direct link between neural states and mental states (defined as "percepts, emotions, thoughts, attitudes, etc.")³ In the same paper Hasson *et al.* frequently talk about film "effectiveness," relating this property with increased ISC response to a film and therefore increased control of neural and mental states across viewers. The logical conclusion drawn from the above premises is that the most effective film is the one with the strongest control over the mind of the viewer. A number of experiments they conducted within the last decade permitted Hasson *et al.* to comprise a tentative "hierarchy of effectiveness" among the films they used as stimuli. Directorial style seems to be for them the most important factor contributing to mind control, since Alfred Hitchcock, for instance, brought the highest case of ISC with his *Alfred Hitchcock Presents* TV series episode *Bang! You're Dead* (1961). At the bottom of the hierarchy, the least effective testing material proved to be an "unstructured segment of reality,"⁴ i.e. raw footage from a camera placed at a random spot of a public space, capturing in a static frame random occurrences in front of its lens.

The emerging field of neurocinematics tends to connect in a causal relationship brain activation with the filmmakers' skills of directing viewers' attention, which results in control of their minds, evident in the orchestrated activation of a number of different brains as shown in fMRI scans. Informed by older and more recent debates in film studies, the authors of the *Neurocinematics* article, mainly comprised by psychologists and neuroscientists, joined by one Cinema Studies researcher, Ohad Landesman, show a special interest in cognitive film theory, and draw inspiration from some of its own assumptions – especially those of scholars David Bordwell and Kristin Thompson, Noël Carroll, and Ira Königsberg,⁵ who have written on techniques of directing and guiding attention in films.

¹ Uri Hasson, Ohad Landesman, Barbara Knappmeyer, Ignacio Vallines, Nava Rubin, David J. Heeger, "Neurocinematics: The Neuroscience of Film," in *Projections. The Journal for Movies and Mind*, no. 1, 2008, pp. 1-26.

² *Ibidem.*

³ *Ibidem.*

⁴ *Ibidem.*

⁵ Among the sources Hasson *et al.* cite are: David Bordwell, *Narration in the Fiction Film*, The University of Wisconsin Press, Madison 1985; David Bordwell, Noël Carroll, *Post-Theory: Reconstructing Film Studies*, The University of Wisconsin Press, Madison 1996; David Bordwell, Kristin Thompson,

Hasson *et al.* equate what cognitive film theory describes as control of attention with their neurological view of “mind control,” and assert that the mesmerizing power of movies lies in their ability to take control of viewers’ minds. Moreover, they point out that “viewers often seek and enjoy such control because it allows them to become deeply absorbed (and mentally engaged) in the movie.”⁶ To support this claim the authors quote Konigsberg: “Part of the pleasure of viewing a film is having our attention guided in an immediate and controlled manner, seeming to have the camera do the looking for us.”⁷

Here Konigsberg refers to something more than attention: to the taking over of purposeful intentional perception by another agency – and this is an issue that other strands of film theory have tackled before cognitivism. However, neurocinematics does not at all thematize this dimension of film control. Rather, Hasson *et al.* point out two characteristics of films that evoke controlled responses.

On the one hand, it is of course attention, measured by tracking the viewers’ eye movements (in both silent and sound films), that allows researchers to follow what exactly the subjects see and in which part of the frame they focus each time. Substantial work on eye tracking as a vector of attention to audiovisual stimuli has also been done by psychologist Tim Smith.⁸ Smith has shown how film directors and editors, intuitively taking advantage of certain “flaws” of natural perception, such as change blindness, use editing in such a way so as to aid the spectator’s construction of a fluent and believable diegetic space. However, when it comes to neurologically manifest “control,” eye tracking does not seem sufficient to reach any concluding statement. Hasson *et al.* too are careful to clarify that it is not just the immediate following of the action assessed by the eye position that leads to high ISC (controlled brain responses across viewers). Equal amounts of attention, as in the case of a backward played clip, can lead to low ISC because of lower intelligibility. Attention is therefore a necessary but not sufficient condition for a high ISC.⁹ Intelligibility and comprehension *according to the intentions of the storyteller-director* is the factor fulfilling the second role. This is something that their later work demonstrates further.¹⁰

Film Art: An Introduction, The University of Wisconsin Press, Madison 2008; Noël Carroll, *Theorizing the Moving Image*, Cambridge University Press, New York 1996; Ira Konigsberg, “Film Studies and the New Science,” in *Projections. The Journal for Movies and Mind*, no. 1, 2007, pp. 1-24.

⁶ Uri Hasson *et al.*, “Neurocinematics: The Neuroscience of Film,” *cit.*

⁷ Ira Konigsberg, “Film Studies and the New Science,” *cit.*

⁸ Tim Smith, “The Attentional Theory of Cinematic Continuity,” in *Projections. The Journal for Movies and Mind*, no. 1, 2011, pp. 1-27.

⁹ It is remarkable that attention is here discussed as an externally manipulated variable, rather than an internally controlling factor, as in the “attention driven regulation” according to which the brain “controls” where to place emphasis in a film (e.g., what area to look at, or what dimension, such as color, motion, orientation). In this view, the brain does not “just” react to the stream of stimuli that a film provides but can control and streamline its reaction. This dimension of attention is discussed by Joseph Magliano, Jeffrey Zacks, “The Impact of Continuity Editing in Narrative Film on Event Segmentation,” in *Cognitive Science*, no. 8, 2011, pp. 1489-1517.

¹⁰ See Greg J. Stephens, Lauren J. Silbert, Uri Hasson, “Speaker–Listener Neural Coupling Under-

Even though they consider high ISC as a vector of engagement in the movie, towards the end of their paper Hasson *et al.* question the direct link between the two variables. As they say, films with low ISC might still produce a deep engagement, which, however, for unknown reasons can vary between individuals. The effectiveness of movies, however, is still defined in relation to the high ISC, to the directed *joined attention and intelligibility* of many viewers, which surpasses individual variability and produces similar patterns of neural activation in different areas of their brains.

Nuances of film control in cognitive film theory

Apart from questioning the self-evidence of the link between directorial guidance of attention as approached by cognitive film theory and “mind control” as defined in neurocinematics, I want to focus on the notion of control itself and the use of this term (in connection with film viewing) that traverses neuroscientific and cognitivist approaches to film.

The emphasis that neurocinematics places on control resonates with some well-established observations of cognitive film theory and with the use of the same term in this discipline. Control here also seems to be in the hands (and minds) of the filmmakers, rather than those of the spectators. For example, David Bordwell and Kristin Thompson in *Film Art* associate film directorship with control of cinematography, *mise en scène*, sound and other film dimensions. By controlling these aspects, especially in fiction films,¹¹ the filmmakers can in turn control the viewers’ experience, what they see and understand¹² – therefore, both attention and intelligibility. Moreover, films can also control what viewers know in the long run, as their narration can be more or less restrictive, and at times, even “omniscient.”¹³

In his discussion of cinema in *Theorizing the Moving Image*, Carroll uses the term referring to control of *attention* by movies, and to the way editing controls the perceptual responses of viewers.¹⁴ Comparing movies to theater, Carroll observes that the former exert a much heightened degree of “control over the spectator’s attention.”¹⁵ He also observes that films assure “effortless” comprehension – through the use of various camera techniques – and thus are cognitively “perspicuous.”

Another cognitivist, Ed Tan, expands on this “effortless” dimension of film

lies Successful Communication,” in *Proceedings of the National Academy of Sciences*, no. 32, 2010, pp. 14425-14430.

¹¹ David Bordwell, Kristin Thompson, *Film Art: An Introduction*, cit., p. 29.

¹² *Ibidem*. Quoting from the book: “The frame’s control of the scale of the event has also controlled our understanding of the event itself” (p. 182), “the duration and speed of the mobile frame can significantly control our perception of the shot over time” (p. 201), “by controlling editing rhythm, the filmmaker controls the amount of time we have to grasp and reflect on what we see” (p. 227).

¹³ *Ivi*, p. 89.

¹⁴ Noël Carroll, *Theorizing the Moving Image*, cit., p. 13.

¹⁵ *Ivi*, p. 84.

spectatorship, and underlines how film narration exerts control upon the viewers' percepts and emotions.

*The viewers are [...] given the strong impression that their movement and sight is being controlled. It is the film, or more precisely, the film's narration that determines what the viewers see, when they see it and how. As viewers, we adopt a variety of points of observation in space, but the selection and timing of them are completely beyond our control. It is the film that imposes them upon us. The viewers are aware to some extent of the selection being made by some instance controlling their view. That sense of being controlled may add to the feeling that the fictional world exists independently of the viewers' world.*¹⁶

Interestingly, the reverse feeling of lack of control on behalf of the viewers, is considered to be lying at the core of the film-viewing pleasure, being the prerequisite, according to Tan, for the state of "intense observation" that manifests viewers' emotional engagement.¹⁷

Certain remarks by Tan, such as that "the film's control over what the viewers see, and how and when they see it, effectively leads them into an elaborate fantasy from which there is little or no escape," to some sort of "controlled invisible witness illusions,"¹⁸ echo past theoretical approaches to film as a "dream factory," such as those of Jean Baudry and Christian Metz.¹⁹ These and other post-structuralist film theorists criticized the ideological functioning of the cinema institution and the forms of spectatorship and subjectivity it creates. However in Tan's cognitivist account, as well as largely in the cognitivist strands of film theory, the observations on the illusionary function of cinema are stripped from the psychoanalytical and critical connotations of poststructuralism and instead credited with some up-to-date scientific "objectivity," as well as with a claim that viewers are active, and by choosing to cooperate, they gain maximum reward.²⁰

As already mentioned, Konigsberg, stressing once more the fact that cinema images are illusions in comparison to real life perception, describes how the source of viewing pleasure lies in the viewer's controlled experience in the theater, where the film utilizing techniques of focus "does the work" for the eye. The feeling of being captive into the fictional world is for Tan, as well as for Konigsberg, one of the most important sources of viewing pleasure within the cinematic situation, creating what Noel Burch earlier called the "diegetic effect."

¹⁶ Ed Tan, "Film-induced Affect as a Witness Emotion," in *Poetics*, vol. 23, 1994, pp. 7-32.

¹⁷ *Ibidem*.

¹⁸ *Ibidem*.

¹⁹ See Jean Baudry, *The Apparatus: Metapsychological Approaches to the Impression of Reality in Cinema*, in Philip Rosen (ed.), *Narrative, Apparatus, Ideology: A film theory reader*, Columbia University Press, New York 1986, pp. 299-318; Christian Metz, "The Fiction Film and its Spectator," in *New Literary History*, no. 1, 1976, pp. 75-105.

²⁰ "Perhaps it is most accurate to say that the viewer has willingly delegated control to the narration, expecting in return certain gains, such as being entertained" (Ed Tan, "Film-induced Affect as a Witness Emotion," cit.).

Even though, as already mentioned, neurocinematics does not touch upon the arresting of agency that films effectuate in order to take control of our percepts and emotions, and does not “control” the effect of this variable upon ISC, it is certainly no coincidence that neurocinematics picks up on this emphasis on control by cognitive film theory and amplifies it. One just has to think of the fact that controlled viewing meets perhaps its ultimate realization in the viewing conditions of the neurocinematic experiments, where viewers lie (almost) still inside an fMRI scanner, which is at least kinaesthetically much more restrictive than the traditional movie theater. At the same time, and a bit ironically, this type of control is more and more dissolved in contemporary society, where portable or urban screens change our film viewing habits and increasingly distract our attention.

Control and effective communication

The implications of the use of the term control go unquestioned in both cognitive film theory and neurocinematics, and the underlying assumption that film is by definition skillful and successful only if it manages to control the viewer seems interdisciplinarily contagious. Attempting an ideological critique to the notion in a poststructuralist way would be more than plausible, but it would also be useful to add another perspective and approach the control problematic from the aspect of communication studies. Neurocinematics associates control of mind-brain responses with effective communication between film and viewer – marked by attention and intelligibility. However, the emphasis on “effects” that films have on brains can be seen as outdated from the point of view of media and communication sciences, as it resonates with an “old-media” paradigm of one-way communication, according to which, an action (message sent through media) leads to a reaction (in this case, brain-mind activation), expected and predicted by the action. According to the classical Shannon-Weaver mathematical model of communication, input and output of a message/signal can be matched provided that noise is omitted from the message.²¹ Hasson *et al.*'s emphasis on predictability in their definition of control in their neurocinematics research, but also in later research on communication between speaker and listener,²² somehow brackets out noisy cases (low ISC) as being the non-standard ones. This happens even when steps are taken towards the study of variability, as in the 2009 study of Hasson with an international group of psychologists and psychiatrists, who investigated the non-standard or

²¹ See Claude Shannon, Warren Weaver, *A Mathematical Theory of Communication*, University of Illinois Press, Champaign 1963.

²² As Stephens *et al.* remark, “the speaker’s activity is spatially and temporally coupled with the listener’s activity. This coupling vanishes when participants fail to communicate” (Greg J. Stephens, Lauren J. Silbert, Uri Hasson, “Speaker–Listener Neural Coupling Underlies Successful Communication,” *cit.*).

atypical cases of individuals with autism. The patterns of neural activation of these subjects during film watching differed from those of the “typical” (not autistic) subjects as well as from those of other autistic individuals, because they displayed low ISC; however the fMRI scans of the autistic subjects still showed increased intra-subject correlation, that is, reliability and predictability (controlled responses) within subjects on repeated viewings. Moreover, omitting noise, certain patterns of common activation were revealed.²³ Although here variability proves to be an important concern for neurocinematics, it still appears as a problem to be solved by uncovering underlying similarities and using demonstrated “highly effective” films to do so. Interestingly, the variability of “typical” subjects in response to less effective films does not seem as appealing to neurocinematics as that of atypical groups, which could potentially demonstrate a certain – even aberrant – reliability in their processing patterns.

As far as effectiveness is concerned, neurocinematics suggests that the “ineffective” film cases of low ISC (which demonstrate variable brain activity across viewers, and therefore, low control), can be either due to a less engaged processing of the incoming information (e.g., as in a state of day-dreaming) or to an intensely engaged but variable (across individuals) processing of a movie sequence. Even though these “typical atypical cases” are not studied further, they nonetheless could be the potential case studies of Semir Zeki’s proposal that variability of brain activation (triggered by the same visual response) will be the next “giant step” in neuroaesthetic research.²⁴

In what appears as a self-reflexive meta-comment, in their *Neurocinematics* paper Hasson *et al.* question their own hierarchy of film effectiveness, according to which Hitchcock and Leone seem to be particularly mesmerizing directors. On the one hand, they claim that neurocinematics offers empirical evidence for “the long-lasting distinction in film theory between films that remain faithful as much as possible to reality and those that seek to control or distort it” and on the other hand slightly criticize the films that their own research proves most effective, as belonging to a tradition of controlled aesthetics and message manipulation through highly structured editing (e.g., Hollywood, Michael Moore’s documentaries). This tradition is opposed to the tradition of “democratic ambiguity of the image” – represented by films with loose editing (e.g., European Art Cinema, Italian neo-Realism, direct cinema documentaries). For this meta-comment the authors draw on classical film theory and particularly André Bazin, who argued in *What is Cinema* that highly edited and carefully staged films exert more control, on the one hand over the external world (manipulating its reality/truth) and on

²³ See Uri Hasson, Galia Avidan, Hagar Gelbard, Ignacio Vallines, Michal Harel, Nancy Minshew, Marlene Behrmann, “Shared and Idiosyncratic Cortical Activation Patterns in Autism Revealed Under Continuous Real-life Viewing Conditions,” in *Autism Research*, no. 4, 2009, pp. 220-231.

²⁴ Semir Zeki, “Statement on Neuroaesthetics,” The Institute of Neuroaesthetics website, <http://neuroaesthetics.org/statement-on-neuroaesthetics.php>, last visit 19 January 2014.

the other hand over the viewer's experience of the world.²⁵ It is quite contradictory though that Hasson and his colleagues criticize the notion of control that themselves prioritize as most important in film effectiveness and the way they define it. Even though they acknowledge that film effectiveness can be ideologically problematic, they still establish it on the same grounds of controlled aesthetics.

Marketing neurocinematics: Personalizing control

Defending a just-as-much degree of control by movies on minds, one that would make the film effective in attracting attention and mesmerizing viewers but not too trivial (as in the case of "maximal control"),²⁶ neurocinematics rises as a field potentially profitable in its market applications. It should be no surprise that the results of early neurocinematics research were embraced fast and with enthusiasm by the industry and particularly by (neuro)marketing, the field from which the term neurocinema is said to be coming from.²⁷ The incentive is given already by Hasson *et al.*: among the potential applications of neurocinematics, they refer to the way ISC and its pattern of development over time can offer "a new neuro-editing tool for assessing the moment-to-moment impact of a given film."²⁸ Apart from the benefit this can have for the filmmaker in terms of editing to maximize audience engagement in particular film scenes (and correct for the lack of it, in cases when ISC falls), the researchers keep an eye on potential marketing applications. As they explain,

the ISC analysis of brain activity can also serve as a measurement of systematic differences in how various groups of individuals (defined by age, gender, sexual preference, ethnicity, cultural background, etc.) respond to the same film. Measuring the ISC for different cultural groups may allow us to study the underlying neuronal substrates that correlate with inter-cultural differences. Moreover, it would allow us to assess the impact of a given film on different target groups.²⁹

The overall emphasis that neurocinematics places on effects, coupled with the control discourse, becomes particularly problematic in its real-world implications, and the way that the discourse of neurocinema reaches the wider public. For instance, through film neuromarketing, companies promise to guide Hollywood producers and directors on how to make their movies more influential

²⁵ See André Bazin, *The Evolution of the Language of Cinema* in Hugh Gray (ed.), *What is Cinema*, vol. 1, University of California Press, Berkeley 1967, pp. 23-40.

²⁶ *Ibidem.*

²⁷ According to Khalid Hammou's, Hasan Galib's and Jihane Melloul's article "The Contributions of Neuromarketing in Marketing Research," in *Journal of Management Research*, no. 4, 2013, pp. 20-33), the term was coined in the inaugural address of marketing professor Ale Smidts in 2002.

²⁸ Uri Hasson *et al.*, "Neurocinematics: The Neuroscience of Film," cit.

²⁹ *Ibidem.*

upon audiences, enhancing the level of control they can exert upon brains. In this respect, the words of Peter Katz, producer and assistant at one of the first neuromarketing companies, Mindsign Neuromarketing, echo the suggestions of Hasson and his colleagues.

Movies could easily become more effective at fulfilling the expectations of their particular genre. Theatrical directors can go far beyond the current limitations of market research to gain access into their audience's subconscious mind. The filmmakers will be able to track precisely which sequences/scenes excite, emotionally engage or lose the viewer's interest based on what regions of the brain are activated. From that info a director can edit, re-shoot an actor's bad performance, adjust a score, pump up visual effects and apply any other changes to improve or replace the least compelling scenes. Studios will create trailers that will [be] more effective at winning over their intended demographic. Marketing executives will know in a TV spot whether or not to push the romance- or action-genre angle because, for example, a scene featuring the leads kissing at a coffee shop could subconsciously engage the focus group more than a scene featuring a helicopter exploding.³⁰

Even more interesting than this neuro-enhanced effectiveness anticipated by Katz is a reverse tendency which sets off from a different, interactive or “new media” perspective and developments in film personalization, and expects the brains of viewers to “take over” and guide the projection of a film. In experimental settings (like that of Pia Tikka’s “enactive cinema”)³¹ but also in commercial applications, spectators may be able to give feedback to the projection system by means of physiological data, and then in turn “fed back” with scenes or story versions that their individual brain seems to be wanting to see. Here, it is not the common, orchestrated reaction of brains that is of interest, but rather, the individualized, variable and even marginal reactions and how they can be included in and predicted by the system. Former *NeuroFocus* CEO A.K. Pradeep explains (predicting convergence between games and neurocinema):

Multiple if not infinite versions of one film with myriad story twists and endings will be produced and consumed. Netflix and Facebook will play a big part in film “personalization.” “Real-time instant consumer brain response-based personalization will create true dynamic modifications of the same movie and afford endless delight to consumers.”³²

This direction of neuroaesthetic film research and its marketing application is remarkable because it takes a perspective different than that of Hasson *et al.*

³⁰ Peter Katz, “Neurocinema Aims to Change the Way Movies are Made,” interview by Curtis Silver, in *Wired*, 23 September 2009, <http://www.wired.com/geekdad/2009/09/neurocinema-aims-to-change-the-way-movies-are-made>, last visit 19 January 2014.

³¹ See Pia Tikka, *Enactive Cinema: Simulatorium Eisensteinense*, PhD dissertation, University of Art and Design Publication Series, Helsinki 2008.

³² See Kevin Randall, “Rise of Neurocinema: How Hollywood Studios Harness your Brainwaves to Win Oscars,” in *Fast Company*, 2011, <http://www.fastcompany.com/1731055/rise-neurocinema-how-hollywood-studios-harness-your-brainwaves-win-oscars>, last visit 19 January 2014.

In informational terms, instead of bracketing out noise it seeks to classify it and model its different realizations within a system of alternative film/clip versions. Far from abandoning control, this approach seeks to control for what in Hasson *et al.*'s methodology would be a low ISC, in other words, for how minds can wonder in different trajectories not directly triggered by the film-stimulus.

The complexity of film-mind

The popularization of the control-effectiveness discourse is problematic in the sense that it undermines the complexity of the film-mind system and creates a closed film-viewer loop of action-reaction, both when the film controls the viewer's mind and when the latter controls the film and is in turn controlled in a personalized loop. However, as it is known since the 1970s when biologists Humberto Maturana and Francisco Varela published their work on autopoiesis and self-organizing systems,³³ the reaction of brains to any kind of stimuli (including films) is never a linear process and depends more on the internal organization of the brain than on the external stimuli – an organization that, we can add, is to a significant extent also socially shaped. When considered as autonomous self-organizing systems, film system and viewer's cognitive system each have their own internal organization and their own temporality. Moreover, taking one more step to the direction of complex systems theory, the reaction of the brain to film stimuli is not instant but cumulative and emergent, just like the cognitive organization itself.

It is worth taking a closer look at the *Neurocinematics* article, as well as Hasson's later research, as it can shed more light on the temporality of the brain and how it shapes its reaction to films. Using silent films as stimuli, Hasson *et al.* identified a hierarchy of "temporal receptive windows" in the brain, suggesting that different cortical regions respond to stimuli in different time-scales.³⁴ In the paper Hasson co-authored with Lerner and colleagues in 2011 the temporal brain structure was tested using as stimulus an orally narrated story.³⁵ It was found that frontal areas are the ones that respond only after listening to whole paragraphs, rather than individual words or sentences. An earlier version of this experiment was held by Hasson *et al.* in 2008 using film stimuli with parts of the same silent movie clip shown to subjects shuffled in bigger, medium or smaller chunks. These experiments, apart from showing the brain as a self-organizing system with its own temporality, also demonstrate

³³ Francisco J. Varela, Humberto R. Maturana, Ricardo Uribe, "Autopoiesis: The organization of living systems, its characterization and a model," in *Biosystems*, no. 4, 1974, pp. 187-196.

³⁴ Uri Hasson, Eunice Yang, Ignacio Vallines, David J. Heeger, Nava Rubin, "A Hierarchy of Temporal Receptive Windows in Human Cortex," in *The Journal of Neuroscience*, no. 10, 2008, pp. 2539-2550.

³⁵ Julia Lerner, Christopher Honey, Lauren Silbert, Uri Hasson, "Topographic Mapping of a Hierarchy of Temporal Receptive Windows Using a Narrated Story," in *The Journal of Neuroscience*, no. 8, 2011, pp. 2906-2915.

the lack of a one-to-one relationship between stimulus and response, as certain brain areas react to an accumulation of audiovisual information, for instance to whole sequences instead of individual shots.

The brain areas responding only to large chunks of information (thus only affected by the long-time scale shuffling) are those cortical regions responsible for higher order narrative processing and plot understanding. This differential temporal functioning was found similar across subjects, through the ISC method. However, as the writers suggest, even though ISC is an indicator of response reliability (demonstrated by control and predictability of activation patterns), it is not one of response amplitude. The latter has a low ISC, therefore an increased variability across viewers, even though it is an indicator of “incessant processing, presumably aimed to extract meaningful information from the stimuli.”³⁶ Here we come again to the problem of engagement that we mentioned earlier. The viewers might be heavily engaged in their communication with the film, however in a variable way from one another, and perhaps even in a way that was not intended by the sender (filmmaker). The communication in this sense might not fulfill the criteria of neurocinematic effectiveness set by Hasson *et al.*, but can still have a more complex, indirect, and perhaps long-term impact.

Making a parallelism between their neurocinematic findings and 1960s op art and optical illusions (such as the Akiyoshi Kitaoka 2003 Rotating Snakes), which are not perceived in the same way by all subjects, Hasson *et al.* in the *Hierarchy of Temporal Receptive Windows* note that “In all of these cases, visual neurons presumably respond with large amplitudes while processing the stimuli, but the responses are unreliable, leading to a failure to ‘lock in’ to a consistent and stable perceptual organization.”³⁷

This “failure to ‘lock in’ to a consistent and stable perceptual organization” is exactly what neuroscientists such as Francisco Varela and Scott Kelso find a vital characteristic of the brain as a complex dynamic system. According to Kelso, this incessant instability is not unique to the visual cortex; it is rather a generic feature of the brain’s working as a complex dynamic network, and affects not only early percepts but also complicated thoughts, such as narrative understanding. At every level of processing, the brain is characterized by “nonstationary dynamics,” a prerequisite for pattern formation when encountered with a meaningful task.³⁸ Referring to the dynamics of perception, Varela used as examples cases of multistability, like the man/woman figure,³⁹ where two forms of the same object (two “pictorial attractors”)⁴⁰ are at the same time present in one single object/

³⁶ Uri Hasson *et al.*, “A Hierarchy of Temporal Receptive Windows in Human Cortex,” cit.

³⁷ *Ibidem.*

³⁸ Scott Kelso, *Dynamic Patterns: The Self-organization of Brain and Behavior*, MIT Press, Cambridge (MA) 1995, pp. 283-284.

³⁹ Gerald H. Fisher, “Measuring Ambiguity,” in *The American Journal of Psychology*, no. 4, 1967, pp. 541-557.

⁴⁰ See also Robert Gregson, “Transitions Between Two Pictorial Attractors,” in *Nonlinear Dynamics, Psychology and Life Sciences*, no. 1, 2004, pp. 41-63.

image.⁴¹ According to Varela's neurophenomenology, optical illusions like this demonstrate the mind's functioning as a dynamical system, the neural circuits of which are always found in a state a cognitive drift/flow, in which

*the geometry of phase space needs to be characterized by an infinity of unstable regions, and the system flows between them spontaneously even in the absence of external driving forces. There are no attractor regions in phase space, but rather ongoing sequences of transient visits in a complex pattern of motion, modulated only by external coupling.*⁴²

In this view, the low ISC can be considered an indicator of the phase space of brain activity without major attractors, while the high ISC is the manifestation of the presence of an attractor which gives a similar reliable pattern of response across brains. Causal determination of the phase space and creation of attractors is what leads to the predictability of response patterns, within and across brains.

Within the complex systems paradigm, even the notion of directorial control itself can be revised. There are authors who have already attempted to approach filmmaking through this lens. For instance Jan Simons in his book *Playing the Waves*,⁴³ drawing on complex systems simulation methods, analyzes the directorial style of Lars von Trier, a director often discussed for his obsession with control. He explains how the filmmaker's techniques set parameters which causally determine the phase space of the film's narrative, and by extension, of the viewer's cognitive response. The phase space in physics is a term referring to a representation of all possible states that a system might take. Editing together multiple takes of the same scene, von Trier provides the viewers with a phase space of multiple narrative trajectories instead of a single one, as it happens in most films. A similar observation is made by Stephen Shaviro about Nick Hooker's technique of shooting in his early music videos.⁴⁴

The notion of control as setting parameters and determining the phase space indicates that even the stimulus can be multiple, not only the interpretation. This way the latter is still controlled but in a different way than the one praised by Carroll in films that promote a unique understanding, having the spectator "always looking where he or she should be looking, always attending to the right details and thereby comprehending, nearly effortlessly, the ongoing action pre-

⁴¹ Hasson has also investigated this phenomenon from a different perspective in Uri Hasson, Talma Hendler, Dafna Ben Bashat, Rafael Malach, "Vase or Face? A Neural Correlate of Shape-Selective Grouping Processes in the Human Brain," in *Journal of Cognitive Neuroscience*, no. 6, 2001, pp. 744-753.

⁴² Francisco J. Varela, "The Specious Present: A Neurophenomenology of Time Consciousness," in Jean Petitot, Francisco J. Varela, Bernard Pachoud, Jean-Michel Roy (eds.), *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, Stanford University Press, Stanford 1999, pp. 266-314.

⁴³ Jan Simons, *Playing the Waves: Lars von Trier's Game Cinema*, Amsterdam University Press, Amsterdam 2007.

⁴⁴ Steven Shaviro, "Post-Cinematic Affect: On Grace Jones, Boarding Gate and Southland Tales," in *Film-Philosophy*, no. 1, 2010, pp. 1-102.

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cisely in the way it is meant to be understood.”⁴⁵ The complex systems perspective helps to move away from a simple and one to one stimulus-response idea of film effectiveness, either in time, or in space.

In this line of thinking, the process of “structural coupling”⁴⁶ would offer a good alternative for the description of the relationship between film and viewer as autonomous systems. Thus, a film’s textual system and the brain of the viewer can be engaged in a nonlinear and open communication process, contributing to a complex and dynamical cinematic experience. Then we can say that these structurally-coupled systems “will have an interlocked history of structural transformations, selecting each other’s trajectories.”⁴⁷

This article, rather than presenting new research results, suggests a pause to reflect on already conducted research. Due to space limitations the main focus has been on Hasson *et al.*’s seminal – concerning the impact on film studies and the non-academic public – article, with only brief references to other important contributions to neuro-cinema research. Pause, distance and focus are not only necessary tools for film analysis; they are also crucial first steps for a critical neurofilmology.

⁴⁵ Noël Carroll, *Theorizing the Moving Image*, cit., p. 84.

⁴⁶ See Humberto R. Maturana, Francisco J. Varela, *The Tree of Knowledge: The Biological Roots of Human Understanding*, Shambhala Publications, Boston 1987.

⁴⁷ Francisco J. Varela, *Principles of Biological Autonomy*, Elsevier, New York 1979, pp. 48-49.

Dexter's Plastic Brain: Mentalizing and Mirroring in Cinematic Empathy

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Abstract

This essay revisits the question of empathy in film theory by looking at recent neuroscientific findings on affect, emotion and empathy. In film theory there is a classic division between cognitive approaches toward emotional engagement with characters, based on mentalizing or projecting oneself into the situation of another, and phenomenological approaches, based on a more direct embodied experience of mirroring emotional states of characters on screen. Debates in cognitive and affective neuroscience seem to reconfirm these two dominant views on cinematographic engagement: social and cognitive neuroscience demonstrates how we imagine the experience of others in activating the prefrontal and lateral regions of the cortex in projecting a “Theory of Mind.” Affective neuroscientist have demonstrated that the activation of mirror neurons in different parts of the brain, such as the anterior insula, and middle anterior cingulate, effectuate an immediate embodied emotion. Both in film theory and in neuroscientific debates, these two views are often opposed and presented as mutually exclusive. This article elaborates the emerging view that both forms of emotional simulation have their own validity and work together in a dynamic network with varying degrees of dominance according to the type of dramatic situation. The television series *Dexter* will be considered as a “neuro-image,” an extended and new form of contemporary cinema and will serve as a partner in dialogue in the development of the arguments.

Dexter has a problem. Well, actually, in the course of the eight seasons of the popular television show *Dexter*, the blood-spatter analyst of Miami Metro Police, alias serial killer-with-a-moral-code, will encounter many problems and moral dilemmas – and so will we as spectators. Dexter’s main problem, however, is that he is unable of experiencing emotion. At the beginning of the show, he states:

Whatever made me the way I am left me hollow, empty inside, unable to feel. It doesn't seem like a big deal. I'm quite sure most people fake an awful lot of everyday human contact. I just fake it all. I fake it very well, and the feelings are never there. (Season 1, pilot)

During the course of the series, as a whole, Dexter's feelings do become a big deal, arguably even the biggest deal of the whole series. Leaving aside all the ethical dilemmas that the television show also raises, in this essay I will focus on Dexter's explicit struggle with emotions and feelings. Taking *Dexter* as a "neuro-image" typical of our digital screen culture, I will relate some of the issues addressed in the series to contemporary findings in affective neuroscience.

Dexter as neuro-image

Dexter (Showtime, 2006-13) is one of the many contemporary high quality television series that involve extended cinematographic aesthetics. *Dexter* puts us in the mind of a serial killer. Not only do we predominantly stay within Dexter's point of view, but in every episode we hear at regular intervals the reflections running through his head in voice-over. While this use of voice-over is a classic film device for expressing inner speech that has been around at least since Hitchcock's *Murder!* (1930), the long and consistent way in which Dexter Morgan (played by Michael C. Hall) unfolds his deepest thoughts to us is significantly different. In *Murder!* Herbert Marshall plays Sir John Menier, member of the jury of a murder trial who has second thoughts about the conviction of a young woman. His doubts are conveyed to us in an interior monologue that we hear while he is shaving in front of a mirror. Hitchcock's use of the voice-over as expression of thought was innovative (allegedly this is the first use of voice-over used in this way).¹ Nevertheless, the content of his thoughts could also have been conveyed in a dialogue with others, a point proven later in *Twelve Angry Men* (Sidney Lumet, 1957). This is because Menier's reflections in *Murder!* primarily address the narrative of the murder mystery, where doubt about the guilt or innocence in a murder case are the main questions that can and should be shared with others.

In *Dexter* on the other hand, the fact that we, as spectators, are constantly aware of Dexter's innermost thoughts while the people around him are not, is crucial for the basic suspense of the narrative. While in every episode there are murders to solve, and the question of guilt and innocence is part of practically all sub-stories throughout the series, the predominant questions are played out inside Dexter's head, unobservable to others around him. The suspense in *Dexter* is largely due to the tension between knowing how he perceives himself and how he is perceived by others. This inward turn into a character's head space is characteristic of a mode of cinematography that I have called elsewhere "the neuro-image."² The neuro-image is indebted to Gilles Deleuze's famous adagio that we

¹ See François Truffaut, *Hitchcock by François Truffaut*, Simon and Schuster, New York 1967, p. 53. See also the description of *Murder!* at *BFI Screen Online*, <http://www.screenonline.org.uk/film/id/437872>.

² Patricia Pisters, *The Neuro-Image: A Deleuzian Film-Philosophy for Digital Screen Culture*, Stanford University Press, Stanford 2012. The concept of the neuro-image does not only comprise

have to see that “the brain is the screen” and proposes to go beyond Deleuze’s own categories of classical movement-images and modern postwar time-images.³ While there is much to say about the continuities and differences in these cinematographic developments in relation to the brain screen, the main point that I want to highlight here is that one of the ways in which the neuro-image brings us more directly into the brain worlds of characters is by way of emphasizing the affective dimensions of these inner landscapes.⁴

This affective dimension can be addressed on different levels and has various aesthetic effects on its spectators. An important way of assessing these aesthetic developments is by turning to findings in contemporary neuroscience. Adriano D’Aloia, for instance, demonstrates how neurophenomenology of the film experience offers a psychophysiological way of understanding suspense.⁵ While narrative comprehension of the story is still an important source of suspense, there are also other levels of more directly embodied cognition that play an important role. D’Aloia explains that the tension between feeling with the characters (via perception of affordances through canonical neurons in association with mirror neurons) and the perception of one’s own bodily situation (that often gives contradictory information between the optical and the haptic situation of the viewer) gives new insights into the film experience, exemplified in the contradictory experience of the “tangible intangibility” of cosmic space travel films.⁶

Another way of understanding the primacy of the affective in resonance with

contemporary cinema that is characterized by complex forms of narration, influenced by a digital logic of feedback looping, parallel lives and remixed storylines, but also extends to the long and rich new forms of television dramas and converged narratives in the wider media landscape. See the discussion on the television series *Lost* in *Ivi*, pp. 156-185. One has to note that the film aesthetics or narrative does not necessarily need to emphasize the “head space” of a character. In an extension of this argument, the whole media world can be considered as a “brain world.”

³ Gilles Deleuze, “The Brain is the Screen,” in Gregory Flaxman (ed.), *The Brain is the Screen: Deleuze and the Philosophy of Cinema*, University of Minnesota Press, Minneapolis 2000, pp. 365-373; Id., *L’image-mouvement. Cinéma 1*, Les éditions de Minuit, Paris 1983 (Eng. ed. *Cinema 1: The Movement-Image*, The Athlone Press, London 1986); Id., *L’image-temps. Cinéma 2*, Les éditions de Minuit, Paris 1985 (Eng. ed. *Cinema 2: The Time-Image*, The Athlone Press, London 1989). Deleuze was particularly inspired by Jean Pierre Changeux’s book on “neuronal man” that came out in the early 1980s. However, as Raymond Bellour argues, “While Deleuze recognized the cinema as brain (or brain-body), it is essential for a neurobiologist to be able to recognize the brain (brain-body) as cinema”, Raymond Bellour, “Deleuze: The Thinking of the Brain,” in *Cinema: Journal of Philosophy and the Moving Image*, no. 1, 2012, p. 83. See also Jean-Pierre Changeux, *L’homme neuronal*, Fayard, Paris 1983 (*Neuronal Man: The Biology of Mind*, Princeton University Press, Princeton 1997).

⁴ Other dimensions of *The Neuro-Image* are the hallucinatory powers of images that are experienced as “realities of illusion” (as opposed to the classic idea of cinema as “illusion of reality”) and the complex experience of time as serialized folds and feedback loops that are thought from a future perspective.

⁵ Adriano D’Aloia, “The Intangible Ground: A Neurophenomenology of the Film Experience,” in *NECSUS: European Journal of Media Studies*, no. 2, 2012, pp. 219-239, <http://www.ingentaconnect.com/content/aup/necsus/2012/00000001/00000002/art00012>.

⁶ *Ivi*, p. 222.

new findings in cognitive neuroscience is by way of the concept of the “neuro-thriller.” In *The Neuro-Image* I argue that it is possible to understand for instance Andrea Arnold’s contemporary surveillance film *Red Road* (2006) as a form of neuroaesthetics where, as spectators, we are drawn into a fight between the main character’s immediately experienced “subpersonal” unconscious emotions and her more appropriated “personal” and conscious feelings.⁷ Though both processes of emotions and feelings are recognized as forms of affective response in cognitive neuroscience and are embodied in the brain, they do operate on different levels of levels or even in different brain circuits that are connected in often asymmetrical ways. It is that tension that is played out on a neuronal level, while being fully embodied and embedded in a setting and expressed in the aesthetics of the images, that I propose as typical for the neuro-image and the neuroturn in film theory.

Dexter adds yet another way of looking at primacy of the affective in contemporary audiovisual culture. As already indicated, Dexter’s main problem concerns affective connections to others, feelings and emotions that he does not seem to grasp. About half of his voice-over musings concern his analytic observations of the emotions and feelings of others, comparing them to his own lack of this spectrum of experience. The other big part of the externalization of his mindscape is dedicated to the appearances of his stepfather Harry, who always returns from the dead to discuss the moral dimensions of his actions (is he killing according to the code of only killing bad guys, is he not transgressing in such a way that he could get caught, covering his tracks, etc.). While these moral aspects of Dexter’s mind are very interesting and important, they go beyond the scope of this essay. What interests me here is the way in which Dexter somehow fights a battle between two forms of empathy and emotional simulation that resonate with larger debates in cognitive neuroscience, and in discussions between phenomenological and cognitive branches of film studies. So in the following I will consider Dexter as an “aesthetic figure” that on an implicit level connects to these debates.⁸ As a fictional character, Dexter expresses in a popular way current knowledge and concerns on empathy and emotion, and as such can be considered as an (unexpected) partner in dialogue in the larger field of affective studies in neuroscience and art.

Dexter’s evolving problem

As already indicated, the premise of *Dexter* is based on the idea that its protagonist Dexter Morgan is unable to experience any deeply felt emotion, even though

⁷ Patricia Pisters, *The Neuro-Image: A Deleuzian Film-Philosophy for Digital Screen Culture*, cit., pp. 110-121. See also Patricia Pisters, “The Neurothriller,” in *New Review of Film and Television Studies*, no. 2, January 2014, http://www.tandfonline.com/doi/abs/10.1080/17400309.2014.878153#.U3Xaivl_uSo.

⁸ The term of aesthetic figure was introduced by Gilles Deleuze, Félix Guattari, *Qu’est-ce que la philosophie?*, Les éditions de Minuit, Paris 1991 (*What is Philosophy?*, Verso, London-New York 1994, p. 65).

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there are people that care about him. The introduction of his stepsister Debra (Jennifer Carpenter) is accompanied by his reflection in voice-over: "She loves me – that's nice. I don't have any feelings but if I could have them I would have them for her." Also his colleagues at the police department like him. While in his work as a blood pattern analyst this emotional distance is considered as professionalism, Dexter himself feels like the world is staged without his participation: "I dream I'm floating on the surface of my own life. Watching it unfold. Observing it. I'm the outsider looking in" (Season 1, episode 2). And observing and analyzing the emotions and feelings of others, he understands very well that the social codes demand that he acts according to the norms of socially accepted empathic conduct.

Initially Dexter has no clue about sexual relationships either, but he has figured out that a girlfriend would make him seem more normal. And so he engages in a relationship with Rita (Julie Benz), finding examples of conduct in the people and cases he encounters. When Dexter in one of his killings has caught a murderous husband and his wife (who knew about the crimes of her husband), they proclaim their love for one another while tied to Dexter's plastic foil covered slaughter bench. Back home, Dexter takes away parts of this strange declaration of love to convince Rita of his feelings for her (Season 1, episode 5). And even if he does not feel anything, his performance is convincing. After Rita gets pregnant and Dexter in a seemingly loveless way has unsuccessfully proposed to marry her, he copies and adapts the words of a confession of a murderer and delivers them showing up unexpectedly at Rita's place:

My life has always felt like an unanswered question. A string of days and nights waiting for something to happen but I didn't know what. Rita, we're connected. Wherever I am, I feel you and the kids with me. And that makes me real. I want us to always go out for banana splits. And replant the lemon tree that keeps dying. And I never ever want to miss a pizza night. And that's how I know I want to marry you. Because something as simple as pizza night is the highlight of my week. (Season 3, episode 4)

This time with the desired result. So Dexter becomes a husband, a father and family man. All along "honing his crafts" and "working diligently" to find himself in a "role for a life time," to paraphrase Dexter's inner musings (Season 3, episode 4).

The only moments when he feels himself and is not acting is when he follows his killer instincts, his "Dark Passenger" as he calls it: "He's all I've got. Nothing else could love me, not even... especially not me" (Season 2, episode 3). However, during the course of the years (eight seasons), slowly but surely all his lies and performances start to turn into something else. Taking Dexter's sometimes strange behaviour for a drug addiction, Rita sends Dexter to an NA support group. Here Dexter finds himself talking about his Dark Passenger to others (who take it as a metaphor for narcotic addiction), confessing that lately he starts to feel connected to something other than his addiction: "It's like the mask is slipping and things... people... who never mattered before are suddenly starting to matter. It scares the hell out of me" (Season 2, episode 3). And while Dexter here is still lying (obviously about the true nature of his addiction) it also occurs to him

that people like Deb, Rita and his son Harrison become important to him, even more so after Rita is brutally murdered at the end of Season 4. “Real feelings” of love and fear start to slip into his performances. Also in the following seasons, Dexter will learn in many different ways about connecting emotionally to others.

Mentalizing and mirroring: Affective neuroscience and two mechanisms for empathy

So how does this resonate with findings in affective neuroscience? In the final season of *Dexter* there is a direct reference to the brain when Miami Metro investigates a new serial killer who opens the skulls of his victims and takes out a part of their brain. The killer gets the nickname “the Brain Surgeon” and the homicide department gets help of neuropsychiatrist Dr. Evelyn Vogl (a guest role by Charlotte Rampling). The Brain Surgeon, called Oliver Saxon (Darri Ingolfsson) leaves messages at Dr. Vogl’s doorstep: the anterior insular cortex of his victims in a jar. The anterior insular cortex is an important section of the brain involved in emotion, and thus this killer seems to make an obvious statement about his own lack of emotion (Saxon proves to be more cold and emotionless than Dexter and in the end is revealed as Dr. Vogl’s psychopath son who in the past killed his brother). The brain in a jar seems nothing more than a tongue-in-cheek reference to our contemporary obsession with brains and neuroscience. And at a first glance these references seem simply a popular gesture without much depth indeed. But let us take a closer look at affective neuroscience and its possible significance for the understanding of cinematic empathy. Could Dexter possibly have anything to offer to neuroscience?

As D’Aloia and others have pointed out, the study of cinematic empathy certainly did not start with neuroscience.⁹ Cognitive branches of film studies have studied empathy in terms of a “theory of mind” which proposes inferences of another person’s state of mind based on patterns of recognition in behavior, desires, thinking and other mental structures.¹⁰ On the other end of the film theoretical spectrum are the more phenomenologically inspired embodied forms of sensual and emotional engagement.¹¹ Both these classic cognitive and phenomenological approaches give valuable insights in the ways in which cinematographic aesthetics engages its spectators without any reference to neurophysiology. However, since important branches of contemporary neuroscience emphasize the significant role of embodiment in any kind of processes of the brain, perhaps the classic division between mind/cognition versus body/phenomenological experience

⁹ Adriano D’Aloia, “The Intangible Ground: A Neurophenomenology of the Film Experience,” cit.

¹⁰ See for instance Murray Smith, *Engaging Characters: Fiction, Emotion and the Cinema*, Clarendon Press, Oxford 1995.

¹¹ See for instance Laura U. Marks, *The Skin of Film: Intercultural Cinema, Embodiment, and the Senses*, Duke University Press, Durham-London 2000; Vivian Sobchack, *Carnal Thoughts: Embodiment and Moving Image Culture*, University of California Press, Berkeley 2004.

might be rethought in new and perhaps more productive ways.¹² This has already led to interesting explanations of embodied cognition in film experience, for instance from an evolutionary neuroscientific perspective.¹³

However, even within the general acknowledgement of the embodied (and embedded, extended and enactive) nature of our neurological processes in affective neuroscience, a new (but actually very familiar) split seems to reproduce itself around the complex notions of empathy and emotions. In any case, within affective neuroscience, there seem to be two camps, each defending a different mechanism for empathy. On the one hand there are those who defend empathy via direct embodied simulation related to the phenomenon of mirror neurons that get activated both when experiencing oneself emotions and when anticipating or observing someone else's affective states.¹⁴ On the other hand there are those who defend a different circuit for empathy and emotional engagement, one that is closer to the idea of a theory of mind that relate more to a set of brain areas that allow mentalizing and perspective sharing in top down cognitive processes of self-projection at a distance from the other.¹⁵ Both these mechanisms for empathy are neurophysiologically materialized. Mirroring systems operate in a set of regions in the inferior frontal cortex, superior parietal lobe, the anterior cingulate cortex and the anterior insula; mentalizing systems are more related to the prefrontal cortex, the temporal junction and the medial prefrontal cortex.¹⁶ Both mechanisms operate in our brain and have different functions in relation to emotional engagement that seem to be separate systems. At best, these systems are acknowledged to complement one another. Very often, however, and depending on one's theoretical inclination (towards a cognitivist embodied mind or towards a phenomenological emminded body), one of the two mechanisms is preferred at the exclusion of the other.

¹² See for instance John Protevi, *One More 'Next Step': Deleuze and Brain, Body and Affect in Contemporary Cognitive Science*, in Rosi Braidotti, Patricia Pisters (eds.), *Revisiting Normativity with Deleuze*, Bloomsbury, London 2012, pp. 25-36.

¹³ See Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film*, Oxford University Press, Oxford 2009. Grodal introduces here his model of PECMA flow. According to this theory spectators engage via Perception, Emotion and Cognition toward Motor-Action. See also Murray Smith who in his recent work proposes a triangulated methodology between phenomenological, psychological and neurological evidence related to aesthetic experience: Murray Smith, "Triangulating Aesthetic Experience," in Arthur P. Shimamura, Stephen Palmer (eds.), *Aesthetic Science: Connecting Minds, Brains and Experience*, Oxford University Press, New York 2012 pp. 80-106.

¹⁴ See for instance Vittorio Gallese, "'The Shared Manifold' Hypothesis: from Mirror Neurons to Empathy," in *Journal of Consciousness Studies*, no. 8, 2010, pp. 33-50; Id., "Embodied Simulation: From Neurons to Phenomenological Experience," in *Phenomenology and Cognitive Sciences*, no. 4, 2005, pp. 23-48.

¹⁵ See for instance Helen Gallagher, Christopher Frith, "Functional Imaging of 'Theory of Mind,'" in *Trends in Cognitive Sciences*, no. 7, 2003, pp. 77-83.

¹⁶ See Frank van Overwalle, Kris Baetens, "Understanding Others' Actions and Goals by Mirror and Mentalizing Systems: A Meta-Analysis," in *NeuroImage*, no. 48, 2009, pp. 564-584; Adam Waytz, Jason P. Mitchell, "Two Mechanisms for Simulating Other Minds: Dissociations Between Mirroring and Self-Projection," in *Current Directions in Psychological Science*, no. 20, 2011, pp. 197-200.

In her article “Both of Us Disgusted in *My Insula*,” for instance, Ruth Leys argues that “our knowledge of other minds cannot be explained by an appeal to a simple mechanism of mutual resonance or mutual attunement [as proposed in the mirror-neuron mechanism].”¹⁷ Leys rightly warn against any neuroscientific reductionist and grand claims of finding “unifying mechanism for understanding the behavior of others,”¹⁸ as the neuroscientific study Leys discusses seems to claim. As if indeed the anterior insula could be isolated (in an fMRI scan or in a jar) and explain something as complex as emotions by these specific neuronal processes alone. Also more generally a critical approach toward neuroreductionism remains important to bring into the discussions as to anchor scientific findings about the brain in social and cultural contexts and to draw attention to implicit presuppositions and positions in scientific experiments.¹⁹ Conversely, it is unproductive to reject important neuroscientific findings in respect to empathy in a fight between complete “embodied mirroring” versus “cognitive inferences at a distance from the self.”²⁰ So are there other ways to look at these two systems and the way they could possibly interact?

In a recent neuroscientific study on empathy Gal Raz *et al.* propose a dynamic model that allows asking new questions.²¹ At the beginning of the article “Cry for Her or Cry with Her” the authors set out the two dominant models of empathy already mentioned: embodied simulation (ES) found in the anterior insula and other mirror neuron regions, and theory of mind (ToM) related to prefrontal areas of the brain. They are careful in pointing out that the ES-ToM distinction is not the same as the difference between affective and non-affective empathy. Therefore they also include a third system in the brain, the core limbic network (including the amygdala, hypothalamus and hippocampus) that has been implicated in basic low level affective processing, including the rapid evaluation of the valence of a stimulus and the generation of bodily arousal in reaction to it:

¹⁷ Ruth Leys, “‘Both of Us Disgusted in My Insula’: Mirror Neurons Theory and Emotional Empathy,” in *Nonsite.org*, no. 5, 2012, p. 16. Leys criticises here the article by Bruno Wicker, Christian Keysers, Jane Plailly, Jean-Pierre Royet, Vittorio Gallese, Giacomo Rizzolatti, “Both of Us Disgusted in *My Insula*: The Common Neural Basis of Seeing and Feeling Disgust,” in *Neuron*, no. 40, 2003, pp. 655-664.

¹⁸ Bruno Wicker *et al.*, “‘Both of Us Disgusted in My Insula’: Mirror Neurons Theory and Emotional Empathy,” *cit.*, p. 655.

¹⁹ Suparna Choudhury, Jan Slaby, *Critical Neuroscience: A Handbook of the Social and Cultural Context of Neuroscience*, Blackwell Publishing, Malden (MA)-Oxford 2012.

²⁰ See for instance Vittorio Gallese, David Freedberg, “Motion, Emotion and Empathy in Esthetic Experience,” in *Trends in Cognitive Science*, no. 10, 2007, p. 197-203. In the same issue Roberto Casati and Alessandro Pignocchi react in a letter entitled “Mirror and Canonical Neurons are Not Constitutive of Aesthetic Response” (p. 410) and Gallese and Freedberg respond with another letter “Mirror and Canonical Neurons are Crucial Elements in Esthetic Response” (p. 411).

²¹ Gal Raz, Yael Jacob, Tal Gonen, Yonatan Winetraub, Tamar Flash, Eyal Soreq, Talma Hendler, “Cry for Her or Cry with Her: Context-Dependent Dissociation of Two Modes of Cinematic Empathy Reflected in Network Cohesion Dynamics,” in *Social Cognitive and Affective Neuroscience*, no. 9, 2014, pp. 30-38.

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*ES-and ToM-related circuits are assumed to have distinctive anatomical connectivity profiles and evolutionary and ontogenetic histories, which qualify them as systems specialized in processing different types of information. Although interoception or cognition may often not develop into a full-blown emotional experience, under certain conditions these processes may also drive inter-subjective sharing of emotions as they integrate with relevant input from other perceptual and limbic domains. The relative contributions of each of these systems and their interactions with limbic structures to one's empathic reaction are within the main focus of this study.*²²

The study sets out to prove that these regions are dynamically interrelated networks. And in order to produce a more holistic and realistic approach that includes multi-modal stimuli, development over time, embodied and embedded situations, cinematic empathy was the preferred mode of emotional engagement. The experiment was set up by comparing the neural connectivity of test subjects during two movie excerpts of about ten minutes: similar empathy-evoking scenes where a mother has to say goodbye to her children from *Stepmom* (Chris Columbus, 1998) and *Sophie's Choice* (Alan Pakula, 1982). These findings were matched with other tests, such as self-reports and questionnaires about the viewer's emotional experiences watching the clips. The reported findings are remarkable. Not only did the two excerpts provoke significant more neuronal activity in either the insular-cingulate (ES) circuit (*Sophie's Choice*) or the prefrontal-temporo-parietal (ToM) circuit (*Stepmom*) but the data also showed dynamic and changing patterns of connectivity of these circuits as well as growing interaction with the limbic system when the empathic engagements became stronger.²³

There are several primordial things to mention in relation to this study. First of all, these findings indicate that instead of asking whether we engage via embodied simulation or via theory of mind, it is more interesting to ask when and why one networked circuit is more dominant than the other, and how these networks might influence one another. The authors indicate that one reason for more immediate embodied responses in *Sophie's Choice* could be that the situation in this film is related to an immediate present danger: in this scene the mother (Meryl Streep) is forced by a Nazi officer to choose in a split second between one of her children. This activates in the spectator first-person affective information from his/her own low-level limbic structures (such as the amygdala, which is our fear center). Moreover, aesthetically this scene is shot in expressive close-ups, which also triggers immediate affective reactions that involve mirror-neurons.²⁴ They are what Deleuze has called affection-images, that operate immediately on our brain screen.²⁵ In *Stepmom* the dramatic situation is similar but different as

²² Ivi, p. 31.

²³ Ivi, p. 35.

²⁴ This is also proposed in an interesting article by Jane Stadler, "Affectless Empathy, Embodied Imagination and *The Killer Inside Me*," in *Screening the Past*, no. 37, 2013, pp. 1-17. Stadler also gives an account of various important film theoretical approaches to empathy and engagement.

²⁵ Gilles Deleuze, *Cinema 1: The Movement-Image*, cit., p. 87-101.

well: in this separation scene a mother (Susan Sarandon) is terminally ill and says goodbye to both her children, though we do not see her die in the film and the family situation for the children is stable. Here the ToM responses are more strongly activated in cognitive functions such as thinking about the future. This networked circuit is more related to the projection of one's own self as in a third-person perspective, as if one is an external observer projecting one-self in the situation of another. Here too, we can add that aesthetically the cinematography of the scene in more distant medium shots is an important factor in creating this particular affective engagement. Both scenes, however, are very emotional in their activation of affective circuits that are not mutually exclusive but do seem to operate with different hegemonic intensities.

Obviously much more remains to be said about these scenes in particular and (cinematic) empathy in general, but bringing in context-dependent and aesthetic variables, and considering the different empathic areas as networks that can interconnect dynamically and that with variegated intensities "hook up" with the limbic system, seem to be very valuable insights that could unlock perhaps some of the blockages in the encounters between cognitivist and phenomenological approaches in cinema and in neuroscience. Granted, this is a big claim, so let us return more specifically to *Dexter*.

Dexter's plastic brain

I would like to suggest that these scientific insights that play out on a neuronal level, can also be traced on a narrative level, related to the emotional journey that Dexter undertakes. In the first seasons, Dexter feels like a spectator of his own life. He has adopted a third-person perspective and observes the emotions of others that he then imitates, faking them so well that nobody in his environment sees the difference. Perhaps we could say that he is "conditioned by an inherent theatricality [...] making persons into actors and spectators who distance themselves from each other and even from [himself]."²⁶ From this perspective mirror neuron embodied simulation equals "the possibility (the dream) of complete sympathetic merger or identification."²⁷ And theatricality or performance creates the necessary third person distance for engagement. But Dexter seems to be stuck in this theatricality. He is unable to mirror directly anything. While according to critics of mirroring systems for engagement this only prevents us from the false dream of merging with the other, Dexter, having only his staged emotions, thinks of himself as a monster, a non-human who can never live a full life.

However, he proves himself wrong. In the course of the following seasons, Dexter has so many encounters, both with partners in crime as well as with peo-

²⁶ Ruth Leys, "'Both of Us Disgusted in My Insula': Mirror Neurons Theory and Emotional Empathy," cit., p. 16.

²⁷ *Ibidem*.

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ple that deeply care about him, that he begins to think that he might be human after all. He meets Lumen Pierce (Julia Stiles) who teaches him that “nothing is set in stone, not even darkness” (Season 5, episode 12). Dexter’s brain is plastic and dynamic and changes in and through the encounters he has. In the last seasons he even falls in love with Hannah McKay (Yvonne Strahovski). And he finds that “somewhere along the line the fake life that we created as a cover to kill became real. It is not fake anymore” (Season 7, episode 12). In the very last season Dr. Vogl also becomes important to Dexter (she is the one who in the past advised Dexter’s stepfather Harry to teach him “the code”). When she is killed by Saxon/the Brain Surgeon in front of Dexter’s eyes, there is no more voice-over, but we see his emotions in his facial expression.

Most importantly, however, is the relationship to his sister. It is Debra who shows Dexter that he has always been a good brother to her. And in the end Dexter not only thinks he would have feelings for her if only he could, but he actually has feelings. In the series finale Debra gets wounded and sinks into a coma. And instead of running off with Hannah and Harrison to a new life in Argentina as was the plan, Dexter puts an end to Debra’s life, stages his own death and departs to a remote area where he lives in a self-imposed prison – not connecting to anyone anymore, out of fear of hurting the people he has come to love. As the producers of the show explain this is Dexter’s tragedy: “The one thing we felt Dexter wanted more than anything was human connections. [...] Now that he’s finally made that journey and he’s almost poised to have a real human life, he has to give all that up to save Harrison and Hannah.”²⁸ Much more could be said about Dexter but what I wanted to highlight here is that his emotional journey, expressed in the highly popular form of a television show that can be considered as a form of extended cinematography that is part of the neuro-image, is a very interesting one. Because of its development over a long period of time, the show goes beyond pure fantasy, showing us a character struggling with his own engagement with the world, with people around him. Dexter starts out engaging only by simulating what he knows of the emotions of others (mentalizing, ToM), but he finds out that by simulating he develops new and more embodied feelings as well (mirroring, ES). Dragging us all along into his mental world, he shows that the different emotional circuits in the brain are in continuous dynamic interaction. And in this way *Dexter* might give us a dramatic cinematic perspective on empathy and emotion that enters in dialogue with findings that affective neuroscience proposes on a synaptic level. We might have become “neuronal men” but we will need a holistic and interdisciplinary approach to develop new thoughts about engaging and connecting to others in cinema, and in life.

²⁸ James Hibberd, Interview with Scott Buck and Sarah Colleton, in *Entertainment Weekly*, 13 September 2013, <http://insidetv.ew.com/2013/09/23/dexter-interview-series-finale>.

First-Person Emotions: Affective Neuroscience and the Spectator's Self

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Abstract

The investigation of viewers' affective experience is one of the most complex and stimulating tasks for film scholars, and it has recently been addressed by analytic and continental strands of film theory. As neuroscience is well equipped to offer insights into cinematic emotional experience, a stimulating dialogue between film studies and neuroscience has been engaged. The present article proposes that an affective neuroscience approach may constitute a valuable framework for empirical investigations of the qualities of cinematic emotional experience. In particular, affective neuroscience provides important theoretical insights and empirical evidence for the study of the subjective dimension of emotional experience from a naturalistic point of view. Current psychocinematic research aims to investigate film experience by focusing on the connections between brain processes and mental events. The agenda of the psychocinematic theorists may be expanded by integrating third-person observations of neural activities with first-person methods that take into account the experience of mental phenomena. In this framework, brain studies on the experiential self are relevant for the investigation of the subjective character of the emotional experience of film.

Introduction

When we are in a movie theater, the flow of the narrative events becomes part of our own experience. What we see on the screen powerfully concerns and affects us; we are passionate and fascinated viewers. From the 1910s onward, one of the major tasks of film theory has been the attempt to explain cinema's emotional power. Over the decades, a variety of disciplines has been called upon, from psychology to philosophy and psychoanalysis, in order to suggest possible models of the spectator's mind and selfhood.¹

¹ See David Bordwell, *Models of Mind in Explaining Film*, in Arthur P. Shimamura (ed.), *Psychocinematics. Exploring Cognition at the Movies*, Oxford University Press, Oxford-New York 2013, pp. 29-52.

In recent years, especially after the “naturalistic turn” in film theory, neuroscience has become an important reference discipline for both speculative and empirical research on the cinematic experience. The current empirical research program related to the viewer’s aesthetic response to cinematic stimuli has been labelled “neurocinematics” or, from a broader perspective, “psychocinematics;”² the findings of this line of research offer insights for a neuropsychological understanding of the cinematic experience.

This paper emphasizes the relevance of affective neuroscience for both empirical and theoretical studies on the viewer’s subjective experience.³ I will refer particularly to Jaak Panksepp’s and Georg Northoff’s concepts of selfhood, which allow one to theorize the self as basically affective and embodied, and contribute to the investigation of first-person experience from a scientific perspective.

Consciousness and selfhood, traditionally prerogatives of philosophy and psychology, have recently become fields of investigation in neuroscience. Affective neuroscience specificities on these topics will be clarified in the next sections; I will specify how affect is theorized and in what respects it differs from emotion and feeling. In what follows, I will also briefly specify what I mean by “cinematic emotional experience.”

First, the experience I am referring to is that of a canonical narrative film in a movie theater. Following Casetti, the “twentieth-century” theatrical film experience is shaped by the structure of “attendance,”⁴ which minimizes the possibilities of actual interaction with the environment, and establishes an intense cognitive/affective relationship with a virtual universe. Neurocinematic research typically refers to this kind of experience, in which the mind-screen interactions are investigated without considering additional dimensions of experience.

Second, “experience” is here understood as *Erlebnis*, an essentially moment-to-moment dynamic in which the viewer’s affective experience is framed and modulated by a double (narrative and sensory) cinematic flow. Martin Jay defines *Erlebnis* as “the prereflexively registered influx of stimuli from without or the upsurge of stimuli, either somatic or psychic, from within;” or as “sentient observation, which is generally prior to any reflection on its meaning. Philosophers sometimes call such experiences ‘raw feels’ or ‘sensations.’”⁵ The focus of my interest will be the bottom-up dynamic through which filmic stimuli catch the viewer’s attention in a primary level of engagement.

² Uri Hasson *et al.*, “Neurocinematics: The Neuroscience of Film,” in *Projections. The Journal for Movies and Mind*, no. 1, 2008, pp. 1-26; Arthur P. Shimamura, *Psychocinematics: Issues and Directions*, in Id. (ed.), *Psychocinematics. Exploring Cognition at the Movies*, cit., pp. 1-26.

³ See Dominique Château (ed.), *Subjectivity: Filmic Representation and the Spectator’s Experience*, Amsterdam University Press, Amsterdam 2011.

⁴ Francesco Casetti, “Filmic Experience,” in *Screen*, no. 50/1, 2009, p. 60.

⁵ Martin Jay, *Songs of Experience: Reflections on the Debate over Alltagsgeschichte*, in Id., *Cultural Semantics*, University of Massachusetts Press, Amherst 1998, p. 44. See also Thomas Elsaesser, “Between *Erlebnis* and *Erfahrung*: Cinema Experience with Benjamin,” in *Paragraph*, no. 3, 2009, pp. 292-312; Ruggero Eugeni, *Semiotica dei media. Le forme dell’esperienza*, Carocci, Roma 2010, pp. 25-56.

Third, as the emphasis in this paper is on an approach to affectivity in a broad sense, there will be no references to specific emotions. Even at the risk of a certain degree of abstraction, I will refer to a model of experiential selfhood which is relevant in order to theorize simulation in film experience. The theoretical frame of reference is Torben Grodal's "PECMA Flow" model, in which the viewer's experience is schematized as a flow of perceptions, emotions, cognitions, and motor actions. Even if the acronym places "emotion" in second position, it is essential to remember that "the emotion centers in the limbic system continuously interact with all mental processes: perceptual, associative, cognitive, and motor;" and this allows one to talk about "emotions" independently from phenomena "such as love and hate."⁶ In Grodal's influential works, neuroscience plays a major role;⁷ this makes it particularly suitable as a reference model of affective, as well as embodied, cinematic spectatorship.

A model of self will be discussed in order to address the issue of first-person experience. Phenomenology-inspired perspectives on spectatorship are of course useful references in this regard;⁸ despite this, as will be seen, they will remain partly in the background. Phenomenology as a philosophical approach is typically focused on conscious experience; in contrast, Panksepp's research is focused on a radically affective and pre-propositional type of "core consciousness" (see below). In his perspective, affective *experience* arises from deep regions of the brain, the locus of the "periconscious" substrate of consciousness.

Affective Neuroscience and the Bodily Self

Neuroscientific approaches to emotion have been considerably developed over the last decades; currently, the expression "affective neuroscience" usually refers to a wide branch of research, and it is generally intended as "the cognitive neuroscience of human emotion."⁹ However, in this paper "affective neuroscience" refers to a concept introduced in the 1990s by Jaak Panksepp.¹⁰

In Panksepp's view, the affective neuroscience approach differs from that of the "cognitive neuroscience of emotions" insofar as the latter tends to understand emotional experience as a "cortical readout" of unconscious bodily commotions.

⁶ Torben Grodal, "The PECMA Flow: A General Model of Visual Aesthetics," in *Film Studies*, no. 8, 2006, p. 4.

⁷ See especially Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film*, Oxford University Press, Oxford-New York 2009.

⁸ For an overview, see Elena del Río, *Film*, in Hans Rainer Sepp, Lester Embree (eds.), *Handbook of Phenomenological Aesthetics*, Springer, Dordrecht-Heidelberg-London-New York 2010, pp. 111-117.

⁹ Jorge Armony, Patrik Vuilleumier, *Introduction*, in Id. (eds.), *The Cambridge Handbook of Human Affective Neuroscience*, Cambridge University Press, New York 2013, p. 2.

¹⁰ Jaak Panksepp, *Affective Neuroscience: The Foundation of Human and Animal Emotions*, Oxford University Press, New York 1998; Jaak Panksepp, Lucy Biven, *The Archaeology of Mind. Neuro-evolutionary Origins of Human Emotions*, W.W. Norton & Co., New York-London 2012.

Cognitive neuroscience “envisions affects as inherently coupled to higher human cognitive functions;”¹¹ which means that humans can consciously “experience” emotions, while other animals can only “have” emotions.

Conversely, following the affective neuroscience perspective, emotional *feelings* arise from subcortical areas which are homologous in all mammals.¹² Therefore, animals do experience emotions, even though they are not “conscious” in a noetic way.¹³

In everyday human experiences, cognitions and affects are inevitably intertwined; nonetheless, an affective neuroscientific approach highlights how the latter motivate the former. Cognitions and affects reflect different features of brain organization: “Cognition involves the neocortical processing of information gleaned largely from environmental inputs via exteroceptive senses. Affects are not encoded as information. They are diffuse global *states* generated by deep subcortical brain structures, interacting with primitive viscerosomatic body (core self) representations.”¹⁴ Animal brain research studies are therefore pivotal in order to investigate the ancient foundations of human emotional experience.

Panksepp’s studies on animal affective experience, conducted via electrical and chemical brain stimulation, allowed the identification of seven emotional and motivational systems, namely SEEKING, FEAR, RAGE, PANIC, LUST, CARE, and PLAY.¹⁵ The arousal of those basic systems is necessary, even if not sufficient, for every conscious experience in humans; it also generates action tendencies and a core affective experience that is expressed, as already mentioned, in raw emotional feelings.

The affective neuroscience perspective highlights how an adequate comprehension of human emotional experience cannot disregard the basic mammalian emotion systems. Those primary emotional affects do not appear in pure form in humans; indeed, compared to that of other animals, the human brain displays more complex interactions between primary, secondary, and tertiary neocortical processes.¹⁶

Cognitive approaches to emotion have shaped most of the theoretical ac-

¹¹ Jaak Panksepp, *The Affective Brain and Core Consciousness*, cit., p. 52.

¹² A terminological clarification is necessary here. In Panksepp’s vocabulary, “affect” and “emotion” are sometimes interchangeable terms, although in most cases the latter implies a cortical processing of primary affects. Instead, the use of the term “feeling” is crucial. It usually indicates a typically human “emotional consciousness,” but, in Panksepp’s view, “feeling” refers to a core “affective consciousness” shared by all mammalian species. This is the reason why primary feelings are frequently qualified as “raw:” they do not refer to a higher form of noetic consciousness, and yet they are the purely experiential, anoetic foundation of conscious experience.

¹³ Marie Vandekerckove, Jaak Panksepp, “The Flow of Anoetic to Noetic and Auto-noetic Consciousness,” in *Consciousness and Cognition*, no. 18, 2009, pp. 1018-1028.

¹⁴ Jaak Panksepp, *The Affective Brain and Core Consciousness*, in Michael Lewis, Jeannette M. Haviland-Jones, Lisa Feldman Barrett (eds.), *Handbook of Emotions*, 3rd ed., The Guilford Press, New York-London 2008, p. 48.

¹⁵ Panksepp’s capitalized nomenclature indicates that these systems correspond to “classes” of response, which involve action tendencies.

¹⁶ In Panksepp’s vocabulary, primary processes are distinct from secondary/learning and tertiary/thought processes. It is also important to specify that there is mutual integration, and not segregation, between the three levels.

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counts of spectatorship after the “naturalistic turn.” For example, in Plantinga’s “cognitive-perceptual theory” (which, however, emphasizes the relevance of affects in cinematic experience) “emotion” is defined as “an intentional mental state [...] that is often *accompanied by* various sort of feelings, physiological arousal, and action tendencies.”¹⁷ In this respect, as mentioned above, Grodal’s model is more deeply shaped by an “affective” approach to emotions: “emotions express the embodied brain’s motivation system and affect even the most basic processes by which the brain tries to make sense out of the millions of pieces of light information that arrive through the eyes.”¹⁸ Cinematic experience, in this perspective, is imbued with intensities from the very first perceptual level (this is what Panksepp calls “sensory affects”), it is affectively colored at different levels, from simple perceptual salience to powerful narrative emotions.

For example, Grodal mentions the relevance of Panksepp’s SEEKING system in processing narratives. The dopaminergic SEEKING system is related to approaching, anticipative, and explorative behaviours.¹⁹ This system interacts with the other emotional systems; it motivates the impulse to affective engagement with the environment, and the search of the meaning of events. It is aroused rapidly and typically from novel stimuli to generate raw feelings of “‘intense interest,’ ‘engaged curiosity,’ and ‘eager anticipation.’”²⁰ This is why it can be considered to be the affective foundation of interest and attention, which are higher cognitive processes instantiated in sub-cortical seeking activations.

When Grodal assumes that the SEEKING system supports the “serious mode” of processing basic narratives,²¹ this would substantially accord with, for example, Tan’s detailed psychological account, which is grounded on the consideration of “interest” as the fundamental emotion in cinematic attendance.²² At the same time, Grodal’s reference to Panksepp’s approach permits one to reconceive Tan’s basically disembodied cognitive perspective such that core embodied affects play a major role.²³ The seeking impulse, briefly, may be envisioned as the affective foundation of the spectator’s fascinated attention.

Affective neuroscience insights underline the relevance of pre-propositional and pre-cognitive dimensions of feelings in human experience. The cross-species experiential level of affectivity features the qualities of human mental life that

¹⁷ Carl Plantinga, *Moving Viewers. American Film and the Spectator’s Experience*, University of California Press, Berkeley 2009, p. 54 (my emphasis).

¹⁸ Torben Grodal, “The PECMA Flow: A General Model of Visual Aesthetics,” cit., p. 4.

¹⁹ See Jaak Panksepp, Lucy Biven, *The Archaeology of Mind. Neuroevolutionary Origins of Human Emotions*, cit., pp. 95-143.

²⁰ Jaak Panksepp, *Affective Neuroscience: The Foundation of Human and Animal Emotions*, cit., p. 149.

²¹ Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film*, cit., p. 180 (see also p. 125).

²² Ed S. Tan, *Emotion and the Structure of Narrative Film: Film as an Emotion Machine*, Lawrence Erlbaum, Mahwah 1996.

²³ A different attitude emerges in Ed S. Tan, *The Empathic Animal Meets the Inquisitive Animal in the Cinema*, in Arthur P. Shimamura (ed.), *Psychocinematics. Exploring Cognition at the Movies*, cit., pp. 337-367.

Panksepp calls “e-qualia,” i.e. “evolutionary,” but also “emotional,” qualia;²⁴ (this notion is related to the topic of subjective emotional experience, and recalls David Chalmers’ “hard problem”).²⁵

But “who”, or “where”, is the subject of this unreflective and purely experiential primary consciousness? Panksepp relates it to an ancient form of first-person experience, and he identifies a fundamental level of selfhood which is directly affective and embodied, assuming that humans share with other mammals a core “affective consciousness.”²⁶

The foundation of conscious emotional experience can be located deep in the midbrain – in particular PAG, the periaqueductal grey area – and not in cortical areas. It is therefore possible to identify a cross-species affective, embodied and “periconscious” SELF (Simple Ego-type Life Form) arising from the interaction between basic emotional systems and brainstem representations of the body.²⁷ This “core self” is not cortical, since emotional experience does not imply the intervention of the neocortex (which plays an important role in regulating emotions, but not in generating feelings). Panksepp’s bodily SELF resembles William James’ physical self, and it is basically coextensive with Damasio’s proto-self.²⁸ It is the “core” of consciousness although it is not conscious *per se*; and it indicates more a subjective “ego” than an objectified “self.” Therefore, it cannot be excluded in the explanation of human experience, even if it refers to somewhat ineffable dimensions.²⁹

Self-Relatedness and the Experiential Self

In a recent fMRI research study, Raz and colleagues showed how connections between functional brain networks during emotional experience of sadness can vary across experimental cinematic conditions.³⁰ It is a multi-layered analysis that investigates the cohesion of limbic, medial prefrontal cortex, and cognitive clusters; and it is a remarkable example of the complexity that “affective neurocin-

²⁴ See Jaak Panksepp, *The Periconscious Substrates of Consciousness: Affective States and the Evolutionary Origins of the Self*, in Shaun Gallagher, Jonathan Shear (eds.), *Models of the Self*, Imprint Academic, Thorverton 1999, pp. 113-130.

²⁵ David Chalmers, “Facing Up to the Problem of Consciousness,” in *Journal of Consciousness Studies*, no. 3, 1995, pp. 200-219.

²⁶ Jaak Panksepp, “Affective Consciousness: Core Emotional Feelings in Animals and Humans,” in *Consciousness and Cognition*, no. 14, 2005, pp. 30-80.

²⁷ Remember that capitalization does not indicate the conscious noetic self, but its evolutionary substrate. See Björn Merker, “Consciousness without a Cerebral Cortex,” in *Behavioral and Brain Sciences*, no. 30, 2007, pp. 63-134.

²⁸ Antonio Damasio, *Self Comes to Mind: Constructing the Conscious Brain*, Pantheon-Random House, New York 2010.

²⁹ For example, the “chills” of music: see Jaak Panksepp, Günther Bernatzky, “Emotional Sounds and the Brain: The Neuro-affective Foundations of Music Appreciation,” in *Behavioural Processes*, no. 60, 2002, pp. 133-155.

³⁰ Gal Raz *et al.*, “Portraying Emotions at their Unfolding: A Multilayered Approach for Probing Dynamics of Neural Networks,” in *NeuroImage*, no. 60, 2012, pp. 1448-1461.

ematics” inquiries can achieve in accounting for the richness of film experience. The results of the experiments confirm the existence of interactions between a “lower” limbic network that processes primary emotions at a preattentive level, and “higher” cortical structures involved in self-referential processing.

This finding is consistent with Panksepp’s perspective, since the activation of the core limbic group may correspond to the aforementioned PANIC system.³¹ However, Panksepp’s core self is only the first level of a multilayered selfhood; it is the foundation of experience, but a hypothesis is needed to connect the trans-species SELF to a more strictly “mental” self.

I assume that self-referential processing (SRP), by which core-self structures process environmental stimuli and relate them to organism concerns, may be a relevant issue for both theoretical and empirical studies on the cinematic experience. In what follows, a possible explanation of the viewer’s immersed experience will be proposed.

Georg Northoff has recently suggested that the processing of self-referential stimuli is connected to, although not exhausted by, the activation of medial regions together referred to as cortical midline structures (CMS).³² CMS are therefore supposed to be involved in first-person emotional experiences; this is a crucial issue, since neural processing in CMS is supposed to be involved in generating *mental* states.

In this regard, Northoff and Heinzl proposed “First-Person Neuroscience” as a method to investigate the links between neural and mental states in subjective emotional experiences, giving particular attention to neural processing in CMS. First-Person Neuroscience “uses methods for the systematic examination and evaluation of mental states by themselves and their contents as experienced in first-person perspective and links them with data about neuronal states as obtained in third-person perspective.”³³ Phenomenology and introspective psychology are included as first-person methods.³⁴

The authors recall an fMRI study on the experience of emotional pictures in which a parametric first-person and a categorical third-person approach were

³¹ Moreover, in a review of current methodologies of “affective neurocinematics,” Raz and colleagues note that evidence from lesion and animal research may integrate functional brain imaging methods. See Gal Raz, Boaz Hagin, Talma Hendler, *E-Motion Pictures of the Brain: Recursive Paths Between Affective Neurosciences and Film Studies*, in Arthur P. Shimamura (ed.), *Psychocinematics. Exploring Cognition at the Movies*, cit., p. 285.

³² Georg Northoff, Felix Bermpohl, “Cortical Midline Structure and the Self,” in *Trends in Cognitive Sciences*, no. 3, 2004, pp. 102-107; Georg Northoff, Pengmin Qin, Todd E. Feinberg, “Brain Imaging of the Self,” in *Consciousness and Cognition*, no. 1, 2011, pp. 52-63.

³³ Georg Northoff, Alexander Heinzl, “First-Person Neuroscience: A New Methodological Approach for Linking Mental and Neuronal States,” in *Philosophy, Ethics, and Humanities in Medicine*, no. 1/3, 2006, p. 4.

³⁴ Phenomenology and introspection as methodologies are discussed in Francisco J. Varela, “Neurophenomenology: a Methodological Remedy to the Hard Problem,” in *Journal of Consciousness Studies*, no. 3, 1996, pp. 330-350.

compared.³⁵ What is interesting is that the results of the two approaches were different. In particular, “the first-person approach showed only regions in the cortical midline,” which are supposed to be involved in the first-person experience of emotions; “more generally, these regions have been assumed to be involved in any type of first-person experience [...] since they seem to preferentially process self-referential stimuli as distinguished from non-self-referential ones.”³⁶ As this example suggests, First-Person Neuroscience is not limited to the observation of third-person neuronal states, but aims to identify the correlates of the meaning of experiencing a mental state (here: an emotion).

As previously mentioned, a major role is played by SRP by which core-self structures process environmental stimuli and relate them to organism concerns. In a meta-analysis of neuroimaging studies on self-related tasks (including the presentation of emotional pictures and movie clips) Northoff and colleagues have shown that while emotion processing takes place in subcortical regions, the activation of CMS reflects “the high degree of self-referentiality shared by all emotion rather than intrinsic emotion processing.”³⁷ Moreover, since SRP is related to the environmental context and to meaningfulness, it intensifies the processing of emotional stimuli. It is also important to remember that neural processing in CMS is “supramodal,” since it seems independent of the sensory modalities of the presentation of emotional stimuli. Namely, it is *per se* independent of perceptual processing.

This approach to selfhood is not inconsistent with Panksepp’s model: it is therefore possible to assume a more global system consisting of the “subcortical-cortical midline system” (SCMS) that allows a more strictly “mental” and “experiential” core self from the bodily-sensory SELF to emerge.³⁸

This experiential self could be understood as an integrative mechanism that enables SRP. As Panksepp and Northoff claim,

*subcortical regions may determine the basic self-relatedness of the organism by coding the relation between different stimuli: interoceptive, exteroceptive, motor and emotional. This relation is expressed in affective and valuative terms. The resulting “sense of relatedness” may then be further elaborated in cortical midline regions in cognitive and temporal terms.*³⁹

³⁵ Alexander Heintel *et al.*, “How do we modulate our emotions? Parametric fMRI reveals cortical midline structures as regions specifically involved in the processing of emotional valence,” in *Brain Research. Cognitive Brain Research*, no. 25, 2005, pp. 348-358.

³⁶ Georg Northoff, Alexander Heintel, “First-Person Neuroscience: A New Methodological Approach for Linking Mental and Neuronal States,” *cit.*, p. 8.

³⁷ Georg Northoff *et al.*, “Self-referential processing in our brain – A meta-analysis of imaging studies on the self,” in *NeuroImage*, no. 31, 2006, p. 448.

³⁸ Georg Northoff, Jaak Panksepp, “The Trans-Species Concept of the Self and the Subcortical-Cortical Midline System,” in *Trends in Cognitive Sciences*, no. 7, 2008, pp. 259-264.

³⁹ Jaak Panksepp, Georg Northoff, “The Trans-Species Core SELF: The Emergence of Active Cultural and Neuro-Ecological Agents through Self-Related Processing within Subcortical-Cortical Midline Networks,” in *Consciousness and Cognition*, no. 18, 2009, p. 207.

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All of this is, of course, a fascinating hypothesis on the roots of selfhood; further cortical-subcortical investigations regarding SRP may strengthen or adjust it. The aforementioned Raz's neurocinematic experiment demonstrates that the interactions between limbic and medial prefrontal cortex may vary from film to film, and this may depend on dynamics of emotional regulation. However, this reminds us that selfhood is a continuum of stages and that "though it is a unity, it is not unitary:"⁴⁰ only further neurocinematics research can improve our knowledge of the dynamic interactions between components of self during film viewing.

Since cinematic attendance encourages an ego-centered experience, my claim is that taking SRP into account will allow for an improved understanding of "immersed simulation" as a default mode. The issue of simulation is broad and complex, and I will not attempt to summarize the debate here. Gallese's "embodied simulation" is particularly relevant for the study of the spectator's engagement,⁴¹ as well as enactive approaches;⁴² the affective neuroscience approach can add a different perspective, which is also centered on the body-action system but is less focused on perception.

Firstly, the so-called simulation theory of mind-reading requires the processing of external stimuli as self-referential. Indeed, as Northoff underlines, experiments on SRP in social domains reveal an involvement of CMS in both self- and other-referential-processing, and this strengthens the idea of a "resonance" of the others' mental states in one's own mental state.⁴³

Secondly, and more basically, the core-SELF must be understood as a fundamental "I" which emerges from the interaction of primary-process sensory, homeostatic and emotional affects. Cinematic attendance is a form of mediated experience insofar as it heightens our receptivity, intensifies our emotional life and encourages simulation. It is immersive also because it produces strong emotions connected to ourselves. As Grodal states, "immersed" simulation may be considered as a default mode of experiencing narratives: "one might therefore hypothesize that the basic, default mode of experiencing others consists in a simulation in which emotions and action tendencies derived from the self, that is, first-person emotions, are activated."⁴⁴

Emotions are intrinsically self-referential; and our experience of the self is always emotionally charged. A recent experiment showed that in subcortical regions the sense of self is closely related to emotional valence and intensity, while at

⁴⁰ Joseph LeDoux, *Synaptic Self*, Penguin Books, New York 2002, p. 31.

⁴¹ See Vittorio Gallese, Michele Guerra, "Embodying Movies: Embodied Simulation and Film Studies," in *Cinema: Journal of Philosophy and the Moving Image*, no. 3, 2012, pp. 183-210.

⁴² See Pia Tikka, *Cinema as Externalization of Consciousness*, in Robert Pepperell, Michael Punt (eds.), *Screen Consciousness. Cinema, Mind and World*, Rodopi, Amsterdam-New York 2006, pp. 139-62.

⁴³ Georg Northoff *et al.*, "Self-referential processing in our brain – A meta-analysis of imaging studies on the self," *cit.*, p. 448.

⁴⁴ Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film*, *cit.*, p. 188.

a higher level we can easily make a distinction between the self and its emotions.⁴⁵ Only neuroscientific investigations may bring to light the functioning of subcortical regions from which our bodily self emerges, and this is why affective neurocinematics are uniquely equipped to investigate cinematic emotional experience.

Concluding Remarks

In an article on the relationships between neuroscience and continental film theory, Paul Elliott recalls the recent “experiential turn” in film theory and its new conceptualization of vision in the embodied spectatorship. Cinema, borrowing a formula from Elsaesser, is now regarded as an “immersive perceptual event.”⁴⁶ Influential theories of spectatorship, which currently emphasize the embodied, affective and haptic dimensions of the viewer’s experience, are involved in a paradigm shift occurring in both analytical and continental theories. The issue of experience has become pivotal, and it has been variously theorized, drawing on phenomenology, post-structuralism (or combinations of the two), critical theory, media theory, cognitive science, and neurophenomenology.⁴⁷

In this paper, I suggested how affective neuroscience contributes to an understanding of immersed simulation by focusing on self-referential processing and the corresponding experiential self. More particularly, I assumed that affective neuroscience offers valuable insights into selfhood, in order to investigate the dynamics of first-person experience from a scientific perspective. The references to bodily-affective and mental-experiential self, of course, do not exhaust the relationships between neuroscientific and philosophical accounts on selfhood;⁴⁸ still, empirical investigations of the bodily-affective foundation of self seem particularly relevant in order to understand first-person experience.

Unlike neurocinematics experiments on visual perception,⁴⁹ affective neurocinematics do not show an immediate impact on the study of film style, nor do they seem suitable for providing tools for new models of film analysis. Their ob-

⁴⁵ Georg Northoff *et al.*, “Differential Parametric Modulation of Self-Relatedness and Emotions in Different Brain Regions,” in *Human Brain Mapping*, no. 30, 2008, pp. 369-382.

⁴⁶ Paul Elliott, “The Eye, the Brain, the Screen: What Neuroscience Can Teach Film Theory,” in *Excursions*, no. 1, 2010, pp. 1-16.

⁴⁷ See respectively Vivian Sobchack, *The Address of the Eye. A Phenomenology of Film Experience*, Princeton U.P., Princeton 1992; Steven Shaviro, *The Cinematic Body*, University of Minnesota Press, Minneapolis 1993; Laura U. Marks, *The Skin of the Film. Intercultural Cinema, Embodiment, and the Senses*, Duke U.P., Durham-London 2000; Miriam Hansen, *Cinema and Experience*, University of California Press, Berkeley 2012; Francesco Casetti, “Filmic Experience,” *cit.*; Carl Plantinga, *Moving Viewers*, *cit.*; Adriano D’Aloia, *La vertigine e il volo. L’esperienza filmica fra estetica e neuroscienze cognitive*, Fondazione Ente dello Spettacolo, Roma 2013.

⁴⁸ See Shaun Gallagher, “Philosophical Conceptions of the Self: Implications for Cognitive Science,” in *Trends in Cognitive Sciences*, no. 1, 2000, pp. 14-21.

⁴⁹ See Tim Smith, “The Attentional Theory of Cinematic Continuity,” in *Projections*, no. 6, 2012, pp. 1-27.

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ject is experience, and not the cinematic perceptual field. However, in its best examples, this line of research cannot be labeled as “uncinematic.”⁵⁰ A major stake for affective neurocinematics is the consideration of “cinematic conditions,” since they are focused on “‘pure’ emotion-related cinematic notions,” considering their efficacy as “emotional cues.”⁵¹ In this respect affective neurocinematics, although still in their infancy, are of fundamental importance for the insights they offer in order to explain the qualities of our cinematic emotional experience.

⁵⁰ See Vittorio Gallese, Michele Guerra, “Film, corpo, cervello: prospettive naturalistiche per la teoria del film,” in *Fata Morgana*, no. 20, 2013, pp. 77-91.

⁵¹ Gal Raz et al., *E-Motion Pictures of the Brain: Recursive Paths Between Affective Neurosciences and Film Studies*, cit., p. 285.

The Sensory-Motor Grounding of Abstract Concepts in Two Films by Stanley Kubrick

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Abstract

This article provides an embodied account of conceptual meaning in film. More specifically, it claims that the sensory-motor system plays a constitutive role in the cinematic characterisation of abstract concepts. Firstly, we briefly discuss the standard disembodied view of first-generation cognitive science according to which the mental representations of concepts are primarily symbolic and abstract. Secondly, we argue against this view by discussing an embodied theory of concepts based on recent neuroscientific evidence and results from cognitive linguistics. Lastly, we consider the implications of the latter for the study of visual representations of abstract conceptual meaning in film. Using Stanley Kubrick's *2001: A Space Odyssey* (1968) and *Eyes Wide Shut* (1999) as examples, we make the case that sensory-motor structures play a crucial role in the representation of abstract concepts in cinema.

The Standard Disembodied View of Concepts

It has been a common theoretical position in early cognitive science to consider mental representations of concrete (e.g., CHAIR) and abstract concepts (e.g., TIME) from the perspective of abstract formal models.¹ According to these first-generation theories of cognition, which are rooted in the analytic tradition of philosophy of language, concepts are analysed on the basis of representational schemes that are wholly detached from our sensory-motor systems. They are disembodied or amodal in that the internal structures of the mental representations are not related to the sensory-motor states that produced them.

Consider, for example, the disembodied symbol system that underlies the mental representations of concrete concepts, as discussed by Lawrence Barsalou.² At

¹ See for example Jerry Alan Fodor, *The Language of Thought*, Harvard University Press, Cambridge (MA) 1975; Zenon Pylyshyn, *Computation and Cognition*, MIT Press, Cambridge (MA) 1984.

² Lawrence Barsalou, "Perceptual Symbol Systems," in *Behavioral and Brain Sciences*, no. 22, 1999, pp. 578-579.

first the amodal system assumes that during perceptual experience perceptual states arise in sensory-motor systems. These perceptual states can be processed either consciously by experience or unconsciously by the activation of neural representations. When these perceptual states occur, a selection is transduced into an entirely new representation system that describes these states amodally, that is, in the absence of the perceptual states that produced these symbols. Once transduced, they enter into larger representational structures containing feature lists, semantic networks, and frames that have no similarity to the initial perception states. For this reason amodal systems and their characteristics are often described by means of language. Just as words are arbitrary linked to their corresponding referents in the world, amodal symbols of concepts are arbitrary linked to their perceptual states. Like the word “chair” bears no correspondence to physical chairs, the amodal mental representation of the concept CHAIR bears no correspondence to perceived chairs. In this view meaning is referential. Symbols get their meaning solely by virtue of their capacity to correspond to things, properties, and relations, existing objectively in the world.³

Consequently, as Mark Johnson has pointed out, arts or aesthetics have never been regarded as very important in the discussion of conceptual knowledge and meaning.⁴ Because painting, film, music, architecture, and so on, are not regarded as primarily conceptual and propositional in nature, they are thought not to have meaning in its proper sense. According to this view, which Johnson rejects, art can only have meaning to the extent that it can be structured in terms of a linguistic model of meaning, that is, according to representational schemas that are similar to words, phrases, and sentences in language. For instance, post-structural film theorists, such as Christian Metz and Colin MacCabe, have regarded film primarily as a hermetically-sealed linguistic discourse, arguing that film can only have meaning if it is seen to be a type of language (“the language of film,” or “film-as-language”).⁵ On this view, no recourse to a referent outside of itself is necessary (e.g., the intention of the filmmaker(s), the life of the body).

In this article we are discussing a radically different view of the analysis of conceptual meaning in cinema. Following grounded theories of cognition, in particular conceptual metaphor theory, we will argue that the representation of abstract concepts in cinema is grounded metaphorically in embodied knowl-

³ Following a convention in Cognitive Linguistics, concepts and image schemas are written in small capitals (e.g., the concept CHAIR), while quotes will be used to indicate linguistic manifestations (words, sentences). This convention is necessary to maintain the distinction between the conceptual level, on the hand, and the linguistic expression level, on the other hand.

⁴ Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding*, University of Chicago Press, Chicago 2007, pp. 207-208; see also Mark Johnson, *Identity, Bodily Meaning, and Art*, in Tone Roald, Johannes Lang (eds.), *Art and Identity: Essays on the Aesthetic Creation of Mind*, Rodopi, Amsterdam-New York 2013, pp. 15-38.

⁵ Christian Metz, *Film Language: A Semiotics of the Cinema*, University of Chicago Press, Chicago 1974; Colin MacCabe, *Tracking the Signifier: Theoretical Essays on Film, Linguistics, Literature*, University of Minnesota Press, Minneapolis 1985.

edge. More specifically, we will illustrate by means of a specific case-study how the sensory-motor system structures the expression of conceptual content in cinema. First of all, however, it is necessary to clarify the role of the body in conceptual knowledge, that is, we have to discuss how the mental representation of concepts is grounded in sensory-motor processing, before we can relate it to the question of *filmic* representation.

Towards an Embodied Theory of Concepts

Over the last years the disembodied standard view of concepts has been challenged by various accounts of grounded cognition.⁶ Although different in scope and form, these accounts generally share the same embodied view according to which conceptual content is not (exclusively) a matter of amodal symbol systems. Rather, they argue that concepts are primarily constituted by knowledge that is represented within our sensory-motor system.

One influential view of grounded cognition has been Barsalou's theory of perceptual symbol systems.⁷ The basic assumption underlying this theory is that cognition is inherently grounded in perception. During experience (e.g., easing into a chair) the brain captures perceptual states. These states, belonging to sensory-motor systems, are in turn stored permanently in long time memory in the form of multimodal representations, which Barsalou calls "perceptual symbols." Later, when information is needed to represent a concept, these symbols are once more retrieved. More specifically, perceptual knowledge captured during experience is activated again to re-enact or to simulate the initial perceptual states acquired during actual experience and interaction with the world. On this view, mental representations are not formed by abstract and amodal symbols, but by modal and analogical perceptual symbols. They are analogical in the sense that the structure of the cognitive representations corresponds in some way to the perceptual system that underlies it.⁸

A similar theory of concepts that is grounded in the sensory-motor system has been proposed by Vittorio Gallese and George Lakoff.⁹ Using neuroscientific

⁶ Lawrence Barsalou, "Perceptual Symbol Systems," cit.; Id., "Grounded Cognition," in *Annual Review of Psychology*, no. 59, 2008, pp. 617-645; Lawrence Barsalou, Katja Wiemer-Hastings, *Situating Abstract Concepts*, in Diane Pecher, Rolf A. Zwaan (eds.), *Grounding Cognition: The Role of Perception and Action in Memory, Language, and Thought*, Cambridge University Press, New York 2005, pp. 129-163; Vittorio Gallese, George Lakoff, "The Brain's Concepts: The Role of the Sensory-Motor System in Conceptual Knowledge," in *Cognitive Neuropsychology*, no. 22, 2005, pp. 455-479; George Lakoff, Mark Johnson, *Metaphors We Live By*, University of Chicago Press, Chicago 1980; George Lakoff, Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*, Basic Books, New York 1999.

⁷ Lawrence Barsalou, "Perceptual Symbol Systems," cit.

⁸ *Ivi*, p. 578.

⁹ Vittorio Gallese, George Lakoff, "The Brain's Concepts: The Role of the Sensory-Motor System in Conceptual Knowledge," cit.

research results showing that mental representations have similar features as perception and action, they suggest that the sensory-motor system has the right kind of information structure to characterise the structure of concepts. Consider, for example, the concrete concept of GRASPING. According to Gallese and Lakoff this action concept gets its meaning via our ability to imagine, perform, and perceive grasping.¹⁰ More specifically, they argue that in order to understand the concept GRASPING one must be able to imagine oneself or somebody else grasping an object. On this view, imagining is considered to be a sort of mental simulation in that it shares the same neural substrate as doing or perceiving.

The action concepts of EASING INTO A CHAIR or GRASPING AN OBJECT are concepts for literal sensory-motor actions. As such, it is plausible to assume that they entail, in a constitutive way, embodied information. Lakoff calls this approach “literal” in that “the concepts for what the physical body is and does are embodied.”¹¹ There is a physical correspondence between the concept, on the one hand, and the actual physical experiences it draws upon, on the other hand. This, however, is not the case with abstract concepts such as JUSTICE, BEAUTY or TIME, “entities that are neither physical nor spatially constrained.”¹² For it is much harder to see how these entities could be embodied, as there is no physical experience that can be related in a direct way to their meaning.¹³ The crucial question, then, is to ask how these abstract concepts can be grounded in sensory-motor processing?

One proposal that has received much scholarly attention in the last three decades has been Conceptual Metaphor Theory (CMT), as originated in cognitive linguistics.¹⁴ The underlying idea behind CMT is that our abstract concepts are defined by systematic mappings of attributes and relations from bodily-based, sensory-motor source domains onto abstract target domains. More specifically, CMT claims that we employ the logic of our sensory-motor experience (i.e. image schemas) to draw inferences about abstract concepts. Consider, for example, the conceptual metaphor UNDERSTANDING IS GRASPING, as analysed by Johnson.¹⁵ In this metaphor elements of the source domain (GRASPING) are mapped onto the target domain (UNDERSTANDING) as follows:

¹⁰ Ivi, p. 456.

¹¹ George Lakoff, “Explaining Embodied Cognition Results,” in *Topics in Cognitive Science*, no. 4, 2012, p. 775.

¹² Lawrence Barsalou, Katja Wiemer-Hastings, *Situating Abstract Concepts*, cit., p. 129.

¹³ Bradford Z. Mahon, Alfonso Caramazza, “A Critical Look at the Embodied Cognition Hypothesis and a New Proposal for Grounding Conceptual Content,” in *Journal of Physiology - Paris*, no. 102, 2008, p. 60.

¹⁴ George Lakoff, Mark Johnson, *Metaphors We Live By*, cit.; George Lakoff, Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*, cit.

¹⁵ Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding*, cit., p. 166.

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Source domain (GRASPING)	Target domain (UNDERSTANDING)
Object grasped	Idea/concept understood
Grasping an object	Understanding an idea
Strength of grip	Depth of understanding
Losing one's grip	Failing to understand
Object out of reach	Idea that cannot be understood

More specifically, Johnson argues that when we conceptualise the act of intellectual understanding in terms of the UNDERSTANDING IS GRASPING metaphor, we are activating the GRASPING schema, as discussed by Gallese and Lakoff.¹⁶ For example, when an object is out of reach. Similarly, if you lose your grip on an object, you drop it. These kind of inferences provide us then with the necessary information to reason about what it means to understand an idea. They are carried over in a metaphorical way from the source domain into the target domain. Thus, if you lose your grip on an idea, it follows that you will not understand the idea.¹⁷

However, an important question that enables us to make the transition from the mental representation of concepts to the filmic representation, regards the question of non-linguistic evidence of conceptual metaphor.¹⁸ Proponents of CMT claim that the systematic processing of image schema mappings for abstract thinking provides evidence that metaphors are primarily conceptual rather than linguistic. Linguistic metaphors are only the expression of underlying conceptual metaphors in a person's conceptual system. This, however, raises the following issue: if our thinking about abstract concepts activates image schematic logic

¹⁶ *Ibidem*.

¹⁷ The crucial question that remains, however, concerns the question of empirical evidence. Can we actually connect these image schemas and conceptual metaphors to the workings of our brains? Do we, as Johnson writes, "use our sensory-motor neural circuitry for abstract reasoning, via metaphorical structures?" See Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding*, cit., p. 167. Although the answer to this question is still unclear, there seems to be an interesting line of evidence coming from cognitive neuroscience. Narayanan, for example, has suggested that these metaphorical mappings are not only conceptual, but also neural. In constructing computational neural models of target and source domains he demonstrated that these mappings reflect patterns and neural connections between and among various functional parts of the brain. See Srinivas Narayanan, *Embodiment in Language Understanding: Sensory-Motor Representations for Metaphoric Reasoning about Event Descriptions*, PhD dissertation, Department of Computer Science, University of California, Berkeley 1997. The result, according to Gallese and Lakoff, is a "neural theory of conceptual metaphor" according to which the conceptual mappings that constitute conceptual metaphors are grounded in neural mappings. See Vittorio Gallese, George Lakoff, "The Brain's Concepts: The Role of the Sensory-Motor System in Conceptual Knowledge," cit., p. 469.

¹⁸ See also Charles Forceville, *Non-verbal and Multimodal Metaphor in a Cognitivist Framework: Agendas for Research*, in Charles Forceville, Eduardo Urios-Aparisi (eds.), *Multimodal Metaphor*, Mouton de Gruyter, Berlin 2009, pp. 19-42; Diane Pecher, Inge Boot, Saskia Van Dantzig, *Abstract Concepts: Sensory-Motor Grounding, Metaphors, and Beyond*, in Brian Ross (ed.), *The Psychology of Learning and Motivation*, Academic Press, Burlington 2011, vol. 54, p. 240.

directly, and language is merely an expression of such activation, not the cause, then it is plausible to assume, as some studies already have demonstrated, that other (non-verbal) modes of expression reflect this activation as well.¹⁹ Abstract meaning in film can indeed be analysed in terms of structures of sensory-motor experience. This will be the subject of the third and final part of our article.

The Role of the Sensory-Motor System in the Filmic Representation of Abstract Meaning

CMT describes the relationship between language and thought in a derivative way. By placing meaning on a higher psychological level (i.e. above the arbitrary linguistic rules of syntactic and semantic categories), it instigates a distinction between a conceptual level, on the one hand, and a formal expression or manifestation level (linguistic or otherwise), on the other hand. In doing so it places itself among other theories of meaning that are primarily psychological rather than linguistic or semiotic. It recalls, for example, Paul Grice's inferential model of communication, John Searle's theory of speech acts, and more recently Wilson and Sperber's relevance theory.²⁰

Consequently, when considering the distinction between mental content (i.e. conceptual metaphors, image schemas, etc.) and representational form from the perspective of film, not language, the following question arises: can the filmic mode of expression provide some evidence that conceptual metaphors and image schemas are activated when abstract concepts are processed non-linguistically? In other words, do filmmakers make use (consciously or unconsciously) of embodied structures of meaning-making to convey abstract concepts to the viewer?²¹

¹⁹ See Alan Cienki, Cornelia Müller, *Metaphor, Gesture, and Thought*, in Raymond W. Gibbs Jr. (ed.), *The Cambridge Handbook of Metaphor and Thought*, Cambridge University Press, Cambridge (MA) 2008, pp. 483-501; Maarten Coëgnarts, Peter Kravanja, "Embodied Visual Meaning: Image Schemas in Film," in *Projections: The Journal of Movies and Mind*, no. 6 (2), 2012, pp. 84-101; Maarten Coëgnarts, Peter Kravanja, "Towards an Embodied Poetics of Cinema: The Metaphoric Construction of Abstract Meaning in Film," in *Alphaville: Journal of Film and Screen Media*, no. 4, 2012, pp. 1-18; Maarten Coëgnarts, Peter Kravanja, "From Thought to Modality: A Theoretical Framework for Analysing Structural-Conceptual Metaphors and Image Metaphors in Film," in *Image & Narrative*, no. 13 (1), 2012, pp. 96-113; Charles Forceville, *The Journey Metaphor and the Source-Path-Goal Schema in Agnès Varda's Autobiographical Gleaning Documentaries*, in Monika Fludernik (ed.), *Beyond Cognitive Metaphor Theory: Perspectives on Literary Metaphor*, Routledge, London 2011, pp. 281-297; Charles Forceville, Marloes Jeulink, "The Flesh and Blood of Embodied Understanding: The Source-Path-Goal Schema in Animation Film," in *Pragmatics & Cognition*, no. 19 (1), 2011, pp. 37-59; María J. Ortiz, "Primary Metaphors and Monomodal Visual Metaphors," in *Journal of Pragmatics*, no. 43, 2011, pp. 1568-1580.

²⁰ Paul Grice, *Studies in the Way of Words*, Harvard University Press, Cambridge (MA) 1987; John Searle, *Mind, Language and Society*, Basic Books, New York 1999; Deirdre Wilson, Dan Sperber, *Meaning and Relevance*, Cambridge University Press, Cambridge (MA) 2012.

²¹ One of the pioneers to study this possible link between the bodily origins of our thinking and

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In what follows, we will explore this question by means of a concise case study. Using two scenes from *Eyes Wide Shut* (Stanley Kubrick, 1999) and one scene from *2001: A Space Odyssey* (Stanley Kubrick, 1968) as examples, we will demonstrate how sensory-motor structures play a fundamental part in the filmic representation of higher disembodied meaning. We have chosen these two particular films by Stanley Kubrick because they are usually considered as art house films. They combine, to use Torben Grodal's characterisation, "stylistic innovation with a claim to higher meaning."²² They provide a concrete perceptual level of style while at the same time offering an abstract level of meaning. As such, they strongly mirror the distinction between form and content, which, as we have seen, is intrinsic to CMT. Therefore, it is plausible to assume that the formal skills of Kubrick's films reflect an underlying conceptual and metaphorical design which is inherently embodied.

Eyes Wide Shut (1999)

The first scene we want to address from the perspective of embodied cognition concerns the bedroom confession scene from *Eyes Wide Shut*. In this scene Alice (Nicole Kidman) confesses to her husband Dr. Bill Harford to have been so attracted to a naval officer the previous summer in Cape Cod that she was ready to give up everything. The film shows the couple lying on the bed. They are smoking marijuana together. Alice is questioning Bill about a couple of models that he was "hitting on" last night at Ziegler's Christmas Party. When Bill bluntly states that it is understandable for guys to want to have sex with his wife for the only reason that she is beautiful, Alice hastily stands up (see fig. 1). Irritated by his remark, she repositions herself in the opening of the bathroom door, thus leaving her husband behind on the bed. This concrete bodily gesture on the ante-filmic level is accentuated by another additional element on the filmic level. As Alice is standing still in the opening of the door, the camera moves subtly towards her. As a result, the distance between the camera and Alice is reduced, causing Bill in the foreground to disappear off-screen (see fig. 2). By means of a single movement of the camera the film establishes a perceptual distinction between IN and OUT (of frame), between Alice and Bill. The CONTAINER schema, which manifests itself in multiple sensory-motor experiences from the experience of being in something to the act of placing something within another thing, attaches itself onto the scene, thus allowing

the visual arts has been the famous Gestalt-psychologist of art Rudolf Arnheim. He expressed the non-dualistic view according to which thinking is grounded in patterns of perceptual experience (hence, his concept of "visual thinking"). See Rudolf Arnheim, *Visual Thinking*, University of California Press, Berkeley-Los Angeles 1969; Rudolf Arnheim, "A Plea for Visual Thinking," in *Critical Inquiry*, no. 6 (3), 1980, pp. 489-497.

²² Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film*, Oxford University Press, Oxford-New York 2009, p. 208.

the filmmaker and his team to highlight the emotional shift of balance between the two characters.²³ While the couple was at first repeatedly shown together, they are now separated throughout the rest of the scene via montage.

Similarly, when Alice actually recounts her sexual attraction to the naval officer, and the scene reaches its emotional pinnacle, the visual form is adjusted to the content once more. In order to evoke the psychological effect of Alice's monologue on her husband's state of mind, the film shows Bill no longer in a medium shot, but in a close-up. The basic schema underlying this transition is that of CENTER-PERIPHERY.²⁴ This schema finds its physical roots in the experience of the body as a centre and the perceptual field as the periphery and states that an observed object gains intensity as it approaches the centre. The smaller the distance towards the centre, the greater the potential for interaction and intimacy (and vice versa). From this basic perceptual experience, the film then moves metaphorically to a more abstract reading of the schema. More specifically, the heightening of the psychological tension caused by the content of the monologue is rendered visually by narrowing the edges of the film frame in relationship to the front side of Bill's face (the centre). When her confession is interrupted by a telephone call, the pressure is temporally released, and Bill is shown again through a medium shot.



Fig. 1 – *Eyes Wide Shut* (Stanley Kubrick, 1999).

²³ For a discussion of the CONTAINMENT schema see for example Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason*, University of Chicago Press, Chicago 1987, p. 21.

²⁴ For a discussion of the CENTER-PERIPHERY schema see Mark Johnson, *The Body in the Mind*, cit., pp. 124-125.



Fig. 2 – *Eyes Wide Shut* (Stanley Kubrick, 1999).

The metaphorical extension of the CONTAINMENT schema is even more apparent in the following scene with Marion Nathanson (Marie Richardson). In this scene Bill tries to console Marion for the death of her father. The film shows Bill as he enters the residence of the Nathansons. The camera tracks Bills backside as he walks through the entrance hall towards the door of the apartment. It is a fluid steadicam camera shot, reminiscent of similar shots from *The Shining* (Stanley Kubrick, 1980). Once inside he meets Marion. This encounter is caught in one single static shot. Both are occupying the same visual space (CONTAINER). However, in the subsequent shots they are shown separately. Marion and Bill are sitting each on a chair in front of the dead body of Marion's father. Their faces are turned to each other. On the one hand, the separation is highlighted in one single establishing shot by the ante-filmic presence of a lamp which is placed symmetrically between the two parties. On the other hand, the division (and by extension the CONTAINER schema) is established cinematically via shot-reverse-shot where shots of Bill are alternated with shots of Marion. Each character dominates his/her own private visual space. The film carries on with this visual strategy of division until Bill tilts his head somewhat below, a compassionate token of empathy towards Marion's grief. As a result, his head enters for the first time Marion's frame from the left side, thus interrupting her visual space. The visual separation is brought to an end. It is at this moment, when the barrier between the two (containers) falls apart, that Marion, in an outburst of emotion, declares her love to Bill, and she starts kissing him. The next shot shows both faces together again in profile (see fig. 3). The eyeline match has disappeared. But then again, as in the confession scene, the emotional climax is disturbed, this time by a doorbell. Carl, Marion's

friend, is arriving at the apartment. His entrance is filmed in the same visually striking way as Bill's. The space that was taken in by Bill some moments earlier, is now occupied by Carl. This presumption of a distortion of Bill's dominance over the visual space comes to a conclusion in the upcoming shot. As Carl enters the room, the *mise en scène* changes again. The film shows both parties separated by the central background figure of the dead body of Marion's father (see fig. 4). Carl and Marion are occupying the left side of the body, whereas Bill is occupying the right side. Thus, the order is restored again. Bill and Marion are brought back to their initial places. The scene ends up with Bill leaving the room.²⁵



Figs. 3-4 – *Eyes Wide Shut* (Stanley Kubrick, 1999).

²⁵ For a similar application of the CONTAINMENT schema in Stanley Kubrick's *Spartacus* (1960) see Maarten Coëgnarts, Peter Kravanja, "Embodied Visual Meaning: Image Schemas in Film," cit., pp. 89-90.

2001: A Space Odyssey (1968)

The third and last scene we would like to discuss in terms of embodiment regards the crucial scene from *2001: A Space Odyssey* in which HAL 9000, the computer of the space ship Discovery, becomes aware of Dave and Frank's plans to disconnect "him." In this scene the film offers an embodied solution to the following abstract problem of filmic representation: how can the filmmaker and his team communicate without resorting to dialogue: the idea of HAL 9000 *knowing about* the astronauts' plans to shut him down?²⁶

In order to convey this crucial piece of narrative information, which coincides with HAL's point of view, namely his cognitive state of mind, the film makes use of the conceptual metaphor KNOWING IS SEEING, together with the UNDERSTANDING IS GRASPING metaphor, one of the dominant metaphorical conceptions for understanding.²⁷ Let us consider the scene in detail. The scene consists of five shots. The first shot involves a static long take lasting almost two minutes. It shows the two astronauts on the foreground, seated and facing each other inside the pod. They are symmetrically divided by HAL's eye, which is visible in the centre background of the shot, outside the sound-proof container where Dave and Frank, respectively on the right and left side of the computer, are having a conversation. They are talking about a navigational failure that HAL may have made, and the possibility of disconnecting him. As the conversation continues, apparently outside HAL's notice, the film cuts to a closer shot of the computer's eye (shot two), followed by a return to the initial framing of the first shot (shot three). By shifting from the CENTER (the astronauts) to the PERIPHERY (HAL), the computer's presence is reminded.²⁸ HAL now takes over the CENTER (i.e. the entity that is the closest to the viewer's point of view) from the astronauts who are now abandoned to the PERIPHERY (i.e. the off-screen space). In this way the film prepares the viewer for the upcoming shift of balance between the two men and HAL. In the next shot the schema is intensified. The film cuts to an extreme close-up of HAL's eye (shot four) (see fig. 5). But contrary to the previous cut, the shift is now also accompanied by the additional and monotonous sound of airwaves. As such, the film indicates that the camera is no longer physically present inside the silent space of the pod, but outside closer to HAL. Then, the camera cuts to the final shot: a silent extreme close-up of Frank's moving lips, screen right, from the perspective of HAL

²⁶ This formulation in terms of (abstract) problems and (embodied) solutions recalls other problem-solving approaches to cinema, notably Jacques Aumont, *À quoi pensent les films?*, Nouvelles Éditions Séguier, Paris 1996 and David Bordwell, *Poetics of Cinema*, Routledge, New York 2008.

²⁷ See George Lakoff, Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*, cit., pp. 393-394; Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding*, cit., p. 166; Ning Yu, "Chinese Metaphors of Thinking," in *Cognitive Linguistics*, no. 14 (2/3), 2003, p. 149.

²⁸ See also Mario Falsetto, *Stanley Kubrick: A Narrative and Stylistic Analysis*, Praeger Publishers, Westport 2001, p. 109.

(shot five) (see fig. 6). For the first time, the camera brings movement to the scene by panning left to Dave's lips, back right to Frank, and finally left again to Dave. Thus, the film shifts to the computer's point of view. By making the viewer share HAL's perception, the audience is made aware of the astronauts' plans to shutting him down. In other words, HAL's perceptual state of mind (his point-of-view) is used as a means (i.e. source domain) to reach HAL's cognitive state of mind, namely, his knowledge concerning the astronauts' motives (i.e. target domain).



Figs. 5-6 – 2001: *A Space Odyssey* (Stanley Kubrick, 1966).

Notice that HAL's perception, although used as a concrete source domain, is rendered in a metaphorical way as well. After all, HAL's perception belongs to the realm of subjectivity. As such, it cannot be represented directly.²⁹ In order to overcome this problem, the film makes use of what Grodal labels the representation of subjectivity by means of “deviant or distorted enactional or perceptual access to a represented space,” that is “the ways in which special

²⁹ Language forms an exception in that the subjective activity of “seeing” can be rendered symbolically by means of words, as in the following sentences: “I see what you’re saying” or “I don’t see the point.” Spoken or written signs are, by virtue of their arbitrary nature, the only mode being capable of expressing the abstract and generic quality of target domains. See also Maarten Coëgnarts, Peter Kravanja, “From Thought to Modality: A Theoretical Framework for Analysing Structural-Conceptual Metaphors and Image Metaphors in Film,” cit., p. 102.

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or deviant relationships between the viewer-protagonist and a given space can create feelings of subjectivity.”³⁰ When regarding *2001: A Space Odyssey*, this deviation is elicited by limiting the view of the audience to that of HAL. More specifically, the viewer’s subjective feeling (i.e. the feeling of viewing through HAL’s eyes) results from restriction. The blocking of information, caused by HAL’s subjective point of view, makes the viewer feel that he or she has no control over the diegetic world. This restriction is highlighted in two ways. Firstly, there is the use of an extreme close-up, combined with the use of a (non-moving) circular mask to emphasize the movement of the astronauts lips. These formal choices provoke a sense of subjectivity in that the blocking and selective quality of these strategies reflect the distinction-making nature of observation itself.³¹ Secondly, there is the panning movement of the camera from right to left and back again, which additionally enhances the viewer’s feeling of not having access to an objectively given space.³² By applying these filmic devices HAL’s perception is represented to the viewer, and by metaphorical extension his cognitive state of mind as well.

Conclusion

In this article we have presented an embodied approach to the representation of abstract concepts in two films by Stanley Kubrick. Following recent theories of embodied cognition, notably conceptual metaphor theory, we have shown that both films make use of the same sensory-motor dimensions and metaphorical elements that operate at the heart of what is commonly considered to be the prototypical and exclusive bearer of meaning, namely language. More specifically, our analysis indicates that the sensory-motor system that structures the expression of conceptual content in language also plays a crucial role in the expression of abstract meaning in film. As such, our analysis supports the claim of Johnson according to which “the processes of embodied meaning in the arts are the very same ones that make linguistic meaning possible.”³³ Furthermore, by providing a non-verbal account of conceptual metaphor in film, our analysis helps to validate CMT’s dictum that metaphor is primarily a matter of thought, and only derivatively a matter of form. Equally, CMT has some important merit for film studies as well. As a theory concerned with the bodily underpinnings of meaning-making, CMT can provide important insights into the question as to how meaning is constructed in film, that is, how, to cite Pudovkin, filmmakers and

³⁰ Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film*, cit., p. 239.

³¹ See for example George Spencer-Brown, *Laws of Form*, Allen & Unwin, London 1969.

³² Another strategy to enhance subjectivity by blocking information through movement would be the zoom-in. For an application of this technique in relation to Kubrick’s *Barry Lyndon* (1975), see Maarten Coëgnarts, Peter Kravanja, “Towards an Embodied Poetics of Cinema: The Metaphoric Construction of Abstract Meaning in Film,” cit., pp. 8-11.

³³ Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding*, cit., p. 209.

their entourage can express their concepts “in clear and vivid visual images.”³⁴ Because CMT aims to consider the connections between conceptual content and formal issues, it is well-suited to enlighten the relationship between a film’s thematic content and its style of presentation of which Kubrick himself once said, that if you can combine both, “you have the best of all possible films.”³⁵

³⁴ Vsevolod I. Pudovkin, *Film Technique And Film Acting - The Cinema Writings Of V.I. Pudovkin*, Sims Press, Peterborough 2008, p. 31.

³⁵ Stanley Kubrick as quoted in Thomas Allen Nelson, *Kubrick: Inside a Film Artist's Maze*, Indiana University Press, Bloomington 2000, p. 7.

Phenomenological Considerations on Time Consciousness under Neurocinematic Search Light

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Abstract

Film narratives are intrinsically time-dependent designs. This article proposes a model of narrative nowness, based on Husserl's concepts of retention and protention on one hand, and Francisco Varela's neurophenomenological exploration of time consciousness on the other, relating this further to narrative experience and its neural epiphenomena. Only recently has brain research been equipped with the possibility of dealing with temporal frames relevant for time consciousness in the scope of whole narratives. The study of cinema using neuroscientific methods and insights is referred to as *neurocinematics*. We promote neurocinematics as a complementary method of traditional film research, rather than an approach of brain sciences in general. Neurocinematic methods may provide film studies with new tools for re-evaluating established filmmaking conventions and developing new ways to study, for instance, the film viewer's experience and related aspects of time consciousness.

Introduction

The early phenomenologists William James and Edmund Husserl regularly applied scientific findings to support their phenomenological reflections. Particularly, psychology and physics provided metaphors and practical models for their philosophical inquiries. In psychology, Hugo Münsterberg was among the first to recognize the strong influence of film narratives on the audience. It was therefore natural for the early film theorists, such as Sergei Eisenstein, to apply the insights of their contemporary natural scientists, psychologists and brain scientists to lay the foundations of the discipline, as we know it today.¹ Against the historical background, it appears unproductive to isolate phenomenologically-

¹ Pia Tikka, *Enactive Cinema: Simulatorium Eisensteinense*, University of Art and Design Publication Series, Helsinki 2008.

oriented film studies from the sciences that reveal stunning insights to the epiphenomena of film experience.

We will base our approach on Francisco Varela's neurophenomenological studies and the broader paradigm referred to as the embodied mind approach.² In our article, the gradually accumulated scientific understanding of intersubjectively shared human experiences is extrapolated to the study of cinema narratives and the related viewer experiences. In the following article, we discuss the state-of-art in neurocinematics that has obvious benefits to the understanding of film experience, and propose a model of time consciousness that bridges phenomenology of narrative experience with empirical brain studies.

State-of-art in neurocinematics

The study of cinema using neuroscientific methods and insights is referred to as *neurocinematics*. The term was coined by the neuroscientist Uri Hasson and his team in an article targeted to the cognitive film research journal *Projections*.³ However, today neuroscientists in general have to a great extent abandoned the term. For instance, Hasson has stated that his interest to use films focuses *not* on studying films, but on the human brain functions; for instance, memory encoding and retrieval.⁴ His team has recently focused on questions regarding different scales of neural temporality, which Varela also discussed in his article *Specious Present* in the 1990s.⁵ In relation to the topic of the present article, neuroscientific studies into temporal windows in the brain provide neurocinematic studies with highly valuable knowledge, in particular about how film viewers' holistic experience of filmic time might emerge from neural dynamics.

Neurophysiology intertwines with the social and cultural in an inseparable manner. In line with this argument by the embodied mind approach, neurocinematic research assumes that the viewers experience external phenomena in a relatively similar manner. The relativity claim does not reject idiosyncratic private experiences as such. However, it assumes the similarity of that experience – due to the biological and cultural evolution of humankind under certain particular environmental constraints – is far more extended than people in

² Francisco J. Varela, Evan Thompson, Eleanor Rosch, *Embodied mind: Cognitive science and human experience*, MIT Press, Cambridge (MA) 1991; Francisco J. Varela, "Neurophenomenology. A methodological remedy for the hard problem," in *Journal of Consciousness studies*, no. 4, 1996, pp. 330-349; Id., "The Specious Present: A Neurophenomenology of Time Consciousness," in Jean Petitot, Francisco J. Varela, Bernard Pacoud, Jean-Michel Roy (eds.), *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, Stanford University Press, Stanford 1999, pp. 266-329.

³ Uri Hasson, Ohad Landesman, Barbara Knappmeyer, Ignacio Vallines, Nava Rubin, David J. Heeger, "Neurocinematics: The Neuroscience of Film," in *Projections. The Journal for Movies and Mind*, no. 2, 2008, pp. 1-26.

⁴ Uri Hasson, personal communication.

⁵ Francisco J. Varela, "The Specious Present: A Neurophenomenology of Time Consciousness," cit.

general are willing to admit. The art of filmmaking and storytelling relies on this intersubjectivity. And so does the art of neurocinematics in its endeavour to bridge the studies of film and the brain.

Only recently has brain research been equipped with the possibility of dealing with temporal frames relevant for time consciousness in the scope of whole narratives, such as full-length films, due to the rapid development of data collection and analysis methods. The use of the free-viewing method, as it is referred to, is increasing.⁶ This signals a shift from traditional, more artificial studies, where, for instance, viewing dynamically changing images of faces has been taken as a sufficient experimental condition for studying the neural underpinnings of a range of human social behaviours.

Intersubjectivity

Neuroimaging experiments have revealed that viewer's brains "tick together" when they are viewing the same film.⁷ The similarity of brain behaviour between viewers is likely due to the way their attention is trapped, guided, and tricked by the narrative design, which in turn builds on the shared foundations. Film-making, after all, relies on the mastery of manipulating the viewer's attention in time. The seminal neuroscientific observation of Hasson and colleagues showed significant intersubjective correlation between the brain responses of viewers of a Hitchcock film, but this did not hold for those watching a random surveillance video footage.⁸ A quite reasonable interpretation is that well-designed storytelling engages viewers in predictable ways similar to most individuals, due to the built-in capabilities of the cognition, while a random series of events does not.

In film viewing situations we may assume the *narrative cognition* in play.⁹ Based on their previous experience the viewers expect the narrative flow to be structured to guide their attention and anticipation. This may imply that unpredictable narratives require more intensive cognitive labour in terms of continuous updating of expectations than more strictly controlled narratives do. Indeed, in one of our recent neurocinematic studies, a group of individuals watched an

⁶ Uri Hasson, Yuval Nir, Ifat Levy, Galit Fuhrmann, Rafael Malach, "Intersubject synchronization of cortical activity during natural vision," in *Science*, no. 303, 2004, pp. 1634-1640; Andreas Bartels, Semir Zeki, "The chronoarchitecture of the human brain – Natural viewing conditions reveal a time-based anatomy of the brain," in *NeuroImage*, no. 1, May 2004, pp. 419-433.

⁷ Uri Hasson *et al.*, "Intersubject synchronization of cortical activity during natural vision," *cit.*; Iiro P. Jääskeläinen, Katri Koskentalo, Marja H. Balk, Taina Autti, Jaakko Kauramäki, Cajus Pomren, Mikko Sams, "Inter-subject synchronization of prefrontal cortex hemodynamic activity during natural viewing," in *Open Neuroimaging Journal*, no. 2, 2008, pp. 14-19.

⁸ Uri Hasson *et al.*, "Neurocinematics: The Neuroscience of Film," *cit.*

⁹ With the notion of narrative cognition we particularly refer to the sense-making processes that relate to cinematic structures. See Pia Tikka, *Cinema as externalization of consciousness*, in Robert Pepperell, Michael Punt (eds.), *Screen Consciousness: Mind, Cinema and World*, Rodopi, Amsterdam-New York 2006, pp. 139-162.

experimental silent short film, *At Land* by Maya Deren (1944). As explicitly pointed out by Deren herself, the film has been structured by other cinematic decisions, deliberately ignoring the story.¹⁰ When we compared the intersubjective brain behaviour of the viewers with that of another group of viewers, who had watched a story-driven drama in similar conditions, we could detect differences between the groups.¹¹ Our preliminary interpretation assumes that *At Land* elicits stronger functional connections at the anterior parts of the brain that are associated with the management of higher cognitive tasks, such as decision making, evaluation of the consequences of the main characters actions, or grasping the “bigger picture,” in contrast to the more consistent sensory-related posterior functional connectivity observed with the story-driven films.¹²

Annotation of film content

Annotation of content is the prerequisite of interpreting brain activity against cinematic content.¹³ So far, it has been applied to mark up intersubjectively shareable situations, for instance, faces of other people or landscapes,¹⁴ global or local movement,¹⁵ and social vs. non-social actions.¹⁶ Several overlapping methods are already in use, such as a) automated analysis methods: image, sound, and language analysis; b) subjective analysis methods: questionnaires, online annotation tools, and self-rating tools are used for collecting information of each viewer’s subjective experiences; c) crowdsourcing methods: an online community including a large group of people may be invited to annotate narrative content (e.g., Mechanical Turk); d) expert annotation methods: discourse analysis methods; expert content analysis by dramaturgists, psychologists, social scientists.

¹⁰ Maya Deren, *An Anagram of Ideas on Art, Form and Film*, Yonkers, The Alicat Book Shop Press, New York 1946, re-print in Bill Nichols (ed.), *Maya Deren and the American Avant-Garde*, University of California Press, London 2001, pp. 267-322.

¹¹ Janne Kauttonen, Yevhen Hlushchuk, Pia Tikka (unpublished data). Films are *At Land* by Maya Deren, USA, 1944, *Heartbeats* by Saara Cantell, Finland, 2009, and *The Match Factory Girl* by Aki Kaurismäki, Finland, 1990.

¹² Pia Tikka, Mauri Kaipainen, *Screenance as enactment in Maya Deren’s At Land: Enactive, embodied, and neurocinematic considerations*, in Douglas Rosenberg (ed.), *The Oxford Handbook of Screenance Studies*, Oxford University Press (in press).

¹³ Jelena Rosic, Pia Tikka, “Annotation of film content for a neurocinematic analysis: Implications for embodied approaches to filmmaking,” an oral presentation at SCSMI2013, Society for Cognitive Studies of the Moving Image 2013 Conference, Berlin, 12 June 2013.

¹⁴ Sanna Malinen, Yevhen Hlushchuk, Riitta Hari, “Towards natural stimulation in fMRI: issues of data analysis,” in *Neuroimage*, no. 35, 2007, pp. 131-139.

¹⁵ Andreas Bartels, Semir Zeki, Logothetis Nikos K., “Natural vision reveals regional specialization to local motion and to contrast-invariant, global flow in the human brain”, in *Cereb Cortex*, no. 3, 2008, pp. 705-717.

¹⁶ Juha Lahnakoski, Juha Salmi, Iiro P. Jääskeläinen, Jouko Lampinen, Enrico Glerean, Pia Tikka, Mikko Sams, “Stimulus-Related Independent Component and Voxel-Wise Analysis of Human Brain Activity during Free Viewing of a Feature Film,” in *PLoS ONE* 7, 2012, e35215.

Annotation in itself is a broad field of methodological development that falls outside of the present topic. For the present discussion it suffices to assume that every meaningful event in the film is marked up with annotations that can be used to match the measured brain activity to it. However, the match of low-level content annotation with brain responses may not be sufficient in the long run as the focus of interest moves to the higher levels of cognitive functions.¹⁷ To put it in another way, our point here is that annotation is not enough to describe the viewer's consciousness of the narrative time, and another layer of representing the narrative is needed to relate it to the neurocinematic data.

Time and narration in neurocinematics

The Russian film theorist Lev Kuleshov's famous montage experiment showed that a neutral face combined with images loaded with varying emotional context (a bowl of soup, a child's coffin, a woman) create different interpretations. Indeed, we tend to infer other people's situations based on the available contextual cues and information. In the unfolding of film narrative earlier images predetermine the interpretation of those that follow. Later Eisenstein proposed a more holistic idea by pointing out that sequentiality is not the main principle that defines the interpretation but rather the holistic simultaneity of different narrative elements in the viewer's mind, defined in terms of memory and anticipation. This conceptualization appears very similar to the Husserlian idea of *nowness*. All previous events condition the experience of *nowness* and the anticipation of the coming events along the narrative.

So far, naturalistic neuroscientific studies have analysed the relation between film content and brain data within isolated time frames. Yet, this method runs short of relating contextual conditions and the anticipations that filmic events trigger in time scales natural to film viewing, not to mention life itself. In our view, studies that do not take into account the viewer's temporal situatedness with respect to continuous narrative just fall short of meeting the attribute "naturalistic." For example, when in *The Match Factory Girl* by Aki Kaurismäki (1990) the main character Iris (Kati Outinen) rushes into the bathroom to vomit in the middle of her work shift, a current method that focuses on locally synchronized events would ignore the previous events that build the overall context. The interpretation of the corresponding brain data would be based on the assumption that the viewers are feeling disgusted because they are witnessing someone vomiting. However, the more correct interpretation that takes into account the context would be that the viewers feel shocked because they understand that Iris is pregnant with the child of a man that does not love her. This example shows

¹⁷ This critical issue has also been recognized by neuroscientists, e.g., Uri Hasson *et al.*, "Intersubject synchronization of cortical activity during natural vision," *cit.*; Iiro P. Jääskeläinen *et al.*, "Intersubject synchronization of prefrontal cortex hemodynamic activity during natural viewing," *cit.*

why we regard it crucial for neurocinematic interpretations to go beyond the currently applied methods of matching the film and the brain data, and move toward experimental paradigms that address time consciousness in a dynamical way with regard to the full scale of narrative contexts.

In order to gain further understanding of narrative *time consciousness*, we depart from the assumption that temporal and contextual situatedness constitute an intrinsic part of the human cognitive system and is likely to have been built into the neural dynamics in the course of evolution. Neuroscience studies have shown that cognitive segmentation of continuous narratives into meaningful sequences or shorter events appears to be a built-in cognitive mechanism related to intersubjectively shared sense-making.¹⁸ In addition, the recent neuroscientific findings related to *temporal receptive windows* in the brain may guide neurocinematic mapping of the phenomenological, neural, and behavioural *nowness* into narrative structures on different time scales. Consequently, a hierarchy of cortical areas in terms of distinct temporal dynamics of neural population can be assumed.¹⁹ To comprehend the idea of measured durations of the brain's temporal receptive windows we may consider them, for example, in terms of the spatial receptive fields in the visual cortex. Cortical hierarchy related to varying scales of temporal narrative coherence has been detected, for instance, in a study, where people were engaged in reading the same story content organized as a) "backward story," b) "word scram," c) "sentence scram," d) "paragraph scram," and e) intact "forward story."²⁰ The more coherent the story, the more extended the intersubjectively shared activation in the listener's brain.

In terms of narrative comprehension, the different temporally characterized functions could be assigned to different anatomical locations in the brain, and the temporal window of neural activity might even correlate with the level of abstraction of related neural representations.²¹ Typically, for instance, the visual brain areas are responsive to "lower" level visual features (e.g., detecting line directions, contrasts) in a time scale of milliseconds. In turn, the "higher" level

¹⁸ Jeffrey M. Zacks, Nicole K. Speer, Khena M. Swallow, Corey J. Maley, "The brain's cutting-room floor: segmentation of narrative cinema," in *Frontiers in Human Neuroscience*, no. 4, 2010, pp. 1-15; Jesse Q. Sargent, Jeffrey M. Zacks, David Z. Hambrick, Rose T. Zacks, Christopher A. Kurby, Heather R. Bailey, Michelle L. Eisenberg, Taylor M. Beck, "Event segmentation ability uniquely predicts event memory," in *Cognition*, no. 129, 2013, pp. 241-255.

¹⁹ Uri Hasson, Eunice Yang, Ignacio Vallines, David J. Heeger, Nava Rubin, "Hierarchy of temporal receptive windows in human cortex," in *The Journal of Neuroscience*, no. 10, 5 March 2008, pp. 2539-2550; Jukka-Pekka Kauppi, Iiro P. Jääskeläinen, Mikko Sams, Jussi Tohka, "Inter-Subject Correlation of Brain Hemodynamic Responses During Watching a Movie: Localization in Space and Frequency," in *Frontiers in Neuroinformatics*, no. 4, 9 March 2010.

²⁰ Yulia Lerner, Christopher J. Honey, Lauren J. Silbert, Uri Hasson, "Topographic mapping of a hierarchy of temporal receptive windows using a narrated story," in *Journal of Neuroscience*, no. 31, 2011, pp. 2906-2915.

²¹ Uri Hasson *et al.*, "Hierarchy of temporal receptive windows in human cortex," cit.; Iiro P. Jääskeläinen, Jyrki Ahveninen, Mark L. Andermann, John W. Belliveau, Tommi Raij, and Mikko Sams, "Short-term plasticity as a neural mechanism supporting memory and attentional functions," in *Brain Res*, no. 1422, 22 September 2011, pp. 66-81.

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cognitive areas of the frontal lobe associated with, let us say, management of future tasks or evaluation of the moral consequences of film character's actions, may respond to information accumulated over longer temporal intervals up to tens of seconds. The direct implication of these findings is that temporal situatedness is to be conceived of in terms of multiple layers. In the following we propose a preliminary conceptual model of narrative time inspired by Francisco Varela's neurophenomenological approach to time consciousness.

Conceptualizing time consciousness

Varela's neurophenomenological interpretation of Husserl's model on temporality assumes moments of *nowness* embedded in broader temporal contexts in terms of *retention* and *protention* (fig. 1).²² Retention refers to the temporally backwards-extended present, consisting of a long tail of past events that form a hierarchical system of mutually embedded contextual framings of the experience of the present, i.e. the *nowness*. From the point of view of psychology and neuropsychology, retention is entertained on multiple levels of gradually decaying memory traces. Protention, in turn, refers to the anticipation of the next moment implied by *nowness*.

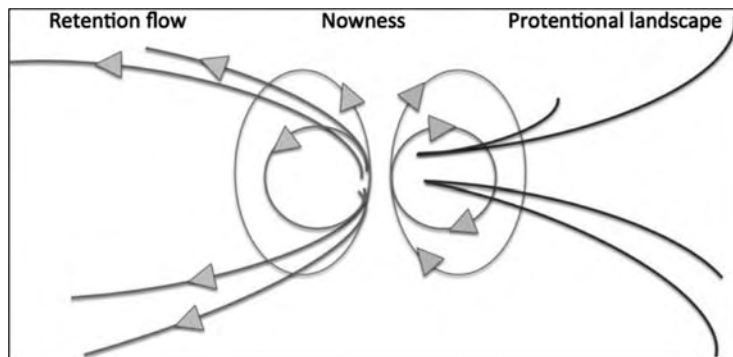


Fig. 1 – The fourfold structure of nowness constituted by retentional flow and protentional landscaping. Time can be seen to flow horizontally from left to right (static constitution) while vertically between the dynamical loops of retention and protention emerges the immanent affective disposition. The image can be seen to describe an experiential moment within the filmic flow. The image adapted from Varela's fourfold structure of nowness in "The Specious Present," p. 303.

²² Francisco J. Varela, "The Specious Present: A Neurophenomenology of Time Consciousness," cit.; Edmund Husserl, *The Phenomenology of Internal Time Consciousness*, Indiana University Press, Bloomington 1964. Husserl's writings in German language *Zur Phänomenologie des Inneren Zeitbewusstseins* originate from 1893- 1917.

We suggest that a proper dynamic model of narrative nowness should allow mapping of retention (i.e. meaningful context conditions accumulated in time), and protention (i.e. the anticipation of immediate future) against the observed brain activity. Varela points out three aspects that should be considered as being elementarily intertwined in the neurophenomenological study of time consciousness: “(1) the neurobiological basis, (2) the formal descriptive tools mostly derived from nonlinear dynamics, and (3) the nature of lived temporal experience studied under reduction.”²³

In Husserlian terms, the experience of narrative nowness can be described as a kind of *temporal fringe*,²⁴ in terms of a spatial metaphor, an imaginary viewpoint from the centre to the periphery. The model allows holistic comprehension of nowness as that which simultaneously holds the *just passing past* with the still reachable memory of the gradually distancing past (retention), as well as the anticipation of the *nearest future* in terms of gradually approaching events (protention), all of these dynamically linked by means of feedback loops.

The duration of nowness can be intuitively defined in terms of on-going actions. We relate the notion of *protonarrative*²⁵ to the phenomenological idea of nowness, as a reference to the briefest possible meaningful event. For example, the moment when someone is rejected by another person exemplifies a socially meaningful protonarrative with a duration of a few seconds. The typical duration of a protonarrative might serve as a preliminary heuristics for the automated segmentation of film content into events, which in turn are necessary pointers to the neural phenomena of nowness. As observed in the brain activations, spectators seem to automatically recognize changes in the situations, for example, when an action or event ends and a new one begins.²⁶

Quite obviously, the order of introducing narrative elements constitutes the fundamental aspect of narrative. What happened earlier will define the experience of nowness and by doing this, it will also condition the protention, the anticipation of immediate future events. In the next section, we propose a dynamical model that describes the narrative flow in terms of continuous updates of the retentive contexts.

²³ Francisco J. Varela, “The Specious Present: A Neurophenomenology of Time Consciousness,” cit., p. 305.

²⁴ Edmund Husserl, *The Phenomenology of Internal Time Consciousness*, cit., pp. 27, 41; Francisco J. Varela, “The Specious Present: A Neurophenomenology of Time Consciousness,” cit., p. 278.

²⁵ The notion of protonarrative was applied in neurocinematic studies by Pia Tikka in 2010; see also Philip Lewin, “The Ethical Self in the Play of Affect and Voice,” Conference on After Post-modernism, University of Chicago, 14-16 November 1997, http://www.focusing.org/apm_papers/Lewin.html, last visit 6 April 2014.

²⁶ Jesse Q. Sargent *et al.*, “Event segmentation ability uniquely predicts event memory,” cit.

Narrative nowness model

The narrative nowness model determines to what extent each narrative event is considered meaningful for the experience of nowness for an individual viewer, constituting what can be consequently called the *narrative perspective*, following our conceptualization.²⁷ The narrative perspective of an individual movie viewer corresponds to their memory and attention varying from moment to moment. The assumed diminishing attention or decaying memory traces of past events can be described mathematically and algorithmically. Another factor is the one of context-refreshing associations induced by the storytelling at each moment of nowness, constituting a feedback loop that regulates the way the retentive memory traces are allowed to influence the interpretation of nowness (fig. 2).

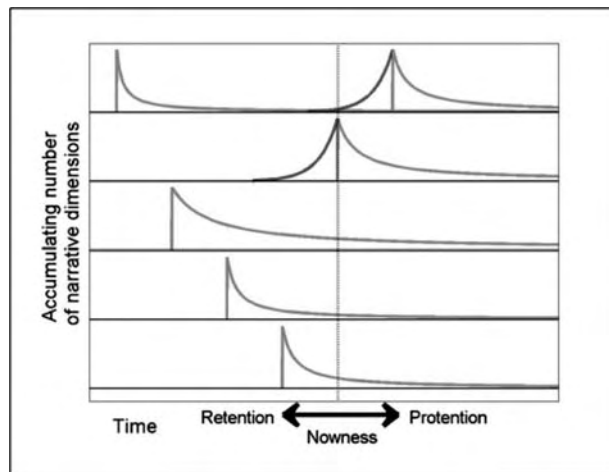


Fig. 2 – Schematic depiction of the evolution of the momentary nowness window and the weights on narrative dimensions that determine the corresponding perspective. The a) sharp peaks curve correspond to introduction of new dimensions through new narrative elements, b) the rising red curves to protentive expectations triggered by other events, while c) slowly decaying curves stand for narrative dimensions that gradually lose their prominence due to shift out from active working memory or attention.

We assume that once introduced, each meaningful event forms a *narrative context* for the following ones. It can be formally described as a narrative coordinate referring to a *dimension* of the narrative space, the value corresponding to its prominence in the experience of the nowness. The dimensions altogether define what can be termed a high-dimensional *narrative ontospace*, with reference to the

²⁷ Roberto Pugliese, Pia Tikka, Mauri Kaipainen, “Navigating story onto space: Perspective-relative drive and combinatory montage of cinematic content,” in Raivo Kelomees, Chris Hales (eds.), *Expanding Practices in Audiovisual Narrative*, Cambridge Scholars Publishing, Newcastle (in press).

ontospace model of Kaipainen and colleagues.²⁸ The narrative ontospace corresponds to the whole system of potential experiences. An individual experience, in turn, is a *perspective* on that space, modelled as a set of weights, one for each narrative dimension. The coordinate value of a particular narrative dimension can be approximated by some decaying function of the temporal distance from the moment of when the memory was last refreshed.

The experience of *nowness*, as described above, while being based on the retentive perspective, is dynamically coupled to the protentive function, allowing a tension of anticipating coming events. It is, however, beyond the model to predict what the anticipated events are. It may suffice here to assume that anticipations involve the entire cognitive-perceptual and experiential apparatus, with its evolutionary hard-wired elements, such as emotions, logical inferences, as well as learned and culturally assimilated associations.

The suggested *narrative nowness model* potentially allows computational implementations, which can be calibrated to match measurements of memory and attention. Provided a level of validity with respect to these aspects of psychology, the model should be able to generate predictions for brain responses to cinematic events embedded in their full narrative contexts. This opens up several new avenues for the neurocinematic inquiry. It allows (1) evaluating effects of narrative context-dependency on the brain activity in the continuous movie viewing paradigm, (2) developing annotation methods to describe experience-determining narrative contexts in the scale of entire movies, and further, (3) combining these into a system that allows correlating large neuroimaging data (quantitative) and perspective-weighted annotations of content (qualitative), and (4) addressing issues of shared vs. individual narrative experience in terms of being able to describe and further compare varying perspectives.

Conclusions

We envision that the proposed *nowness model*, inspired by the phenomenological considerations, will contribute to the analysis of time- and context-dependency of film narratives. The model may also help anchoring the interpretation of the temporally unfolding contextually rich film content to that of viewers' brain data in a meaningful way. This would mean being more faithful to the holistic ways our narrative cognition functions as we experience the complexity of film characters' situatedness in the fictional world. The model allows for new ways for analysing and interpreting the neurocinematic data that have been collected during viewing of films. Further, the concept of narrative perspective associated to *nowness* accommodates even broader life contexts and other individual

²⁸ Mauri Kaipainen, Peter Normak, Katrin Niglas, Jaagup Kippar, Mart Laanpere, "Soft ontologies, spatial representations and multi-perspective explorability," in *Expert Systems*, no. 5, 2008, pp. 474-483.

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determinants of experience, such as engagement in a film culture in such a way that allows the identification of cross-references between movies. In this respect, the proposed model should rather be regarded as the broad hypothesis that the experience of nowness can be modelled and mapped to its neural epiphenomena, implying a novel paradigm of film research.

Some sceptics with an implicit dualist attitude may argue that by introducing scientific methods into the film research the neurocinematic approach takes a collision course with humanist values. We believe the opposite, namely that insights to the physiological grounds of the embodied film experience will contribute to the holistic understanding of the art of film – right at the heart of humanity.

Acknowledgements

We thank Dr. Janne Kauttonen for his valuable insights to the formulation of the narrative nowness model. The research group aivoAALTO and Aalto Starting Grant at the Aalto University, as well as the Foundation for Baltic and East European Studies provided the frameworks and resources that made this work possible.

The Feeling of Motion: Camera Movements and Motor Cognition

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Abstract

Camera movements are considered a key element for the intersubjective relation between viewer and screen; nonetheless, their concrete effect on spectators' experience still lacks the attention it deserves. This paper promotes an embodied approach to the study of camera movements, aiming to better understand the role of motor cognition during the film experience by analyzing the effects of camera movements on viewers' motor cortex activation. We present an empirical high-density EEG neuroscientific study on camera movements, investigating viewers' brain motor responses to different techniques like zooming, and the use of a dolly and steadicam. This is triggered by the idea that each movement implies a particular form of physical relation between the audience and the movie. Indeed the experiment showed that the Steadicam determined the strongest activation in viewers' motor cortex, providing first empirical ground to the notion of the capacity of the camera to simulate the virtual presence of the viewer inside the movie. This study shows how cognitive neuroscience can contribute to a better understanding of film style and techniques. Finally, this research demonstrates how film technique can be useful to cognitive neuroscience, by enabling the simulation of observers' movements and, in so doing, allowing a novel approach to the study of action-perception links.

*Camera as Fonteyn, operator as Nureyev would be ideal –
a dance partnership capable of any vector of graceful motion
within the range of the operator's hands, arms, and legs.*
Garrett Brown¹

Introduction

Most of the papers and books in the humanities in which we find studies inspired by a neuroscientific approach use cognitive neuroscience as a tool to confirm, re-

¹ Quoted in Serena Ferrara, *Steadicam: Techniques and Aesthetics*, Focal Press, Oxford 2011, p. 7.

fine, or sometimes reject theories shaped up in other domains. During the last two decades, cognitive neuroscience has shown us that human experience should be thought of as a natural form of relational experience: we live in relation with other people, objects, landscapes that are present in our real world, but we also live in relation with people, objects, landscapes that come to us within the imaginary worlds displayed by the arts.² Both kinds of relationship are rooted in our brain-body system, and if we aim to grasp the basis of the complexity and the multimodality these relationships imply, we have to go back to our own brain and body.

Cognitive neuroscience can enter theoretical debates on mediated experience, bodily engagement in aesthetic experience, new theories of enactment and simulation. In this case, we find that such an approach allows scholars, in diverse fields, to probe one of the artist's fundamental questions: how to involve the public? This approach could be christened as "theoretical/archaeological," and its usefulness is to bridge results from neuroscientific experiments planned and executed elsewhere with old and new questions raised within the humanities.

A second approach considers these experiments not only as a tool for implementing theories, but also as an analytic instrument capable of refining stylistic analyses, as several studies on contemporary art, literature, acting, music, and partly cinema have already demonstrated. Style is basically what strengthens our relationship with a work of art, what allows us to orient (or lose) ourselves within the imaginary worlds of fiction. Style is a way to manipulate the mediation, to establish a peculiar intersubjective relation between us and the work of art. Film style, for instance, is a matter of technology and techniques: filmmakers are compelled to use what they can afford from a technological point of view, and their film techniques depend on those technologies.³ Once they understand how to handle the medium, they can experiment different ways to involve the viewer, to let him/her enter the story. To study film style, hence, we should have a precise idea of the technological context and we should wonder how a specific technique depending on a specific technology could embody or re-embody our experience in new interactive ways. As we see it, this approach is a very concrete one – we could describe it as "pragmatic," – and its goal is to create a real convergence between issues from film studies and neuroscientific methodologies.

However, we cannot think of cognitive neuroscience as a panacea for film studies or, more broadly, for the humanities. We are fully aware that cognitive neuroscience cannot provide all the keys for the secret doors of our aesthetic experience: cognitive neuroscience has to be thought of as a "cognitive archaeology" capable of clarifying determinate aspects of our experience, for example the relevance of motor cognition in our social behavior and aesthetic experience. It can also revolutionize our conceptions of terms like "action" and "simula-

² Among the huge literature, see Barbara Maria Stafford, "Crystal and Smoke: Putting Image Back in Mind," in Barbara Maria Stafford (ed.), *A Field Guide to a New Meta-Field: Bridging the Humanities-Neuroscience Divide*, University of Chicago Press, Chicago 2011, pp. 1-63.

³ See Barry Salt, *Film Style and Technology*, Starword, London 1993.

tion,” which have been long discussed within Western philosophy. That said, it should be clear that if we wish to understand something new about film by means of cognitive neuroscience, we must question the movies according to the limits and potentialities of the neuroscientific approach. In a previous paper, we showed how to blend the theoretical/archaeological approach and the pragmatic one, starting from film theory, then formulating hypotheses about a new concrete approach to the history of film style, and finally to programmatically promote a third step, the “experimental” one, inspired by previous theories and capable of offering new insights on film.⁴

To put it even more clearly, we want to pose some questions: how important is it to evaluate our embodied relationship with film technology? At which level and by which means can we study and understand this kind of embodiment? Does such a perspective contribute to a fuller comprehension of our film cognition? Does it add something to the traditional and shared knowledge on film? Could we consider the degree of embodiment as a sign of the salience of a scene with respect to a multilayered form of viewers’ involvement? Could an embodied approach to film have relevance also from a historical point of view?

The viewer’s ability to move inside a virtual spatio-temporal dimension like that of the screen is tightly connected to these issues, and matters like bodily engagement in film viewing or film subjectivity should cope with the embodied approach to film techniques. As Jacinto Lageira wrote, referring to previous proposals like those put forward by Erich Feldmann in the 1950s, viewers’ subjectivity can simultaneously locate itself aesthetically in the film while obviously remaining itself in the real world.⁵ This is the very mission of film, and this is the field on which cinema has been challenged by other media, like videogames or VR, which shape up their virtual space-time often referring to simulation techniques previously elaborated within film practices. Though in this first phase cognitive neuroscience can primarily provide quantitative data to the study of film experience, as emphasized by Hasson and colleagues in their seminal work,⁶ we will show that some analyses could not only contribute to clarify stylistic issues, but also to focus on theoretical issues that have been long considered out of reach because of the difficulties in providing solid empirical bases to their discussion.

We present here a recent empirical neuroscientific study we performed on camera movements by means of high-density EEG, which we believe could be a good starting point to show how cognitive neuroscience can tell us something new on a quite neglected topic in film studies. This study allows us to talk of

⁴ Vittorio Gallese, Michele Guerra, “Embodying Movies: Embodied Simulation and Film Studies,” in *Cinema: Journal of Philosophy and the Moving Image*, no. 3, 2012, pp. 183-210.

⁵ Jacinto Lageira, “Imaginary Subject,” in Dominique Chateau (ed.), *Subjectivity: Filmic Representation and the Spectator Experience*, Amsterdam University Press, Amsterdam 2011, p. 150. See also Erich Feldmann, “Considérations sur la situation du spectateur au cinéma,” in *Revue Internationale de Filmologie*, no. 26, 1956, p. 83.

⁶ Uri Hasson *et al.*, “Neurocinematics: the Neuroscience of Film,” in *Projections. The Journal for Mind and Movie*, no. 1, 2008, p. 21.

mediated experience, embodied techniques, spatial cognition at the movies, and most of all to talk of the crucial role that motor cognition plays at a pre-reflexive level in making us empathize with the moving pictures.

Film and camera movements

As Vivian Sobchack pointed out, there are four basic kinds of movement in moving pictures. The first is the movement of the human beings or even the objects within the frame; the second is the movement between the images, that is, the editing; the third is the optical movement of the camera lens from a fixed position, that is, the zoom; the fourth is the camera movement: “the bodily motion of the camera itself.”⁷ Since the very beginning, the relevance of what Don Ihde would call “motile experience” to provide a stronger form of simulation,⁸ was perfectly present to the mind of film operators and technicians. While the still camera can provide a strong impression of reality, but it does not reduce the distance between the viewer and the screen, the moving camera not only implements our experience by adding kinesthetic, bodily, tactile cues as well as the sense of balance and gravity, but also gives the impression that the movie is to some extent *live*, that there is an intentionality which endows it with peculiar bodily functions and subjectivity.

The resonance effect provided by the camera movement would suggest that the impression of “being there,” and exploring the film space and measuring its time, largely relies on a shared motor code. As Maurice Merleau-Ponty wrote in his notes for the “Cours au Collège de France” of 1953 – where cinema plays a role and the influence of French filmology is quite well detectable – “on perçoit donc mouvement, son sens, son allure caractéristique, par possibilité motrices du corps propre.”⁹ As we have already showed in our abovementioned paper, this view was widely shared by many “film physiologists” between the 1910s and 1920s, and partly by some film theorists like for instance Léon Moussinac or Sergej Eisenstein, but it would be enough to read some interviews given by Hollywood directors to have an idea of how deep this conception of camera movement was.¹⁰

⁷ Vivian Sobchack, “Toward Inhabited Space: the Semiotic Structure of Camera Movement in the Cinema,” in *Semiotica*, no. 1-4, 1982, p. 317.

⁸ “In the trajectory that began with monosensory simulations and then increased its complexity of those dimensions, adding audiovisual to visual, and ultimately kinesthetic-tactile to audiovisual, one could see a trajectory toward, although not reaching whole body, motile experience.” Don Ihde, *Experimental Phenomenology 2nd Edition*, SUNY Press, Albany 2012, p. 142.

⁹ Maurice Merleau-Ponty, *Le monde sensible et le monde de l'expression. Cours au Collège de France. Notes 1953*, texte établi et annoté par Emmanuel de Saint-Aubert et Stefan Kristensen, MetisPresses, Genève 2011, p. 119.

¹⁰ To refer just to some of Bogdanovich's interviewees (Peter Bogdanovich, *Who the Devil Made It*, Knopf, New York 1997), Allan Dwan talks of the first time he decided to move the camera in 1915 movie *David Harum*, saying that viewers thought *they* were moving, while Fritz Lang, talking of the reasons of each camera movement, admits he never loved the zoom because it looks “unnatural.”

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The reasons that bring a director to move the camera are multiple: of course, the profilmic implicit 3D experience will gain intensity through movement, but also the kinetic, psychological and dramatic effects of the movie will be enhanced by these techniques, sometimes consisting of a complex combination of different camera movements. That said, we could sum up the very meaning of camera movement by borrowing Garrett Brown's statement: "In the movies, when the camera begins to move, we are suddenly given the missing information as to shape and layout and size. We are there."¹¹

Though camera movement has even become a "moral issue," as notoriously French critics and filmmakers like Rivette, Moullet, and Godard saw it, such a technique was originally conceived as a means for strengthening cinematic intersubjectivity and to emphasize the relational nature of film style. Its importance was not well grasped by film theorists, and if we tried to look for essays or books on camera movements we would be disappointed. During the first phase of film history, camera movements were discussed and analyzed only in magazines devoted to the craft of cinematography, like for instance *American Cinematographer*.¹² In the following years, we do not find any thorough analysis, as such when David Bordwell decided to focus on camera movement in two 1970s essays, he observed that this issue had been considered as too elusive to be analyzable for long.¹³

Bordwell, who is more interested in the visual perception of camera movements than in their motor implications, focuses immediately on their anthropomorphism, saying that they would represent

*a basis for the orthodox comparison between the camera and the human body. The head may rotate, that is, pan or tilt, or the entire organism may displace itself, may "locomote," by tracking or craning.*¹⁴

Bordwell goes on pointing out that we can hardly resist reading the effect provided by camera movements as a "persuasive surrogate for our subjective movement through an objective space,"¹⁵ properly referring to our anthropomorphic conception of camera movement. Bordwell's assumptions have been basically shared both by film phenomenologists like Sobchack – who approaches camera movements from an embodied perspective, understanding them as natural as our bodily movements in space,¹⁶ – or Voss – who put forward the idea of the

¹¹ Garrett Brown, "The Moving Camera. Part I," <http://www.garrettcam.com/movingcamera/article1.htm>, last visit 7 January 2014.

¹² A historical and theoretical survey on camera movements is Jakob Isak Nielsen, *Camera Movement in Narrative Cinema: Toward a Taxonomy of Functions*, Ph.D. dissertation, Department of Information and Media Studies, Faculty of Arts, University of Aarhus, 2007.

¹³ David Bordwell, "Camera Movement and Cinematic Space," in *Ciné-Tracts*, no. 2, Summer 1977, pp. 19-25 and the prior "Camera Movement, the Coming of Sound, and the Classical Hollywood Style," now in Paul Kerr (ed.), *The Hollywood Film Industry*, Routledge, London 1984, pp. 148-153.

¹⁴ David Bordwell, "Camera Movement and Cinematic Space," cit., p. 20.

¹⁵ *Ivi*, p. 23.

¹⁶ Vivian Sobchack, "Toward Inhabited Space: the Semiotic Structure of Camera Movement in the

viewer's body as a "surrogate body," which "loans" a three-dimensional body to the screen.¹⁷ More obviously, such a position has been also shared by ecological/cognitive film theorists like Anderson – who says that through camera movements we feel as if we moved inside the diegetic space of film, and who was the first to claim an empirical study of dollies and zooms.¹⁸

When we first thought about an experiment on the viewer's brain motor responses to camera movement, we started from the idea that each movement implied a particular form of physical relation, and that a motor approach to its meaning would add to what Brown calls the "camera's putative presence and behavior."¹⁹

Moving mirrors: Motor Cognition and camera movements

For quite a long time the cortical motor system was considered as the mere neural controller of elementary physical features of movement such as force, direction and amplitude. This picture was revolutionized by the discovery that many cortical motor neurons do not discharge during the execution of elementary movements, but are active before and during motor acts – movements executed to accomplish a specific motor goal. Furthermore, it was discovered that the cortical motor system is endowed with sensory properties, perceptually responding to visual, auditory and somatosensory inputs.²⁰ Particularly revealing, in this respect, was the discovery of mirror neurons.²¹ Mirror neurons, originally discovered in macaques and later on also revealed in the human brain, are motor neurons that not only respond to the execution of movements and actions, but also during their perception when executed by others. It has been proposed that the mirror mechanism instantiated by mirror neurons enables a direct form of action understanding: the relational character of behavior as mapped by the cortical motor system would enable the appreciation of purpose without relying on explicit inference. Altogether, these findings led

Cinema", cit., p. 317.

¹⁷ Christiane Voss, "Film Experience and the Formation of Illusion: the Spectator as 'Surrogate Body' for the Cinema," in *Cinema Journal*, no. 4, Summer 2011, pp. 136-150.

¹⁸ Joseph D. Anderson, "Moving Through the Diegetic World of the Motion Picture," in Lennard Højbjerg, Peter Schepelern (eds.), *Film Style and Story: a Tribute to Torben Grodal*, Museum Tusulanum Press, Copenhagen 2003, pp. 11-21.

¹⁹ Garrett Brown, "The Moving Camera. Part II," <http://www.garrettcam.com/movingcamera/article2.htm>, last visit 7 January 2014.

²⁰ For reviews, see Giacomo Rizzolatti, Vittorio Gallese, "From action to meaning," in Jean-Luc Petit (ed.), *Les Neurosciences et la Philosophie de l'Action*, Vrin, Paris 1997, pp. 217-229; Vittorio Gallese, "The inner sense of action: agency and motor representations," in *Journal of Consciousness Studies*, no. 7, 2000, pp. 23-40.

²¹ Vittorio Gallese, Luciano Fadiga, Leonardo Fogassi, Giacomo Rizzolatti, "Action recognition in the premotor cortex," in *Brain*, no. 119, 1996, pp. 593-609; Vittorio Gallese, Christian Keysers, Giacomo Rizzolatti, "A unifying view of the basis of social cognition," in *Trends in Cognitive Sciences*, no. 8, 2004, pp. 396-403.

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to formulate the “Motor Cognition” hypothesis²² as a leading element for the emergence of social cognition. According to this hypothesis, cognitive abilities like the hierarchical representation of action with respect to a distal goal, the detection of motor goals in others’ behavior and action anticipation are possible because of the peculiar functional architecture of the motor system, organized in terms of goal-directed motor acts.

It should be added that a limiting factor of most experiments carried out so far to study the mirror mechanism in humans consisted of their avoidance of real social interactions, like movements of the observer towards or away from the observed agent. In a recent study we tried to fill this gap by devising a more ecological approach. We used a combined behavioral and high density EEG experiment to determine whether various types of camera movements, more or less simulating an observer’s own movement toward the observed acting agent, might modulate observers’ mirror mechanism.²³ Stimuli were short videos showing an agent performing goal-related hand actions, like grasping an object from a table and looking at it. We studied observers’ motor cortex activation by measuring Event Related Desynchronization and Resynchronization (ERD/ERS) of the mu rhythm, a standard marker of “motor resonance,” that is, of the activation of the mirror mechanism in observers’ brains. Previous studies showed that voluntary action execution and observation correlate with ERD in upper alpha bands as well as in lower beta bands recorded over sensorimotor areas. Building on the design normally employed to investigate the hand action mirror mechanism, we focused on two questions: 1) whether the mirror mechanism responds differently to the observation of the same hand action filmed by a static camera in comparison with a moving camera approaching the scene; 2) whether the mirror mechanism activation is modulated by different ways a camera can be used to approach the scene. More precisely, we investigated whether the mirror mechanism is differently modulated by camera movements such as: a) zooming in on the scene; b) real camera movement towards the scene realized by using a dolly (camera mounted on fixed tracks); c) real camera movement towards the scene obtained by using a steadicam (camera fixed to the body of the cameraman, walking towards the scene).²⁴ We also investigated whether differences among viewing conditions (still, zoom, dolly, steadicam) could be related to participants’ subjective

²² Vittorio Gallese, Magali Rochat, Giuseppe Cossu, Corrado Sinigaglia, “Motor cognition and its role in the phylogeny and ontogeny of action understanding,” in *Developmental Psychology*, no. 45, 2009, pp. 103-113.

²³ Katrin Heimann, Maria Alessandra Umiltà, Michele Guerra, Vittorio Gallese, “Moving mirrors: a high density EEG study investigating the effects of camera movements on motor cortex activation during action observation,” in *Journal of Cognitive Neuroscience*, no. 9, 2014, pp. 2087-2101.

²⁴ Video clips were recorded in a professional film studio, enabling us to film the same scene 4 times under highly controlled conditions. The camera starting position was always 260 cm far from the filmed agent, the end position (in case of movement) was 80 cm from it. The camera movement speed as well as its height from the ground were kept identical in the three different movement conditions, so that the only difference among them consisted of the type of movement/approach to the scene: zoom, dolly and steadicam, respectively.

reports regarding the feeling of involvement and the experienced naturalness or artificiality of the camera movement used. At the end of the EEG recording session participants were again shown the same video clips and for each of them they were asked the following six different questions: 1) How much did you feel involved in the scene? 2) How much did you feel like the actor? 3) How much did you feel as if you yourself would approach the scene? 4) How comfortable did you feel watching the scene? 5) How realistic did you find the camera movement? 6) How much did you feel the camera movement resembled a person's movement when approaching the scene? Questions 3, 5 and 6, of course were not asked for still camera video clips.

The results of our study demonstrated that reducing the distance between spectators and observed agent, realized by moving the camera towards the scene, evoked stronger ERD of the mu rhythm during the observation of goal-directed hand actions. This difference reached significance only when the camera movement was realized by using the steadicam. Videos in which the zoom was applied reliably demonstrated a weaker activation of the motor cortex, as demonstrated by a stronger resynchronization. Results of control recordings from electrodes located over occipital visual areas, which were not affected by the different film styles, demonstrate that the observed different responses of the motor cortex to different film techniques are not due to mere increased attention evoked by the observation of these specific ways of filming actions.

The behavioral rating task showed that the steadicam was most able to produce a visual experience close to the one of a human approaching the scene. Indeed, participants perceived the movements of the steadicam as being the most natural and most resembling the movements of an approaching observer, thus eliciting the feeling that the observer him/herself would walk towards the scene.

These results suggest that film technique predicts time-course specifics of ERD/ERS during action observation, with only videos simulating the natural vision of a walking human observer eliciting a stronger ERD than videos filmed from a fixed position. Among videos dynamically reducing the distance between the observer and the observed agent, only those simulating the "natural" vision of a human observer approaching an agent do elicit a significantly stronger "motor resonance" in comparison to videos showing the same scene from a fixed distance. Furthermore, the artificiality of other ways of simulating the dynamic distance reduction (such as those obtained by filming the same scenes with the zoom or the dolly) appears to be reflected by differences in the time course of the resynchronization phase of the mu rhythm. The time-course of observers' motor cortex activation is modulated by the resemblance between the effect of camera movements and ordinary human vision. Familiarity with the visual experience provided by the video predicts the time course of the mu rhythm ERD/ERS.

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Camera movements, the brain and film theory: closing the gap

The literature on film shows converging evidence on the centrality of camera movement for, on the one hand, building a concrete spatiality within film space²⁵ and, on the other, for inventing a film technique capable of approaching human vision. One of the most relevant characteristics of the steadicam, as explicitly stated by its inventor Garrett Brown, is precisely to simulate human vision.²⁶ According to the operator Larry McConkey, by means of the steadicam, the “camera becomes like another person and the audience becomes connected through that person to the other actors. The audience becomes more empathetic, more involved.”²⁷ According to McConkey, what steadicam basically does is to convey the viewer’s point of view inside the cinematic space-time, giving this point of view the immanence of a virtual body capable of moving in a very natural manner together with the film characters. Martin Scorsese used steadicam this way in very famous shots like the “Copacabana shot” in *Goodfellas* (Martin Scorsese, 1990) and the “Counting room shot” in *Casino* (Martin Scorsese, 1995). In both scenes the camera/viewer not only follows the characters, but also explores the profilmic space by turning its “head” and by focusing on details or accomplishing movements both related and unrelated to the characters’ behavior. The sense of immersion is of course provided by the fluidity of the movement that conveys a very ecological approach to the scene without the overexcitement caused by the handheld camera, but it is provided as well by the motor engagement of the viewer, which has the impression to move freely inside the shot, following both the characters and his own curiosity.

In other words, the feeling of motion triggered by the steadicam seems to suggest a sort of independent movement of the viewer inside the shot, heightened by a stronger motor resonance, as we demonstrated for the first time with our study. This effect is quite well detectable in some shots of Stanley Kubrick’s *The Shining* (1980), when the camera follows Danny’s tricycle in the hallways or the kitchen of the hotel. When the kid exits the shot, Kubrick does not cut, but leaves the camera walking again for some seconds in the empty space, giving on the one hand the physical impression that a phantasmatic entity is actually following and threatening Danny, and on the other hand that the feeling of motion is to some extent independent from the character’s action and intentions.

Even if sometimes the steadicam – as any other stylistic technique – can be used in a less embodied way, our experiment is more in line with Sobchack’s ideas about steadicam than with Geuens’ ones, according to which steadicam would leave behind the force and subjectivity of personal enunciation and would basically disembodied vision.²⁸

²⁵ John Belton, “The Bionic Eye: Zoom Esthetics,” in *Cineaste*, no. 1, Winter 1980-81, pp. 20-27.

²⁶ Serena Ferrara, *Steadicam: Techniques and Aesthetics*, cit., p. 104.

²⁷ Ivi, pp. 123-24.

²⁸ Jean-Pierre Geuens, “Visuality and Power: the Work of the Steadicam,” in *Film Quarterly*, no.

Our experiment clarifies widely shared ideas among film directors on the nature of camera movements. The zoom is usually considered as a fake movement or, at least, an abstract one, while the camera movement is the only way to elicit the audience's sense of presence. David Cronenberg stated:

*One tool I never use is the zoom lens, because it doesn't correspond to my idea of filmmaking. The zoom is just an optical gadget; it's purely practical. And I will always prefer moving the camera, because I find that it physically projects you inside the film's space. And zooming doesn't achieve that. It keeps you outside.*²⁹

Similarly, Bernardo Bertolucci said: "I hardly ever use a zoom. I don't know why, but I find that there's something fake about its movement."³⁰ As our experiment shows, the relationship between viewers' motor and empathic involvement and camera movements is best obtained with steadicam. Considering that, as Geuens notes, it is not so easy to distinguish a steadicam shot from others using traditional techniques, the results of our experiment emphasize the skill of the motor brain to recognize a different kind of camera's motor behavior.

By the same vein, these data allow us to say that film's intentionality and subjectivity are also grounded on viewers' embodied simulation of camera movements, suggesting that the immanence of cinematic subjectivity largely relies on the bodily nature and understanding of film. Our experiment provides strong empirical neuroscientific evidence supporting what Dominique Chateau wrote about subjectivity: "If film has something to do with subjectivity, it is to the extent that its moving form bears the imprint of a subjectivity."³¹ In conclusion, the relational nature of film style and cinematic intersubjectivity can be usefully investigated by focusing on viewers' motor cognition implied by film techniques.

2, Winter 1993-1994, pp. 15-16.

²⁹ David Cronenberg in Laurent Tirard (ed.), *Moviemakers' Master Class*, Faber and Faber, New York 2002, p. 108.

³⁰ *Ivi*, p. 53.

³¹ Dominique Chateau (ed.), *Subjectivity: Filmic Representation and the Spectator Experience*, cit., p. 166.

New Studies

Cinéma d'exposition 2.0: **Mixed-Reality Games in and around the Museum¹** *Olivier Asselin, Université de Montréal*

Abstract

The museum has always been open to virtuality, to *mimesis*, since the objects it collects are often images. But with the competition from modern spectacles, the museum was quickly confronted with a broader virtuality, that of *immersion*, which places the viewer not in front of the image, but *in* the image. Obviously, the immersive aesthetic is not ideally suited to the museum's education, cultural and cultural mandate. The long and complex history of the relationship between the museum and cinema – which culminated in the “cinéma d'exposition” – clearly demonstrates this. The museum's recent interest in mixed-reality games, which echoes the use of the Internet and video games by mass culture, has renewed this tension. We will test these hypotheses in examining *Uncle Roy All Around You* (2003), an exemplary game involving street-players and online players collaborating in the search for a mysterious missing person, which was designed by Blast Theory and which premiered at the Institute of Contemporary Arts in London.

For Paul Milgram and his colleagues, *mixed reality* refers to a large class of technologies that create a dialogue between the real and the virtual, be it by introducing virtual data into real space (*augmented reality*) or by introducing real data into virtual space (*augmented virtuality*).² Nowadays, mixed-reality

¹ A first version of this text was presented at the *New Perspectives, New Technologies* conference organized by Ludovica Galeazzo, Elisa Mandelli and Emanuele Pellegrini, Università Ca' Foscari di Venezia and Università Iuav di Venezia, Venice, 13-15 October 2011.

² Paul Milgram, Haruo Takemura *et al.*, “Augmented Reality: A Class of Displays on the Reality-Virtuality Continuum,” in *Telematic Manipulator and Telepresence Technologies, SPIE*, vol. 2351, 1994, pp. 282-292. See also Ronald Azuma, Yohan Baillet, Reinhold Behringer, Steven Feiner, Simon Julier, Blair MacIntyre, “Recent Advances in Augmented Reality,” in *IEEE Computer Graphics and Applications*, vol. 21, no. 6, 2001, pp. 34-47, <http://www.cs.unc.edu/~azuma/cga2001>, last visit 2 March 2015; Oliver Bimber, Ramesh Raskar, *Spatial Augmented Reality: Merging Real and Virtual Worlds*, A.K. Peters, Wellesley (MA) 2005; Lev Manovich, *The Poetics of Augmented Space*, in John T. Caldwell, Anna Everett (eds.), *New Media: Theories and Practices of Digitextuality*, Routledge, London 2003, pp. 75-92. This last text is also available on the author's website (http://www.manovich.net/DOCS/Augmented_2005.doc) and translated in French as “Pour une poétique de

displays are omnipresent. They appear in various forms and on different platforms, mobile in particular. They have all kinds of applications and uses: they still serve to communicate, receive and transmit information – both textual and audiovisual – in a simply dialogical mode or a community or social network, but they can have an amateur, professional, scientific, political, commercial, educational, touristic or purely recreational use as well. Mixed-reality games are thus played in both real and virtual spaces, in the city and on the Internet. At once motivated and arbitrary, localized and delocalized, *in situ* and online, these mixed-reality games cross all types of spaces: natural or urban, private or public, commercial or institutional. Paradoxically, they are favoured in particular by the *old* institutions traditionally defined by a specific *location*, a particular *building* and *real* objects – such as museums.

The museum has always been open to virtuality, to *mimesis*, since the objects it collects are often images. But with the competition from modern spectacles, the museum was quickly confronted with a broader virtuality, that of *immersion*, which places the viewer not in front of the image, but *in* the image.³ Obviously, the immersive aesthetic is not ideally suited to the museum's educational, cultural and cultural mandate. The long and complex history of the relationship between the museum and cinema – which culminated in the “cinéma d'exposition” – clearly demonstrates this. The museum's recent interest in mixed-reality games, which echoes the use of the Internet and video games by mass culture, has renewed this tension. Here I would like to examine a mixed-reality game that was presented in a museum context, which I think exemplifies the dialectic condition of the museum in the digital age.

l'espace augmenté,” in Olivier Asselin, Alain Depocas, Chantal Pontbriand (eds.), “Écran numériques,” *Parachute*, no. 113, 2004, pp. 34-59. Space (and much previous discussion) here prevents me from discussing further the obviously problematic opposition between reality and virtuality.

³ This is not the place to develop a detailed reflection on the notion of immersion. Briefly defined, immersion is an experience that gives one the feeling of physically entering a separate space (Olivier Grau, *Virtual Art: From Illusion to Immersion*, MIT Press, Cambridge [MA] 2003). But over the past few years, the theory of immersion has developed rapidly. Most authors today consider the term to cover a variety of experiences, and that a distinction should be made, within the general category, between several types of immersive experiences. For example, in her inaugural study of immersion, which pondered the relationship between literature and virtual reality, Marie-Laure Ryan identified four degrees of absorption: concentration, imaginative involvement, entrancement, addiction; and three types of immersion: spatial (a response to setting), temporal (a response to plot) and emotional (a response to character). (Marie-Laure Ryan, *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media*, John Hopkins University Press, Baltimore 2001). More recently, Gordon Calleja, reflecting upon immersion in video games, distinguished six dimensions of involvement: kinesthetic, spatial, shared, narrative, affective and ludic; and two phases within each of these dimensions: micro-involvement and macro-involvement (Gordon Calleja, *In-Game: From Immersion to Incorporation*, MIT Press, Cambridge [MA] 2011). On the relationships between the museum and the institution, see Alison Griffiths, *Shivers down your Spine: Cinema, Museums, and the Immersive View*, Columbia University Press, New York 2008.

Uncle Roy All Around You (2003)

Blast Theory, an artist collective based in London (lead by Matt Adams, Ju Row Farr and Nick Tandavanitj), has done pioneer work in the field by creating, as early as 2001 with *Can You See Me Now?*, games that merge online and mobile technologies through the use of GPS. In 2003, Blast Theory launched a new mixed-reality game, *Uncle Roy All Around You*, which takes place simultaneously in a real city and on the Internet, in a virtual representation of the real city, and which involves *street players* and *online players* who enter the game through computer terminals set inside the museum or from their homes, anywhere around the world.⁴ As in the first video games, the goal here is simple: you must find someone (Uncle Roy) in a limited amount of time. Both positions of street and online players are accessible to the public. But they are not in competition; on the contrary, they must cooperate to thwart Uncle Roy, the game master, and his accomplices from Blast Theory.⁵

Street players purchase tickets on the premises of the participating institution. At the registration desk, they have their picture taken and are asked to “hand over all their possessions: phone, purse, bag, loose change, etc.” In exchange, they receive a handheld computer and a code number. They are then shown how to operate the computer and, most importantly, they are informed of their mission: within 60 minutes, they must find Uncle Roy, a mysterious character we know little about, who is hiding somewhere in the city. Finally, the players are invited to enter their code into the handheld computer, which starts the game – and the countdown. On the small screen, a map of the district appears, which the player can drag around, zoom in or out at will, and on which the names and positions of online players are shown. Once outside the building, the player receives a first text message from Uncle Roy himself: “Meet me in the park by the lake. I’ve marked your map with the location. Click the ‘I’m here’ button to confirm you’ve arrived and I’ll come to meet you.” The game continues in the same manner: when the player arrives at the first meeting point and confirms his position, he receives a new text message from Uncle Roy giving him new directions.

Online players may register anywhere, from any computer, on the game’s website. A virtual city appears on their computer screen, a miniature version of the real city, and their own avatar, in a third person perspective. By using the arrow keys on their computer keyboard they can move around in this virtual world and discover the position of other players: the online players are marked by a white dot and the street players by a red flashing dot, which brightens when the player

⁴ For the presentation of the game by the authors themselves, see the Blast Theory website: <http://www.blasttheory.co.uk/projects/uncle-roy-all-around-you>, last visit 2 March 2015.

⁵ The game’s operation is ensured by a small technical crew from Blast Theory. From an improvised control room on the game’s real sites, the crew operates the server and can communicate with the street players through an independent channel.

declares her position. But online players also have access to a map of the gaming area and to photographs of selected locations.

Players may interact, but exchanges are carefully regulated. Online players can send public text messages to all other online players (whose recent exchanges appear at the bottom of the screen), and private messages to selected street players (whose ID cards appear at the right of the screen). Street players can record and send short voice messages to online players who write to them – or ignore them. All players receive text messages from Uncle Roy.

This is how players cooperate, and this cooperation is encouraged. On the one hand, online players have only a virtual existence and they need street players to accomplish their mission; on the other hand, street players have only a limited knowledge of the game and may benefit from the expanded knowledge of online players – for example, when Uncle Roy's rendezvous are so enigmatic that they require an exploration and an interpretation of the whole game space.⁶

Towards the end of the game, Uncle Roy prompts the street player to go to a specific address: "Go to 12 Waterloo Place and ring the bell marked Roy." Often with the help of an online player who has a picture of the entrance, the street player finds the address and rings the doorbell. The door opens automatically and the player finally enters Uncle Roy's office. The office is empty, but it looks as though it was recently occupied. Uncle Roy's presence can be felt everywhere. The lights are on, so is the radio. There is a red vinyl chair and a small coffee table, black metal shelves and a large architect's desk. On the desk is a model of the city made of Post-it notes and on the opposing wall hangs an augmented reality display showing, on the same model, all active players, whether they be online or on the street.

At the same time, online players are informed that a street player has entered the office and they are invited to join him, virtually. But first, they must answer a series of questions, including this last one, which binds them:

Somewhere in the game, there is a stranger who is also answering these questions. Are you willing to make a commitment to that person that you will be available for them if they have a crisis? The commitment will last for 12 months and, in return, they will commit to you for the same period.

If they accept, online players are asked to type in their address and phone number. Then, they are allowed to *enter* the virtual office, where they get a live webcam feed of the street player in the real office.

Meanwhile, in the real office, the street player finds a postcard on the table, on which a simple question is printed: "When can you begin to trust a stranger?" Uncle Roy asks the player to answer the question, in writing, on the very card, then to look into the webcam and to imagine a stranger looking back at him. Finally, he is invited to leave the building, with the card in hand, and to wait close by

⁶ Having said this, *Uncle Roy All Around You* is less engrossing for online players than for street players and Blast Theory had to revise certain rules and parameters in later versions of the game.

in a telephone booth. At that moment, the phone rings and a voice instructs the player to enter a white limousine parked on the corner of the street – and to fasten his seatbelt. The limousine is indeed there, with a driver patiently waiting. The player enters, buckles his seatbelt and soon after Uncle Roy himself – really an actor – climbs aboard the vehicle, which drives away. During the car ride, Uncle Roy asks the street player the same questions online players had to answer earlier. If the player accepts to commit herself to a complete stranger for twelve months, she must write her contact information on the postcard. The car stops in front of a mailbox and the player is invited to slide the card inside – addressed to Uncle Roy. The game ends here and the player is abandoned to her fate on the sidewalk (not far from her starting point...). But Blast Theory's team eventually pairs each street player who has accepted, blindly, the mutual aid contract with an online player who has also consented. The contact information of each player is then sent to the other one. For one year, each of the two players may receive a request for help from the other one, whom s/he doesn't know, and s/he is bound to answer it.

I will not linger here on the minimal narrative situation and plot on which the game is based – it is a story of flight and pursuit – nor on the moral relations they try to establish – relations of power, domination and submission. They are probably linked to the potentialities and limitations of the mobile and locative technologies used. However, they undoubtedly do have a social and political meaning.

A Remediation of the Museum

Blast Theory's games are site-specific works: they are intimately connected to their context of reception, have often been conceived and realized according to a particular location and are adapted to each new location. They were made for specific cities, events and festivals, for particular centres and museums. *Uncle Roy All Around You* was commissioned by The Institute of Contemporary Arts in London and premiered there.

The museum here is indeed central. It is the first location of the game, its physical starting point. Many players enter the game through the museum: this is where the *ludic contract* is undertaken, through an exchange of goods and information. But the museum is also represented in the game and in many different ways with indexes, icons and symbols, through speech and text, as well as photographs models and computer graphics. Being at once the context and the referent of the game, the museum here undergoes a *mise en abyme*.

However, the museum is simultaneously and drastically marginalized. As we have seen, online players can access the game not only from within the museum, but from elsewhere too, from any other computer terminal. Moreover, from the beginning of the game players, whether they be online or on foot, in virtual space or in real space, are asked to leave the museum's premises and explore the surrounding neighbourhood. Originally, the decision may have been a technical one (given the instability of GPS and WiFi connections), but it has aesthetic and

political consequences. Immediately, the players' attention is diverted from the museum's interior – and everything it contains.

In the virtual space of the game, which is a much simplified 3D model of reality, all details disappear. The museum, as an institution, is reduced to its physical reality, its contents to its container, and the collection to the architecture and the architecture to the space it occupies and to its surfaces; that is, to coloured geometrical shapes on a map, to simple transparent wire-frame models or opaque meshes on which photographs of facades have sometimes been mapped. The very name of the museum is not always mentioned, though this is also the case with every other building and the entire city. Furthermore, *real* people do not appear on the screen, nor do cars, objects, signs, etc. We only see here the abstract avatars of the players, in a textureless space which is reminiscent of the first 3D video games. In its 3D model form, the city thus becomes a ghost town, where only a few spectres move.

In real space, the experience is not fundamentally different. Once outside the museum, street players only get back to the building at the end of the game. In the surrounding neighbourhood, they pass real people, objects and signs, but only pay attention to them if they are or could be part of the game. (The game thus instigates a certain paranoia in the player who must constantly wonder if what she is encountering is relevant or irrelevant to the game.) Usually, in the real city, players only notice that which is essential to the game and disregard the rest (they do not have enough time to be undisciplined). Their experience is mediated through an abstract image, that of the virtual city which superimposes itself onto the real city and creates a layered, biplanar consciousness.⁷

The Player's Perspective

Mixed-reality games are characterized by an exceptional spatial, temporal and social extension.⁸ Some games are played out around the entire world, across many months and imply hundreds of players. In Blast Theory's works, the game space is limited to a particular area, but it expands outside the museum, into public space and in the city, usually around one square kilometre.⁹

⁷ For a complete description of the first performance of the game, with a comparative analysis of street and online players' experiences, see Steve Benford, Nick Tandavanitj, Matt Adams, Ju Row-Farr *et al.*, "Uncle Roy All Around You: Implicating the City in a Location-Based Performance," http://www.blasttheory.co.uk/wp-content/uploads/2013/02/research_uraay_implicating_the_city.pdf, last visit 2 March 2015.

⁸ On this subject, see Steve Benford, Gabriella Giannachi, *Performing Mixed Reality*, MIT Press, Cambridge (MA) 2011; Eric Gordon, Adriana de Souza e Silva, *Net Locality: Why Location Matters in a Networked World*, Wiley-Blackwell, Chichester 2011; Markus Montola, Jaakos Stenros, Annika Waern (eds.), *Pervasive Games: Theory and Design*, Morgan Kaufman Publishers, Amsterdam 2009; Carsten Magerkurth, Carsten Röcker (eds.), *Concepts and Technologies for Pervasive Games*, Shaker Verlag, Aachen 2007.

⁹ Here, as in all pervasive games, the limits of the game are broad and ill-defined. They have

The duration of the game is also substantial – two hours for *Can You See Me Now?*, one hour for *Uncle Roy All Around You* – especially if compared to the average time spent before works of art in museums. Finally, the game implies a large number of players – many street players, even more online players – and it requires a constant interaction between them.¹⁰

But the main feature of these games is obviously that they are mixed, in Milgram's sense of the word: they do not take place only in the real world (like treasure hunts or traditional role playing games), nor only in the virtual world (like video games and virtual reality); they mix real and virtual environments. To the street players, real space is augmented with virtuality; it contains invisible virtual players and it is watched by an absent virtual gaze. To the online players, virtual space is augmented with reality, the virtual information refers to real places and real people.

The real and virtual worlds are here similar. The virtual city is a representation of the real city and the real players, whether they are on the street or at home, in front of their computer, have virtual avatars. Furthermore, both worlds are linked in real time and sometimes, live. Between the two, radio and Wi-Fi lines of communication are established which allow an instantaneous exchange of textual, audio and visual information, and most notably an exchange of audio messages and webcam images. But the two worlds are not only synchronized, they are also sometimes *syntopized* (as we could say through symmetry), or *syn-localized* (if Latin is preferred to Greek). At times, the real world and the virtual

been given various names, such as the magic circle (Johan Huizinga, *Homo Ludens: A Study of the Play-Element in Culture*, Beacon Press, Boston 1971; Katie Salen, David Zimmerman, *Rules of Play: Game Design Fundamentals*, MIT Press, Cambridge [MA] 2004) or the membrane (Edward Castronova, *Synthetic Worlds: The Business and Culture of Online Games*, The University of Chicago Press, Chicago 2005). Obviously, these metaphors do not always convey the complexity of the games and many authors have sought other models that are not strictly spatial. In his analysis of role playing, Gary Alan Fine (*Shared Fantasy. Role Playing Games as Social Worlds*, University of Chicago Press, Chicago 2002) suggests considering the limits of the game as frames – a notion borrowed from Erving Goffman (*Frame Analysis: An Essay on the Organization of Experience*, Northeastern University Press, Boston 1986), who himself borrowed it from Gregory Bateson (*A Theory of Play and Fantasy*, in Id., *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*, The University of Chicago Press, Chicago 2000, pp. 138-148) – to underscore the conceptual, pragmatic and contextual dimension of these limits. Fine distinguishes three discursive frames: the primary framework, which is entirely outside the game; the secondary framework, which relates to gaming rules (this frame is meta-communicational); and the tertiary framework, which is inside the world of the game (this frame is some ways intradiegetic). These three frameworks are mutually embedded, but players may freely circulate from one to the other without warning or notification. Dominic Arsenault, Bernard Perron (*In the Frame of the Magic Cycle. The Circle(s) of Gameplay*, in Bernard Perron, Mark J.-P. Wolf (eds.), *The Video Game Theory Reader 2*, Routledge, New York 2008, pp. 109-131) have also proposed a rich model that emphasizes the temporal dimension of gaming and presents the incessant dialogue between the player and the system of the game as a three-fold spiral movement in which gameplay, narrative and interpretation unfold.

¹⁰ On the collaborative work between players, behind-the-scene staff and occasional members of the public, see Andy Crabtree, "The Social Life of Uncle Roy: Executive Summary," in *School of Computer Science & IT*, University of Nottingham, http://www.blasttheory.co.uk/wp-content/uploads/2013/02/research_the_social_life_of_ur_executive_summary.pdf, last visit 2 March 2015.

world are visually aligned with one another, as would be a photograph of a location seen in that very location. And they are temporally connected, as when there is a live audio or video exchange of information. This synchronization and this *synlocalization* of the two worlds are manually ensured by the user (when he enters his actual position into the handheld computer, when he moves his avatar with the arrow keys of her keyboard) or automatically by the GPS.

The importance of this synchronization and this *synlocalization* is never as evident as when it fails. WiFi and GPS technologies are not infallible and players in Blast Theory's games have experienced some connection and positioning problems. Because they have found themselves outside the game space or in dead zones (close to or inside buildings), or because of the never-ending movements of satellites, some street players have momentarily lost their connection, they have sent imprecise coordinates or received data with a delay of a few seconds.¹¹

The fact remains that the synchronization and the *synlocalization* of real and virtual spaces are what makes mixed-reality games interesting. The most striking moments of the game are when both worlds become synchronous and *synlocalized* when they suddenly communicate, spatially and temporally, locally and in real time, or better, live and *in situ*, in the very location where the player stands. The game really intensifies when an online player discovers in the virtual world photographs of real places; when she sees a picture and hears the voice of the street player whose avatar she has been following on the screen; when she understands that the street players follow, in real space, her own virtual avatar and that she can therefore influence their itinerary; when street players pronounce her name and discuss with her strategies to capture Uncle Roy; when Uncle Roy himself sends her a personalized message; when a webcam image appears that gives her direct access to Uncle Roy's office; when the street player present in the room suddenly looks at her; when online players using the museum's computers see pass by them, through the real window, the street player they had been following on the screen, etc. Similarly, the game becomes very effective when street players realize they are being observed by virtual players, that is to say, by real players who are in other locations; when the messages sent by Uncle Roy refer to, not only real places, streets and buildings, but also to the people they happen to walk past at that very moment ("Pay no attention to the street cleaner with long grey hair...", "Watch a tourist cross the road and follow them [sic]," etc.). The game's climax occurs when street players finally enter Uncle Roy's office and can sense his presence without seeing him, when they are asked to climb aboard the limousine and finally, when Uncle Roy himself, in the flesh, sits beside them and starts talking to them. In such games, the street player's experience may be more exciting than that of online players. But in both positions, the most sought-after effect is the same: the effect of the real, the staging of the real presence of a

¹¹ There have been some incidents in the virtual world in which street players' avatars suddenly disappeared and reappeared elsewhere. Some online players concluded that the game had granted these players special "powers."

virtual person in real space, of a real person in virtual space (but a real presence always that is haunted by an absence).

Metalepsis is certainly the dominant rhetorical trope at work in these games. It blurs the diegetic registers and connect the world of the narratee, the world of the narrator and the world of the characters, the space-time of the players, the space-time of the authors and the space-time of fiction, the intradiegetic and the extradiegetic: the narrator and the characters communicate with the player at home, they enter his private life; the players enter the diegetic space, they become characters of the game and they interact with the other characters; likewise, the narrator also becomes a character you run into in the diegetic space, in a real car, etc. All narrative instances are fictionalized and integrated into the story; they are moreover realized and integrated into the user's life.

These games challenge representation in two ways: on the one hand, they blur the lines between the real and the virtual, between the factual and the fictional (they work on the threshold of fiction); and, on the other hand, they push back the spatial, temporal and social limits of the game (they work on the threshold of the institution). They transform the museum and the entire city into a diegetic space and into a game space, the narrators and narratees, the authors and the users, the puppet-masters and the players become characters, integrated into the story and into the game, they transform aesthetic experience into an immersive fiction. Within the ensemble of immersive practices, these games partake of both virtual reality and theatre or, more precisely, of live action role-playing games (or LARPs). (They present an *image* that is limited, *homomaterial* (Eco), egocentric (Milgram), and which involves an *allo-subjective actancial identification* (Schaeffer).

Mixed-reality games such as these are therefore paradoxical. They entertain a desire for the Real (for the thrill of real time and of live action), but at the same time, they also cause an eclipse of the real under the fiction of the game. They nurture a strange fetishism that fantasizes about both physical proximity and distance. It is not surprising that the preferred genre here is the suspense thriller.

Because they take place in a particular location, mixed-reality games seem to invite users to leave virtual reality and become aware of actual reality, they seem to promote, not immersion, but *emersion* – a rediscovery of the actual site where the game takes place, of public spaces and local communities. But when these games involve the development of elaborate narrative and ludic fictions, in real time and *in situ*, the effect may well be reversed: the real itself is virtualized, the factual is fictionalized, gamified, the local is delocalized and fictional immersion deepens.

The Institution's Perspective

The museum has always nurtured immersion. From the moment it became interested in collecting not only objects, but also objects that are images, the museum opened, within its own real space, a window to virtual space and it invited the spectator to step into it, if only by imagination. Throughout Modernity, the

museum was much interested in monumental images, such as history paintings or large-scale landscape paintings. And during the 20th century, it has opened itself up to *new* immersive technologies – to photography, cinema, video, audio guides and, of course, video games – in order to offer even more immersive experiences.

The museum's interest in immersion certainly has sociological causes. It is obviously linked to the development of immersive culture in modern mass media. It is also connected to the legitimacy crisis that all museum institutions face regularly and now more than ever. The problem is not, yet, financial legitimacy (profitability), but rather social and political legitimacy, which is now measured by public success. As recent statistics show, museum attendance is stable, in relative and absolute terms, but competition for public attention is ferocious and cultural habits are undoubtedly changing.¹² In this context, it is not surprising that museums are now courting a larger and younger public, and that their programming includes more and more exhibitions, mediums and works that have, from this point of view, an obvious public appeal. The museum's interest in immersive and interactive technologies clearly illustrates this fight for public attention.

However, at the same time the museum has always kept from completely giving into the immersive aesthetic, probably because it risked losing part of its specificity in the process. Obviously, the museum has a plural mandate, that of exhibition and conservation, education and enjoyment (as stated by the ICOM).¹³ It collects not only images but also objects, not only icons but also relics, it encourages not only immersion, but also authenticity. It thus participates in a two-fold regime that cultivates both exhibition value and cult value,¹⁴ allographic and autographic forms,¹⁵ metaphorical and metonymic figures.¹⁶

This may be the reason the museum has always preferred mixed reality to vir-

¹² See John Micklethwait, "Temples of Delight," Special Report on Museums, *The Economist*, 21 December 2013, <http://www.economist.com/news/special-report/21591707-museums-world-over-are-doing-amazingly-well-says-fiammetta-rocco-can-they-keep>, last visit 2 March 2015. Marie Bourke *et al.*, "New Trends in Museums of the 21st Century," The Learning Museum Network Project, 2013, <http://www.lemproject.eu/WORKING-GROUPS/museums-in-the-21st-century-1/7th-report-new-trends-in-museums-of-the-21st-century>, last visit 2 March 2015.

¹³ The International Council of Museums (ICOM) officially defines the museum thus: "A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment." ICOM, "Museum Definition," <http://icom.museum/the-vision/museum-definition>, last visit 2 March 2015.

¹⁴ Walter Benjamin, *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit*, Suhrkamp Verlag, Frankfurt am Main 1955 (Eng. ed. *The Work of Art in the Age of Mechanical Reproduction*, Penguin, London 1936).

¹⁵ Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols*, Hackett Publishing Company, Indianapolis 1976.

¹⁶ It is important to note that if these two programs are in opposition from the museum's perspective, they may not be from the spectator's: the difference between the original and the copy is not pertinent when, in terms of the aesthetic experience, they are indistinguishable: what matters here is not the presence, but the effect of the presence.

Cinéma d'exposition 2.0

tual reality, works that create experiences that are at once immersive and emergent, that open to a virtual world while remaining tied to the real world such as large-scale photography, video installations and *cinéma d'exposition*.¹⁷ The museum's interest in works using mixed technologies likely expresses a similar concern, and it may be the symptom of the institution's epistemological hesitation. This hesitation is not new: it is inherent in the museum, and is revived whenever a new technology is developed and spreads. But digital technologies have brought about an extensive revolution that questions the museum's very foundations. The emerging culture is not only audio-visual, immersive, interactive and communicational, it is also decidedly mobile and nomadic.

¹⁷ To which we could undoubtedly add architecture, the museum's own architecture.

L'analyse du film à l'ère numérique.

Annotation, geste analytique et lecture active¹

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Abstract

In 1990 Raymond Bellour defined the practice of film analysis as “an art without future” because of the intrinsically different language it used in relation to its object; specifically, he was referencing oral communication (seminars and teaching classes) and creation through visual arts as the only specific spaces left for film analysis. His idea was to overcome critical and theoretical writing in favour of an *action* on film. What is the relevance of these reflexions in the new media landscape? By envisioning a dialogue between new and old tools, one can reflect on the way digital devices are shaping emerging practices. If the viewer is becoming an actor, then perhaps the researcher is able to become an editor who – by deconstructing the film – can also produce new audio-visual and graphic material. Computer-assisted analysis involves a range of different tools, from statistics to annotation to presentation, and each tool has practical as well as methodological implications. In this article, I examine the conception, application, and potential of four such computer programmes from the perspective of the history of cinema and film analysis. I also hypothesize that active reading tools such as Advene, while helping to promote new practices, may also encourage new approaches. I argue that the computer amounts to a real assistance tool for the practice of analysis. Our desire to deconstruct and analyse films is today more alive than ever, and digital tools can help us not only to “grasp” the film, but also to grasp its impact on us, as well as the path to our comprehension of it.

*Dialogues, actions, suite de plans surtout, avec leur pertinence
élémentaire, je notais, je notais « tout », autant que je pouvais :
jusqu'à l'absurde, remplissant des carnets qui, retranscrits sur fiches,
quand ils n'étaient pas par trop illisibles ou erratiques, me donnaient
toujours l'impression que quelque chose, l'essentiel, continuait de
fuir, que je n'avais dans mes doigts que du vent.*

Raymond Bellour²

¹ Cet article se base sur ma thèse de doctorat : « Problèmes de l'analyse du récit de fiction audiovisuelle: vérification et développement d'un modèle analytique et interprétatif à l'aide d'outils numériques ». Je tiens à remercier Lorenzo Cucu, Lorenzo Garzella, Leonardo Grilli, Thibaut Cavalié, Olivier Aubert, Yannick Prié et toute l'équipe du LIRIS avec laquelle j'ai pu collaborer.

² Raymond Bellour, *L'Analyse du film*, Albatros, Paris 1979, pp. 10-11.

Dans son parcours exemplaire, raconté dans *L'Analyse du film*, Raymond Bellour décrit les trois difficultés qu'il avait rencontré pendant sa pratique. D'abord il y avait la tentative tout à fait *artificielle*, de démonter une matière impalpable comme le film en le privant de sa caractéristique primaire, c'est-à-dire le mouvement ; ensuite l'impossibilité de citer le texte, dont la matière signifiante est très différente de l'écriture et donc l'impératif de se confier au découpage et aux photographes. Enfin une difficulté plus théorique, concernant l'interrogation sur son propre approche et sa méthode de travail, cette *autoréflexion* qui a toujours accompagné les analystes et qui constitue l'un des aspects les plus intéressants de la discipline³. C'est à cause de ces difficultés que Bellour choisit de donner le titre « Le texte introuvable » au premier chapitre de son volume d'analyses, une expression dramatique et efficace avec laquelle il souligne le paradoxe concernant toute analyse filmique, un paradoxe qui concerne l'analyste aussi bien que le lecteur. Dans la tentative de saisir une matière imaginaire comme celle du film, l'analyse se trouve entièrement *emprisonnée*, en équilibre précaire entre mouvement et arrêt, incapable d'embrasser le corps du film – qui la séduit et en même temps s'enfuit – et dont la polysémie s'oppose au langage verbal⁴.

La citation de Raymond Bellour donne l'occasion d'entrer dans le sujet *in medias res*, par le biais des problèmes pratiques qui, depuis toujours, l'ont caractérisée et qui, en faisant débat, lui ont permis de se développer en tant que discipline théorique, méthodologique et pratique. Dans les années 1960, Christian Metz avait inauguré une nouvelle branche d'études – la sémiologie du cinéma – autour de l'idée d'une science de la transparence et de la scientificité qui aurait dû faire sortir les études filmiques de l'empirisme, de l'impressionnisme et du domaine du jugement subjectif⁵: selon son expression, l'analyse du film est un « outil » destiné à poser des questions plutôt qu'à fournir des réponses, une méthodologie de recherche plus qu'une école de pensée⁶. A la même époque, Raymond Bellour réclamait la nécessité d'une pratique autonome, interdisciplinaire, en dehors de conceptions théoriques prédéfinies, une pratique liée surtout à l'intuition du savant et à sa subjectivité. Dans son parcours, Metz s'est surtout occupé de définir de façon toujours plus précise le domaine de cette discipline et de forger les instruments linguistiques pour en parler⁷; de son côté, Bellour a toujours questionné les limites d'une pratique où

³ Francesco Casetti affirme que l'un des premiers objectifs de la sémiologie (et en particulier de la sémiologie metzienne) est la mise au point de la méthodologie, autant qu'elle semble dépasser l'étude de l'objet-cinéma en soi (Francesco Casetti, *Teorie del cinema. 1945-1990*, Bompiani, Milano 1993, p. 97; éd. fran. *Les Théories du cinéma depuis 1945*, Nathan, Paris 1999).

⁴ Raymond Bellour, *L'Entre-Images. Photo, cinéma, vidéo*, La Différence, Paris 1990 (éd. it. *Fra le immagini. Fotografia, cinema e video*, Mondadori, Milano 2007, p. 13).

⁵ *CinémAction*, 25 ans de sémiologie (sous la direction de André Gardies), n° 58, janvier 1991.

⁶ Christian Metz, dans Elena Dagrada et Guglielmo Pescatore (sous la direction de), « La semiotologia del cinema ? Bisogna continuare. Conversazione con Cristian Metz », dans *Cinegrafie*, n° 1, février 1989, pp. 11-23.

⁷ Christian Metz, *Essais sur la signification au cinéma*, vols. I et II, Klincksieck, Paris 1968-1972 ; Id., *Langage et cinéma*, Larousse, Paris 1970.

les enjeux dépassent les résultats, une pratique qu'il a défini « un art sans avenir » : dans *L'Entre-Images*, il affirme que dans le domaine cinématographique la théorie n'a produit aucune analyse qui puisse être comparée au travail de Roland Barthes dans *S/Z*⁸, tout en précisant qu'il faudrait peut-être arrêter avec l'analyse textuelle du film et ne produire que de *gestes*⁹.

Qu'en est-il aujourd'hui de ces réflexions dans le nouveau *media landscape* ? Ces deux approches me semblent fondamentales pour discuter la fonction des outils numériques dans le cadre plus large de l'histoire de l'analyse du film, parce qu'ils permettent d'introduire le problème du rapport entre l'analyste et le film, ainsi que de celui entre l'analyste et les instruments qu'il utilise. La perspective que j'adopte est donc celle d'un dialogue entre des outils actuels et plus anciens, lesquels ont été développés au cours du XX^{ème} siècle, parallèlement à une réflexion sur les nouvelles pratiques favorisées par de nouveaux dispositifs.

De la machine statistique...

En 1990, Bellour parle de *geste analytique* comme d'un geste qui peut s'exprimer non seulement dans les domaines du séminaire et de l'enseignement (c'est-à-dire dans la communication orale), mais également dans celui de la création; des lieux qui sont autant d'espaces ouverts à la possibilité d'une *action* qui ne serait plus de l'ordre de la critique et de la théorie (et donc de l'écriture) mais plutôt de la mise en scène et de la création. À l'époque, le filmologue songe au milieu scolaire et académique comme des lieux voués à l'analyse *via* un projecteur et un écran, ainsi qu'au milieu artistique où la vidéo permet des nouvelles rencontres entre la parole et l'image¹⁰. Mais aujourd'hui, avec la numérisation, le champ de l'analyse est devenu celui des outils numériques, lesquels modifient notre rapport aux images en permettant de se rapprocher du *geste*, comme suggéré par Bellour (qui d'ailleurs a fait partie d'un projet destiné à l'annotation et à l'analyse audiovisuelle à l'aide d'un outil informatique sur lequel je vais revenir)¹¹: un geste qui a des implications créatives mais aussi méthodologiques, et qui est capable de donner une nouvelle vie à la pratique analytique.

L'approche des humanistes de la technologie informatique consiste souvent à demander au logiciel de pouvoir accélérer certaines pratiques (comme les calculs) et d'automatiser certaines procédures. Mais un logiciel pour l'annotation et l'analyse audiovisuelle n'est pas seulement une *machine statistique* : il suffit de réfléchir à la différence entre un livre imprimé et un *ebook* pour comprendre qu'il s'agit de deux objets différents, et non pas seulement de la simu-

⁸ Roland Barthes, *S/Z*, Paris, Seuil 1970.

⁹ Raymond Bellour, *L'Entre-Images*, cit.

¹⁰ Bellour pense en particulier au travail de Thierry Kuntzel et de Jean-Luc Godard qui utilisent la vidéo comme outil de réflexion et d'analyse sur le cinéma (Raymond Bellour, *L'Entre-Images*, cit.).

¹¹ http://web.iri.centrepompidou.fr/pop_site.html, dernier accès 18 janvier 2015.

lation numérique d'un vieux média¹². La numérisation et le développement de logiciels spécifiques ont permis l'émergence de nouvelles approches à l'analyse du film qui favorisent une *lecture active* : de ce point de vue, il faut considérer le logiciel non seulement comme un instrument qui permet d'aboutir à un résultat de façon plus rapide et précise, ou de gérer une grosse quantité de données (ce que nous demandons habituellement aux logiciels), mais comme un allié du chercheur qui peut changer la façon dont on interprète les films et peut-être également la théorie du cinéma elle-même¹³.

... à la lecture active

The act of interpreting a film, which used to involve simply thinking and writing about it, now involves the physical manipulation of the film through its interface. This process itself is an act of déconstruction ; a film's meaning is taken apart not only by our thinking critically about it, but by our physical interaction with it through its interface.
Nicholas Rombes¹⁴

Bien avant la naissance de l'ordinateur, Sergueï Eisenstein, dans sa conception du montage comme une forme de raisonnement non exclusivement cinématographique, avait imaginé une sorte d'hypertexte avant la lettre qu'il décrit avec précision en 1929 et qui demeure sa référence dans ses écrits ultérieurs. Réfléchissant à la meilleure forme à donner à un ouvrage qui traite des problèmes du montage, Eisenstein imagine un *livre-sphère*, tournant et dynamique, conçu lui-même comme un dispositif de montage. Il s'agit à proprement parler d'une structure qui sera à la base de l'hypertexte : c'est-à-dire une structure avec un noyau central et une série de satellites appelés *secteurs* qui sont liés à la fois entre eux et au noyau central. Une structure où l'ensemble, chacune de ses parties et leurs relations réciproques sont constamment sous les yeux du lecteur¹⁵.

Le parcours artistique du théoricien soviétique est caractérisé par une osmose permanente entre la création et la réception du cinéma, ainsi qu'entre l'écriture et la lecture d'un texte théorique sur le cinéma (ou les autres arts) : les deux

¹² Pour une comparaison entre les « anciens » médias et les « nouveaux » médias : Lev Manovich, *The Language of New Media*, MIT Press, Cambridge (MA) 2001 (éd. fr. *Le Langage des nouveaux médias*, Les Presses du réel, Dijon 2010).

¹³ Lorenzo Cuccu, superviseur d'un logiciel pour l'annotation et l'analyse de l'Université de Pise (le DCP), soutient que pendant l'opération de segmentation d'un film, l'outil informatique favorise et rend explicite l'exigence de considérer une segmentation qui se réalise sur plusieurs composantes du texte, à savoir sur des lignes de développement qui – tout en se superposant – ont une nature spécifique et différente l'une de l'autre (Lorenzo Cuccu, *Carlo Ludovico Ragghianti : l'esperienza del tempo nelle arti figurative e nel cinema. Qualche osservazione*, dans Marco Del Monte [sous la direction de], *Far comprendere far vedere. Cinema, fruizione, multimedialità : il caso "Russie!"*, Terra Ferma, Treviso 2010, pp. 87-93).

¹⁴ Nicholas Rombes, *Cinema in the Digital Age*, Wallflower Press, London 2009, p. 68.

¹⁵ Antonio Somaini, *Ejzenštejn. Il cinema, le arti, il montaggio*, Einaudi, Torino 2011, pp. 80-94.

domaines sont interdépendants et s'influencent réciproquement. Mais il existe un autre aspect novateur de son écriture qui va compléter sa conception avant-gardiste de l'écriture critique, à savoir la pratique de la *post-analyse* que l'auteur applique à ses propres films et qui lui permet de mettre en évidence la complexité des solutions de montage adoptées. Le caractère analytique et autoanalytique de sa réflexion le conduit à produire des articles qui, tout en se conformant à la linéarité de la page écrite, font apparaître constamment des renvois croisés, et témoignent de la nécessité d'aller non seulement au-delà de la page, mais aussi au-delà du film, à la recherche d'une forme nouvelle susceptible de conjuguer texte et analyse du texte. Eisenstein mène toujours en parallèle écriture et graphisme, et les réflexions théoriques s'appuient sur des instruments de vérification et d'illustration efficaces, tels que la publication adjacente de reproductions picturales, de dessins, d'esquisses, de photogrammes retouchés, complétés de schémas et de grilles, jusqu'à des diagrammes complexes qui montrent – comme dans une partition – la *polyphonie* des moyens d'expression à l'œuvre dans ses films, ainsi que les correspondances verticales entre le développement figuratif des plans et celui de la musique¹⁶ (fig. 1).

Les diagrammes d'Eisenstein, tout comme les schémas et les grilles réalisés par Dziga Vertov, semblent anticiper les logiciels actuels de montage non linéaire et les technologies qui seront développées quelques décennies plus tard : les hypertextes, les logiciels de *video editing* et les hypervidéos¹⁷. La « Numeric transcription of a montage piece of a film by Dziga Vertov – the moment of the flying of the flag on the day of the opening of a pioneer camp »¹⁸ (fig. 2) montre à l'horizontale une liste de plans (de 1 à 52), et à gauche une colonne contenant une liste de personnages et de *motifs* ; dans les cases du tableau où se croisent les deux listes, nous trouvons des nombres qui indiquent

¹⁶ Le diagramme qui montre les correspondances audiovisuelles d'un fragment de douze plans du film *Aleksandr Nevskij* (1938) a été publié dans Jay Leyda (sous la direction de), *The Film Sense*, Harcourt Brace and Company, New York 1942 (éd. it. *Forma e tecnica del film e lezioni di regia*, Einaudi, Torino 1964).

¹⁷ Comme le soulignent les chercheurs de *Digital Formalism : The Vienna Vertov Collection*, Vertov structurait ses films comme des combinaisons de *patterns* visuels en utilisant des systèmes numériques sur papier qui anticipent les nouveaux médias. Cf. Vera Kropf, Matthias Zeppelzauer, Stefan Hahn, Dalibor Mitrovic, *First Steps Towards Digital Formalism : The Vienna Vertov Collection*, dans Michael Ross, Manfred Grauer, Bernd Freisleben (sous la direction de), *Digital Tools in Media Studies. Analysis and Research. An Overview*, transcript Verlag, Bielefeld 2009.

¹⁸ La fiche a été publiée dans Aleksandr Belenso, *Kino-segodnja [Film Today]: Očerki sovet'skogo kinoiskusstva*, Mosca 1925. Des schémas plus complexes se trouvent dans *Sinfonija Donbassa. Raskadrovka fil'ma. 1. Schema 1930* (Symphony of the Donbas. Breakdown of the film), deux pages doubles quadrillées sur lesquelles Vertov a dessiné des diagrammes à l'encre bleue et violette qui, on le présume, ont pu être réalisées durant le tournage du film *Sinfonija Donbassa* et qui montrent divers types de relations entre des éléments donnés (lieux, objets, etc.) : parfois, les éléments sont liés par des motifs en marches d'escalier, parfois par des frises, d'autres par des arceaux (il y a aussi des instructions sur les sons, la musique, les bruits et les pauses). Les schémas sont fournis par The Dziga Vertov Collection de l'Austrian Film Museum et se trouvent sur le site : <http://mubi.com/notebook/posts/images-of-the-day-how-dziguavertov-breaks-down-his-film>, dernier accès 8 novembre 2014 (fig. 3).

le comptage des photogrammes ou la longueur de chaque plan, alors que sur la droite est reportée la somme des nombres de photogrammes pour chaque *motif*. Ce schéma montre l'approche systématique de la construction technique du film de Vertov: le processus de montage est transcrit en un système numérique, de sorte qu'en visualisant la carte, on ait une idée claire de la scène tournée sans même la regarder, de sorte à pouvoir par exemple noter le rythme rapide et le motif récurrent du drapeau.

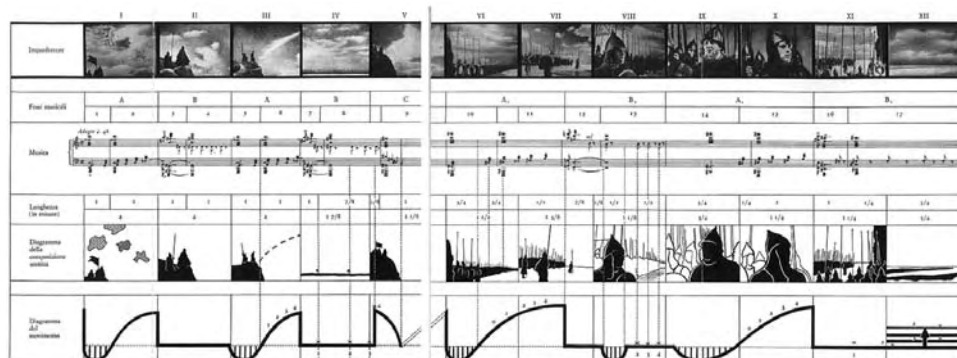


Fig. 1 – Le diagramme des correspondances audio-visuelles d'un fragment de douze plans (le début de la bobine numéro 7) du film *Aleksandr Nevskij* de Sergueï M. Eisenstein (1938) (tiré de *Forma e tecnica del film e lezioni di regia*, Einaudi, Torino 1964, p. 354).



Fig. 2 – « Numeric Transcription of a montage piece of a film by Dziga Vertov – the moment of the flying of the flag on the day of the opening of a pioneer camp » (tiré de Vera Kropf, Matthias Zepelzauer, Stefan Hahn, Dalibor Mitrovic, *First Steps Towards Digital Formalism : The Vienna Vertov Collection*, dans Michael Ross, Manfred Grauer, Bernd Freisleben [sous la direction de], *Digital Tools in Media Studies. Analysis and Research. An Overview*, transcript Verlag, Bielefeld 2009, p. 122).

L'analyse du film à l'ère numérique

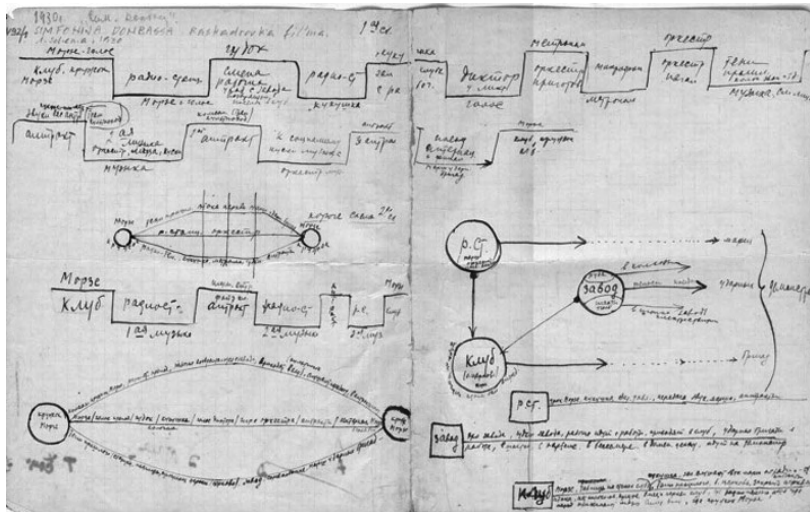


Fig. 3 – *Sinfonija Donbassa. Raskadrovka fil'ma. 1. Schema 1930* (Symphony of the Donbas. Breakdown of the film) (The Dziga Vertov Collection of l'Austrian Film Museum, <http://mubi.com/notebook/posts/images-of-the-day-how-dziga-vertov-breaks-down-his-film>, dernier accès 8 novembre 2014).

L'emploi de logiciels nous pousse à dépasser la distinction entre le *faire* et l'*étudier*, et à mettre en œuvre une nouvelle rencontre entre différentes disciplines théoriques : à travers les nouveaux instruments, il est donc possible de retrouver cette attitude *osmotique* et *synchrétique* déjà préfigurée par les expérimentations d'Eisenstein. Aujourd'hui, le chercheur en cinéma peut finalement *agir* directement sur son propre objet d'étude, en exerçant son regard analytique grâce à un *geste* qui emploie la même matière que celle de l'objet étudié. Il s'agit d'un changement qui débouche sur la naissance d'un riche champ de recherche, en particulier au plan des nouvelles expériences de réception, bien qu'il manque encore une attention rigoureuse portée aux outils favorisant ce type d'expérience, ainsi qu'au domaine de l'analyse conduite avec les outils numériques. Comme le souligne Lev Manovich, il existe un vide par rapport aux études consacrées aux outils numériques désormais régulièrement utilisés au point de façonner de nouvelles pratiques de la réception (qui sont l'objet, par contre, d'un fort intérêt) ; c'est cette lacune qui l'a poussé à proposer un nouveau champ de recherche défini sous le terme de *Software Studies*, le *software* étant devenu notre interface avec le monde¹⁹.

En 2007 a eu lieu le premier workshop sur l'application d'outils numériques aux *Media Studies* organisé par le centre de recherche Media Upheavals de l'Université de Siegen. Le workshop a permis aux chercheurs de faire le point à la fois sur le

¹⁹ Lev Manovich, *Software Takes Command*, Creative Commons Attribution-NonCommercial-No-Derivative Works 3.0 United States License, 2008.

potentiel et les limites de ces instruments, tout en soulignant l'importance d'élaborer une approche interdisciplinaire nécessaire au nouveau paysage médiatique. En ce qui concerne le cinéma, la numérisation a donné l'occasion d'ouvrir le domaine aux études statistiques, dans la direction d'analyses encore inimaginables il y a peu, ainsi que dans le champ de l'analyse du style et des études empiriques sur la réception²⁰. Dans ces domaines, la recherche sur l'automatisation est fondamentale parce que les logiciels peuvent énormément aider l'analyste en lui faisant gagner du temps et de la précision ; c'est pourquoi il existe des centres en Europe et aux Etats-Unis qui s'occupent de développer cet aspect spécifique et de le tester au fur et à mesure que la recherche avance²¹. Toutefois, dans ce qui suit, je ne vais pas m'attarder sur la question de l'automatisation, bien que le développement de ces types d'algorithmes concerne également les outils que je vais décrire ; je vais surtout m'intéresser aux concepts qui sous-tendent certains logiciels, à leurs applications et à leur potentiel comme outils capables d'intégrer (voire de substituer) les outils traditionnels de la pratique analytique, tout en favorisant des nouvelles approches.

Cinematics et l'analyse quantitative

Comme Warren Buckland le dit, la *statistical style analysis* couvre principalement trois domaines de recherche : celui de l'analyse d'une œuvre (à travers l'analyse quantitative de certains paramètres formels qui sont considérés comme spécifiques d'un style et donc transgressifs par rapport au canon)²², celui de l'attribution de paternité d'une œuvre (à travers l'étude systématique des paramètres formels des films d'un auteur donné par rapport à un autre auteur, surtout par l'analyse de la mise en cadre) et celui de l'attribution d'une date (à travers l'analyse des changements qui intéressent le style d'un auteur donné et manifeste d'un film à l'autre)²³.

Cinematics naît précisément avec ce but : il s'agit d'un web-database créée en 2005 par Yuri Tsivian, avec Gunars Civjans, pour encourager l'analyse quantitative du cinéma, une piste de recherche encouragée à son tour par les metteurs en scène qui avaient l'habitude de compter les photogrammes au montage et d'étudier le

²⁰ Il s'agit de recherches qui utilisent des technologies géospatiales (GIS) pour la visualisation de données concernant la réception (Deb Verhoeven, Kate Bowles, Colin Arrowsmith, *Mapping the Movies. Reflections on the Use of Geospatial Technologies for Historical Cinema Audience Research*, dans Michael Ross, Manfred Grauer, Bernd Freisleben [sous la direction de], *Digital Tools in Media Studies*, cit.).

²¹ Depuis 2003, le NIST (National Institute of Standards and Technology) organise un workshop conduit par vingt-et-un instituts du monde entier afin de tester les automatismes des logiciels de segmentation et d'annotation audiovisuelles (trecvid.nist.com).

²² Barry Salt a été un des pionniers dans ce domaine (« Statistical Style Analysis of Motion Pictures », dans *Film Quarterly*, n° 28, 1974 ; « Film Style and Technology », dans *Film Quarterly*, n° 30 et 31, 1992).

²³ Warren Buckland, Thomas Elsaesser, *Studying Contemporary American Film : A Guide to Movie Analysis*, Arnold Publishers, London 2002, pp. 101-116.

rythme de leurs films (comme Dziga Vertov et Abel Gance)²⁴. Le logiciel est plutôt simple et, à travers son interface, il est possible de mesurer la longueur des plans ainsi que la présence d'autres éléments liés au style (comme l'échelle des plans) ou aux contenus ; afin d'entreprendre ces calculs, il faut entrer les données manuellement pendant le défilement du film, puis les faire élaborer. Une fois élaborées, il est possible d'accéder aux données à travers les différents histogrammes que Cinemetrics crée pour l'analyse du *cutting rate* (un indice qui mesure la fréquence des coupures) à partir de laquelle il est possible de calculer un deuxième indice, l'ASL (Average Shot Length) ; ce dernier, qui représente la durée moyenne des plans d'un film donné, est un indice employé pour les analyses statistiques diachroniques (analyse stylométrique de la filmographie d'un auteur ou d'un monteur) et pour les analyses statistiques synchroniques (l'étude de films qui appartiennent à une même époque) (fig. 4).

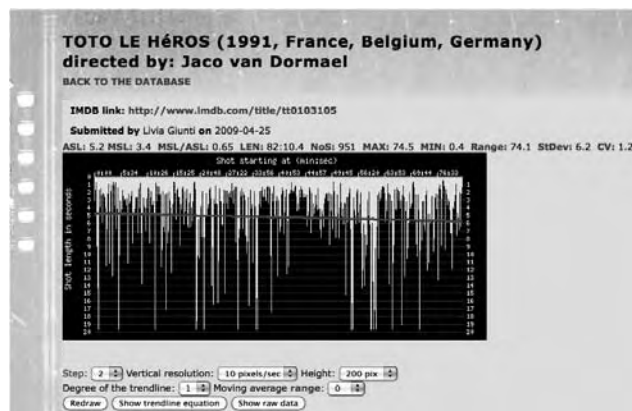


Fig. 4 – Une capture d'écran qui montre la page d'un film que j'ai analysé avec Cinemetrics (http://www.cinemetrics.lv/movie.php?movie_ID=3068, dernier accès 8 novembre 2014).

L'application ne se fonde pas sur la précision de l'entrée des données : il suffit d'introduire les données et le logiciel calcule la quantité et la fréquence du changement de l'élément étudié. Chaque film est lu comme une base de données de plans, Cinemetrics permettant de mesurer trois types de données : le *cutting swing* (l'indice d'oscillation de la durée des plans qui indique les plans correspondants aux écarts minimaux et maximaux par rapport à la moyenne donnée par l'ASL), le *cutting range* (qui calcule la différence en secondes entre la durée du plan le plus long et celle du plus court) et les *dynamic profiles*, c'est-à-dire le

²⁴ www.cinemetrics.lv, dernier accès 19 novembre 2014. Le matériel informatif sur l'outil se trouve sur le site et dans le colloque de Yuri Tsvivan tenu à Siegen, *Cinemetrics. Part of the Humanities' Cyberinfrastructure*, dans Michael Ross, Manfred Grauer, Bernd Freisleben (sous la direction de), *Digital Tools in Media Studies*, cit., pp. 93-100. La première monographie sur le logiciel est parue au mois de septembre 2014 : Mike Baxter, *Notes on Cinemetrics Data Analysis* (sur le site).

rythme du film (la façon dont la durée des plans varie au cours du film). L'objectif du logiciel de Tsivian et Civjans est de créer un archivage vaste et diversifié de données relatives au montage autour duquel circule une communauté d'historiens et d'historiennes : toutes les données rassemblées sont ensuite partagées en ligne et viennent enrichir la base de données de l'application qui, aujourd'hui, compte environ 14.000 films ; il est donc également possible de visiter simplement le site afin d'étudier les données que les différents analystes ont chargées.

Lignes de temps et l'analyse subjective

Lignes de temps est un logiciel développé par l'IRI (Institut de Recherche et d'Innovation) du Centre Pompidou pour l'*annotation d'objets temporels*, et pensé dans le but d'impliquer le visiteur d'expositions cinématographiques (et d'arts visuels en général) dans l'annotation filmique mobile et online²⁵. L'interface graphique du logiciel est très proche des interfaces des logiciels de montage numérique (composés par *timelines*) et, comme à l'instar d'une partition, il est possible de saisir le film par la représentation graphique de son rythme au moyen des divers éléments qui le composent. L'interface se présente vide de façon à permettre à l'utilisateur de décider, en toute autonomie, quel type d'annotation entrer et donc quelles catégories nommer ; ensuite, pour chaque catégorie dénommée, Lignes de temps crée une *ligne de temps* que l'utilisateur peut utiliser pour annoter ce qu'il souhaite, en indiquant au logiciel la présence de l'élément choisi pendant le déroulement du film (élément qui est immédiatement visualisé sur la ligne de temps correspondante) (fig. 5).

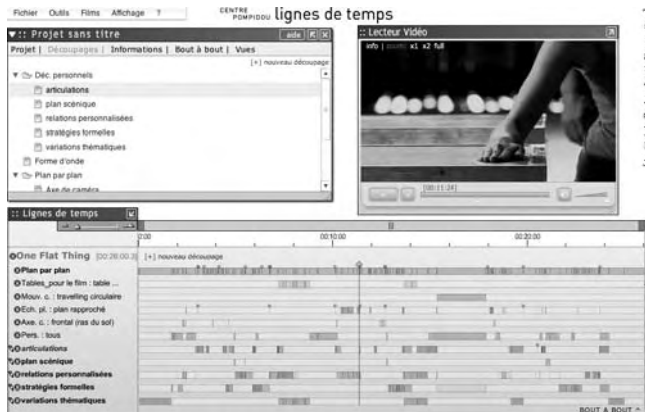


Fig. 5 – Une capture d'écran qui montre l'interface du logiciel Lignes de temps (<http://web.iri.centrepompidou.fr>, dernier accès 8 novembre 2014).

²⁵ Pour télécharger l'application : <http://web.iri.centrepompidou.fr>, dernier accès 19 novembre 2014 (Vincent Puig, Johann Holland, Thibaut Cavalie, Cora Benjamin, Johan Mathé, Yves Marie Haussone, Sébastien Liévain, *Atelier IHM 2007. Lignes de temps, une plateforme collaborative pour l'annotation de films et d'objets temporels*).

Grâce à une visualisation simple et intuitive qui suit le déroulement chronologique du film, l'interface de Lignes de temps donne la possibilité d'observer instantanément les premiers résultats à travers le *croisement à vue* des occurrences, c'est-à-dire à travers une *verticalisation* des données ; de cette façon, il est possible de garder sous nos yeux à la fois le film dans son intégralité et chacune de ses parties, ainsi que la présence ou l'absence de certains éléments. Comme le remarque Bernard Stiegler, le projet veut mettre en évidence l'aspect subjectif de l'analyse, la rencontre entre le film et le regard du spectateur qui devient, en quelque sorte, un spectateur actif. C'est ainsi que la *cartographie* du temps et du rythme du film peut permettre au spectateur de vivre une expérience différente par rapport à celle qu'il vit dans la salle de cinéma : une expérience spatiale et interactive où il/elle devient à son tour monteur de son propre parcours à l'intérieur du film. En ce sens, Lignes de temps semble donner corps aux réflexions de Raymond Bellour sur la possibilité de saisir le film à travers le *geste*, transformant le spectateur et le chercheur en monteurs d'un second parcours du film : l'analyse verbale devient ainsi gestuelle au moyen d'un outil qui rapproche la présentation du film du geste analytique.

Le logiciel a été utilisé pour la première fois en 2007 à l'occasion de l'exposition *Victor Erice / Abbas Kiarostami : Correspondances*²⁶. Dans sa première application, le projet prévoyait que les visiteurs de l'expo reçoivent des tablettes numériques pour prendre des notes durant la visite ; puis, à la fin du parcours, un espace critique avec des postes de travail les attendait pour leur donner la possibilité de réélaborer leurs commentaires et de les synchroniser avec les films choisis, en leur permettant ainsi de partager leur propre visite critique avec celle des autres visiteurs. Le logiciel permet de calculer le nombre d'occurrences des éléments choisis (contenus dans les lignes de temps) et de monter bout à bout différentes séquences d'images appartenant à un même film ou à deux films différents afin d'analyser les analogies et les divergences. En ce sens, Lignes de temps se présente comme un outil soit de lecture, annotation et analyse, soit de mise en forme car il permet de présenter son propre parcours critique à travers une interface simple et consacrée. Son but est spécifiquement celui de promouvoir des nouvelles pratiques et d'observer l'interaction entre différentes typologies d'utilisateurs (enseignants, étudiants, historiens, critiques, visiteurs...), ce qui le destine particulièrement aux domaines de l'éducation et des musées²⁷.

²⁶ Cette application spécifique se trouve sur le site : <http://web.iri.centrepompidou.fr>.

²⁷ Le manque de précision dans la gestion du plan et de la bande son semble favoriser surtout l'analyse du fragment (ou de fragments de films différents) et l'analyse thématique, plutôt que l'analyse systématique d'un film entier à travers ses composantes formelles. Raymond Bellour a fait partie du projet en signant un des *regards signés* de l'exposition sur Kiarostami et Erice qui se trouve sur le site du logiciel : http://web.iri.centrepompidou.fr/pop_site.html, dernier accès 19 janvier 2015.

Digital Cinema Project (DCP) et l'analyse du film comme texte

Le projet DCP naît à l'Université de Pise en 2002 sous la forme d'un logiciel consacré à l'étude statistique et comparative du langage filmique²⁸. A l'origine, il est doté d'une grille de paramètres d'analyse observables dans un film, avec des critères d'observation prédéterminés, de façon à pouvoir stocker les observations dans une base de données, laquelle favorise des comparaisons croisées entre différents aspects du langage au sein d'un même film (ou entre différents films). La construction d'une structure théorique très riche, permettant à l'analyste d'utiliser un langage universel, est l'une des principales ambitions du projet : la grille conceptuelle contient quarante-huit clefs d'analyse (chacune avec son propre paradigme de choix prédéfinis) de façon à permettre à l'utilisateur de procéder soit à l'analyse syntagmatique soit à l'analyse paradigmatique du film, indiquées au sein de la structure théorique du logiciel par les termes de « segmentation » (en référence à la division du film en unités : images, plans, syntagmes, sous-séquences, séquences, grandes unités narratives, etc.) et de « stratification » (analyse de chaque segment du film *via* ses paramètres iconographiques, sonores, temporels et narratifs)²⁹.

La présence de paramètres et de termes prédéfinis permet d'accélérer les processus et d'accroître la possibilité de comparaisons entre différents films, tout en laissant ouverte la possibilité d'ajouter des informations spécifiques en personnalisant les termes de l'analyse. Cependant, DCP n'a pas seulement été élaboré comme outil destiné à l'annotation : dans sa conception originelle, il aurait dû gérer des analyses complexes, telles des études liées à la narration et à la temporalité. Celles-ci prévoyaient une division précise du film en unités filmiques et en unités de récit de divers degrés et niveaux, à partir desquelles il soit possible d'établir des comparaisons objectives relatives à une étude structurelle du récit audiovisuel³⁰.

Contrairement à la visualisation graphique et horizontale de Lignes de temps, l'interface graphique de DCP est structurée verticalement et verbalement, et associe une ligne à chaque entrée de données (fig. 6) : pour la saisie, il faut aban-

²⁸ Le projet est le résultat de la recherche Cofin 2002 de l'unité locale de Pise (Francesco Casetti était le responsable au niveau national et Lorenzo Cuccu l'était au niveau locale). Le logiciel a été créé par Leonardo Grilli (Information Technology Manager pour le DigitalSoccerProject du Panini groupe) avec la coordination de Lorenzo Garzella et la supervision de Lorenzo Cuccu. Il a été présenté au mois de mars 2004 à Udine dans le XI Convegno Internazionale di Studi sul Cinema / International Film Studies Conference ; le projet s'est par la suite arrêté en raison du manque de financements. Il s'agit néanmoins d'une tentative pionnière en Italie.

²⁹ Selon la distinction proposée par Francesco Casetti et Federico di Chio dans *Analisi del film*, Bompiani, Milano 1990.

³⁰ Je dis « aurait dû » car, comme déjà expliqué dans la note 27, DCP n'est pas arrivé à une version beta ; en tout cas Lorenzo Cuccu et Lorenzo Garzella avaient pensé doter le logiciel d'une riche organisation interne qui aurait permis de gérer plusieurs données relatives aux différentes dimensions temporelles du récit filmique, soit au niveau du déroulement chronologique soit au niveau de son contenu (la durée cinématographique de chaque segment du film et la durée diégétique des différents segments). De cette façon DCP aurait calculé l'arc temporel de l'histoire en lien à la fois avec les différents niveaux de la segmentation et le film entier.

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donner l'interface d'annotation et entrer dans une autre interface consacrée à l'agrégation des lignes qui permet d'obtenir des synthèses et d'exporter des tableaux récapitulatifs. DCP permet un contrôle très précis du flux audiovisuel et donc de l'entrée des données, des caractéristiques qui en auraient fait un vrai outil d'analyse d'après la sémiologie metzienne, laquelle se fondait sur la possibilité d'une méthodologie partagée et d'un langage universel qui auraient pu rendre les études cinématographiques plus précises et par conséquent plus ouvertes à cet échange entre les disciplines et les approches³¹.

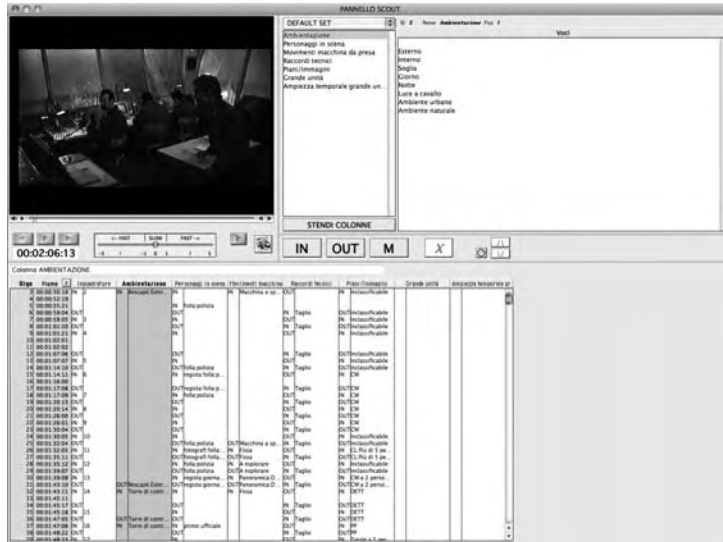


Fig. 6 – Une capture d'écran qui montre l'interface du logiciel DCP (mon archive).

Advene (Annotate Dvd, Exchange on the Net) et la lecture active

Advene est une plateforme pour l'intégration, la visualisation et l'échange de métadonnées de documents audiovisuels qui donne aux utilisateurs la possibilité de définir eux-mêmes, en fonction des tâches à accomplir, la structure des métadonnées et la manière de les visualiser³². Il s'agit donc d'un outil souple qui

³¹ Dans une perspective de développement ultérieur, le DCP aurait dû se doter d'une structure plus visuelle parce qu'en l'état actuel il conserve un lien trop marqué avec la page écrite, ce qui empêche un *crossement à vue* des données, ainsi qu'une prise réelle sur le film (il est impossible d'accéder à la visualisation de la structure intégrale du film).

³² Advene est un projet du laboratoire LIRIS (Lyon Research Center for Images and Intelligent Information Systems) de l'Université Claude Bernard Lyon 1, initié en 2002 par Olivier Aubert, Pierre-Antoine Champin et Yannick Prié. Pour télécharger le logiciel : <http://liris.cnrs.fr/advene>, dernier accès 19 novembre 2014.

peut accueillir une pluralité et une variété d'approches, tout en laissant l'utilisateur libre de décider de la forme qu'elle/il veut donner à son parcours d'analyse. Cette approche fait d'Advene non pas simplement un outil d'annotation, mais plutôt un ensemble d'outils permettant de *dessiner* sa propre analyse, ainsi que sa propre expérience d'analyse : les développeurs définissent cette ouverture et cette autonomie en tant que *lecture active*³³ : celle-ci permet à l'utilisateur à la fois d'annoter des documents audiovisuels, de gérer différentes typologies de visualisations des documents annotés, de créer des hypervidéos avec les annotations directement affichées sur le film, et enfin d'échanger en ligne les commentaires et leurs modes de visualisation indépendamment du document original³⁴.

L'objectif consiste à favoriser l'émergence de nouvelles pratiques hypermédia *via* l'emploi de documents audiovisuels ; une fois le film annoté et analysé, les utilisateurs peuvent partager un *recueil* de données en ligne qui exclut la circulation du film : chaque utilisateur peut donc annoter son film (ou visualiser le recueil d'un autre utilisateur) en utilisant sa copie personnelle en dvd, pour ensuite partager uniquement les données liées au film à travers le recueil³⁵. Le logiciel est organisé autour de quelques concepts-clés : les schémas, les annotations, les relations, les recherches et les visualisations, autant d'éléments structurels qui ensemble constituent le recueil. Le schéma correspond à un regroupement de catégories qui pourrait indiquer l'approche ou le point de vue adopté pour analyser un film : il peut s'agir d'une collection d'annotations (divisées en typologies qui contiennent à l'intérieur d'autres annotations), de relations (divisées aussi en typologies et sous-éléments), de visualisations (une liste de modes de visualisation des données) et de recherches (une liste de recherches réalisées sur une même série de données). Les annotations sont alors visualisées sous forme de petits briques colorées qui peuvent afficher un contenu interne, enrichissant ainsi la visualisation dans la direction d'une meilleure observation des données à travers la présence/absence d'un certain élément³⁶ (fig. 7).

³³ Olivier Aubert, Pierre-Antoine Champin, Yannick Prié, *The Advene Model for Hypervideo Document Engineering*, LIRIS FRE 2672 CNRS report, Lyon 1 University, janvier 2004 ; Olivier Aubert, Yannick Prié, *Advene : Active Reading Through Hypervideo*, Proceedings of ACM Hypertext'05, septembre 2005, pp. 235-244.

³⁴ La récupération, la visualisation et la manipulation des informations sont aujourd'hui des domaines fondamentaux pour ceux qui s'occupent d'annotation et d'analyse audiovisuelle. Lev Manovich dirige en Californie un laboratoire qui s'occupe de la visualisation de données culturelles : www.CultureVis.com.

³⁵ Cependant il faut posséder la même copie du film en dvd pour ne pas fausser l'ancrage des annotations dans le code temporel.

³⁶ Il est possible d'afficher des contenus sous forme de nom, attribut, nombre, histogramme, etc.

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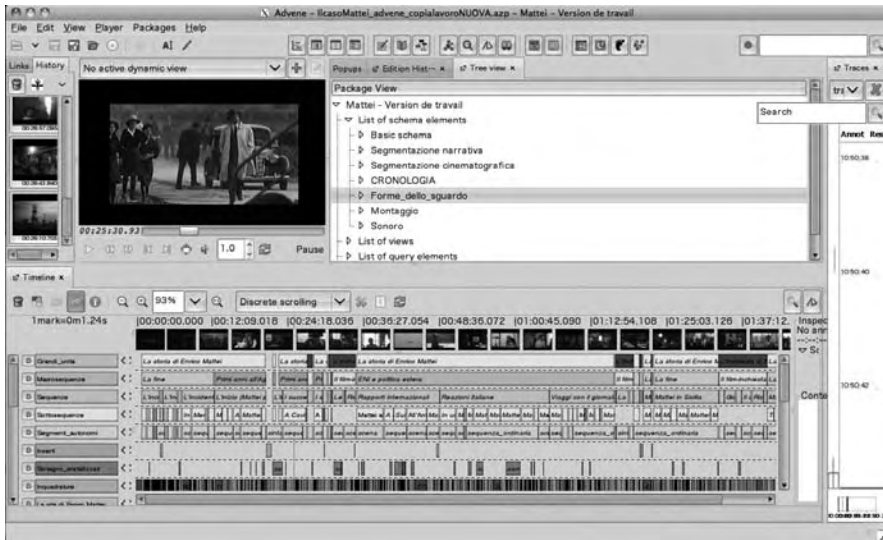


Fig. 7 – Une capture d'écran qui montre l'interface du logiciel Advène (mon archive).

L'interface graphique est subdivisée en différentes zones qui peuvent être personnalisées par l'utilisateur en temps réel et qui lui offrent divers modes de visualisation de la même série de données : de cette façon, il est possible d'enrichir la navigation horizontale par association de contenus (ce que l'on fait normalement en surfant dans un hypertexte) avec la navigation verticale à travers le contrôle dynamique du numéro des informations visualisées et de leur typologie. Il est donc possible tout simplement d'*agir* sur un même groupe de données afin de les visualiser de façon différente, et passer d'une visualisation à l'autre sans avoir surfé entre les contenus. Parmi les différents modes de visualisation, le logiciel favorise particulièrement la création d'hypervidéos³⁷, à savoir des films *augmentés* qui, avec le document audiovisuel d'origine, peuvent contenir des sous-titres et autres notes et graphiques utilisés pendant l'annotation. En outre, il est tout à fait possible de modifier le cours de la lecture du film en favorisant une interaction majeure avec l'utilisateur, à travers l'apparition de fenêtres pop-up qui dirigent la navigation en la faisant sauter d'un bout à l'autre du film.

Les développeurs soulignent l'importance de cette transition dans le domaine du traitement des documents audiovisuels : il s'agit de passer des *video retrieval systems* (des systèmes simples visant la récupération des informations utilisées pour indexer une vidéo) au *video information management systems*, des systèmes plus avancés qui permettent de manipuler les résultats de la re-

³⁷ Olivier Aubert, Yannick Prié, *Documents audiovisuels instrumentés. Temporalités et détemporalisations dans les hypervidéos*, LIRIS FRE 2672 CNRS report, Lyon 1 University, décembre 2004.

cherche dans la direction de l'*hypermedia authoring*, où l'utilisateur devient en quelque sorte auteur et producteur de contenus³⁸. Avec un logiciel comme Advene il est possible d'atteindre l'ère de l'analyse du film conduite (presque) entièrement par ordinateur et parvenir ainsi à l'*artéfact intermédiaire* dont parlait Jacques Aumont³⁹: un outil citationnel, descriptif, analytique, de lecture et de production qui maintient ensemble le film et son/ses analyse/s (permettant ainsi de dépasser le problème de la vérification de l'analyse) ; un outil qui donne au chercheur en cinéma l'opportunité de se déplacer librement en dehors des contraintes spatio-temporelles, et donc des habitudes imposées par la page écrite et le flux audiovisuel. Son efficacité réside en particulier dans sa capacité à offrir au chercheur une série d'instruments intégrés qui l'aident et l'assistent dans son raisonnement et dans le *corps à corps* avec le film⁴⁰, aboutissant à une meilleure conscience méthodologique et pratique : prendre des notes, contrôler les données, rappeler instantanément des groupes de données et les filtrer pour des recherches, adapter chaque fenêtre de l'interface à ses besoins, visualiser les données de façon différente, les exporter pour en faire des calculs et des statistiques, construire des pages web pour publier les résultats sous forme de tables graphiques, etc., autant d'*actions* qui sont fortement liées à l'analyse (et non seulement aux résultats et à leur présentation). En outre, avec la fonction des *traces* – qui conservent la mémoire des *passages* de l'analyste en lui montrant graphiquement sa propre pratique sur l'axe diachronique – le logiciel peut révéler des schémas récurrents, permet de visualiser rapidement la méthode de travail et donc de s'orienter dans son propre *workflow*, donnant ainsi forme à la « compréhension de la compréhension »⁴¹.

Quelques conclusions

Dans les années 1960, Raymond Bellour se plaignait des difficultés concernant la *prise* sur le film : son carnet de notes et ses fiches d'analyse étaient alors insuffisants pour saisir la nature fugitive et évanescence des images et des sons. De nos jours, malgré l'actualisation des outils technologiques, cette impression demeure : l'expérience filmique reste insaisissable, intangible, et sa substance semble toujours se situer ailleurs. Cependant, l'exigence analytique persiste encore, et les nouveaux instruments peuvent, non seulement nous aider à saisir le film, mais aussi à saisir l'impression que le film nous a laissé ; c'est-à-dire qu'ils peuvent nous aider à exer-

³⁸ Olivier Aubert, Yannick Prié, *From Video Information Retrieval to Hypervideo Management*, LIRIS FRE 2672 CNRS report, Lyon 1 University, décembre 2004.

³⁹ Jacques Aumont, Michel Marie, *L'Analyse des films*, Nathan, Paris 1998, p. 34.

⁴⁰ Aubert et Prié parlent aussi de la « dimension narrative » d'Advene : la structure des annotations est formée par des informations qui sont réutilisables et qui, avec les visualisations, fournissent des outils pour la construction de discours à partir de la structure des annotations (Olivier Aubert, Yannick Prié, *Advene : Active Reading Through Hypervideo*, cit.).

⁴¹ Ce que Francesco Casetti et Federico di Chio appellent *métacompréhension*, dans *Analisi del film*, cit.

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cer un regard analytique et à réfléchir à notre parcours de compréhension et d'analyse. Selon moi, c'est à partir de cette perspective qu'il faut envisager la réflexion sur les outils d'annotation à l'ère numérique : d'un regard qui vise aux résultats obtenus, ainsi qu'à la pratique de l'analyse elle-même. Toutefois, il faut reconnaître que pour apprendre à utiliser ces logiciels, il faut du temps, de la motivation, et qu'il serait également nécessaire d'élaborer une sorte de *koïnè* entre informaticiens et humanistes afin de faciliter la conceptualisation et l'utilisation des ces outils⁴².

⁴² Récemment, Olivier Aubert a remarqué que l'annotation audiovisuelle avec Advene est une activité compliquée qui exige du temps et de la motivation de la part de l'utilisateur, ainsi que l'assistance du développeur (surtout pour la création d'hypervidéos) (Olivier Aubert, *Using Personal Annotations to Enrich Interactions with Videos*, 6th Teletask Symposium, Potsdam, LIRIS, Lyon 1 University, octobre 2012). Pour une liste d'autres logiciels pour l'annotation : http://icar.univ-lyon2.fr/projets/corvis/logiciel_annotation.html, dernier accès 19 novembre 2014.

Panoramic Visions of the Archive in EYE's Panorama: A Case Study in Digital Film Historiography

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Abstract

Recent years attest to a significant change in the representational practices of film historiography. As a consequence of digitization, visual display formats occupy a more prominent role in scholarly and museum practices as means for contemplating the historicity of archival film. This development prompts a discussion of how we might appreciate digital formats as “visual secondary sources” which reproduce and recast historical tropes. To address this discussion the article proposes a combination of institutional and medium specific analysis as a framework for analysing this transition’s consequences. The permanent *Panorama* (2012) installation at EYE Film Institute Netherlands – a multiple-screen installation which offers a panoramic vision of film history using video excerpts from EYE’s digital collection – constitutes the article’s core example. The article analyses how the installation’s arrangement as a panorama situates the excerpts within two different film histories. First, the analysis attends to how the installation’s taxonomy suggests a connection to former deputy director Eric de Kuiper’s philosophy of film history and emphasis on cinema’s intermediality. Second, it considers the installation in relation to classic, cinephile conceptions of panoramic vision. Conclusively the article provides some brief remarks on how the analysis’ findings might help us further our discussion of visual display formats as visual secondary sources.

The past decades have witnessed the emergence of an array of digital access and reuse formats for film heritage, in scholarly and museum contexts. In these contexts, formats such as interactive diagrams, video essays, DVDs, maps and museum installations provide new techniques for visualizing, representing and contemplating the historicity of archival material. Since the mid-1990s CD-ROM and DVDs have been developed into advanced, annotated, historical-critical formats for the scholarly study of film history as have online maps.¹ And in more

¹ Film historian Yuri Tsivian’s award-winning CD-ROM *Immaterial Bodies: Cultural Anatomy of Early Russian Films* (1999) or the annotated, historical-critical Hyperkino DVD editions of film

recent years a number of online platforms and museum displays have emerged from a range of European film heritage institutions.

In light of this development, it appears urgent to understand how the disciplinarity and epistemology of film history is negotiated with digital forms of visualization and moving image appropriations. Film scholars are beginning to draw attention to this consequence of digitisation, voicing a need to analyse and theorize in greater depth how social and technical factors condition this shift in representational practice. Film scholar Vinzenz Hediger has for instance highlighted that the role which film historians, archivists and curators play as decision-makers in conceiving access and reuse formats potentially becomes more crucial than ever before in developing new traditions in the digital age.² Katherine Groo conversely argues, drawing on Lev Manovich's new media theory, that digital techniques of moving image appropriation, to a greater degree "foregrounds the contingent and dialogical encounter between historian and artefact."³ In a proposition which echoes literary scholar George P. Landow's hypertext theories from the early 1990s, Groo suggests that the non-linear and open-ended nature of digital representations foster a convergence between post-structural forms of narration and historiography.⁴ This development, according to Groo, deauthorizes film history by inviting alternative interpretations which emphasize film historiography's contingency.

These points reflect that film scholars are beginning to nurture a discussion on the status of digital formats as historical representations in a manner which parallels on-going debates in the discipline of history. As historian David J. Staley has made the case for over a decade, visualizations of archival material in diagrams, videos and museum installations need to be taken seriously as "visual secondary sources" in their own right which fundamentally shape contemporary historical understandings.⁵ In this regard, digital representational practices suggest a radical departure from and end point for established historiography as they instantiate new forms of access to and experiences of film history, which can appear fragmented, open-ended and non-narrative in respect to linear, written prose. As David J. Staley argues, digital visual history as opposed to prose, introduces a new set of distinct representational modes which work differently; for instance by analogy rather than logic, or synthesis rather than analysis by relating events

historians Natascha Drubek and Nikolai Izvolov or the Austrian Filmmuseum's ground-breaking DVD editions of Dziga Vertov films testify to this development.

² Vinzenz Hediger, "Politique des Archives. European Cinema and the Invention of Tradition in the Digital Age," in *Rouge*, no. 12, 2008.

³ Katherine Groo, "Cut, Paste, Glitch and Stutter: Remixing Film History," in *Frames Cinema Journal*, no. 1, 2012, p. 13.

⁴ *Ivi*, p. 3. This view is also one of the key tenets in the hypertext theory of literary scholar George Landow, see George Landow, *Hypertext: The Convergence of Contemporary Critical Theory and Technology*, The Johns Hopkins University Press, Baltimore 1991.

⁵ David J. Staley, *Computers, Visualization and History*, M.E. Sharpe, Armonk - London 2003, pp. 59-60.

in dense, “thick depictions” without a linear mode of access.⁶ In this respect, it is pertinent to say, that a significant development is taking place, when it comes to the forms which film historiography begins to take on.

Yet, one may also argue that these points overemphasize digitisation's transformative effect upon historiography from primarily a technician, formalist perspective which neglects the role which institutions continue to play in a digital age. As media scholar and political theorist Régis Debray has stressed on several occasions since the early 1990s, digitisation should theoretically make cultural heritage institutions as physical sites superfluous and privilege general users, but in fact often tend to nurture the opposite effect.⁷ Debray proffers that “the centrifugal dematerialization of data's supporting base increases our need to re-centre ourselves on the basis of symbolic reference points.”⁸ Mindful of this point we should remain attentive to how digital representational practices pertain to the contexts they emanate from and reflect institutional priorities.

In this article I address this discussion through an analysis of a particular exhibition format; EYE Film Institute's Panorama. The Panorama is part of the permanent exhibition area the Basement located in the EYE Film Institute Netherland's recently inaugurated museum building at the river IJ in Amsterdam. Using state-of-the-art digital projection, the format offers an interactive environment, in which video clips from EYE's digitised collection can be projected and explored. Installed in a fully darkened room, the eleven wide-angle beamers which make up the installation form a 360-degree projection to evoke the format of a historical panorama: a cylindrical painting that visitors could behold from a central position, typically depicting significant historical events. To find out what exactly could be the history which the spectator can behold in the Panorama, is the main objective of this article, which also tries to make the case that film scholars need to be more attentive to the institutional environments in which digital formats emerge to understand how established historical tropes are reproduced in digital moving image appropriation practices. To this end I discuss the Panorama in relation to its institutional context to understand how its exhibition design reflects the archival policies and visions of film history of EYE (previously the Nederlands Filmmuseum). In this regard, I draw on historian and anthropologist Michel de Certeau's concept of “historiographical operation”⁹ and its tripartite division of historiography as constituted by 1) a social place of production, 2) a practice conditioned by specific techniques and supports of inscription – whether a role of papyrus, note blocks or computers and 3) a representation – a staged form of writing which eliminates the signs of institutional as well as technical

⁶ *Ivi*, p. 55.

⁷ Régis Debray, *Transmettre*, Odile Jacob, Paris 1997 (Eng. ed. *Transmitting Culture*, Columbia University Press, New York 2000, p. 60).

⁸ *Ibidem*.

⁹ Michel de Certeau, *L'Écriture de l'Histoire*, Gallimard, Paris 1975 (Eng. ed. *The Writing of History*, Columbia University Press, New York-Chichester, 1988, pp. 58, 69, 86).

procedures which led to its appearance. My analysis considers a select number of clips in relation to the installation's arrangement in comparison to previous projects at the Nederlands Filmmuseum and to classic, cinephile film history writing to elicit the format's underlying philosophy of film history. Conclusively, I provide some brief remarks on how my analysis may further our understanding and discussion of the current shift in film history's representational practices.

Space as a Key to Historical Abstraction in a Digital Age

While museum scholar Andrea Witcomb in the following quote summarizes debates on digitisation in museum studies, it can be taken to succinctly encapsulate a recurrent premise of debates surrounding film heritage digitisation:

*For those who interpret it as a threat, the implications are a loss of aura and institutional authority, the loss of the ability to distinguish between the real and the copy, the death of the object, and a reduction of knowledge to information. For those who interpret it as a positive move, such losses are precisely what enable new democratic associations to emerge around museums. For them, the loss of institutional authority equates with the need for curators to become facilitators rather than figures of authority...*¹⁰

On the one hand, a number of film preservationists and historians take digitisation in film archives and its forms of access to undermine the core values of a classic, cinephile mode of museum exhibition. This position holds, that the critical function and autonomy of the curator as well as the material experience of archival film disappears, when digitised collections are made available to general users with a less genuine interest in film. This is a view which has been proposed by film preservationists and curators such as for example Freddy Buache, Raymond Borde and Alexander Horwath. As argued by Horwath, digitisation seems for example more driven by the market's desire to create immaterial, free-flowing "image-banks,"¹¹ or as opined by Borde and Buache, by detached, bureaucratic concerns which embody in database management.¹²

On the other hand, a position has emerged, which perceives digital access

¹⁰ Andrea Witcomb, *The Materiality of Virtual Technologies: A New Approach to Thinking about the Impact of Multimedia in Museums*, in Fiona Cameron, Sarah Kenderdine (eds.), *Theorizing Digital Cultural Heritage. A Critical Discourse*, MIT Press, Cambridge (MA) 2007, p. 35.

¹¹ Alexander Horwath, "The Market vs. the Museum," in *Journal of Film Preservation*, no. 70, 2005, pp. 6, 8.

¹² Raymond Borde, Freddy Buache, *La crise des cinémathèques... et du monde, L'âge d'homme*, Lausanne 1997, p. 6. As Buache and Borde write: "Les cinémathèques sont aujourd'hui des cliniques du film. Les techniciens en blouse blanche évaluent, diagnostiquent et restaurent du matériel laissé sur le bord de la route par le cinéma. Une objectivité foudroyante préside à leurs travaux. Ils opèrent sur ordinateur. Ils ne sont ni des chercheurs de trésors, ni des partisans. Ils voient les collections qui se déroulent sur leurs machines, comme les fondés de pouvoir entretiennent et surveillent les actifs d'une banque."

formats as harbingers of a more democratic engagement with archival collections. This view implies that digital access formats emancipate and empower the user as an active co-producer and creator of texts, narratives and meanings. Such a vision is prominently discernible in Lev Manovich's foundational book *The Language of New Media*.¹³ A key tenet in Manovich's new media theory is that hyperlinking in databases and multimedia formats breaks down established narratives and hierarchies, to allow users to create new ones, when navigating through non-linear pathways.¹⁴ In Manovich's view, the database does not represent a constraining bureaucratic logic but conversely holds a liberating potential. With regard to film archives, such a view arguably reflects in media scholar Jamie Baron's argument that the meaning of digitised archival footage is defined predominantly in the viewer's experience and appropriation, rather than in an archive's authoritative definition.¹⁵

While proposing antagonistic ideological responses to digitisation, both positions identify a subversion of institutionalized historical narratives, in the transformation of collections into either immaterial "image-banks" or user-generated multimedia appropriations. In this respect, both positions arguably nod to Walter Benjamin's materialist historiography, articulated in the emblematic phrase that "History decomposes into images, not into narratives," to indicate an inherent contingency of image-based historiography, as a distinguishing feature not only of modern visual culture but also in particular of databases and digital culture.¹⁶ In different ways these positions point to the problem formulated in the introduction, that to understand what constitutes a historiography in digital formats is no longer a matter of analysing history as a language system with attention to causation, for example, as proposed by key theorists of the 1960s and 1970s' "linguist turn" such as Hayden White and Richard Rorty. This rather becomes, one could argue in line with Staley, a matter of analysing how digital techniques and tools of visualization are used to establish analogies between historical events and moments to sustain historical tropes. Faced with digitisation, these positions propose analytical foci for understanding the transformation of film historiography which identify the core agents of this process outside of traditional institutions. Along those lines institutions have only little or no say in shaping this process.

Conversely, as suggested by Hediger, the activities of film archivists, historians and curators might on the other hand give a privileged insight into how film heritage institutions define film history through digital moving image appropriations. This view seems particularly pertinent when considering that digi-

¹³ Lev Manovich, *The Language of New Media*, MIT Press, Cambridge (MA) 2001, p. 76.

¹⁴ *Ibidem*.

¹⁵ Jaimie Baron, *The Archive Effect. Found Footage and the audiovisual experience of history*, Routledge, Abingdon (Oxon) 2014, pp. 7, 142.

¹⁶ Susan Buck-Morss, *The Dialectics of Seeing: Walter Benjamin and the Arcades Project*, MIT Press, Cambridge (MA) 1991, p. 220.

tal techniques – as in other sectors of society – increasingly permeate everyday life, both in film heritage institutions and academic settings where they become embedded in the agendas of specific archival policies and research programs.¹⁷ From this perspective, it appears necessary to reintroduce a focus on the agency of institutions into the discussion as a way of understanding how the shift in representational practices is molded. In this regard, one could take Certeau's notion of "historiographical operation" to be also encompassing digital practices, as it conceptualizes of tools of visualization as more than mere auxiliary inscription devices, but also as constitutive of historiography in specific knowledge spaces.¹⁸

Consequently, a focus on sites of production and institutional practices may provide a key to understanding how historical tropes are reproduced in digital formats, and might enhance our apprehension of digitisation's transformation of historiography. From this conceptual vantage point, the following sections analyse the permanent Panorama installation at EYE Film Institute Netherland's museum building in Amsterdam as a form of film historiography, by eliciting the conditioning factors which can be found in the institution, such as established archival taxonomies, philosophy of history and previous moving image appropriation practices.

Panorama/Panoramique

EYE Film Institute's Panorama (2012) is part of the permanent exhibition area the Basement located at the recently inaugurated museum building at the river IJ in Amsterdam. The installation is produced and designed in collaboration with local companies Beamsystems and Submarine and draws inspiration from a panoramic exhibition format developed by museum scholar Sarah Kenderdine and multimedia artist Jeffrey Shaw at the City University of Hong Kong's Applied Laboratory for Interactive Visualization and Embodiment (ALIVE).¹⁹ Installed in a fully darkened room, the eleven wide-angle beamers which make up the installation form a 360-degree projection that surrounds the visitor. Four of the installation's eleven beamers cover the room's corners with what reminisces vertically running film strips, while the remaining seven are connected to individual consoles spread out through the room (fig. 1).

¹⁷ Marianne van den Boomen, Sybille Lammes, Ann-Sophie Lehmann, Joost Raessens, Mirko Tobias Schäfer (eds.), *Digital Material: Tracing New Media in Everyday Life and Technology*, Amsterdam University Press, Amsterdam 2011, p. 8.

¹⁸ Michel de Certeau, *The Writing of History*, cit.

¹⁹ Giovanna Fossati, *Found Footage Filmmaking, Film Archiving and New Participatory Platforms*, in Marente Bloemhevel, Giovanna Fossati, Jaap Guldemond (eds.), *Found Footage. Cinema Exposed*, Amsterdam University Press, Amsterdam 2012, pp. 182.

Panoramic Visions of the Archive in EYE's Panorama



Fig. 1 – Wide-lens view of the EYE Panorama's interior. Source: www.eyefilm.nl

Each console enables the projection of sixteen thirty-second film fragments on the screen facing the visitor, in juxtaposition with clips on the adjacent screens controlled by other visitors. To facilitate the visitor's selection of clips, the consoles represent individual themes: *Magic*, *Color*, *the Netherlands*, *Exploration*, *Film Stars*, *Slapstick* and *Battle*. The sources of the clips vary greatly, drawing from European avant-garde and art cinema to Hollywood blockbusters and unidentified bits of travelogues, creating an eclectic encounter of titles and periods for the visitor walking through the installation's consoles. In the *Color* console, an excerpt from Peter Greenaway's *The Cook, the Thief, His Wife and Her Lover* (1989) meets the Dutch absolute film *Diepte* (1933) by Frans Dupont. The console themed *Exploration* brings together travelogues and ethnographic films with an excerpt from Stanley Kubrick's *2001: A Space Odyssey* (1968).

Clearly, EYE's installation evokes the format of a moving, historical panorama; a cylindrical painting that visitors could behold from a central position, typically depicting significant historical events. But at a first encounter with the installation, it does not seem evident which film history the format exactly proposes. EYE provides only a sparse blurb of the installation's set-up, selection of clips and function in the Basement area on the museum's website, which does not appear in the on-site installation. It reads as follows:

*The highlight is the Panorama, a room where visitors will be surrounded on all sides by film fragments, and where they can browse through EYE's collection with the help of seven control panels. There are nearly one hundred regularly changing scenes that can be viewed, and these are grouped around the themes Discovery of the World, Film Stars, Colour, the Netherlands, Slapstick and Battle.*²⁰

²⁰ See <http://www.eyefilm.nl/en/node/992238>, last visit 18 February 2014. Note that the categories used in this description diverges slightly from the categories used in the installation's current set-up.

The absence of the blurb in the on-site installation, invites the visitor to make sense of the images' juxtaposition in the installation, and to draw instead on his or her respective frames of reference, to discern the format's film historical vision. In this respect, the installation's eclectic juxtapositions might initially appear as disjunctive, and be perceived as a particularly a-hierarchical film history which privileges primarily the user's experience of reception, in line with new media theories which align digitality with critical theory. On the other hand, the taxonomy used in the installation and the inclusion of a particular set of clips might suggest, for the museum visitor who is familiar with EYE's previous exhibition formats, that the Panorama proposes a regime of interaction which relies on concepts of film historiography closely associated with the institution's history. It is this latter point which I would like to pick up in relation to the Panorama, based on my own experience of walking through the installation. Because it seems that an attentiveness to the life cycles of some of the clips, their juxtaposition and the format's taxonomy in relation to EYE's vision of film history and prior exhibition practices, might elucidate how the Panorama to some degree pertains to a specific institutional vision of film history and how it develops it.

Departing from this observation, I suggest in the following analysis, that EYE's Panorama appears to be playing with two different, to some degree opposite conceptions of panoramic vision of film history. On the one hand, the appearance of a small number of clips and categories suggests that the Panorama sustains a more revisionist model of film history, related to the institution's philosophy of film history as articulated in the late 1980s by former deputy director Eric de Kuyper. On the other hand, the Panorama's taxonomy also seems to draw on a more classic, cinephile conception of panoramic vision – a *panoramique* – which sustains notions such as national cinemas, stylistic developments and genres as a precondition for film historiography, which proposes a more canonical film history.

The Panorama and Eric de Kuyper's "Aesthetic of Film History"

Walking through the Panorama, the appearance of one particular film excerpt in the console themed *Magic* seems to invite an approximation of this installation to the philosophy of film history articulated at the Nederlands Filmmuseum in the late 1980s; an excerpt from the early trick film *La fée aux pigeons* (Pathé, 1906) by Segundo de Chomón and Gaston Velle in which a fairy transforms handkerchiefs into pigeons. As film historian Juan-Gabriel Tharrats concisely summarizes this Pathé production from 1906 the film is "A magical story, that justifies all kinds of scenery, transformations and apparitions."²¹

The excerpt is recognizable from a different context in which it has been pre-

²¹ Juan Gabriel Tharrats, *Segundo de Chomón – Un pionnier méconnu du cinéma européen*. L'Harmattan, Paris 2009, p. 97.

sented in a play with cinematic categories reminiscing the ones in EYE's Panorama and which opens itself up to the following reflection. This is in the context of Austrian filmmaker Gustav Deutsch's found footage work, *Film Ist. 7-12* (2002) which consists partly of footage from EYE's collection. As EYE's Panorama, the chapters of Deutsch's film is divided into different cinematic categories – 7. *Comic*, 8. *Magic*, 9. *Conquest*, 10. *Writing and Language*, 11. *Emotions and Passions*, 12. *Writing and Document* – to explore different aspects of the film medium through the juxtaposition of film fragments and excerpts. In the eighth chapter entitled Magic, the excerpt from *La fée...* included in the Panorama's Magic console appears. This chapter of Deutsch's film opens with a text simply stating "Film IS Magic," and aims at demonstrating, as Deutsch explains on his website, the development of special effects in early cinema by intercutting fragments from *La fée...*, with other early Magic films of de Chomón, for example *Le Spectre Rouge* from 1907, to create a historical exploration of trick and féerie films, pointing toward later horror films.²²

In EYE's Panorama, as in Deutsch's film, the fragment from *La fée...* is presented in the console themed Magic with a display text stating: "Film IS Magic." The display text echoes Deutsch's description of his Magic chapter. Whereas Deutsch's *Film ist. 7-12* for example only includes early cinema excerpts, the Panorama Magic console groups together excerpts from several Segundo de Chomón and Georges Méliès films with snippets of John Landis' *An American Werewolf in London* (1984) and *Harry Potter and the Sorcerer's Stone* (2001), among others.

In the larger framework of Deutsch's film, *La fée* is juxtaposed with the other chapters' fragments, which centre on different themes and draw on a wider variety of sources. Chapter nine for example, *Conquest*, focuses on colonial film or chapter eleven, *Emotions and Passions*, centres on Italian diva films from the 1910s. Thus, in the overall context of *Film ist 7-12*, Deutsch juxtaposes the excerpt from *La fée...* with excerpts from a colonial film such as *By Aeroplane to Pygmyland* (1926), or with shots of Italian diva Lyda Borelli from Amleto Palermi's *Carnevalesca* (1918) (fig. 2).

²² Gustav Deutsch's description of the Magic chapter reads as follows: "8. Magic. Early masters of film such as Georges Méliès often came from the milieu of showmen and magicians. It was only logical therefore that they would be responsible for inventing all the tricks and reality alienations which only film techniques could produce – stop tricks, time lapse, superimpositions and reverse action in all manner of combinations. Film replaced trapdoors, levers and invisible ropes. It was enough to stop the camera while the lady left the stage. The transformation, when someone or something became something else became the central theme of the majority of magic-films. Later the same tricks were built into normal plots and so became essential elements in early fantasy and horror films." See <http://www.gustavdeutsch.net/index.php/en/films-a-videos/72-film-ist-7-12.html>, last visit 27 February 2014.



Fig. 2 – *La fée aux pigeons* appearing in chapter 8. *Magic* of Gustav Deutsch's *Film Ist. 7-12* (2002).

These juxtapositions seem to have left a residual in the Panorama. Also appearing in the Panorama is the clip from the aforementioned colonial film *By Aeroplane to Pygmyland*. While Deutsch uses this clip in chapter 9 *Conquest*, it appears in the Panorama in the *Exploration* console together with an excerpt from Stanley Kubrick's classic *2001: A Space Odyssey* (1968). Furthermore, while no diva films are included in the Panorama, it does comprise a section of clips with famous film personalities in the *Film Stars* console.

Film archivist and historian Nico de Klerk who worked on the production of *Film ist. 7-12* has stated that Deutsch's use of sources represents a vision of film history, which in making these juxtapositions is more democratic. As de Klerk writes:

*...home movies rub shoulders with the first Lumière films, a classic of the silent avant-garde blends in with early farce. All these materials find themselves in a democratic mix (...) Deutsch strips the films he re-uses of film history as we know it.*²³

Considering the arrangement of EYE's Panorama, this a-hierarchical vision of film history that levels canonized films and masterpieces with industrial film seems to be echoed in the installation and account for parts of its structuring principle, providing a possible explanation as to why *By Aeroplane to Pygmyland* "rubs shoulders" with *2001: A Space Odyssey*.

²³ Nico de Klerk, *Designing a Home. Orphan film in the work of Gustav Deutsch*, in Wilbirg Brainin-Donnenberg, Michael Loebenstein (eds.), *Gustav Deutsch*, Österreichisches Filmmuseum/ SYNEMA – Gesellschaft für Film und Medien, Wien 2009, pp. 117.

But one can go further back than *Film ist* to argue that such a vision of film history is historically closely tied to EYE as an institution. Beyond the parallel between the Panorama and *Film ist*. 7-12, one sees this vision in the philosophy of film history developed at the Nederlands Filmmuseum in the 1980s and the 1990s. In the early 1990s, then deputy director Eric de Kuyper proposed a meta-historical approach to film history which he dubbed an 'aesthetic of film history, that articulated a set of problems with film history writing as it was then widely practiced. A contention toward mainstream film history in de Kuyper's critique was, that film historians who conducted research in the film archive, seldom accounted for the scarcity and contingency of film history's source material as experienced by film archivists. In the late 1980s, archivists at the Nederlands Filmmuseum felt that film historians coming to the archive were too concerned with establishing linear film histories based on notions of schools and national styles, neglecting that film archives contain anonymous fragments which do not fit into these accounts. The existence of these fragments in de Kuyper's view suggested an impossibility of writing comprehensive, teleological film histories and should instead prompt film historians to acknowledge that film history is synecdochic and can have multiple developmental lines, appearing as a "Swiss Cheese" full of holes, where the holes are just as significant as what is left.²⁴ As de Kuyper suggested:

*The story of film aesthetics could have a very different developmental line than that of other film histories, giving more space to ruptures and discontinuities, the interplay with other aesthetic domains, and more generally accepting the fact that we have to work with "fragments of a history of film" where the holes and losses are even as significant as what is still there!*²⁵

With its suggestion to recognize alternative developmental lines, de Kuyper's essay proposed an acknowledgement of the intermediality between cinema and other visual display formats from before the emergence of cinema. This can be regarded as a point which derives from early cinema studies, and in particular American film historian Charles Musser's "history of screen practices," or to go further back the seminal *Technique et Idéologie* – essays published by film theorist Jean-Louis Comolli in *Cahiers du cinéma* in 1971-1972 and its critique of among other things contemporary periodisations in technological histories of film.²⁶

To promote this understanding of film history and of the film archive, the Nederlands Filmmuseum produced numerous compilation films and TV documentaries using neglected parts of its collection. Films such as Peter Delpout's *Lyrical Nitrate* from 1991, the television documentary *De Tijdmachine: Overpeinzingen bij 100 jaar beeldcultuur* (*The Time Machine: Reflections on 100 Years*

²⁴ Eric de Kuyper, "Anyone for an aesthetic of film history," in *Film History*, no. 6:1, 1994, p. 106.

²⁵ *Ibidem*.

²⁶ For the most recent anthologized and update edition of these essays, see Jean-Louis Comolli, *Cinéma contre spectacle*, Verdier, Lagrasse 2009.

of *Image Culture*, 1996), *Diva Dolorosa* from 1999 directed by Delpout and produced by Frank Roumen, the *Bits & Pieces* programs which circulated in festivals, and later found footage films by filmmakers such as Gustav Deutsch.²⁷ These multiple re-workings, foregrounded the fragments and conceived them as malleable objects, of which the meaning could be constructed in numerous ways from multiple entry points in relation to other fragments and well-known films, thereby questioning and challenging the historical status of the latter.²⁸

In the Panorama this philosophy seems to be reflected in the taxonomies, display texts and clips proposed in the consoles. Thus, it seems that the format proposes a regime of interaction within which the visitor can create encounters between clips, which ties up to this philosophy. From this perspective, EYE's use of the panoramic format to display parts of its digitised collection might then encourage visitors to think critically of film history's foundations and developmental lines.

On the other hand, as the next section discusses, holding up this philosophy of film history and the comparison between *Film ist. 7-12* against another substantial part of the Panorama's consoles and clips, also suggests a more canonical film history in this particular format.

The Panorama as Panoramique and Cinephile Film History

In contrast to the "aesthetic of film history" discussed above, a more canonical frame of reference also characterizes the selection of clips in the Panorama and could be said to shape its historical vision. In the installation's first consoles *Netherlands*, *Film Stars* and *Slapstick*, excerpts from a range of canonical titles appear, which by being grouped into these particular categories seem to a lesser degree to "strip film history as we know it" but instead to reinstall it.

As the first console which meets the spectator, the *Netherlands* console for instance explicitly invokes the notion of a Dutch national cinema, by containing excerpts from some of the most canonized Dutch films such as Paul Verhoeven's *Spetters* (1980). This is followed by the console themed *Slapstick* offering among others a visual reference to Chaplin. Arguably, these categories sustain more traditional notions and guiding principles of film historiography such as national cinemas and stylistic schools, representative of the historiography which an 'aesthetic of film history' sought to challenge.

²⁷ Itzia Gabriela Fernandez Escareño, *La Compilation, un outil paradoxal des films muets recyclés par Peter Delpout et coproduits par le Nederlands Filmmuseum (1989-1999)*, PhD dissertation, Université Sorbonne Nouvelle – Paris 3, 2009, pp. 19, 440.

²⁸ Furthermore, it is particularly suggestive in relation to the EYE's Panorama, that Deutsch's *Film ist* project, has also been displayed as a panoramic installation on several occasions for example at the 2002 International Filmfestival Rotterdam, which also aligns with a wider tendency in found footage filmmaking. See Christa Blümlinger, *Kino aus zweiter Hand: Zur Ästhetik materieller Aneignung im Film und in der Medienkunst*, Vorwerk 8, Berlin 2009 (Fr. ed. *Cinéma de seconde main. Esthétique du remploi dans l'art du film et des nouveaux médias*, Klincksieck, Paris 2013, pp. 286-287).

With their appearance in the Panorama, these categories and clips could be said to inflect a historical vision upon the installation, which pertains to a more classic cinephile film history and its conceptualization of panoramic vision as a structuring principle for discerning masterpieces. Looking beyond the Panorama, and the history of panoramas as a visual display format culminating in the nineteenth century, it seems pertinent to recall that the panoramic also carries a particular meaning in cinephilia and in film historiography as a mode of perception and vision which lays the foundation for a film history of masterpieces.

With regard to classic cinephilia from the 1920s and the 1950s-1960s, the panoramic can for example refer both to ritualized viewing habits and to the panorama of masterpieces which early film histories would promote through their discernment and comparison of particularly beautiful cinematic moments. As a ritualized viewing habit, panoramic vision refers to idiosyncratic, spectatorial postures which enhance the identification of such moments, to create the fundament for a masterpiece model of film history. Filmmaker and key figure of the French Nouvelle Vague Jean Douchet, has described for example his own spectatorial habit of choosing a specific position in the cinema, in order to privilege a "sweeping vision" of the cinema screen, which may increase his possibilities of identifying remarkable, hidden cinematic moments and details of beauty in the frame.²⁹

Such ritualized, subjective spectatorial habits, have sustained the writing of film histories since the early cinephiles in the 1920s – Louis Delluc, Marcel L'Herbier and Germaine Dulac – promoted the concept of *photogénie* as a way of discerning moments of cinematic beauty based on their subjective viewing experiences. While these habits are arguably less common today, this vision provided a basis for some early film historians to create canons and to write internationalist, general film histories, which were attentive to different national schools and styles, and which linked filmic moments kaleidoscopically across time and space as a *panoramique* of film art's development.³⁰

This model of history is discernible particularly in French film historiography which emerged out of "first wave" cinephilia in the 1920s. The 1920s writings of French film theorist, historian and ciné-club activist Léon Moussinac can be regarded emblematic in this respect. Establishing a historical understanding of cinema as an art form by using *photogénie* as its theoretical conception, Moussinac's *Naissance du cinéma*³¹ was central in creating a frame of reference films, drawing examples from the repertory of contemporary film distribution in Paris. This reference frame would later, as we now know, become institutionalized in cinémathèques and film libraries when the film preservation movement gained

²⁹ Christian Keathley, *Cinephilia and History, or the Wind in the Trees*, Indiana University Press, Bloomington 2006, p. 45.

³⁰ Bernard Eisenschitz, *Die Utopie einer Weltfilmgeschichte. Französische Ansätze der Filmhistoriografie*, in Hans-Michael Bock, Wolfgang Jacobsen (eds.), *Recherche: Film – Quellen und Methoden der Filmforschung*, text + kritik, München 1997, p. 120.

³¹ Léon Moussinac, *Naissance du cinéma*, J. Povolozky, Paris 1925.

momentum in the 1930s. The title of Moussinac's later *Panoramique du cinéma* (*Au sans pareil*, 1929), is directly suggestive of a panoramic model of vision, which compares key moments particularly from a set of North-American and European films as absolute cinematic masterpieces.³² While these early histories were linear and overtly teleological, in their pursuit to promote the recognition of cinema as an art form, they established an internationalist referential system – a panorama – of films to sustain their conception of film history as an art form.

The choices in the Panorama can be said to evoke these highlights and stages of development in film by revolving around concepts such as distinct national styles in an internationalist perspective, the development of cinematic acting – slapstick for example and the development of film as an art form, as demonstrated through the appearance of Frans Dupont's *Diepte* among other titles. In this regard, while a part of the Panorama seems to suggest an 'aesthetic of film history' another part seemingly invokes a classic, canonical, cinephile film history, corporealised in its immersive, panoramic set-up using a "thick description," to use Staley's words, to invoke the cinephiles' comparisons of moments and eclectic encounters of films across time and geographical origin.

In this respect, the format arguably displays both a classic, "amateur" paradigm of film history pointing back to the heydays of first wave cinephilia historiography, while at the same time including perspectives from a later more academically informed film historiography and its emphasis on intermediality and the contingency of historiography.³³ If compared to de Kuyper's "aesthetic" it appears then that the particular format of the Panorama suggests a move towards a more easily recognizable frame of reference and canonical film history, in its use of the set-up's "thick depiction," thus leaning towards a traditional film history.

Conclusion

In this article I have addressed the emerging debate on film history's shifting representational practices in a digital age, departing from the propositions put forward by respectively Vinzenz Hediger and Katherine Groo. Subsequently addressing the antagonistic responses to digitisation's consequences for film archives and heritage institutions, I have made the case that processes of social appropriation and institutionalized historiography continue to play a crucial role in reproducing historical tropes in digital access and reuse formats. In doing so, I have borrowed Michel de Certeau's concept of "historiographical operation" which has enabled me to analyse

³² Also Georges Charenzol, *Panorama du cinéma*, Kra, Paris 1930 can be seen as a suggestive example of early film historiography in this respect.

³³ Philippe Gauthier, "L'histoire amateur et l'histoire universitaire: paradigmes de l'histoire du cinéma," in *Cinémas: revue d'études cinématographiques / Cinémas: Journal of Film Studies*, vol. 21, no. 2-3, 2011, p. 88.

the case of EYE's Panorama in relation to the specific, institutional context within which it emerged.

In my analysis of the Panorama, based on the comparisons with Gustav Deutsch's *Film ist. 7-12* and Eric de Kuyper's "aesthetic of film history" it appeared that the installation contains residuals of *Film ist's* taxonomic juxtapositions. This observation led me to the conclusion that as a panoramic display format, the Panorama partly underlines cinema's different beginning points and developmental lines, potentially inviting the beholder to think of cinema's possible, multiple origins. At the same time, the installation, by introducing and relying on more traditional categories seems to approximate this philosophy to a canonical film history's notions of national cinemas, acting styles and film art. As I have argued, the use of a 'thick depiction' in the panoramic format can be seen in this regard as vital in embodying a classic type of cinephile, panoramic vision. This provided an example of how a traditional film history can be conveyed by effectively using the specific representational forms of digital display formats.

In making these points, my discussion of EYE's Panorama showed, how an attentiveness to institutional processes of technological appropriation may yield an understanding of the ways in which institutions make sense of digitised collections and create historical understandings through analogies and taxonomies drawn from established historical paradigms. Analysing the Panorama from this vantage point, it is possible to counter the strong notions that digital formats either subvert traditional forms of historiography or create entirely new ones. Through this intervention I have downplayed the materialist, formalist implications of digital formats as a radical departure from existing historical tropes and sought to balance it with institutional analysis. I have argued that it is necessary to take such an approach in this transitional moment, to provide an analytical avenue which may fruitfully reorient and further the critical discussion of film historiography's digital representational practices. As a concluding remark, I am in this respect sympathetic to Régis Debray's point that in order to understand technological change it is necessary to acknowledge the *longue durée* of ideas and mentalities as a long history which circumscribes that of the rapid development and evolution of techniques.³⁴ I believe that in order to apprehend the current digital transition we should – as Debray suggests – first take a diachronic look at how "founding ideas [were] themselves founded" to then take a synchronic look at how ideas are transmitted through the material organisation of contemporary technical systems.³⁵ To apply this perspective, I would argue, could lead us to deeper insights on how digital media specificities are negotiated and used to recast film historiographies. Furthermore, it could pave the way for a more historically informed discussion of how digital formats rearticulate or (re-)invent new traditions through digital, material practices.

³⁴ Régis Debray, *Cours de médiologie générale*, Gallimard, Paris 1991, pp. 51.

³⁵ Régis Debray, *Transmitting Culture*, cit., p. 99.

Distant Voices, Still Cinema? Around the Movies

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Abstract

The contribution deals with the contemporary production of neorealist films and photo-romances, a kind of illustrated magazine deploying sentimental narratives through drawings, or mostly stills. Both products were genuinely Italian and marked the country's post-war culture. Whereas the first was advocated as high-brow art and the most remarkable expression of the nation in times of hardship, the latter has been disregarded as cheap popular culture; just in recent times it received the attention that a mass phenomenon deserves. What has been overlooked or only briefly discussed are shared areas between the two. The article tackles three issues: how neorealism partook in and merged into post-war visual culture, to the point that some thresholds and boundaries between highbrow, politically conscious and aesthetically experimental films and formulaic cultural products are hard to detect; the role of intertextuality in this process; and what happened in the transformation that occurred along the passage from the screen to the magazine, by comparing the function narratives had in novelization and in films.

In the early post-war years, immediately following major shifts in the rules concerning governance and citizenship with the turn from monarchy to republic and universal suffrage, a new medium appeared in Italy: the photo-romance magazine. Photo-romance magazines have often been described as escapist and regressive narratives, aimed at an illiterate readership. In fact, these magazines addressed a broader audience than any previous popular magazine, and were aimed at a female reader whom had been widely neglected during the Fascist era. Moreover, the photo-romance's stress on visuality was itself a novelty in a culture that was mostly conceived of and conveyed through a literary language. On 29 June 1946, a minor publisher, Universo, run by the Del Duca brothers in Milan, produced the first issue of what was to become a huge success: *Grand Hotel*. Major publishing houses soon followed suit: Mondadori published *Bohero Film* and Rizzoli *Il Mio Sogno*, later renamed simply *Sogno*.

The focus of this discussion is not a reconstruction and thorough description of the medium's genealogy,¹ which can be traced back partly to category romances and to popular literature broadly. Instead, my argument will focus on national visual culture in the post-war era, with emphasis on two issues in particular. First of all, photo-romance magazines should be read as a product of the general transformation in the previous decade from a traditional to an industrial culture in Italy.² The shift in modes of cultural production created the conditions for and profited from a newly visual culture. It is by no means casual that the main publishing activity of the Del Duca brothers previously, in the 1930s, had been a comic magazine named *L'Intrepido*: comic magazines were a similar product of the new industrial culture insofar as they were serialized and produced on a mass scale, foreshadowing the photo-romance. Even as late as the 1950s, highbrow intellectuals still tended to conflate photo-romance and comic magazines, indicating the continuity of their industrial roots. Second, within this new industrialized culture, cinema, as a mechanical mode of production, held a hegemonic and influential role as a representational and social media model. Again, it is no coincidence that the name of the first, very successful photo-romance magazine makes explicit reference to a famous Hollywood movie: *Grand Hotel* (Edmund Goulding, 1932), starring Greta Garbo, Joan Crawford, and John and Lionel Barrymore. On the front cover of the first issue, a well-dressed bourgeois couple enters the Grand Hotel theatre; the scheduled film shares the title of the issue: *Anime Incatenate (Souls in Chains)* (fig. 1). Another lucrative magazine was named *Bolero Film*, even more directly connecting cinema and the photo-romance (fig. 2).³

¹ For a discussion of photo-romance as a medium, see Jan Baetens, "The Photo-novel: A Minor Medium?" in *Necus*, vol. 1, no. 1, 2012, <http://www.necus-ejms.org/the-photo-novel-a-minor-medium-by-jan-baetens>, last visit 14 July 2013.

² See David Forgacs, *Italian Culture in the Industrial Era, 1880-1980*, Manchester University Press, Manchester 1990; Fausto Colombo, *La cultura sottile. Media e industria culturale italiana dall'Ottocento ad oggi*, Bompiani, Milano 1998.

³ Among the ancestors and heirs of photo-romance magazines are novelizations of films, i.e. the adaptation of film narratives through the selection of individual frames, complete with written commentary. The practice of film novelization in Italy has been widely studied recently, cf. in particular: Raffaele De Berti, *Dallo schermo alla carta. Romanzi, fotoromanzi, rotocalchi cinematografici: il film e i suoi paratesti*, Vita&Pensiero, Milano 2000; Id. (ed.), *La novellizzazione in Italia. Cartoline, fumetto, romanzo, rotocalco, radio, televisione*, special issue of *Bianco e Nero*, no. 548, 2004; Emiliano Morreale (ed.), *Lo schermo di carta. Storia e storie dei cineromanzi*, Il Castoro, Milano 2007. See also the PhD dissertation of Stefania Giovenco, *Il cineromanzo in Italia e in Francia negli anni cinquanta e sessanta*, Università degli Studi di Udine / Université Sorbonne Nouvelle – Paris 3, 2011. On novelization itself see Alice Autelitano, Valentina Re (eds.), *Il racconto del film. La novellizzazione: dal catalogo al trailer/ Narrating the film. Novelization: From the Catalogue to the Trailer*, Forum, Udine 2006; Jan Baetens, "Novelization: A Contaminated Genre?" in *Critical Inquiry*, vol. 32, no. 1, 2005, pp. 43-60.

Distant Voices, Still Cinema?



Fig. 1 – *Grand Hotel*, vol. 1, no. 1, 26 June 1946. Front cover.



Fig. 2 – *Bolero Film*, vol. 1, no. 13, 17 August 1947. Front cover.

The Italian post-war mediascape was characterized by both a new freedom of expression, in political terms, and by Hollywood cinema and American culture more generally. The North-American influence is notable in photo-romance magazines as well as cine-romances (the latter being the adaptation of films in a magazine, selecting film frames and adding them written dialogues and commentary). These publications became a vehicle for a deeper penetration of American mass culture in Italy, and yet at the same time they managed to negotiate the moral values implicit in mass culture, in culturally and socially acceptable terms. In this negotiation, certain journals and individuals played a significant role. A key instance here is the case of Adriano Baracco and the magazines he published: *Hollywood*, *Novelle Film*, and *Cineromanzo*, which together dispersed a form of mass culture that drew upon cinema, stardom and popular narratives.⁴ Originally, Italian cinema was not an source for photo- or cine-romances; however, its progressive relevance grew alongside a renewed industrial stability that emerged with the reinstatement of Cinecittà studios, the growth in film exports and co-productions, and the increase in film attendance. *Novelle Film*, for example, did not adapt an Italian film until three years after its first issue, in 1949. The majority of national film production were popular genre vehicles, including farce, comedies, historical films and, of course, melodramas. From the 1950s on, some of those studios that specialized in popular film genres and intermedial tie-ins turned to cine-romances. This was the case of the Neapolitan company Titanus, who was responsible for some of the most successful melodramas between the 1940s and '50s, and whose production was often

⁴ An overall discussion of the postwar popular press in its relationship to cinema is to be found in Giuliana Muscio, *Tutto fa cinema. La stampa popolare del secondo dopoguerra*, in Vito Zaggarro (ed.), *Dietro lo schermo. Ragionamento sui modi di produzione cinematografica in Italia*, Marsilio, Venezia 1988, pp. 105-133.

novelized as cine-romances in *Novelle Film*.⁵ During this period, high-budget and even neorealist film productions were often turned into cine-romances (figs. 3-5).



Fig. 3 – *Cine-fotoromanzo Gigante*, no. 21, 1 November 1956. Front cover portraying the two main characters of *Il cammino della speranza* (*The Path of Hope*, Pietro Germi, 1950).

Fig. 4 – *Cineromanzo Gigante*, no. 12, October 1955. Front cover portraying Sofia Loren in *La donna del fiume* (*The River Girl*, Mario Soldati, 1954).

Fig. 5 – *Supercinema*, vol. 1, no. 1, 10 December 1950. Front cover displaying Amedeo Nazzari and Silvana Mangano in *Il brigante Musolino* (*Outlaw Girl*, Mario Camerini, 1950).

⁵ See, for instance, *Catene*, in *Novelle Film*, vol. 3, no. 103, 1949 and *Chi è senza peccato*, in *Novelle Film*, vol. 7, no. 264, 1953, both drawn from very popular melodramas directed by Raffaello Matarazzo in 1949 and 1952 respectively. On *Catene* as an intermedial case, see Francesco Di Chiara, *Lacreme italiane: Catene as the Canon of Post-World War II Italian Melodrama*, in Pietro Bianchi, Giulio Bursi, Simone Venturini (eds.), *Il canone cinematografico/The Film Canon*, Forum, Udine 2011, pp. 217-221. On Titanus film productions and the Italian film industry, see Francesco Di Chiara, *Generi e industria cinematografica in Italia. Il caso Titanus (1949-1964)*, Lindau, Torino 2013.

In what follows, I would like to address three issues. First, how neorealism partook in and merged into postwar visual culture, leading to a blurring of the thresholds and boundaries between highbrow, politically-conscious and aesthetically-experimental films, on the one hand, and on the other formulaic cultural products. Within an iconic sphere, modern American visual culture, stereotypes belonging to traditional popular culture, and newly forged realistic forms became intertwined. I would suggest that cine-romances sometimes crystallized these unexpected connections. In this respect, I agree with recent remarks from Stefania Parigi, who singles out the contemporaneity of both neorealist film production and popular magazines.⁶ Nevertheless, I believe that a deeper and more consistent survey, beyond pinpointing shared themes and the links between different parts of the media industry, might shed light on the dynamics at play within postwar visual culture and on further overlooked consonances. Second, my intention is to highlight the role of intertextuality in this process. As a matter of fact, an intertextual methodology enables us to shift from an aesthetic and author-based perspective on neorealism to a more inclusive and broad view on the phenomenon, revealing that neorealism often implied and exploited industrial cultural production. Third, I seek to explain what happened in the transformation that occurred during the passage from the screen to the magazine, by comparing the function of narratives in novelizations and in films.

Photo-romance and cine-romance magazines were part of a growing mass culture, mostly revolving around visual features. In a country that was highly unbalanced in terms of cultural literacy – in the postwar era some areas of Southern Italy exceeded an illiteracy rate of 20%, whereas North-Western Italy's rates were below 5% – this new visual culture to some extent negotiated highbrow models and the needs of the middle and lower classes. Nevertheless, photo-romance magazines were not sold primarily in rural, underprivileged areas, but were aimed at an urban population, who could attend film screenings and experience a recently mediatized cultural consumption.⁷ They seldom reached a highly cultivated readership, as surveys have proved: though photo-romances did begin to penetrate the upper class, the majority of readers belonged to the proletariat or petty-bourgeoisie.⁸ This intermediate position between conservative-highbrow and illiterate cultural models defines the specificity of the photo-romance and its

⁶ See Stefania Parigi, *Neorealismo. Il nuovo cinema del dopoguerra*, Marsilio, Venezia 2014, and specifically pp. 168-169. Some initial remarks concerning the relationship between neorealist cinema and photo-romances are to be found in Paolo Noto and Francesco Pitassio, *Il cinema neorealista*, Archetipo, Bologna 2010, paragraphs 2.3, 2.6, 2.9 and 2.10. A seminal contribution, raising (among many others) the issue of photo-romances, is Francesco Casetti, Alberto Farassino, Aldo Grasso, Tatti Sanguineti, *Neorealismo e cinema italiano degli anni '30*, in Lino Micciché (ed.), *Il neorealismo cinematografico italiano*, Marsilio, Venezia 1999 [1975], pp. 331-385.

⁷ An in-depth survey on cinema and media consumption in postwar Italy can be found in Francesco Casetti, Mariagrazia Fanchi, *Le funzioni sociali del cinema e dei media: dati statistici, ricerche sull'audience e storie di consumo*, in Mariagrazia Fanchi, Elena Mosconi (eds.), *Spettatori. Forme di consumo e pubblici del cinema in Italia. 1930-1960*, Bianco e Nero, Roma 2002, pp. 135-171

⁸ See Anna Bravo, *Il fotoromanzo*, Il Mulino, Bologna 2003, pp. 76-82.

adherence to a new media model that opposed traditional high culture, otherwise still dominant as a national model following authoritarian political action during the Fascist era. In this respect, photo-romances shared the same condition of popular cinema, dime novels, comics, category romances, and so forth. For this reason, many of these genres and formats have for a long time been called para-literature, meaning “a field that contrasts *another* field as *literature*.”⁹

As mentioned, the main point of reference for Italy’s newly established mass and visual production was American culture, as conveyed by mass media and related products and goods. This influence took root between the 1920s and the ’30s, but greatly accelerated after the end of WWII. From the very start, photo-romances looked at (supposedly) American social and moral habits, as the first issue of *Grand Hotel* illustrates through the story of an Italo-American engineer and his romantic affair (fig. 6).



Fig. 6 – *Anime incatenate*, in *Grand Hotel*, vol. 1, no. 1, 26 June 1946.

American cultural models were authoritative in three different respects: social customs, iconography and visual syntax. “Social customs” here refer to the ways of depicting relationships among individuals, and the associated moral values. By “iconography” I intend a set of visual features concerning goods and objects, environments and bodies. “Visual syntax” indicates a way to arrange a set of

⁹ Michele Rak, *Appunti sulla dinamica del sistema dell’informazione estetica: i generi della paraletteratura e la cultura di massa*, in Noël Arnaud, Francis Lacassin, Jean Tortel (eds.), *La paraletteratura*, Liguori, Napoli 1977, p. 17.

individual frames in order to build up a coherent discourse. It is not my intention here to inquire further into how the American way of life penetrated Italian culture through media products before and after WWII. Instead, I would like to sketch out briefly this influence in terms of iconography and visual arrangement. Photo-romances and cine-romances picked from Hollywood cinema a set of goods and objects that were often luxurious, or associated to specific film genres; they also drew on certain melodramatic emotions, such as fear, desire and longing. Stylistic citation appears to have been an effective model for novelized films to downplay their affiliation with the neorealist movement, too, as in *Ai margini della metropoli* (*On the Outskirts of the Metropolis*, Carlo Lizzani, 1953). The selection of the visual score of this politically committed film, partly set in the Roman suburbs, privileges dramatic exchanges among characters, tortured facial expressions, guns, and almost entirely excludes outdoor scenes (figs. 7-8).¹⁰ Though the exclusion of outdoor scenes does not constitute a direct connection to Hollywood iconography, it refers ironically to neorealist film culture, so dependent on crucial outdoor sequences, by denying this link. Instead it conforms to the studio-production standard of contemporary Hollywood film, which in turn was often criticized for excluding the accidental casualties of reality as they might emerge from location shooting.



Figs. 7-8 – Inner passions over outdoor scenes. *Ai margini della metropoli*, in *Novelle Film*, vol. 7, no. 265, 17 January 1953.

¹⁰ See *Ai margini della metropoli*, in *Novelle Film*, vol. 7, no. 265, 1953.

What is most conspicuous in photo- and cine-romance magazines is bodily exhibition, and specifically the female body, which had been almost entirely absent from Italian visual culture until the end of the 1930s. The relevance of the body as a means to express desire, eroticism and attraction was clear from the front cover of photo-romances and cine-romances, and this was strictly connected to stardom. Sentimental interaction was predominantly linked to couples, expressing their passion through the closeness of bodies and faces (fig. 9). However, eroticism was exclusively an allegedly feminine “privilege,” disclosed through a half-naked body displaying a lascivious attitude if not abandoned to its own passion (fig. 10). In this respect, these covers mimic the layout of film posters, as previously mentioned. With regard to visual syntax, photo-romance and cine-romance magazines mostly favoured medium shots, thus privileging characters and indoor scenes over outdoor ones capturing landscapes, despite this latter feature having played such a meaningful role in neorealist culture. Furthermore, the arrangement of shots often adopted classical Hollywood editing as a model, irrelevant of where or how the source film was produced. This happened even when adapted films clearly opposed the Hollywood mode of representation, as per *Umberto D.* (Vittorio De Sica, 1952) and its novelization. Conceived as an almost anti-narrative film, casting a non-trained actor as a main character, *Umberto D.* nevertheless stemmed a cine-romance based on a set of stills laid out according to Hollywood editing (fig. 11).¹¹



Fig. 9 – Faces and passions. *Grand Hotel*, vol. 7, no. 298, 8 March 1952. Front cover.

¹¹ See *Umberto D.*, in *Novelle Film*, vol. 6, no. 222, 1952.



Fig. 10 – Exhibiting heavenly bodies. *Cineromanzo per tutti*, no. 2, 28 May 1954. Front cover.



Fig. 11 – From neorealism analysis to classical editing. *Umberto D.*, in *Novelle Film*, vol. 6, no. 222, 22 March 1952.

As well as making reference to shared popular and visual culture, photo- and cine-romance magazines also included common social experiences of the past. Often their diegetic spaces and events referred to harsh war and postwar realities, as many commentators have remarked, such as war itself, ruins, the Resistance or migration. Photo-romances, and specifically those that adopted photographic stills instead of graphic illustration (such as *Bohero Film*) from the very start, displayed an interest in the difficulty of recent national experiences and assigned a crucial significance to photographic medium itself.¹² Future film director Damiano Damiani played a key role in this respect, directing photo-romances in his early career which made recourse to such aesthetics.¹³ Further, some columns within photo-romance magazines also recounted “real” stories. The “È accaduto” [it happened] column in *Grand Hotel*, for example, reported scoops from everyday life, sharing some features with similar columns published in declaredly neorealist film journals.

The question and function of realism in photo- and cine-romance magazines, or the presence of the popular press in neorealist film, is complex. Certainly, neorealist films did often reflect on the boom in mass culture: in *Riso amaro* (*Bitter Rice*, Giuseppe De Santis, 1949), for example, the main character Silvana browses *Grand Hotel* and dances the boogie-woogie.¹⁴ Furthermore several documentary

¹² Cfr. the stance expressed in Ermanno Detti, *Le carte rosa. Storia del fotoromanzo e della narrativa popolare*, La Nuova Italia, Scandicci (FI) 1990, pp. 104-113.

¹³ On Damiani, see Alberto Pezzotta, *Regia Damiano Damiani*, CEC/Cinemazero/Cineteca del Friuli, Udine 2004.

¹⁴ It should be also noted that *Bitter Rice* was itself novelized at least twice: as a graphic photo-

shorts looked with a mix of curiosity and repulsion at popular media products such as pin-ups or comic and photo-romance magazines, such as *Le fidanzate di carta* (*Paper Fiancées*, Renzo Renzi, 1951), *Zona pericolosa* (*Dangerous Area*, Francesco Maselli, 1951), *L'amorosa menzogna* (*The Lovable Lie*, Michelangelo Antonioni, 1949). Nevertheless, some neorealist directors, such as Giuseppe De Santis and Alberto Lattuada, paid great attention to rising mass culture and consequently moulded their works according to narratives and visual motifs derived from the popular press. To name one striking example, the huge box-office success of Lattuada's ruthless melodrama *Anna* (1951) could not be conceived outside a mediascape that included photo-romance magazines. I would therefore suggest that the question of realism ought to be framed as a trilateral relationship between neorealism, the popular press and postwar melodrama. The latter certainly profited from a realist visual style, as proved by Raffaello Matarazzo's films *Catene*, *Tormento* (*Torment*, 1950) or *I figli di nessuno* (*Nobody's Children*, 1952) or Clemente Fracassi's *Sensualità* (*Sensuality*, 1952),¹⁵ and as well-established scholarship has explained.¹⁶ However, simplified narratives added to the realist setting. In this respect, I agree with Lucia Cardone when she describes photo-romance magazines as belonging to the family of popular realism.¹⁷ It is a family, though, which bears some relationship to a new-born neorealism. Cine-romance magazines took from the multi-layered visual score of neorealist cinema only what could easily be subjugated to clear-cut and singular narratives. Thus, contradictory neorealist urban space and outdoor scenes were typically excluded from cine-romance frames, which instead privileged indoor family groups and situations. Quite paradoxically, this happened with a film like *La terra trema* (*The Earth Trembles*, Luchino Visconti, 1948), whose aim was to depict a family melodrama (it would be a truism to outline the role of melodramatic tradition in Visconti's cinema) that was rooted within a specific archaic space: Eastern Sicily's coastline.¹⁸ Except for the first frame, a sort of establishing shot depicting the fishermen's village and the seashore, all the stills of the cine-romance depict medium shots of the main characters, mostly expressing their feelings or living a simple family life (figs. 12-13) In fact, neorealist films sometimes went in the opposite direction, borrowing highly simplified narratives from melodramas in order to convey political discourse, as was the case with *Riso amaro* or *Non c'è pace tra gli ulivi* (*Under the Olive Tree*, Giuseppe De Santis, 1950).

romance, and as a cine-romance. See, respectively, the extras of the DVD edition *Riso amaro*, Cristaldi Film/Dolmen Home Video 2007; *Riso amaro*, in *Novelle Film*, vol. 3, no. 101, 1949. We might also observe that this latter novelization expressly stresses eroticism through terms of visual and verbal features, thereby enhancing what was already explicit in the film itself.

¹⁵ Also this latter was novelized, as *Sensualità*, in *Novelle Film*, vol. 6, no. 222, 1952.

¹⁶ See for instance Adriano Aprà, Claudio Carabba, *Neorealismo d'appendice*, Guaraldi, Firenze-Rimini 1975; Emiliano Morreale, *Così piangevano. Il cinema melò nell'Italia degli anni Cinquanta*, Donzelli, Roma 2011.

¹⁷ See Lucia Cardone, *Con lo schermo nel cuore. Grand Hôtel e il cinema*, ETS, Pisa 2004.

¹⁸ See *La terra trema*, in *Novelle Film*, vol. 3, no. 14, 1949.



Fig. 12-13 – Taming aesthetic thickness. *La terra trema*, *Novelle Film*, vol. 3, no. 14, 6 August 1949.

Considering intertextuality in photo-romance and cine-romance magazines raises at least three relevant issues: cinema’s hegemony in the postwar mediascape, modes of production, and stardom. In postwar Italy, cinema was certainly the hegemonic medium in terms of symbolic power, as well as being the newest and most financially supported medium, therefore determining and crystallizing visual culture by rooting it in complex narratives. In order to be qualified as an art in its own right, cinema needed to incorporate aesthetic categories that were well established in traditional arts, such as visual art and literature. Italian postwar film culture, and more specifically neorealism, worked hard to promote what was acknowledged across Europe following the inter-war period: that the film director was the sole artistic person responsible for the work of art. Photo-romance and cine-romance magazines somehow denied this, given that two basic features determining their very existence: anonymous producers and serial production. In fact the authors of photo-romances and/or those responsible for novelizations were often anonymous, and even when explicitly named they remained almost universally in obscurity. Furthermore, photo-romance magazines fragmented their narratives in a series of publications, whereas cine-romances prolonged the life of the film in another form and medium. Thus cine-romance magazines declared film’s multiplicity and stressed the fact that its very existence was not exclusively the outcome of individual aesthetic genius, but the effect of anonymous, powerful narratives and industrial, inertial force. As Emiliano Morreale has stated, “cine-romance belongs to the ‘derivative’ exploitation of the film product; [...] in the 1950s a particularly interesting articulated system of synergies within the entertainment industry emerged in Italy.”¹⁹ Film

¹⁹ Emiliano Morreale, *Il sipario strappato. Introduzione ai cineromanzi*, in Id. (ed.), *Lo schermo di*



Fig. 14 – Ingrid Bergman in *La Settimana Incom illustrata*, vol. 5, no. 51, 20 December 1952. Front cover.

directors affiliated with neorealism are rarely remembered in the pages of cine-romance magazines, perhaps excluding Roberto Rossellini, infamous because of his love affair with Swedish-born Hollywood star Ingrid Bergman (fig. 14).

In reality, stardom as a transtextual phenomenon became a key issue in cine-romance magazines for a number of reasons. First of all, this was because female stars were themselves an identification model for some readers and erotic interest to others. For both these reasons, pictures of feminine stars were often displayed on the front covers of cine-romance magazines. In order to give these appearances a more articulated existence, biographical accounts were printed on the last page of the magazine. Second, because photo-romance magazines were part of a structured mediascape, it enabled young ambitious talent to emerge in the cultural industry, as in the cases of Sofia Loren and Gina Lollobrigida (figs. 15-16). Last but not least, by means of national stardom models cine-romance magazines established a relationship between the Italian and Hollywood film industries. Publishing regular columns such as “Rosa dei venti” or “Sala di soggiorno” in *Novelle film*, underlining both the international and family dimension pertaining to Italian stars, or by including in cine-romance magazines single biographical portraits, as *Cineromanzo* did, the cultural industry promoted alternative, industry-based values, as opposed to authorship and artwork. It was ultimately film’s



Fig. 15 – Getting started. Sofia Lazzaro before Sofia Loren. *Sogno*, vol. 4, no. 49, 2 December 1950. Front cover.



Fig. 16 – Getting started. Gina Lollobrigida. *Sogno*, vol. 1, no. 11. 20 July 1947. Front cover.

aesthetic function that was generally brought into question in photo-romance and cine-romance magazines, which centralized instead its narrative value.

Neorealist films were novelized, as different kinds of film products were. The main transformation affecting neorealist films was the reduction of a multi-layered aesthetic and moral representation into well-built, clear-cut, radically dualistic narratives. Let us consider the shifts occurring in the novelization of a world-famous masterpiece, directed by one of the major neorealist directors, i.e. *Stromboli, terra di Dio* (Stromboli, Roberto Rossellini, 1950). The major changes to the text increase the narrative clarity and reduce everything that is not immediately pertaining to the film. First of all, the cine-romance, originally published in *Cineromanzo*,²⁰ stresses the film's value as a star-vehicle by enhancing Ingrid Bergman's profile on the front cover, as did film posters of her films under Rossellini's direction (figs. 17-19). Second, the novelization elevates narrative information, by including in the plot-line exhaustive references to the past of the main female character, from which the film's narrative abstained. Third, the novelization excludes any description, on both verbal or visual levels, by picking only those frames centred on a character. As a matter of fact, the verbal text provides the characters with complex psychology, which the film representation avoided, thus leaving obscure, deep motivations for actions and feelings. Finally, the cine-romance integrates a hetero-

²⁰ See *Stromboli, terra di Dio*, in *Cineromanzo*, vol. 1, no. 29, 1950.

diegetic and extra-diegetic voice into the narratives with a three-fold function: connecting episodes, in order to clarify obscure passages and provide the reader with full explanation; describing the characters' internal motivation, something the original aesthetic options refrained from doing, to stress moral uncertainty and/or freedom;²¹ and including in the narrative a moral stance that is allegedly external to the events themselves, and therefore supposedly neutral, thus assigning to the characters and their respective conduct a position on the scale of virtue.²² In this respect, voiceover in novelizations did nothing but respond to a basic melodramatic function, i.e. depicting virtue's misfortunes.²³ Thus, voice-over, a recurrent feature of neorealist films (as a truthful component that resembled a neutral documentary voice), was transmuted into its very opposite: a moral, authoritative and authoritarian voice, reducing visual ambiguity in favour of narrative transparency. It therefore becomes a scopic regime where the image functioned as seduction, and the voice as a site of moral redemption.



Fig. 17 – Neorealist stardom. Ingrid Bergman and *Stromboli*. *Cineromanzo*, vol. 1, no. 29, 14 October 1950. Front cover.

²¹ This is particularly true of Rossellini's films, which were morally normalized through their novelization. In addition to the case examined here, see also *Europa 51*, in *Novelle Film*, vol. 7, no. 267, 1953.

²² For a discussion of the voiceover function in postwar novelizations, see Raffaele De Berti, *Il cinema fuori dallo schermo*, in Luciano De Giusti (ed.), *Storia del cinema italiano*, vol. VIII, 1949/1953, Marsilio/Edizioni di Bianco&Nero, Venezia 2003, pp. 116-119.

²³ See Peter Brooks, *The Melodramatic Imagination. Balzac, Henry James, Melodrama, and the Mode of Excess*, Yale University Press, New Haven 1995.

Distant Voices, Still Cinema?



Fig. 18 – Neorealist stardom and melodrama. Ingrid Bergman and *Stromboli*. *Cineromanzo*, vol. 1, no. 29, 14 October 1950. Back cover.



Fig. 19 – Neorealist stardom. Angelo Cesselon's poster of *Stromboli, terra di Dio* (*Stromboli*, Roberto Rossellini, 1950).

Projects & Abstracts

How Do We Experience Different Films?

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The objective of this research is to demonstrate that there are cognitive differences in the spectators' experience due to the temporal structure of films, that is, the technical organisation and development of the audio, visual, and linguistic events. Cognitive, in this sense, means the processes involved in the acquisition and use of knowledge, be it sensible, practical or propositional. This work is a reflection founded on Kant's aesthetics, along with the film theory of Gilles Deleuze; the analytical approach in aesthetics and the cognitive theory of fiction from Jean-Marie Schaeffer; the phenomenology of the consciousness of internal time of Edmund Husserl; and an integrated approach in cognitive sciences that presupposes the whole organism in relation to the environment, in a specific circumstance, within its own dynamics. To give empirical evidence to this theoretical thesis, it compares neuropsychological experiments about mainstream film reception² to some representative films of different styles, genres, countries, released on screen during the 2000s;³ with the support of experiments that are analogical to some extent to a film experience, such as looking at paintings, listening to music and reading. Besides its current relevance, this theoretical model for film analysis and critique will apply to cinema in its integrity.

The cinema of this new century seems to represent a tendency to radicalise the rhythm of the films, that is, the intensified rhythm of the continuity editing on the one hand, and "slow cinema" on the other. This tendency appears to be a historical development of the Deleuze paradigms movement-image and time-image. This study interprets these deleuzian concepts as two theoretical models conceived in relation to the differences in the temporal structure of films. The movement-image and the time-image are the manifestation of two intentional and constructive tem-

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² I am referring here to some important experiments carried out by James Cutting, Uri Hasson and Jeffrey Zacks, among others.

³ These films were selected based on the top 10 lists of the best films of the decade published by *Cahiers du Cinéma*, *Cinequanon* and *Sight & Sound*.

poral principles, that distinguish the performance of any film in a scale of degrees, ranging from the extreme of physical time to the extreme of subjective time.

The film structure has a causal relation to the spectator's perception. Thus, this technical structure is the link between the film and the spectator. Nevertheless, this configuration does not represent a language. Each film creates its own system of signs, be it more or less well known by the public. The meaning of the audiovisual flux is constructed by the singular reception of each spectator, with her/his own feelings, desires, beliefs, knowledge, and so on, who re-activates these signs, since the film is the semiotic support of derived Intentional signs. So, the technical structure of the films is intentional as well. That is, the structure can be seen as the content of the author's intentionality, as every human artefact is constructed by a specific point of view, from a determined perspective, which represents certain functions and principles. Then, the film structure is the link between the author(s) and the spectator.

Films are cognitive structures as well, in the sense that the relationship with this representation involves the same mechanisms and affects of the cognitive relationship with the real world. So, the film structure has a relation to the modes of inflexion of our attention and, consequently, with the development of the cognitive processes correlated to comprehension and consciousness. Films are also an interaction between the diegetic world (fictional or not) and the spectator. For this reason, the film structure is also related to the modes of immersion and simulation of the spectators, configuring a specific characteristic of the narrative objects.

The most important property of the object film is time. To differentiate the perceptual temporality of a fixed and unchanged object from the temporality of music, Husserl uses the concept of time-object (*Zeitobjekte*): an object that lasts and changes within its unity and, thus, on this temporal relation of durations and changes, orients the perceptive acts of the subject. Therefore, the film is a time-object if (i) it has temporal properties, that is, events that last and change within their unity, in succession and/or in simultaneity; (ii) the temporal perception of the spectator is oriented by the temporal properties of the object; and (iii) it represents time by time, that is, it gives the perception of time and the representation of time since the time-objects are temporally extended (*Zeitextension*). Films are temporally extended and structured, as is our consciousness.

Our knowledge is also accomplished by its proper temporal structure. Temporal organisation is the key structure for both film and knowledge. If film is made by and perceived as a succession and/or simultaneity of single events, knowledge is constructed by mental schemas that are structured in sequence by the regularities and/or by the differences we experience in our relationship with the objects of the world, with the others and with ourselves.

In consequence of the role of time in the perception of films, how does the relation between the temporal properties of the film and attention work? Or, how does the interaction film/spectator take place? What about the aesthetic attention?

The subjective quality of this experience is the cause of its indetermination and then, the source of the richness of this affective and cognitive relationship.

How Do We Experience Different Films?

As it is a relation between an object and a subject, and following the assumptions of the perceptual realism, the analysis will be based objectively on the most fundamental level of every film: its temporal structure. This research will concentrate on the processes of the cinematographic reception, regardless of its result or final judgement. It will be carried out on the development of these three levels of experience – perception, attention and comprehension – in relation to the film's temporal properties. The aim is to search for the conditions of possibility of the aesthetic attention.

Despite the growing importance of the studies in film cognition, they also present a disparity either in their concepts of the cognitive processes, or in their knowledge about cinema. The purpose of this research is to present cinema as a worthy interdisciplinary scientific object, to demonstrate the cognitive differences in its reception and their implications. In brief, it is a question of the knowledge of people and of the meaning of Aesthetics.

Videographic Film Studies:

From the “Unattainable Text” to Video Essays

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The aim of my research is to investigate how the digital turn is gradually reshaping film studies and film criticism. The consequences of digital technologies for the ontological definition of cinema and for the way in which audiences can nowadays watch and consume movies have already been widely studied and explored. In contrast, scholars and academics have only recently started to reflect on the implications of digital tools for film studies and criticism.

My research will focus in particular on audiovisual essays on film, a form of videographic film studies – a definition provided by Catherine Grant² – mostly known as video essay. The video essay is a montage of footage from existing films for the purposes of analysis and criticism, in order to develop an argument, to substantiate an analysis, to render in a “tangible” way an hypothesis, with the aid of a basic kind of prosumer editing tools, such as iMovie.

As videographic film studies are emergent forms rather than firmly established ones, it is extremely difficult to study video essays including them in a given theoretical frame. Consequently, it is my intention to individuate some crucial issues instead: if this practice is relatively new, it is indubitable that some preceding theories and reflections and some pre-existing practices have a significant influence.

In the first place, a key theoretical point of reference is the tradition of film analysis, especially some essays by Raymond Bellour.³ Reflecting on the material specificity of film, opposed to the usually written form of film analysis, on the one hand Bellour underlines how film scholars cannot really “quote” their object of study. On the other hand, he is one of the first theorists to prefigure the possibility of non-written form of film analyses.

Secondly, it could be fruitful to investigate the notion of *montage*. Starting

¹ Ph.D. thesis supervised by Professor Luisella Farinotti. For information: chiara.grizzaffi@gmail.com.

² Catherine Grant, “Déjà-Viewing? Videographic Experiments in Intertextual Film Studies,” in *Mediascape*, Winter 2013, http://www.tft.ucla.edu/mediascape/Winter2013_DejaViewing.html, last visit 1 April 2014.

³ In particular *Le texte introuvable*, in Raymond Bellour, *L'analyse du Film*, Albatros, Paris 1979 (*Il testo introuvable*, in *L'analisi del film*, Kaplan, Torino 2005) and *L'analyse flambée* in Raymond Bellour, *L'entre-images: photo, cinéma, vidéo*, La Différence, Paris 2002 (*L'analisi infiammata*, in *Fra le immagini: fotografia, cinema, video*, Mondadori, Milano 2007).

from early aesthetic reflection on cinematic montage, through to contemporary remix practices, it is important to remark how montage is increasingly becoming in all respects a fundamental instrument for both creation and comprehension of our cultural artefacts.

Finally, the third issue to explore is *cinophilia*, especially through the recent reflections of Christian Keathley⁴ – who proposes a history of cinophilia and also tries to reflect on the peculiar relationship between “cinephiliacs” and films –, and Laura Mulvey,⁵ who presents a new conception of the spectatorial condition, especially in regard to technological innovation, such as the DVD.

The main focus of the research will then be an analysis of a corpus of audiovisual essays hosted in various websites. The fundamental online sources that I will consider for observation and investigation of video essays are: *Audiovisualcy*, a Vimeo forum founded and edited by Catherine Grant;⁶ the criticism blog *Press Play*;⁷ the blog *Keyframe*,⁸ hosted on Fandor – a video on demand website, but with a more cinephilic rather than commercial inspiration –; Roger Ebert’s blog, now under the editorial direction of Matt Zoller Seitz;⁹ and, finally, the website of the long-established British magazine *Sight and Sound*,¹⁰ that has recently devoted his attention also to video essays.

As a first step, I propose to carry out an investigation of the formal and linguistic strategies implemented by audiovisual essays, in order to question the possibility of their specificity compared to written forms of criticism and analysis. Taking into account some recent observations about the style of audiovisual essays – the notion of a “spectrum” introduced by Christian Keathley¹¹ in order to distinguish between explanatory and poetical forms of audiovisual essays, and a taxonomy recently proposed by Catherine Grant¹² – I will focus on linguistic modes such as the use of voice-over, of written text like subtitles or intertitles, the presence of postproduction effects such as multiple screens or superimposition.

Additionally, after this observation of formal aspects of audiovisual essays, an in-depth analysis of their contents should be also conducted, with the aim of identifying the questions that this emerging form is raising. First of all, even

⁴ Christian Keathley, *Cinephilia and History: Or, The Wind in the Trees*, Indiana University Press, Bloomington-Indianapolis 2006.

⁵ Laura Mulvey, *Death 24x a Second: Stillness and the Moving Image*, Reaktion Books, London 2006.

⁶ <http://vimeo.com/groups/audiovisualcy>.

⁷ <http://blogs.indiewire.com/pressplay>.

⁸ <http://www.fandor.com/keyframe>.

⁹ <http://www.rogerebert.com>.

¹⁰ <http://www.bfi.org.uk/news-opinion/sight-sound-magazine>.

¹¹ Christian Keathley, *La Caméra-Stylo: Notes on Video Criticism and Cinephilia*, in Alex Clayton and Andrew Klevan (eds.), *The Language and Style of Film Criticism*, Routledge, London 2011.

¹² Catherine Grant, *How Long is a Piece of String? On the Practice, Scope and Value of Videographic Film Studies and Criticism*, Presentation at the Audiovisual Essay Conference, Frankfurt Filmmuseum/Goethe University, 23-24 November 2013. Recording online: <http://filmstudiesforfree.podbean.com/2013/12/18/how-long-is-a-piece-of-string-on-the-practice-scope-and-value-of-videographic-film-studies-and-criticism-a-talk-by-catherine-grant>, last visit 1 April 2014.

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the use of the word “essay” with reference to this specific practice is certainly not neutral, but quite problematic: as many scholars have pointed out, the word “essay” seems more appropriate to designate the kind of work with explanatory intentions, rather than the more poetic ones. Moreover, it is also important to inquire about the relationship between videographic film studies and pre-existing written form of analysis and criticism. Audiovisual essays realised for critical purposes seem often more inclined to follow pre-established paths (auteur-driven reflections, prescriptive criticism...) and to adhere to an existing “canon” of privileged objects of study. On the contrary, some scholarly works have a tendency to break boundaries between video analysis and the work of art.

In regard to this last issue, it could be also important to observe which subjects are currently involved in the creation of audiovisual essays, and with what results. Videographic film studies is a field in which boundaries among categories such as film scholars, film critics, artists, amateurs, fans, tend to blur in many different ways, and it is also my objective to investigate this aspect. The audiovisual essay is still at its early stages, and its development is therefore unpredictable. Consequently, the aim of my study is to embrace this complexity raising questions rather than searching for a systematization that could reveal itself as transitory.

Cinema and Agency: Rancière's Political-Aesthetics and Contemporary Film

James Harvey-Davitt / Ph.D. Thesis Project¹
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Jacques Rancière has provided some of the most innovative and stimulating analyses of society and culture in recent times: some cynical and some hopeful. In the contemporary “consensual” climate which attempts to prohibit social disruption through an omniscient demarcation of the “us vs. them,” people are immobilised, change is restricted, and what is “common” is granted from above: this is the scene of the end of politics. How does one negotiate this pessimistic outlook, with a somewhat utopian perspective on the subjectivizing potential of art? Since politics exists because “those who have no right [...] make themselves of some account,”² the case is such that politics is always a latent possibility – that potential interruption always exists beneath the stagnant facade. This potential, it seems, is signalled most decisively in art. To this extent, I believe cinema is of urgent consideration.

The relationship between aesthetics and politics consists [...] in the way in which the practices and forms of visibility of art themselves intervene in the distribution of the sensible and its reconfiguration, in which they distribute spaces and times, subjects and objects, the common and the singular.³

Politics is thus enacted through, envisaged by, and describable as an aesthetic experience. Therefore, the relationship between the “consensual times” constructed by state mechanisms, and the films produced in recent years, invoke an urgent inquiry regarding their discrepancy. How does cinema intervene in the social situation from which it arises? How might cinema imagine new “distributions of the sensible?” Yet this is not a wholly new proposition. From its inception, scholars have mused over the emancipatory potential of film, and its pedagogical possibilities in the cinema. Apparatus theories of interpellation, and

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² Jacques Rancière, *Disagreement*, University of Minnesota Press, Minneapolis-London 1999, p. 27.

³ Jacques Rancière, *Aesthetics and its Discontents*, Polity Press, Cambridge (MA)-Malden (MA) 2009, p. 25.

counter-interpellation, have been proposed and critiqued, then revived and rethwarted. What I propose is a reconsideration of what is commonly understood as “politics,” through the lenses of Rancière’s political-aesthetics. The stakes of this are such that the relationship between cinema and politics becomes positive: departing from the subordination of spectators and minorities, the appearance of politics in the cinema becomes a matter of empowerment and innovation.

To elaborate, my thesis is concerned with considering two conceits: the possibility of cinema altering the politics of states and state-governed societies, and the possibility of a politics reliant solely on the cinema itself (the “politics of aesthetics” that defines and reconfigures a social distribution of the sensible, as it appears in the space of, and experience of, a film). The first of these I term “a cinema of politics.” Here, I consider two recent examples of cinema engaging with state mechanisms and innovating upon official discourses, in a uniquely cinematic way. Pablo Larraín’s *Tony Manero* (2008), *Post Mortem* (2010), and *NO* (2012) is a trilogy of films which intervene into the official, documented truths about recent traumatic events in Chilean history. But they also interrogate the simplistic dichotomy of partisan politics, in a way which caused furore in their reception. Poetically and aesthetically challenging the representation of history, Larraín’s films invoke a radical ambivalence, which Rancière describes as appropriate to the homonymy of *histoire* (1994): entangling both art and science, fiction and reality. Larraín’s are films which intervene into the way political histories generally represent the winners, or the leaders, or even the unacknowledged masses, offering instead something quite unique and distinct. Moving on from representations of the political past, the second chapter considers a presently occurring political event, in the form of a video-diary of an imprisoned filmmaker: Jafar Panahi’s *This is Not a Film* (2010). Panahi’s “non-film” is an urgent appeal for sight upon a helpless situation, an effort to confront and disrupt the Iranian state’s decree upon his movement and vocation. However, confined to the absurd situation of attempting to *describe* a film he was banned from making, I claim that while intervening in the social situation in which he finds himself, Panahi also produces a rich investigation into the politics of aesthetics. As he sets about delineating the limits of his film, he tests and stretches the limits of film in general. Larraín and Panahi’s are examples of films *about* politics, which are at the same time in the process of playing an active, political role.

By “a politics of cinema,” I play upon the difference invoked by Rancière when he describes an aesthetics of politics (what is and is not perceivable in the social environment) and “the politics of aesthetics” (what is political – what of novelty appears and disrupts – in a space definable as “art”). Diverging wholly from films with any apparent relation to politics “as we know it,” I focus instead on instances definable as political in the sense that they are opposed to delimiting the social and propose unique explorations into novelty (in the first film) and equality (in the second). Firstly, I consider Charlie Kaufman’s *Synechdoche, New York* (2008): a biting appeal for heterogeneity in the face of Baudrillardian uniformity. Putting Rancière’s political-aesthetics into dialogue with Thomas Elsaesser’s writing on

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“productive pathologies,” I claim that Kaufman’s consistent concern with peripheral characters (those on the fringes of mainstream society) challenges both commonplace pathologizing, and the conviction that “there is no such thing as the subject,” in order to claim that novelty is always possible. My final analysis considers the concept of *the author*, and the critical writing emanating from the subject. The author symbolises an unjust distribution of power – a hierarchy of meaning which must be overturned for the empowerment of the spectator: this is the critical stance promoted by poststructuralists. With particular attention to Rancière’s *The Emancipated Spectator*,⁴ I contemplate the possibility of a more agonistic relationship between author and audience. Through a close analysis of Nuri Bilge Ceylan’s *Climates* (2006), I consider the political potential involved in the filmmaker’s traversing of several roles in the filmic space – at once, director, actor, character, my claim is that Ceylan disrupts several hierarchies and in turn invites the spectator into a dialogue of equality.

Through each of these chapters, my aim is to reconsider the relationship between film and politics, as a vital one for the restoration of social participation, both inside and outside the cinema. I aim to reiterate Rancière’s claims on the politics of aesthetics in order to confuse the simplistic subordination of film to politics, or politics to film, instead proposing a productive negotiation between two equal sites of social engagement.

⁴ Jacques Rancière, *The Emancipated Spectator*, Verso, London-New York 2009.

The Grammar of Cinematic Body-Mind.

The Syntax of Emotions in Fictional Movies

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Neuroscientists argue brain mechanisms underpinning emotions are essential in constructing the self.² According to Damasio emotionally competent stimuli arouse emotions as actions programmes provoking body status changes. As a consequence, neural circuits activation makes the brain form perceptual images, which awaken feelings among unconscious primordial ones (linked to internal milieu and similar to affects). Therefore, feelings come through in mental images, which give the subject the awareness of his new body status. This mechanism triggers also an *as-if body loop*: the subject's brain simulates programmes of action by connecting mental images of the self selected by the *somatic marker* with *schemas* already existing in implicit and explicit memory.³ The process is a continuous flow involving empathy and activation of the mirror neurons.⁴ The emerging branch of Neurocinematics investigates which neural correlates are related to film experience.⁵ Recently, film scholars have focused on empathy and emotions as well. In his *Vues d'ensemble* Raymond Bellour takes into consideration Stern's and Damasio's neuroscientific perspectives.⁶

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² The neuroscientists Panksepp and Damasio agree on involvement of both neocortex and subcortex, that is linked to seven primary-process emotional networks. See Jaak Panksepp, *Affective Neuroscience. The Foundation of Human and Animal Emotions*, Oxford University Press, Oxford 2004.

³ Antonio Damasio, *Self Comes to Mind*, Pantheon Books, New York 2010. See also Joseph Ledoux, *The Emotional Brain*, Simon & Schuster, New York 2010; Francisco J. Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind. Cognitive Science and Human Experience*, MIT Press, Boston 1991; Mauro Mancina, *Sentire le parole. Archivi sonori della memoria implicita e musicalità del transfert*, Bollati Boringhieri, Torino 2004.

⁴ Giacomo Rizzolatti, Corrado Sinigaglia, *Mirrors in the Brain. How Our Minds Share Actions and Emotions*, Oxford University Press, Cambridge 2008.

⁵ Uri Hasson, Ohad Landesman, Barbara Knappmeyer, Ignacio Vallines, Nava Rubin, David J. Heeger, "Neurocinematics: The Neuroscience of Film," in *Projections*, no. 1, Summer 2008, pp.1-26. See also Arthur P. Shimamura, "Presenting and analyzing movie stimuli for psychocinematic research," in *Tutorials in Quantitative Methods for Psychology*, no. 9, pp. 1-5, 2013.

⁶ Raymond Bellour, *Le Corp du cinéma. Hypnoses, émotions, animalités*, P.O.L., Paris 2009 and Id., "Daniel Stern, encore," in *Trafic*, no. 57, Spring 2006.

ship between the film text and the post-modern spectator.⁷ Film analysis is going to integrate philosophical and psychoanalytic theories with neuroscience. It starts from considering movies as *synesthetic machines*,⁸ which articulate spectator's experience in three layers: sensory scanning, narrative sorting and relational tuning.⁹ According to research hypothesis films become emotionally competent stimuli, if they evoke identifications going beyond cognitivism.¹⁰ Moreover, primary and secondary identifications¹¹ must be connoted by emotion images, e.g., mental images awakening feelings and simulating the *Dasein* of the spectator's self into the text by emotions.

Cinematic images arouse amodal perception.¹² Vertov's cine-eye becomes a cine-body endowed with eye (lens) and (camera) movements, by which spectator achieves primary identification.¹³ Technology (special effects, 3D, performance capture) enhances it by the immersive experiences. The process configures a primordial feeling and arouses primary-process emotional networks, which will cause feelings.

Cinematic language creates a taxonomy of emotion images. The whole of frames (the minimum unit of text) gives rise to the whole of kinemorphs (Kinesics minimum unit) consisting in gestures, facial expressions¹⁴ and their vitality affects. Their decoding by mirror neurons, subcortex and neocortex circuit triggers empathy, and the *as-if body loop* simulating the action on the screen in the brain.¹⁵ Finally, the cognition evokes intersubjectivity consciousness¹⁶ and social emotions¹⁷ through the neocortex. The use of different shots, camera angles, music, lights and cutting can modulate the involvement of neural correlates and increase the tensive logic of narration¹⁸ by focusing characters' actions and symbolic details and emphasizing their function of

⁷ See Veronica Pravadelli, *Post-moderno e nuova spettatorialità*, in Giorgio De Vincenti, Enrico Carocci (eds.), *Il cinema e le emozioni. Estetica, espressione, esperienza*, Ente dello spettacolo, Roma 2012, pp. 379-400.

⁸ Paolo Bertetto, *Le macchine sinestetiche e l'identificazione. A proposito di cinema, sensazione, emozione*, in Giorgio De Vincenti, Enrico Carocci (eds.), *Il cinema e le emozioni. Estetica, espressione, esperienza*, cit., pp. 87-118.

⁹ Ruggero Eugeni, *Semiotica dei media*, Carocci, Roma 2010.

¹⁰ David Bordwell, Noel Carroll, *Post-Theory. Reconstructing Film Studies*, University of Wisconsin Press, Madison 1996.

¹¹ Jacques Aumont, Alain Bergala, Michel Marie, Marc Vernet, *Esthétique du film*, Nathan Edition, Paris 1994.

¹² Daniel Stern, *The Interpersonal World of the Infant*, Basic Books, New York 1985, pp. 47-72.

¹³ On embodiment see Vivian Sobchack, *Carnal Thoughts. Embodiment and Moving Image Culture*, University of California Press, Berkeley-Los Angeles-London 2004.

¹⁴ Paul Ekman, Wallace Friesen, *Unmasking the Face. A Guide to Recognizing the Emotions from Facial Expressions*, Malor Books, Cambridge 2003.

¹⁵ Torben Grodal, *Embodied Visions. Evolution, Emotion, Culture and Film*, Oxford University Press, New York 2009.

¹⁶ Daniel Stern, *The Present Moment in Psychotherapy and Everyday Life*, Norton and Company, New York 2004.

¹⁷ Antonio Damasio, *Self Comes to Mind*, cit, pp. 99-100.

¹⁸ Algirdas J. Greimas, Jacques Fontanille, *Sémiotique des passions. Des états de choses aux états d'âme*, Paris Seuil, 1991. For instance at climax of *The Silence of the Lambs* (Jonathan Demme, 1991) no sooner has the spectator entered the killer's refuge through the empathic simulation of agent Starling's action than the light is off and he's staring at her through the killer's gaze, feeling both his *jouissance* and Clarice's fear.

signifiers. The whole process realizes the transition from the movement images to emotion images¹⁹ and from figurative level of the text to figural.²⁰

In addition, the more the themes dealt with by film text are relevant to the individuals, the more the emotions flow in terms of both secondary identifications and tendency to simulate actions.²¹

The screen is the Lacanian mirror, which stresses the gaze²² (emotion images are what vision lacks) and configures the ipseity, postulated by Ricoeur. Movies succeeding in reconfiguring the self recall the fascination of the infant due to the attuning and the vitality affects,²³ the projective identification²⁴ and the playing dynamics.²⁵ These mechanisms allows spectator to experiment the self and is similar to Freud's notion of poetic creation²⁶ and Gallese's idea of liberated simulation.²⁷ Should spectator's final reaction be the creation of concepts, he will reconfigure his self firmly. On the biochemical point of view it means establishing new neural patterns according to Edelman's Neural darwinism theory.²⁸

Given these methodological premises, case studies chosen, such as *The Hurt Locker* by Kathryn Bigelow (2008), *Crash* by Paul Haggis (2004), *Dial M for Murder* (3 D) by Alfred Hitchcock (1954), *The Silence of the Lambs* by Jonathan Demme (1991), will be analysed in order to elicit both the folds²⁹ of film text realizing emotional flow and what puts it at risk.³⁰

The research aims to pave the way for neurocinematic trials to verify the given hypothesis and improving new film analysis approach, which can be used in marketing and educational programmes.

¹⁹ The concept would recall the mental image describes by Deleuze as *thirdness* in *Cinema 1. The Movement Image*, University of Minnesota Press, Minneapolis 1986. Deleuze argued connections between the brain and the cinematic language also in *Cinema 2. The Time Image*, University of Minnesota Press, Minneapolis 1989 and in his interview with Cabasso.

²⁰ Gilles Deleuze, *Francis Bacon: The Logic of Sensation*, Continuum, London 2003. On the concept of figural see Paolo Bertetto, *Lo specchio e il simulacro*, Bompiani, Milano 2007.

²¹ Ed Tan, Nico Frida, *Sentiment in Film Viewnig* in Carl R. Plantinga, Greg M. Smith (eds.), *Pasionate Views: Film, Cognition, and Emotion*, Johns Hopkins University Press, Baltimore 1999.

²² Jacques Lacan, *Écrits*, Editions du Seuil, Paris 1966.

²³ Daniel Stern, *Forms of Vitality. Exploring Dynamic Experience in the Arts, Psychotherapy and Development*, Oxford University Press, Oxford-New York 2010.

²⁴ Melanie Klein, *Notes on Some Schizoid Mechanisms*, in Melanie Klein, Paula Heimann, Susan Isaacs, Joan Riviere, *Developments in Psychoanalysis*, Hogarth Press, London 1952.

²⁵ Donald W. Winnicott, *Playing and Reality*, Routledge, New York 1989.

²⁶ Which lets consciousness feel jouissance and activate sublimation process. On this matter see Massimo Recalcati, *Il miracolo della forma*, Bruno Mondadori editore, Milano 2007.

²⁷ Vittorio Gallese, Michele Guerra, "Embodying Movies. Embodied Simulation and Film Studies," in *Journal of Philosophy and the Moving Image*, no. 3, 2012.

²⁸ Gerald M. Edelman, *Neural Darwinism. The Theory of Neuronal Group Selection*, Basic Books, New York 1987 and *Second Nature. Brain Science and Human Knowledge*, Yale University Press, London 2006.

²⁹ Referring to the meaning Bellour gave to Deleuze's term *fold* in "Le Dépli des émotions," in *Trafic*, no. 43, Septembre 2002, pp. 93-128.

³⁰ See Francesco Casetti, *L'occhio dello spettatore*, ISU Università Cattolica, Milano 2000 and *Eye of the Century. Film, Experience, Modernity*, Columbia University Press, New York 2008.

Reviews / Comptes-rendus

Arthur P. Shimamura (ed.)

Psychocinematics: Exploring Cognition at the Movies

Oxford University Press, Oxford 2013, pp. 385

“Psychocinematics,” according to Shimamura, “is grounded on a scientific analysis of our *aesthetic response* to movies” (p. 2, emphasis in original). It takes as a starting point that the processing of film is firmly rooted in psychological and biological characteristics of our species, and favours empirical research. Moreover, it aims to contribute to a better comprehension of film as well as of human cognition.

For cognitivists, Part One (“Philosophical Foundations”) covers familiar territory. David Bordwell presents a historical *tour d’horizon* of assorted theories offering explanations of how movies communicate information and affect viewers. A key idea in the cognitivist theories that are central in this volume is that “the spectator draws on real-world knowledge and awareness of narrative conventions in order to go beyond the information given directly in the film” (p. 49). Noël Carroll and William Seeley’s chapter adds that films trigger our attention by various means (e.g., motion, brightness), explaining that our brains are preconditioned to pick up these cues. This makes sense as, in the cognitivist view, human beings are fundamentally goal-driven creatures, and their everyday audiovisual monitoring of the environment serves them equally well in the interpretation of film, a medium which requires only a minimal degree of learning. Joseph Anderson sings the praise of cognitivism over the ideological and political biases of Marxism, psychoanalysis, and Cultural Studies (“Grand Theory”). Drawing on Gibson’s¹ “affordances,” he ends with a plea for more sustained research into the evolutionary role of art. Carl Plantinga discusses how film spectators’ moods, emotions, and body reflexes are almost invariably related to their thinking: the narrative motors of suspense, curiosity, anticipation, and interest rarely run without eliciting affective states.

The rest of the book investigates implications of these assumptions for how to study film viewers’ bodily and mental activities. Part Two, “Sensory and Attentional Features of Movies,” begins with Katherine Thomson-Jones’ philosophical “Sensing motion in movies” – a chapter whose evaluation is beyond my competence. Kaitlin Brunick, James Cutting, and Jordan DeLong show how film

¹ James J. Gibson, *The Ecological Approach to Visual Perception*, Houghton Mifflin, Boston 1979.

narratives are much enhanced by “low-level” building blocks such as shot duration, editing rhythm, movement, luminance, and colour. All of these features can be quantified, and may help cue genres, segment films, or steer the characterisation of protagonists. Sheena Rogers warns that slow-motion screening of documentary (unlike fictional) footage can be highly dubious, as for instance hitting and falling seem less hard and serious than when seen at normal speed. Participants in her experiments were not able to detect marginal slow-downs, which however had strong effects on their evaluations. Rogers firmly concludes: “the jurors in the trial of the police officers who beat Rodney King were lied to when they were shown George Holliday’s home video in slow motion” (p. 157). Tim Smith explains with reference to his own Attentional Theory of Cinematic Continuity how eye-tracking technology, cueing viewers’ continually shifting attention – particularly to motion – helps assess what is going on in their minds. Since spectators can take in only a very small part of what is visible in a shot at any moment, directors need to ensure they immediately focus attention on the pertinent part of the screen (by and large: on faces and task-relevant objects). Indeed, in an experiment in which viewers watched key Hollywood movie scenes, they almost all looked at the same screen area at any given moment.

Part Three pertains to “Knowledge, Imagination, and Narratives.” Human beings always seek a good balance between the reliably familiar and the excitingly new. Too much of the former bores us, yet too much of the latter bewilders us. Todd Berliner argues that Hollywood films, contrary to the stereotypical view of catering only for unity and equilibrium, in fact counterbalance this with a healthy dose of disunity. This latter surfaces in the form of “gaps, discontinuities, incongruities, and other elements that do not operate in strict harmony with story logic” (p. 198).

A feature film of course constantly needs to condense real-time events and actions. Stephan Schwan reports experimental research on how well viewers remembered a sequence depending on whether they saw it in full, in a version featuring natural “breakpoints,” or in a version featuring “unnatural breakpoints.” Viewers did considerably better on the version with natural than on the version with unnatural breakpoints. However, even from the well-edited version participants recalled only 58% of the actions presented. Other experiments demonstrated that viewers are indeed helped by cinematic conventions such as the 180° rule. Jeffrey Zacks, too, reports experimental findings on how viewers segment films. The key driver for locating breaks, as in real life, is “*change* in the features of the depicted situation” (p. 231, emphasis in original), which is construed in light of top-down interpretations of such mechanisms as characters’ relations and goals. Thus, while changes often coincide with cuts this is by no means always the case. Importance of change overrules importance of cuts when the task for participants is: “indicate event boundaries.” fMRI scans of brain activity seem to confirm this pattern and also show that mental simulation beyond vision and hearing (such as smell, taste) occurred specifically when there were changes in objects and in spatial locations.

Daniel Levin, Alicia Hymel, and Lewis Baker point out that the study of “Theory of Mind” (TOM, humans’ – and some animals’ – ability to infer conspecifics’ mental states, emotions, and intentions) strongly depends on visual perception. Findings echo those in Zacks’ chapter: automatic TOM subprocesses such as gaze detection and joint attention are important, but may be revised in light of higher cognitive, narrative processes. The authors further speculate how TOM interacts or competes with other systems (e.g., numerical cognition) and suggest that genre-attribution strongly drives appraisal of events in films.

Keith Oatley’s chapter opens Part Four, which centres on emotion in film. He distinguishes between spectators’ emotions based on (1) imagining they are themselves present at the film scene; (2) their sympathy with the characters; (3) and events in the film world that trigger the simulation of experiences in a spectator’s own life. Art typically gives people a fair degree of freedom to experience emotions tailored to their personal needs. Gal Raz, Boaz Hagin, and Talma Hendler see film as a particularly attractive medium for affective neuroscience, provided “we take into account the contemporary understanding of emotion as an interactive, dynamic process unfolding over time” (p. 286). They discuss major experimental techniques (technical labels: activity contrasts, SSRA, ISC, FC, ICA, NCI). Fully aware of the richness of filmic cues, the authors consider strengths and limitations of the different types of techniques.

Monika Suckfüll’s experiments test emotion regulation in light of the “mode” in which viewers watch a film, since this can help explain why individuals are affected so vastly differently by the same filmic passage. Suckfüll distinguishes four receptive modes, pertaining to viewers’ (i) self-identity-creation; (ii) sympathy and empathy with characters; (iii) spurring of their imagination; and (iv) interest in production issues. Viewers may switch between modes as a way of “regaining control through cognitive change” (p. 328); for instance, when the movie becomes too scary, they may switch from empathy mode to production mode. Ed Tan reviews pertinent literature on man’s response to film as that of an “empathic animal” (p. 344), emphasising the central role of the perception-action mechanism (PAM), introduced by the primatologist de Waal: we perceive others’ actions (particularly those involving facial expressions and hand movements), which in turn trigger real or virtual empathic actions of our own.

The volume convincingly shows how cognitivist approaches and psychocinematics are natural allies, and demonstrates fine opportunities for collaboration between film scholars, psychologists and brain researchers. Let me end with three general points.

First, it is telling that Raz *et al.*’s seemingly robustly cognitivism-oriented chapter is the only one that quotes Deleuze – father of an approach that vies with cognitivism in claiming to contribute to neuroscience.² More generally Raz *et al.* emphasise that Cultural Studies, routinely maligned or ignored by cognitivists,

² See Patricia Pisters, *The Neuro-Image: A Deleuzian Film-Philosophy of Digital Screen Culture*, Stanford University Press, Stanford 2012.

actually provides important insights for psychocinematics. It is perhaps worrying that only these relative outsiders try to build bridges across the chasm separating cognitivist and Cultural Studies approaches.

Second, the chapters reporting experimental research on low-level perception, editing patterns, and automatic empathy persuaded me that the biological contribution to understanding film needs to be part and parcel of introductory film courses. Film students are to be made aware of this dimension of the medium from day one.

Finally, the pervasive references to TOM, attention, empathy, intentionality and modes of reception show that the book has actually less to say (*pace* Shimamura) on the aesthetics of film viewing than on how film is understood. They also show that we need an overall communication and cognition theory to accommodate all of these dimensions. I think Relevance Theory³ can fulfill this role.

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³ See Dan Sperber, Deirdre Wilson, *Relevance Theory* (2nd ed.), Blackwell, Oxford 1995; Charles Forceville, *Relevance Theory as a Model for Multimodal Communication*, in David Machin (ed.), *Visual Communication*, Mouton de Gruyter, Berlin 2014, pp. 51-70.

Ariel Rogers

Cinematic Appeals: The Experience of New Movie Technologies

Columbia University Press, New York 2013, pp. 352

“Psychocinematics,” according to Shimamura, “is grounded on a scientific analysis of our *aesthetic response* to movies” (p. 2, emphasis in original). The critical approach that Ariel Rogers carries out here consists in comparing how the experience of cinema has been formulated in conjunction with radical technological transformations which occurred in the 1950s – such as widescreen, together with stereoscopic 3D – and in the 1990s and early 2000s – when the emergence of digital cinema became a key issue in the industrial and popular media. The result of this long and detailed study is double. Not only does it shed light on some crucial periods in cinema history, but it also provides a historical overview of the discursive and affective frameworks within which the relationship between films and viewers was formulated. Despite some similarities in the public speeches of these different eras, the kind of experience that cinema offers today – regarding the involvement of the *body* of the viewer – is very different, because it has been profoundly transformed in conjunction with both the evolution of society and the concomitant technological change.

From a theoretical point of view, Rogers draws on some suggestions that come from the apparatus theory, even though she moves away from it. She, in fact, points out that the concept of film experience is *historically* rooted, following on this point some academic studies on spectatorship which are focused on “early cinema” and its relationship with the modern metropolis and the supremacy of capitalism. More specifically, on the one hand, she borrows from Baudry¹ the concept that we can fully understand the cinema effect on the audience only if we consider both the cinema material’s organization and the kind of viewing arrangements that it produces. But, on the other hand, she takes a different idea of a viewer’s position from Gunning, and other scholars, that focused their attention on “early cinema,” arguing that until 1906-7 the film experience was different from the type of immersive absorption that the apparatus theory presented as

¹ See Jean-Louis Baudry, *The Apparatus: Metapsychological Approaches to the Impression of Reality in Cinema*, in Philip Rosen (ed.), *Narrative, Apparatus Ideology*, Columbia University Press, New York 1986, pp. 286-98.

intrinsic to the spectatorship. Taking ideas elaborated by Kracauer and Benjamin about the experience of industrial modernity, they instead underline the historical specificity of the cinematic encounters.

Moreover, Rogers acknowledges as influential the notion of experience she uses here, which is not only established in specific historical contexts, but also related to the various technologies that have emerged in those moments. That is the reason why she focuses her attention on examining historical materials, such as technical manuals, fan magazines, marketing materials, trade journals and popular periodicals to explore how the dominant culture promotes the new cinema's appeal. She believes, however, that these materials, even if reflecting the promotional rhetoric, are essential to understanding the encounter between cinema and audience, since they allow us to infer the frameworks within which the cinema experience has been developed in different periods. In the first chapter, for instance, she investigates how the public discourses about widescreen cinema invite beholders into a close, tactile and sensual immersion in the film spectacle. Conversely, as many commentators at that time pointed out, the gigantic figures displayed on the screen would render the human image strange, if not grotesque. In short, widescreen offered a bodily participation that was both thrilling and frightening, inviting spectators to feel more intimate with the overwhelming images and, at the same time, to feel more anxious and uncomfortable with technology (in general) that was transforming life both inside and outside the theatre.

Although the bodily involvement of the viewer in the experience of cinema is considered to be central in all the historical periods taken into account here, specific to the contemporary period is the problematization of concepts of bodily experience and intersubjectivity. The author, in fact, not only analyzes the public discourses surrounding the emergence of 3D cinema in 1950s and 2000s, but looks carefully at some prominent movies – such as *Creature from Black Lagoon* (Jack Arnold, 1954) and *Avatar* (James Cameron, 2009) –, coming to the conclusion that the terms with which the cinematic experience was framed should be reviewed in the light of the new context, profoundly changed by the emergence of digital technologies.

Looking at the aesthetic of these films, Rogers points out that they both emphasize the experience of immersion, but while the usage of 3D in the earlier movie promises a scary tactile encounter with Otherness, underlining the body's vulnerability, the latter movie's use of 3D invites a bodily free navigation into a digital rendered world, Pandora, providing a new type of encounter with a digitally mediated environment.

In addition, the author underlines that, even if the form of bodily immersion, offered by the 1950s technologies, has never disappeared, as we have just seen, the contemporary discourses surrounding the idea of digital cinema problematize this very concept of immersion. We can find similar terms through which the cinema experience has been framed in both periods, but the meaning of

them should be reconsidered. In the era where the information has seen as immaterial and transmissible as a flow, through the wide variety of digital devices, the spectatorial embodiment is being reformulated in conjunction to the deeply changed contemporary context.

Ariel Rogers, then, leads us into a fascinating journey full of information, which is theoretically robust, and in which she illustrates how public discourses and modes of presentation (including film style and form of exhibition) act together to device cinema's appeal for beholders, arguing that the forms of this cinema experience, historically articulated, continue to develop along with contemporary concerns.

[Simona Pezzano, Libera Università di Lingue e Comunicazione IULM]

Laura McMahon

***Cinema and Contact: The Withdrawal of Touch in Nancy,
Bresson, Duras and Denis***

Legenda, Oxford 2012, pp. 176

Cinema and Contact comme le signale Laura McMahon en ouverture de son texte, est la première étude se proposant d'ouvrir un dialogue entre le discours philosophique de Jean-Luc Nancy sur la dimension du toucher et certains éléments reliés à l'exploration du toucher comme figure de la séparation et du détachement dans le cinéma de Robert Bresson, Marguerite Duras et Claire Denis. L'auteur, examinant les rapports entre philosophie contemporaine et cinéma français, propose ainsi de repenser les notions de corps, d'identité, d'être-avec et de relation, dans un temps et un espace reconfigurés par le dispositif cinématographique.

Le texte s'ouvre, non par hasard, sur l'évocation de la célèbre séquence d'ouverture de *Persona* (1966) de Bergman : après un montage surréel d'images méta-cinématographiques – d'une pellicule qu'il brûle au premier plan d'un projecteur –, la séquence montre un enfant tentant de toucher le visage flou d'une femme, probablement celui de sa mère, qui se trouve derrière un écran. Dans cette image l'écran apparaît donc telle une insurmontable barrière, une forme de mise en abîme tant pour l'enfant que pour le spectateur : c'est la mise en évidence de la distance qui nous sépare de la matière des images filmiques, images-lumières, intouchables, impalpables et fugitives.

La séquence est donc le paradigme de cette tension intrinsèque au dispositif cinématographique qui influe sur l'ontologie du cinéma comme médium capable de révéler et de remodeler l'expérience sensible du spectateur, par l'exhibition conjointe du contact et de la séparation, de la proximité et de la distance. Le cinéma est donc ici ce lieu privilégié où l'on peut mener l'expérience du toucher comme figure paradoxale de l'éloignement, de la distanciation, de la rétraction et de la séparation.

La séquence d'ouverture de *Persona* peut aller jusqu'à être utilisée comme clé de lecture pour la totalité du livre de McMahon : un véritable hymne à la dimension haptique de l'image, à sa matérialité et rugosité, qui met tout d'abord à l'épreuve les limites mêmes de la représentation. Il semblerait à cet effet que le rapport entre toucher et image cinématographique remette en cause l'immédiateté de l'avènement du « figural », c'est-à-dire de cet aspect de l'image

qui, tout en relevant du figurable, n'est ni figuratif, ni figuré.¹ L'émergence du tactile, de la matérialité et de la dimension non-représentative de l'image, oriente le travail de McMahon vers un horizon qui tend à privilégier la dissolution de la pureté de la vision et de l'écoute, et donc du primat de l'image audiovisuelle, en faveur d'une réflexion capable d'identifier les limites et les fissures du visible en partant précisément de l'analyse du rapport complexe entre toucher et image.

Dans le premier chapitre l'auteur dessine le cadre théorique à l'intérieur duquel s'inscrit le concept de « *Withdrawal of Touch* », c'est-à-dire une forme de contact qui apparaît dès l'horizon de la séparation : ce sont les œuvres de Jean-Luc Nancy, centrées sur les idées de corps, toucher et immanence (*Corpus*, 1992 ; *L'évidence du film. Abbas Kiarostami*, 2001 ; *Noli me tangere. Essai sur la levée du corps*, 2003), et celles de Laura Marks sur la « haptic visuality » (*The Skin of the Film*, 2000 et *Touch*, 2002) qui établissent l'ossature théorique à partir de laquelle il faut envisager cet équilibre proprement instable entre contact et séparation, accès et distance.

La condition de différence et différenciation perpétuelle, l'être simultanément en contact et séparé de nous-même et des autres, a donc lieu dans l'espace d'une « contiguïté ininterrompue », que l'auteur signale par l'expression « touch-in-separation ». Condition que Nancy décrit dans son *Noli me tangere* en utilisant les mots de Jésus s'adressant à Maria Maddalena « *Μή μου ἅπτου* » (Mê mou haptou) : « Tu vois, mais vu n'est pas, ne peut pas être un toucher, si le toucher lui-même devait figurer l'immédiateté d'un présent, tu touches l'intouchable qui se tient hors d'atteinte de tes mains tout comme celui que tu vois devant toi quitte déjà ce lieu de la rencontre ».² Si l'on considère le cinéma de Bresson, Duras et Denis en étroite relation avec la pensée de Nancy, à travers un corps à corps entre image et parole qui n'a rien d'une banale illustration des réflexions du philosophe français, McMahon essaie de mesurer les limites du visible à partir de la relation entre toucher et cinéma. A ce propos, elle évoque un chœur exemplaire de voix qui ont contribué de différentes façons au tissage de la trame de la suivante rencontre : de Jacques Derrida à Maurice Blanchot, de Georges Bataille à Emmanuel Levinas.

Dans le second chapitre l'auteur prend pour objet d'examen trois films de Bresson : *Pickpocket* (1959), *Au Hasard Balthazar* (1966), et *Mouchette* (1967). En partant de la notion de « technicité », « trans-immanence », « être-avec » et « réel », McMahon démontre que l'idée de « touch-in-separation » prend forme dans les films de Bresson tel un acte de déconstruction des concepts christologiques d'essence et de propriété, telle une forme de résistance, en termes cinématographiques, du corporel à l'égard de l'abstraction théologique.

Dans la troisième partie du texte les objets théoriques pris en examen sont des films de Marguerite Duras tournés au cours des années 1970 : *Détruire dit-elle* (1969), *India Song* (1975), *Le Navire Night* (1979) et *Agatha et les lectures illimitées* (1981). Ici, selon McMahon, ce sont les réflexions de Nancy

¹ Jacques Aumont, *L'image*, Armand Colin, Paris 2011, p. 272.

² Jean-Luc Nancy, *Noli me tangere. Essai sur la levée du corps*, Bayard, Paris 2003, pp. 38-39.

autour de l'idée d'« être-avec », d'« être singulier pluriel » et de « communauté désœuvrée » qui permettent d'amplifier le toucher telle une figure de la « co-exposition » qui ne cède jamais au rappel de la *fusion*, ni en termes érotiques et encore moins en termes politiques (p. 10). Du reste, la dimension du détachement, de la perte et de l'anachronisme est un motif constant dans l'œuvre cinématographique de Duras qui, dans son film *Le Camion* (1977), s'adressant à Gérard Depardieu, affirme : « Que le monde aille à sa perte ! On n'est pas contemporains de notre monde ».³

Le texte se conclut par l'analyse de trois films de Claire Denis : *Beau Travail* (1999), *Trouble Every Day* (2001) e *L'Intrus* (2004). Dans ce dernier film la relation entre cinéma et philosophie – en particulier avec le travail philosophique de Nancy, auteur de l'essai qui a inspiré le film de Denis –, est plus que jamais évident. Dans *L'Intrus* la question du toucher fonctionne comme instrument de mesure de l'inadéquation du modèle fusionnel comme principe d'organisation de ce qui est commun. Hybridation, intrusion, ouverture, exposition, contact et altération contribuent, en ce sens, à la redéfinition du lien de co-appartenance et d'étrangeté qui caractérise le rapport lui-même entre cinéma, philosophie et toucher : « L'intrus n'est pas un autre que moi-même qui n'en finit pas de s'altérer, à la fois aiguïté et épuisé, dénudé et suréquipé, intrus dans le monde aussi bien qu'en soi-même, inquiétante poussée de l'étrange, *conatus* d'une infinité excroissante ».⁴

[Marie Rebecchi, Université Sorbonne Nouvelle – Paris 3]

³ Marguerite Duras, *La couleur des mots. Entretiens avec Dominique Noguez. Autour de huit films*, Benoit Jacob, Paris 2001, p. 148.

⁴ Jean-Luc Nancy, *L'Intrus*, Galilée, Paris 2010, p. 45.

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PRINTED BY DIGITAL TEAM
FANO (PU) IN JUNE 2015