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Original Contributions - Originalbeiträge

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The 'Good Form' of Film

The Aesthetics of Continuity from Gestalt Psychology to Cognitive Film Theory

I.

Films simulate the processes of the mind and 'synchronise' with them: this is a trope followed from early film psychology till today's psychological film studies. Among the first psychologists who showed interest in cinema, Rudolf Arnheim considered the 'art of film' (as in the original title of his 1932 book, *Film als Kunst*) to be a case for understanding how visual art reflects and embodies the ways in which the mind organises the perceived world – a process that he later called 'visual intelligence' (Arnheim, 1997). Before Arnheim, Psychologist Hugo Münsterberg already in 1916 has argued that film moulds reality according to the inner laws of the mind, which do not follow natural laws of causality and continuity in space and time but transform them through attention, memory, imagination and emotion.

Both these 'grandfathers' of film psychology were in some way associated with the Gestalt theory. At the time when Gestalt psychology was still nascent in the gulfs of the Berlin School of Experimental Psychology, Münsterberg was the first to associate motion in cinema with the phi phenomenon discovered by one of the key figures of the Berlin School, Max Wertheimer, in 1912. He thus paved the way for a psychological, and indeed Gestaltist, approach to film. In the case of Arnheim, of course, who joined the Gestalt School when it was already established and became a student of Wertheimer and Wolfgang Köhler, the association is much more direct.

Gestalt psychology is now considered an important yet completed phase in the history of psychology of perception; however, its legacy has been passed on, often in a subtle way, to other strands of psychology of perception and neuropsychology, and particularly, as I am going to argue, to contemporary film psychology. Even though contemporary psychologists studying film are not Gestaltists and the progress of psychology and cognitive science since the 1920s and the 1930s has in some respects rendered Gestalt psychology obsolete, contemporary psychologists are still occupied with how form ('gestalt') is created through film and through the mind and how both synchronise to produce it.

Gestalt psychology was based on the idea that everything we see already has a form; as Arnheim (1997, p. 2) has put it, 'the primary physical facts, from which the sense of sight takes off, are not a bewildering spread of random samples but highly consistent processes of change'. Form is a precondition for vision, and the latter is primed to detect it and to spontaneously organise the visual field. According to Gestalt psychology, the form that the visual system detects and applies to the perceived world is not just any form but the simplest one possible, the 'good' form – associated with the Gestalt 'law of Prägnanz', also referred to as 'simplicity' or 'minimum' principle. This preference for simplicity is according to the Gestalt theory more than just a property of human vision; it is a property of the physical world itself, which is already structured to help us see it. Arnheim's discussion of the simplicity principle with reference to art is relevant here. In his later work *Visual Thinking*, he noted that it is not just vision but nature itself that works to reduce tension and thus 'accidentally' assists vision (1997, p. 33), helping it to select out something that is meaningful of an already existing organisation.

According to the Gestalt theory, it is only through form that we can attend, perceive and ultimately see (and further cognise and remember) a visual scene. This can also be extended to the case of visual arts and film. Orit Halpern has characterised cinema as 'the classic exemplar of gestalt phenomena'. A film, one could argue, is a Gestalt developing in both space and time. Film as a human artefact gives one more layer of form –as Carroll (1988) would have it – to the forms already shaped by nature for us to perceive. As a perfect simulation of Gestalt perception, film has a form at the same time pregiven by the film and recreated by the spectator's mind. As with all Gestalts, when viewing a film, the whole is perceived before the parts, the overall pattern before the particular details. The details are often 'filled in' by the mind without them actually be seen or even sometimes without them really existing, like it happens in the well-known illusion of the Kanizsa triangle, which is defined only by the objects surrounding it.

The very materiality of cinema is based on form, the one created by the connection of still pictures. The perception of movement in film depends on a mental process of combining these stills into a moving whole. According to Halpern, 'the static and indexical image of the photograph that comprises the cinema is only secondary to the form or structure that conditions the possible relations between stills and spectators'. Further on, within the same film frame or even in a static shot, it is again selected forms that are being perceived rather than the totality of elements. Film techniques such as the close-up, as Münsterberg discussed in his study *The Photoplay* (1916, p. 87), aid our vision to select only what is necessary or important, reenacting the mental act of attention. As the film unfolds in its duration in a rapid succession of frames constituting shots and scenes, the mind of the viewer constructs even more forms, not just perceptual but also cognitive, narrative and

stylistic. The process of constructing these forms is considered by cognitive film theorists, namely, Bordwell and Thompson (2008, p. 56) and Tan (1994), to be the main source of interest in viewing films. Viewers are therefore said to find cognitive and aesthetic pleasure in the process of creating patterns through watching films.

A recent wave of psychological research on film by psychologists such as Hasson et al. (2008), Zacks, Speer, and Reynolds (2009), Zacks et al. (2010), Cutting, Brunick, DeLong, Iricinschi, and Candan (2011), Cutting, Brunick, and Candan (2012), Magliano and Zacks (2011), Smith (2005) and others often draws on the tenets of cognitive film theory and scholars such as Carroll and Bordwell to explain how scene organisation facilitates and drives attention (something that can be evaluated through eye-tracking techniques) or how attention and interest are maintained from shot to shot. The fact that such inquiries address more or less explicitly the issue of form reveals the links of contemporary film psychology to Gestalt psychology. Especially, the discussion of continuity in contemporary film psychology reflects, I would argue, the survival of the simplicity principle and Gestalt's 'good form' in the current film's psychological discourse.

There seems to be a consensus, particularly evident in research by Berliner and Cohen (2011), Smith and Cutting, that continuity editing plays a key role in helping the process of form constitution taking place at all levels of film viewing, from scene perception to the overall narrative organisation. For giving continuity editing this prominent role, these film psychologists draw not just on cognitive film theory but more particularly on its 'ecological' strand introduced by Joseph Anderson in his book *The Reality of Illusion* (1996), inspired by the ecological psychology of James J. Gibson and also by Ernst Gombrich's ideas on the process and evolution of art as expressed in his study *Art and Illusion* (1960). According to the cognitive–ecological approach to film that Anderson (1996, pp. 26, 57) advocated, the continuity editing system evolved since the first decades of the 20th century through a process of 'trial and error' in order to 'interface successfully with the human visual (and auditory) system'. Following Anderson's scholarship, many film psychology articles pictured continuity as a mandate for filmmakers in order to engage and satisfy the viewer and present it as the 'natural' way for films to create their forms. Berliner and Cohen (2011) for instance explained how filmmakers need to 'obey' the rules of classical continuity if they want to achieve a coherent construction of space, whereas Smith (2005) noted how continuity editing makes films 'compatible to our perceptual abilities'. Continuity as a technical and aesthetic choice is thus considered a natural necessity.

As already broached, in this 'evolutionary privilege' granted to continuity by contemporary film psychology, one could see the traces of the simplicity principle at the core of the Gestalt theory. Simplicity might be the product of a complex mental process of building a continuous world. Films painstakingly and carefully

imitate and also trigger this process, as Münsterberg (1916, p. 69) observed. They do so by manipulating not just what we attend to in a scene (through mise-en-scene or cinematography, for example the close-up technique) but also what we do not attend to, all that which goes unnoticed. Here, continuity editing plays the leading role. It places cuts exactly at the natural moments of inattention (which have been described as cases of 'inattentional blindness') or at instances like saccades, where our visual system spontaneously blocks processing (the phenomenon known as 'saccadic masking'). This way the continuity system guarantees, as Zacks and Magliano (2011) argued, 'the unobtrusiveness of most continuity edits' and the filling-in of gaps by the viewer in the least laborious way. Thus, the 'good form' of film is achieved.

In the rhetoric of contemporary film psychology, continuity is cinema's primary modus operandi and ultimate purpose in order to create a simulation of a real world and our enaction in it. This has as a consequence that different aesthetic choices such as discontinuous 'artistic' film techniques and effects are not so often the focus of current empirical studies. When such techniques are discussed, for example the modernist technique of the jump cut, they appear as challenges for the brain's filling-in processes – which however proceed in any case– and as examples of how continuity editing can compensate for them, for example, by overlapping frames and masking (see Smith, 2005, p. 254).

Early film psychologists like Münstenberg and Arnheim were also proponents of the 'continuity' built by the mind and imposed on what is perceived – this was after all a fundamental insight of Gestalt psychology as already discussed. However, a main difference between their Gestalt accounts and more recent film-psychological ones is that they did not insist, as their contemporary colleagues do, on the continuity of the film itself as a prerequisite or facilitator for the perceptual and cognitive continuity in our experience of it. On the contrary, Münstenberg and Arnheim called attention to film techniques that distinguish film from reality – therefore, Arnheim's suggestion of film 'as art'. Among these techniques, Arnheim (1957, pp. 127–132) pointed at back projection, slow and fast motion, use of stills and focus distortions as some of the most interesting tools at the disposal of film art. Münsterberg (1916, p. 129) on the other hand in *The Photoplay* makes special reference to 'unusual', non-naturalistic sensations that can be conveyed by film and give rise to stronger affective responses.

To refocus attention on these unusual sensations and the techniques generating them would not be such a difficult step to take for contemporary film psychology; there is in fact already some recognition of this need. Zacks and Magliano (2011), taking as a starting point the case of jump cuts in Lars von Trier's 2000 film *Dancer in the Dark*, noted that

> working with natural tendencies will tend to produce smooth, naturalistic continuity editing. Working against them may introduce jarring perceptual effects, comprehension gaps, and memory encoding difficulties. Poorly used, they may frustrate the viewer, but when used to deliberate effect they may afford a richer and stranger cinematic experience.

But more than suggesting to include these 'unnatural' instances to the psychological study of film, in a way that would go beyond merely showing how continuity can still work despite them and how the mind can more or less easily fill in the gaps, I would argue that it is such non-continuous (for the system of classical continuity) film instances that are linked to the mind's natural generating processes of form and continuity. More than just including non-continuous film stimuli –associated with avant-garde aesthetic styles and traditions – in the psychological study of film, it is necessary to turn to them to achieve a better understanding of how the mind's (and not the film's) continuity works. Neuropsychology and cognitive neuroscience can be a frame of reference for such an endeavour, through their link to Gestalt psychology.

II.

Gestalt theory can be considered an early system theory because it alluded to the self-organisation of whole – the 'forms' Gestalt was occupied with – out of their elements. Köhler (1947, p. 118) maintained that the organisation of sensory experience is not solely based on 'uniformly coherent continua' or 'patterns of mutually indifferent elements'; he rather pointed at the fundamental role of relations between individual elements in the emergence of perceptual whole. However, the Gestalt theory itself did not manage, as it has been argued, to achieve a balance between parts and whole when it comes to the importance of each for the constitution of form. In a recent publication of the outputs of the research project 'Gestalt Re-vision', entitled 'A Century of Gestalt Psychology in Visual Perception', Wagemans et al. (2012) noted that 'The Berlin school of Gestalt Psychology (with Köhler and Kurt Koffka among its main figures) tended to emphasize properties of the system [the form or Gestalt] above properties of the system elements', and in this way, it tended to suggest a 'one way global to local determination', where the form supersedes its elements. This one-way determination posited or implied by the Berlin School was however challenged, Wagemans et al. argued, by the further development of psychology and neuroscience in the later decades, which brought a greater recognition of the complexity of elements/units (for example, the sensory neurons) and the pivotal role of their interactions in the formation of patterns. The balance of determination is therefore recuperated as a two-way mutual constitution of elements and whole starts to be conceived.

As Wagemans et al. (2012) explained, since the 1980s, systemic models of the brain, from connectionism to dynamic systems theory (DST), attempted to give a neuronal substrate to gestalts, either describing them as 'stable patterns of activation' in the case of Connectionism or in that of DST as '"attractors" in the brain's state space, which means, relatively stable states towards which the brain can be said to be attracted'. Especially, DST differentiated from traditional Gestalt theory, embracing the bottom–up emergence of perceptual and cognitive forms and placing a greater emphasis on the unpredictable properties of entangled elements rather than the homeostasis of their constellations. Moreover, DST considered perceptual phenomena like perceptual switching, evident in reactions to ambiguous Gestalt figures such as the Necker cube, to be indications of the mind's tendency for instability rather than stability and for constant drift between attractors and 'established interpretations' (Wagemans et al., 2012). This in turn alludes to a two-way constitution of whole as earlier indicated rather than a global to local determination, because equal, if not more, attention is given to the complex interrelations of elements and their unpredictable properties in the construction of gestalts than in the latter's predominance. Thus, in a way, such developments provide support to Köhler's earlier insights, being in the spirit of Gestalt theory's fundamental principles but achieving a better balance between parts and whole when it comes to the emergence of forms.

The complexity of stimuli can be linked, as already broached, to the mind's natural generating processes of form and continuity and the neuronal patterns corresponding to the emergence of mental forms. Combining a dynamical system perspective with James J Gibson's ecological psychology –influential, as already mentioned, in neurocognitive film research – cognitive scientists Spivey and Dale (2004) argued that the mind only approximates stable configurations (which at the neuronal level can be thought as patterns and at the cognitive level as schemas), never realising them fully. They hypothesised that, especially in highly complex environments including many simultaneously competing representations, as in the 'ambiguous forms' Gestalt psychology studied, 'the proportion of time spent in these unstable regions of state-space – and in the process of traveling toward an attractor [...] but not in one yet – is actually much greater than the proportion of time spent in relatively stable regions of state-space'. However, the ambivalence this instability implies and the resulting 'noise' are not a hurdle for cognitive processing but an instigator of what Spivey and Dale (2004) call the mind's 'cognitive continuity', a term they use to signify this continuous drift of the mind–brain, an unceasing motion in a state space containing 'many meta-stable attractors'.

Neuroscientists Tognoli and Kelso (2014) have recently claimed that the transient states of neuronal activation without attractors (preceding the emergence of one) become increasingly important for the understanding of brain dynamics

by contemporary neuroscience. In such transient states, neurons only show 'synchronisation tendencies' rather than synchronisation. From a dynamical perspective, it is not the formation of attractors, evident by synchronisation, that matters the most but the energy of the mind system to travel between attractors in a continuous motion, therefore demonstrating tendencies for synchronisation.

Dynamic systems in neuroscience have potential applications in film studies, and film psychology and cognitive film theory have sometimes hinted at these applications. Anderson, following Gibson, spoke of the whole process of viewing in cinema as an ambiguous figure/Gestalt, with the screen serving as the 'figure' when the scene serves as ground and vice versa. He commented on the way the two are never coexistent but the mind switches from one to the other, following 'a winner takes it all strategy', which as he argued is 'built into the structure of the brain at all levels – perhaps in a way that is described in chaos theory' (Anderson, 1996, p. 48). He did not however discuss this proposition further, as he argued that for evolutionary reasons, viewers tend to forget the screen and focus on the locus of movement, which resides in the scene (meaning mainly the narrative scene). Anderson seemed to be reluctant to accept that film viewers can deal with ambiguity or to think of situations where film forms can be ambiguous; after all, as he contended, 'the perceptual system does not tolerate ambiguity [...] Indecision is potentially fatal' (1996, p. 45). I would argue that contemporary film psychology tends to follow Anderson's lead: by focussing on the scene and the narrative (and consequently, on the continuity system as the provider of easier-to-remember Gestalts, as Anderson had put it) (1996, p. 155), rather than on the ambiguity of the viewing situation as a whole, film psychology risks to bracket out a fundamental process both for the emergence of film form and the emergence of cognitive patterns.

Another point where dynamic systems in neuroscience and film psychology can meet is in their consideration of noise. Noise events introduce ambiguity, and according to DST, their accumulation can facilitate the departure from a stable pattern of activation and the transition to a new attractor. Ambiguities with which our visual system is encountered allow noise to invade and effectuate a 'switching back and forth' between attractors, therefore triggering a phase transition (Wagemans et al., 2012).

In *The Continuity of Mind*, Spivey (2007, p. 64) discussed how the mind's continuous instability demonstrates a pink noise effect. This is a constructive noise, one that contributes to the travelling of the mind towards an attractor.

> [Pink] 1/f noise is seen as a signature data pattern for complex dynamic systems that self-organize in fractal time. If cognition is such a system, then we'd better start analyzing it as such.

The same kind of noise, characterising many complex natural and social systems from earthquakes to the traffic flow, seems to be playing a fundamental role in not only human attention and mental judgments, but also the way films are structured. The use of the popular 'cinemetrics' software[1] has suggested such a connection, demonstrating the existence of pink noise (or 1/f pattern) in the rhythm of cinematic editing after 1965 (which is the period where Bordwell (2002) placed the appearance and development of a style called 'intensified continuity', an intensification of classical continuity). Psychologist Cutting (2010) has suggested that this 'filmic' pink noise becomes manifest in repeated patterns composed of longer and shorter shots across the length of a feature film. He has also argued (with Ayse Candan in 'Movies, Evolution and Mind' (2013) and in other articles) that, in a fractal way, a 1/f pattern can be observed in repeated patterns formed by in-shot motion, with shorter shots involving more motion than the longer ones. This filmic pink noise creates a pattern that, as Cutting and Candan (2013) have suggested, indicates an approximation and evolution of film towards the natural patterns of attention – the 'endogenous attentional fluctuations of our minds'. The authors have further suggested that filmmakers, by intuitively reproducing these patterns, manage to control attention and also other physiological responses such as heart rate, which also have been found to demonstrate pink noise.

Quantitative tools such as cinemetrics seem to be giving contemporary film psychology support in its defence of the continuity system and its heir, intensified continuity. An overall increased rate of editing, Cutting and Candan maintained, serves even better narrative and memory and the mind's capacity to create forms in time and find pleasure through this process. This is in the end what cinema editing was invented to do in the first place: 'our memories seem to have evolved to remember better the things that are encodable in chunks rather than in a smooth continuous flow' (Cutting & Candan, 2013). Jeffrey Zacks' 'event segmentation theory' and its application to film, to which Cutting and Candan allude here, hold that the segmentation of editing follows the natural segmentation our mind performs on the events of real life. Without segmentation, in movies and in reality, experience would be an undifferentiated mash – or at least this is what these researchers suggest. The continuity system is again depicted as the ideal one, selected by the industry's evolution and at the same time happening to serve best the needs of viewers' brains:

> watching this audiovisual flow comes close to what our minds enjoy best, and ironically these storytelling streams capitalize on what our minds have evolved to do. (Cutting & Candan, 2013)

[1] Cinemetrics is a software programme written by Gunars Civjans that allows for the online or offline calculation of average shot lengths of films. The dedicated website cinemetrics.lv provides this tool and a database of shot lengths for movies users have parsed.

Even though there is neuroscientific evidence (also from DST as already discussed) that pink noise is produced by the mind's unceasing flow and even though environmental stimuli might correlate with this flow, it is problematic to associate only one type of film stimuli and one technical and aesthetic film system (the continuity system) with it, without testing for differential correlations from other types of film stimuli (for a proposal for such testing, see D'Aloia and Eugeni, in press).

As Spivey and Dale discussed using the example of the Necker cube, it is ambivalence that creates the mind's pink noise. On the one hand, the continuity system is based on change – however, this is an 'optimal' kind of change, a change effectuating reduction of ambiguity. The classical continuity system (and its development into intensified continuity) is known for guiding attention in such a way that there is simply not enough time left for ambiguity. Psychologist Hasson and his colleagues (2008) interestingly made a relevant point in their article 'Neurocinematics' (alluding to neuroaesthetics), where they asked whether films that do not tightly control the attention and interest of viewers could be considered more 'democratic' even though less 'effective'. On the other hand, it seems plausible to suggest that mental processes of emergence correspond to instances where the 'good' film form is challenged, or delayed, or to instances of ambiguity where the mind needs to respond by drifting between attractors, competing perceptions and interpretations. Such instances are created by several film techniques that do not necessarily adhere to the continuity system (for some hypotheses regarding such techniques, see Poulaki, 2015).

Even the popular argument in film psychology that Hollywood cinema has evolved into an optimal canon can be challenged. Shaviro (2010) has suggested a qualitative distinction between classical and intensified continuity on the one hand and what he calls 'post-continuity' on the other hand, which he characterises as an implosion of the continuity system – a destruction by its own means, which in this case is its own precision and speed of cutting. Ranging from Hollywood blockbusters such as Michael Bay's franchise *Transformers* (2007–present) to Alejandro González Iñárritu's *Birdman* (2014), which effectively creates the impression of a single-shot feature film, leaving aside various TV series, music videos and video games, continuity and the construction of a coherent space–time do not seem to be necessary anymore.

The changes rapidly taking place in the materiality of cinema within the last two decades have also played an important role. As Rodowick (2007, pp. 172–173) has argued, 'in digital cinema there is no longer continuity in space and movement, but only montage or combination'. In the same vein, Mark Hansen (2014) has argued that continuity is now transferred to the elemental level of pixels

through data mashing processes of bending one image onto the other, rather than connecting film frames in the classical sense.

Such changes in media suggest that the development of editing patterns over the last decades of cinematic development does not necessarily indicate the evolution of film towards the built-in patterns of the brain but also its adjustment to increasingly complex media environments that apparently prompt fleeting forms of attention. In these environments, an emphasis on what I would call 'transformation', alluding to the transgression of form and its change into another, arguably becomes more pertinent than the emphasis on editing continuity (be it traditional or intensified).

Apart from the new possibilities offered by digital editing and post-continuity, the genealogy of transformation in film can be traced in avant-garde practices using a large range of self-reflexive devices (often associated with modernist movements) that draw the attention from scene (with its evolutionary privilege due to motion according to Anderson) back to the screen and vice versa. Such switching increases ambiguity when perceiving a film, pointing at alternative forms that might emerge out of its elements.

In addition, devices praised by psychologists like Münsterberg and Arnheim for generating the curious and unnatural effects leading to perceptual switching could also facilitate transformation in film perception. Although it is not easy to describe perceptual switching in a temporal Gestalt like that of film, we could follow view of Köhler (1947, p. 198) that 'forms in time behave just like shapes in space' and turn to the film examples Arnheim (1957, p. 44) has discussed as cases of pictorial 'surprise' and 'true observation' in his study *Film as Art*. Arnheim does not make direct reference to Gestalt principles here, but I would argue that the pictorial surprise he refers to alludes the cases of perceptual switching that Gestalt psychology studied. René Clair's film *Entre-Act* (1924) is a particularly good example of ambivalence and 'multistability', which in dynamic systems terms would correspond to the drift between attractors. Arnheim (1997, p. 44) has vividly described a scene from the film:

> Rene Clair's film [...] contains a picture of a ballet girl dancing on a sheet of glass. The photograph has been taken from below through the glass. As the girl dances, her gauze skirts open and close like the petals of a flower and in the middle of this corolla comes the curious pantomime of the legs. The pleasure derived from so curious a shot is at first purely formal and is divorced from all meaning. It arises solely from the pictorial surprise.

Whoever watches this shot can probably feel for some seconds an uncertainty similar to the one caused by the classical ambiguous figures used in Gestalt experiments. The switching back and forth of the two 'attractors' of the flower

and the ballerina continues till the end of the shot. The scene ends with one more transformation, this time perhaps more in line with the Dadaist spirit of the film: the transformation of the ballerina into a bearded man.

I find this and other examples Arnheim has mentioned (including Alexander Room's *The Ghost that Never Returns* (1929) and Charlie Chaplin's *The Immigrant* (1917)) as indicative of his appreciation of a type of continuity that is very different from classical continuity, as long as it privileges formal transformation rather than editing-based parsing, which I would connect to cognitive continuity in Spivey's terms. However, Arnheim himself does not escape some ambivalence, as he remarked that 'in a good film every shot must be contributory to the action', and on these grounds, he criticised other films such as Carl Dreyer's *The Passion of Joan of Arc* (1928) for containing a lot of unnecessary cuts between different camera angles. Indeed, cuts here do not correspond to shifts in perception but fragment the scene in many pieces that do not necessarily come together into a form.

Form is not a purely cognitive category. It does not just emerge in the mind of the viewer, but it is induced by the organisation of the stimulus – in our case, the film. Shapeless, 'amorphous' material, according to Arnheim, instead of adding to the freedom of the mind to impose any form possible to the objects of perception, as one might assume, is instead inhibiting the emergence of form altogether. He noted that under common perceptual conditions, such an encounter with an amorphous material is hardly ever the case: 'truly chaotic or otherwise unstructured situations' [like 'when the field is homogeneous, as in total darkness, or when nothing can be seen but a repetitious pattern'] are not typical of normal cognitive processes, and 'when they prevail they make it all but impossible for selective interest to take hold of a target'. A minimum level of organisation, a minimum form, is always necessary. Using the example of the Rorschach inkblots used in projective psychology experiments, Arnheim noted (1997, p. 90), 'it takes a rich assortment of clearly articulate but ambiguous patterns [...] to make the mind respond with acts of recognition. Recognition presupposes the presence of something to be recognized'.

This 'flash forward' from the early to the later Arnheim may help to better understand his observations in *Film as Art*, where he condemns those 'art for art' film techniques that dissolve one form without constructing another (and therefore lack any meaning, like the checkered surfaces he would later use as examples of disengaging patterns). This resistance to the modernist type of editing followed by Dreyer seems curious especially when coming from Arnheim who has considered numerous cases of modern art, from Cubism to abstract animated films (see Arnheim, 1974, p. 413). From the Gestalt perspective, Dreyer's editing would create multiple elements without securing their integration into a coherent whole – thus a 'good form' would never be achieved. These observations of Arnheim might be seen as expressive of the Berlin School's tendency to privilege whole

over elements and brings to mind, apart from the observations of Wagemans et al. we saw earlier, the criticism to Gestalt-influenced art theory Ehrenzweig (1953, p. 146) made when he pointed out that Gestalt theory 'fails to explain the repression of the various thing-free distortions from consciousness' and how whatever does not contribute to an emerging form is rendered redundant by the visual system – unattended or indeed unseen.

It seems to me that contemporary film psychology shares to some extent such anxiety of the formless, manifested by a fixation on the continuity system, that prevents it from embracing a more dynamic approach for the film–mind system. It is, however, time for the psychology of film to take a step away from form and pragnanz – represented by continuity editing – towards process, which in filmic terms would lie in non-continuity and discontinuity. As philosopher Boundas (2009, p. 206) has put it, 'what is necessary is that we move to a language at which the Gestalt itself is already broken, or rather, is yet to be formed. [...] the level of the dissolved Gestalt'.

Psychologists of film see the discontinuity of editing as the necessary force that brings together the building blocks of continuity; however, they do not focus on the conditions of discontinuity itself but only those of continuity, as if what does not serve conscious vision, attention, memory and interpretation can be cut out. This assumption is linking not just contemporary film psychology to Gestalt theory, but also newer approaches to vision influenced by ecological perception, which mainly equate seeing with conscious visual experience (see Noë & O'Regan, 2000).

One could argue that film continuity only addresses the level of the 'interface' between film and viewer and not the neuronal substrate of perceptual and cognitive processing in all its complexity. Still, it has been argued that the interface itself is changing in contemporary films. In the post-continuity cinematic regime, flow becomes more important from the individual frames or chunks of meaning, which films do not parse anymore so meticulously.

The ecological approach of Anderson (1996, p. 110) to film theory, influential for the current (neuro)psychological film research, insists in a nature/culture divide maintaining that films following continuity editing are easily grasped by the 'built-in' tendencies of the mind, while films not following this type of editing 'must be grasped indirectly at the level of symbol and metaphor', a plane of interpretations that can be sensitive to culture. By referring to the continuity of mind research, this article attempted to argue that films that do not follow continuity conventions might be connected to (encultured and embodied) brain processes that precede symbolic interpretations.

More than discontinuity (or continuity editing) as a precondition for the 'naturalness' of the filmic experience, it may be now worth focussing on another sort of continuity, a 'radical' continuity of both the mind's and the film's flow and

drift, as an indispensible condition for cognitive emergence. Entirely different aesthetics would produce and result from this shift, and empirical studies would have to readjust a number of their premises.

Summary
This article questions certain assumptions concerning film form made by the recent (neuro)psychological film research and compares them to those of precursors of film psychology like Hugo Münsterberg and Rudolf Arnheim, as well as the principles of Gestalt psychology. It is argued that principles of Gestalt psychology such as those of 'good form' and good continuation are still underlying the psychological research of film, becoming particularly apparent in its approach to continuity editing. Following an alternative Gestalt genealogy that links Gestalt theory with more recent dynamic models of brain activity and with accounts of brain complexity and neuronal synchronisation, the article concludes that psychological research on film needs to shift the focus from form to transformation, both in conceiving the perceptual and cognitive processing of films and in approaching film aesthetics more broadly.
Keywords: Continuity, film, neurocinematics, Arnheim, Gestalt.

Die "Gute Gestalt" des Films

Zur Ästhetik der Kontinuität von der Gestaltpsychologie zur kognitiven Filmtheorie

Zusammenfassung
In diesem Beitrag werden bestimmte Annahmen der jüngsten (neuro)psychologischen Filmforschung zum Thema Filmform bezweifelt und mit denen von Wegbereitern der Filmpsychologie wie Hugo Münsterberg und Rudolf Arnheim sowie mit Grundlagen der Gestaltpsychologie verglichen. Grundlagen der Gestaltpsychologie wie das Gesetz der "Guten Gestalt" und das Gesetz der "Guten Fortsetzung" bilden nach wie vor eine Grundlage der psychologischen Filmforschung, wie es vor allem in derem Konzept über die Schnitt-Bearbeitung sichtbar wird. Dieser Beitrag folgt einer alternativen Gestaltgenealogie, in der Gestalttheorie mit neuesten dynamischen Modellen zur Hirnaktivität und mit Aussagen über die Komplexität des Gehirns und neuronaler Synchronisation verknüpft wird. Daraus wird der Schluss gezogen, dass die psychologische Forschung zum Film den Schwerpunkt weg von der Form und hin zur Transformation verlegen muss, um sowohl den Wahrnehmungs- und kognitiven Verarbeitungsprozess von Filmen zu begreifen, als auch sich Fragen der Filmästhetik mit einem erweiterten Ansatz anzunähern.
Schlüsselwörter: Kontinuität, Film, Neuro-Filmkunst, Arnheim, Gestalt.

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