

CHAPTER TWO

THE MAGIC OF CINEMA: PERCEPTION, COGNITION AND EMPATHY IN THE CINEMATIC VISION

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This essay does not aim at providing a complete survey on the processes of perception, cognition and empathy during the cinematic vision, but only some insight into the relationship between the fruition of films and recent theorizations about the functioning of our brain and mind.

The hypothesis of my studies, which are still in progress, is not only that it is possible to apply to the cinematic vision more or less all the means used by neuroscientists to understand our ability to grasp reality, but also that this is possible because cinematic vision and the experience of reality have the same aesthetic root, made up by our aptitude to structure what is outside ourselves while penetrating it.

In addition to this, I will try to draw a parallel between cinematic vision and the so - called magical thinking (Subbotsky 2010), a perspective that film and media studies in general have not seriously considered yet, despite the work dedicated to the anthropological meaning of cinema of one of the twentieth century pioneers of humanities: Edgar Morin's *Le Cinéma ou l'homme imaginaire*.

Experiencing movies

As David Bordwell argues, “the process of understanding many things in films is likely to draw upon ordinary, informal reasoning procedures.” (Bordwell 2007, 136.)

Similarly, Grodal points out that cinema and real experience have in common the same stream of data-processing and integration: this process is realized by the human brain-mind through what he calls the PECMA flow, a procedure consisting of both bottom up and top down subprocesses that

include perception - emotion - cognition - motor action as well as all the intermediate evaluation steps (Grodal 2009). In a simplified way, we could say that PECMA flow processes perceptions with the aim to accomplish an appropriate motor action; in a fully-formed mind, this bottom up process is accompanied by some top down activities, such as the concentration of attention, the modeling of emotions and the evaluation of the status of reality.

But how can we define the experience of reality, which the film seems to remind us so much?

According to Maurice Merleau-Ponty, it is possible to talk about reality only as something that is organized and configured by sensory perception. After more than half a century since the author published *Phénoménologie de la Perception*, the studies made by Semir Zeki on cortical activation during aesthetic experience (Zeki 1999) found that the categories described by A. J. Greimas in his theory of visual semiotics are the same ones used by our visual brain to recognize our environment and the objects in it.

This finding sounds like a sort of demonstration of Merleau-Ponty's theory: from this perspective, indeed, the functioning of visual brain, which reminds us the aim of figurative art, is to choose within the ever-changing information of the visual world the ones that are relevant for an essential representation of objects. So the visual brain and the figurative arts carry out a search for constancies that are the durable attributes of vision.

In cinematic experience this question is much more complex: how can objects, subjects and actions remain recognizable in the ceaseless changeability of movies? Films, different from pictorial works and photography, are composed by a juxtaposition of shots, sequences of moving images taken from live action or created using different techniques of animation. Hence they are intrinsically variable. Usually the meaning of a single shot is deeply related to the sense of the previous and of the following ones; if, on the one hand, the illusion of movement given by movies resembles the complexity of reality (and this, for the brain, means an "almost-normal" functioning of visual cortex), on the other hand the juxtaposition of images and the movements of the camera make constancy, in a strict sense, almost impossible. Normally, the content of one frame emerges from its connection with the others in the clip, and the meaning of a shot, even if determinable by itself, to be completely understood has to be put in relation with the others in the same scene; sometimes the meaning of an entire sequence has to even be found in other parts of the movie.

The conclusion we can draw from all these considerations is that constancy in films is the search of relations between the components of a

whole. This research may be interpreted as a contradiction-in-terms: as the first film critics noticed, the fragmentation operated by cinema shots and editing is a peculiar element of the apparatus, a richness that, representing the discontinuity of the real world, is also able to unify the different fragments of reality in a continuum of kaleidoscopic images, able to reinvent experience (Hansen 2011). We can metaphorically compare cinema to the Cubism that makes “certain forms remain implicit, so that the mind of the spectator is the chosen place of their concrete birth” (Zeki 1999, 26).

Our hypothesis is that cinema uses its ability to show and unify a fragmented and unstable stream of perceptions to build situational and implicit constancy. Situational constancy is defined by Zeki as “a given situation that has features that are common to many situation of the same kind, enabling the brain to categorize it immediately as being representative of all.” Instead implicit constancy occurs when “the brain is allowed to free play in interpreting the work in as many way as possible. [...The work] obviously embodied different constancies.” (Zeki 1999, 22.)

These processes do not belong only to the perceptive sphere, but also to deeper processes - like the identification of cognitive frames and the building of narrative scripts – that for psychologists and neuroscientists are able to provide us useful clarification in the chaos of reality.

In particular, the search of situational and implicit constancy can be included into a higher cognitive process that belongs to semantic memory: the recognition of frames, stereotypical models through which we are able to understand what we experience, comparing it precisely with frames (or schemas), patterns that we use to label - from an early age - almost everything, from objects to situations. David Bordwell argues that cinema uses its norms, historically and genre-driven, to generate “subsystems” that work “as supplying cues to the spectator. The cues initiate the process of elaboration, resulting eventually in inferences and hypotheses. The spectator brings to the cues various bodies of relevant knowledge, most notably the sort known to cognitive theorists as schema-based knowledge. A schema is a knowledge structure that enables the perceiver to extrapolate beyond the information given.” Bordwell also suggests that all these cognitive activities vary historically and culturally, developing different norms, schematas and cues in different places and ages (Bordwell 2007, 137)¹.

¹ The theory of frame was developed first by Marvin Minsky, the father of studies on A.I., who defined the frame as the “skeleton” of our mental image of things, something like a form with blank spaces or boxes to be filled. These “blank spaces” which he calls “terminals”, have to be filled with the details of things we see, hear,

To understand how this process works in cinematic vision, think of any scene in any movie; I will pick the opening scene of *28 days later* (Danny Boyle, 2002) which for me, is a clear example of situational constancy.

In the first 30-35 seconds of this film we see what looks like an assemblage of shootings, taken from any TV news program that, in figurative terms, represents various scenes of violence. Knowing the genre of the movie - a post-apocalyptic zombie film - one could expect that this sequence is already representative of the “present” of the story, a portrayal of the first consequences of the zombie epidemic: we see naked people beaten by cops, women crying between corps and ruins, a dead man, hanging from a noose, beaten by a living one, fire and people burned, masses of bodies running along the streets of a city etc. All these images tempt us to categorize the situation we are watching as “witness of the unfolding apocalypse”. Also the quality of images suggests that this is TV footage, and that maybe was shot with handy cams (*28 days later* was made in 2002, when we could not yet talk about smart phones, tablets etc.) by improvised cameramen.

But, at minute 1, everything changes: the camera distances from the images we were looking at, and a panoramic shot reveals that they were forecasted on a series of screens positioned in front of a monkey tied to a table. Here, to understand the meaning of the sequence of images we were watching in the first seconds, we have to relate the figurative contents of the first minute and a half of shots. And, to overcome the ambiguity that characterizes situational constancy, choosing the right frame the scene belongs to, our mind has to verify some hypothesis about what we are watching during the unfolding of the moving images, identifying perceptive data, putting them in relation with our memories and interpreting them. David Bordwell says: “Going beyond the information given involves categorizing; drawing on prior knowledge; making informal, provisional inferences; and hypothesizing what is likely to happen next.” (Bordwell 2007, 137.)

Our provisional inferences could be: is it a TV news program? Is it a witness shot by a non professional cameraman? Is it both of these things? Where and when are characters in the movie watching it? Answering to

touch, smell and taste in the world, that we, thanks to our semantic memory, are able to put in relation with the right frames and terminals. For example, when we see a chair, we are able to put its characteristics, perceived with our senses, into the terminals of our frame of “chair”: assuming that “chair” has three terminals - one for the legs, one for the seat and one for the seat back - we should be able to recognize it in any form, colour or position of its legs, seat and seat back, despite any movement the chair is doing (Minsky 1988).

these questions means to relate perceptive data to the existing frames stored into our semantic memory, in order to get over uncertainty and help the operations of narrative thinking, fundamental to penetrate the narrative content of any media as to build relationships between real events.

Narrative thinking is structured in different steps: first we configure the events happening in the scene in well defined units. Secondly, we assign them causal relationships. Thirdly, we typologize them, still using our semantic memory, by invoking our experiential categories and assigning them one or more typologies (or by creating a new one). The pioneer of cognitive-narratology, David Herman, says that narrative thinking is useful not only to give reality a comprehensible *forma*, but that it provides us with behavioural models and constitutes a tool to enrich our inventory of past, present and possible events and to enlarge our ability to take different perspectives (Herman 2003).

Going back to the beginning of *28 days later*, I think that this is one of the deepest and most intense part of Boyle's movie: it contains all the biggest truths of the film without showing a single zombie, and, at the same time, is able to provide a background to the story and to anticipate the subject of the movie in literal and metaphorical terms. We are watching something that seems witness to what could be a zombie apocalypse (because, when we went to the cinema, we knew what kind of movie we had to expect- a zombie film - so this interpretation is pertinent to what we are watching), that exhibits violence of human beings against his fellows, that is part of a video showed to a monkey forced to watch, and so that is representative not only of the violence of humans against other humans, but also of their violence against nature.

So, what I personally found at the end of this culturally and historically driven cognitive process - made by recognizing, identifying, assigning meanings and relationships to what I'm watching - is my personal and subjective aesthetic opinion about the richness of this scene.

But there is another capital brain-body process involved in the vision of films: its name is "embodiment" (or "embodied simulation") and, in the words of Vittorio Gallese, whose studies are fundamental to research the neuroesthetic effects of media fruition, it "mediates the capacity to share the meaning of actions, basic motor intentions, feelings, and emotions with others". Its outcome is the Feeling of Body (FoB), a kind of physical participation with the aesthetic object that grounds intersubjectivity, a feel of "intercorporeity" (Gallese and Wojcieszowski 2011, 7).

Let us start talking about intersubjectivity: this term was born at the beginning of the twentieth century, along with the debate on the nature of empathy arose between Theodor Lipps and Edith Stein. Basically, if Lipps

affirmed that empathy for other individuals is a feeling of projection of our unconscious into another person and of fusion with him/her, fusion that creates in ourselves an imitation of the exteriority and of the emotions of the other, Stein on the contrary said that in empathic experiences there is not any fusion with the other, but only a proximity that provokes an “almost-action” of imitation. For Stein, when I feel empathy for another person, I do not really imitate what he/she is doing because this “almost-action” does not come from myself but from him/her. This ability to “put ourselves in another shoes”, “almost feeling” the feelings of the other, is of primary importance for the studies on theory of mind, that concerns the ways in which we are able to do inferences and to imagine what other people are thinking, doing or feeling. Indeed, according to a shared hypothesis, we are able to do inferences on other people's behaviour through a peculiar aptitude to simulate it (Pinotti 2011, 9-13). Even more important is that this aptitude is rooted in a kind of bodily comprehension theorized after the discovering of mirror neurons, that are able to produce an internal description of an action (or of an emotion) making us understand, in first person and in a pre-conscious way, the intentions and meanings of actions and emotions performed by others (Rizzolatti and Voza 2008).

Vivian Sobchack's description of “carnal thoughts” provoked by films resembles a lot of the description of FoBs given by Gallese and Wojciehowski: “We do not experience any movie only through our eyes. We see and comprehend and feel films with our entire bodily being, informed by the bodily history and carnal knowledge of our acculturated sensorium” (Sobchack 2004, 63).

According to Sobchack, we are able to experience films with all five senses thanks to the “carnal modality” active during the cinematic view, that brings us to a synaesthetic – coenesthetic condition. In view of this, also identification processes should be reconsidered: “Our lived bodies sensually relates to “things” that “matter” on the screen and find them sensible in a primary, pre personal and global way that grounds (...) identifications that are more discrete and localized” (Sobchack 2004, 65-69).

To illustrate how the viewer's body can truly experience a film Sobchack cites *The Piano* (Jane Campion, 1993); I will pick as an example the scene of the coffin in *Kill Bill Vol. II* (Quentin Tarantino, 2004) at 57'40”, describing the tactile feelings provoked in me by this clip.

In this scene we see the protagonist, Beatrix Kiddow, closed into a wooden bier, whose oppressive walls are illuminated by the faint light of a torch given to Beatrix by her jailor before being tied up and locked in the coffin. The torch lightens the spikes used to seal the bear up, the sweaty face of Uma Thurman, the tiny corners where her body is immobilized and her

knees beat against the cover, while we experience a hyperrealistic claustrophobic sensation. Her hands and feet are wired with ropes, her mouth is bound, all her movements are small and difficult. We feel near to Beatrix, “as if” (Gallese and Freedberg 2008) we were in a narrow, oppressive space, where every move is prevented and tiresome, where the weak yellow ray of the torch is the last, fine line between light and darkness, survival and death.

This is an example of embodiment in the sense of intersubjective empathy: we “almost feel” “as if” we personally had been locked up in a coffin and buried alive, even if at the same time we keep on knowing where we are, at our ease in a chair of a local cinema or on a comfortable couch at home. But embodiment has not only this meaning; it can also be defined as the biological principle underlying any form of signification, as in George Lakoff's and Mark Johnson's acceptance: in their 1980 study *Metaphors We Live By* the linguist and the philosopher propose a theory where the body and the corporal perceptions find the ground where verbal language can take root. Basically, in their view, during the processes of signification we put in metaphorical relation our corporeity with the world to grasp it through operations of mental simulation in which we literally use our body as the measure of all other things. To make some easy examples we can just think about the expressions “the foot of the mountain”, “the head of the company”, “I'm feeling down/prostrated” etc.; they all use particular parts of the human body or body positions to shape portions of our physical, social and psychological world. Obviously these metaphorical operations are not conscious, also because these metaphors are deeply rooted in our languages and a lot of them are not considered as proper metaphors anymore, becoming catachresis.

Even if not immediate, this reflection is quite interesting for film studies, and even more if we consider Edgar Morin's film theory, in which cinema is able to resurrect an archaic vision of the world by superimposing practical and magical experience in a syncretic conjunction (Morin 1956). For Morin, cinema perpetrates a magical vision of the world - though devalued and aestheticized - because in it are present anthropological elements and practices typical of archaic civilizations, such as the presence of “doubles” and of metamorphic processes in which objects get a life and people are reified, and it is no coincidence that the author considers Méliès's movies fundamental to the evolution of cinematic language and techniques during the twentieth century.



Fig. 2.1. *Un homme de têtes* by Georges Méliès, 1898. Courtesy of Georges Méliès and Star Films.



Fig. 2.2. *L'Éclipse du soleil en pleine lune* by Georges Méliès, 1907. Courtesy of Star Films.

Morin considers magic as the other face of emotions and affectivity, in the sense that, in his view, it is a sort of alienate pole of emotionality, a kind of exterior container for our feelings. This definition of magic given by Morin closely resembles the one of empathy developed by Robert Vischer (Vischer 1872). Considering aesthetic pleasure as first of all determined by our corporeity (it is an “aisthesis”), Vischer found three ambits in which aesthetic pleasure expresses itself: sensation, emotion and empathy. This is like emotion, except for the fact that is not not felt when we face another person – with whom we can have an intersubjective relationship – but when we face an inanimate object, in which we project our own life, animating and representing it to our mind as something alive. Vischer distinguished two kinds of empathy: one is sensory and the other is motor empathy. The first is the empathy of mood: when we, for example, find a landscape coloured of a peculiar emotional shade - happy, sad, melancholic etc. – we are feeling sensory empathy. Motor empathy, instead, closely resembles the metaphorical operations grounded in our body described by Lakoff and Jhonson: for Vischer, indeed, we are experiencing motor empathy when we put ourselves in relation with an object, creating metaphorical expressions based on the movements of human body – for example, the tree spreads its branches as if they were arms.

Both of the two kinds of empathy for inanimate objects described by Robert Vischer are present in movies, and we can experience both thanks to our ability to simulate what is outside ourselves using our own brain-body. In particular, we can find motor empathy when a movie depicts one or more metamorphosis, so it is easier - not exclusive - to encounter it in fantasy and science-fiction films, where the physical world and the inanimate things created by human hands take anthropomorphic shapes.



Fig. 2.3. *The Lord of the Rings - The Two Towers* by Peter Jackson, 2002. Courtesy of WingNut Films, The Saul Zaentz Company and New Line Cinema.

Sensory empathy

Some recent studies demonstrate that these kind of contents can be very helpful to the evolution of the human mind, especially for what concerns creativity and divergent thought, the ability to make inferences about other people's beliefs and the “existentialization” process, thanks to which we are able to ascribe different ontological weights to different situations (Subbotsky 2010, 147-152). The peculiar kind of thinking able to develop in our minds of all these faculties is named “magical thinking”, and is different from magical beliefs because it is the result of a conscious act of imagination, and not of a credence.

Conclusion

Examining perception and cognition in cinematic vision led me to the conclusion that our brain processes information coming from the real world and from films in approximately the same way, with at least one relevant difference: if in real experience PECMA flow is directed to the fulfilment of an action, in cinematic vision it is oriented to something else. Grodal thinks that art films express this different aim by creating strong emotional feedbacks in the viewers, so strong because all the perceptive and cognitive

operations of the PECMA stream cannot be manifested in a proper motor action.

My opinion is that any film has an aim very similar to the one described by Grodal for art films: to create embodiment, in the sense of intersubjective experience and empathic one - referring to the definition of empathy given by Robert Vischer. In particular sensory and motor empathy experienced in films can be considered as peculiar forms of magical thinking that provoke in us emotions and in which we project our subjectivity.

In these views, cinematic vision can be considered as a big “magical-aesthetic device” able to arouse in us feelings and emotions that in archaic civilizations were stimulated only by magical practices, and that are fundamental even for the most basic form of verbal communication.

I think it is no coincidence the huge and recent success achieved by fantasy movies and TV series. Is this success connected, for example, with the new progresses made in the computer and web languages, and in the more and more difficult metaphorization implemented in these fields?

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