*Henry BACON / Генри БЭКОН*
| How Direct is our Perception of Film|

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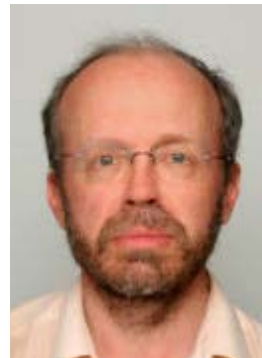
HOW DIRECT IS OUR PERCEPTION OF FILM?

How natural or 'direct' is the way we see and make sense of the world around us? To what extent is our perception 'indirect', and psychologically as well as socially constructed? Moreover, to what extent, and in what sense, is the perception of photographic and cinematic images similar to the perception of our environment?

The answers to these questions divide the field of contemporary film studies. However, recent developments in cognitive studies suggest that perception of both the world and film have a direct, as well as an indirect, component. Thus, even if we assume that certain perceptual functions can indeed be described as direct, we still have to first take into account an element of psychological constructionism, and secondly, the extent to which even our immediate perception — not to mention ourperceptions of human action in real life or in film — is socially constructed. The question about direct vs. indirect visual perception is inseparable from the question of what we perceive and how we make sense of it, in terms of the current situation: we may not be prepared to relate to the situation in a way that could be described as 'direct', and thus might have to resort to some degree of inference.

All this entails considering and integrating both realist and conventionalist approaches to perception and the cinematic experience.

Key words: *direct perception, indirect perception, dorsal system, ventral system, inference, ecological theory of vision, psychological constructivism, social constructivism, motivation*

Насколько непосредственно восприятие фильма?

Насколько естественно и непосредственно наше восприятие окружающего мира? До какой степени восприятие опосредованно и сконструировано в психологической и социальном плане? Как наше восприятие фотографических и кинематографических образов соотносится с восприятием окружающей действительности?

Ответы на эти вопросы разделили современных исследователей кино. Однако последние достижения в области когнитивных исследований показывают, что и в восприятии мира, и в восприятии фильма присутствуют и непосредственный, и опосредованный компоненты. Таким образом, даже если мы решим, что определенные функции восприятия можно рассматривать как непосредственные, все равно придется учитывать, во-первых, определенный элемент психологического конструктивизма, а во-вторых, то, в какой степени наше непосредственное восприятие, не говоря уже о восприятии действий в жизни и в кино, социально обусловлено. Вопрос о непосредственном и опосредованном визуальном восприятии нельзя отделить от вопроса о том, что мы видим и как мы это осмысляем в плане ситуации: возможно, что мы еще не готовы рассматривать данную ситуацию как непосредственную.

Таким образом, представляется необходимым учитывать и сочетать реалистический и конвенциональный подходы к восприятию и кинематографическому опыту.

Ключевые слова: *непосредственное восприятие, опосредованное восприятие, дорсальная система, вентральная система, предположение, экологическая теория зрительного восприятия, психологический конструктивизм, социальный конструктивизм, мотивация*

How natural or 'direct' is the way we see and make sense of the world around us? To what extent is it perception 'indirect' and psychologically as well as socially constructed? And to what extent and in what sense is the perception of photographic and cinematic images like the perception of our environment?

Answers to these questions divide the field of contemporary film studies. However, recent developments in cognitive studies suggest that perception of both the world and film have a direct as well as an indirect component. Thus, even if we assume that certain perceptual functions can indeed be described as direct, we still have to take into account, first of all, an element of psychological constructionism, and secondly, the extent to which even our immediate perception, not to speak of perceiving human action in real life or in film, is socially constructed. The question about direct vs. indirect visual perception cannot be separated from the question of what is being seen and how we make sense of it in terms of the situation in hand:

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we may not be prepared to take relate to the situation in a way that could well be described as direct, and might thus have to resort to some degree of inference.

All this entails taking into account and interrelating both a realist and a conventionalist approaches to perception and the cinematic experience.

The great schism: natural or constructed

The major structuring opposition in the field of humanities is that between *realist* and *conventionalist* view of the nature truth and knowledge. The realist position in this context is defined as the faith in that scientific methods produce objective knowledge about the world, whereas the conventionalist position is based on the understanding that knowledge and notions about truth are always conditioned, if not actually determined, by historical and social factors.[1] The debate extends to fundamental questions such as the nature of perception. Most semioticians claim that perception is learned in conjunction with the infant's gradual process of socialization and involves some degree of inference. It has thus been described as *indirect*. In contrast, the proponents of the realist, so-called ecological theory of visual perception, argue that perception is *direct*. This implies that no socially constructed mediation or even psychological construction of a mental image need be assumed and that significant features of the environment — dangers and affordances, as the psychologist James Gibson referred to them — are immediately available for the perceiving organism.

The realism/conventionalism pair is a good example of an opposition that embodies fundamental issues but which makes sense only when the components of the oppositions are dialectically interrelated. It follows us in various guises, and it underlies what might be called the great schism in film theory. This principal division may be broadly defined as that between culturalist approaches such as Screen-theories and cultural studies on the one hand, and a host of approaches grouped round cognitive studies and formalist analysis on the other. Screen theories found their inspiration in Saussurean semiotics, Althusserian neomarxism, Freudian or Lacanian psychoanalysis and Foucauldian analysis of power relationships. This movement was fired by the conviction that the existing evaluative approaches were not only impressionistic but also hopelessly complicit with the dominant ideological order, and that film studies should move into a scientific analysis of the production, distribution and reception of film.[2] The political dimension gave this scholarly movement an almost messianic mission, which could not but harden attitudes on both sides of the schism. A bit later on, partly as a reaction to the universalizing claims made by the followers of Althusser, cultural studies which originated mainly in Britain at the University of Birmingham under the guidance and inspiration of Stuart Hall, has continued on a similar line of emancipatory agenda. While its proponents within film studies may or may not share notions expounded by the Screen theorists, it is essentially (but not necessarily dogmatically) conventionalist in that it focuses on cultural specificity of the process of reception.

A major realist countermovement emerged over the 1980s and 1990s combining mainly cognitive science,[3] formalist analysis of filmic style and narration, analytical philosophy and ecological theory of visual perception. In the late 1980s some of the leading proponents of this movement, Joseph Anderson, David Bordwell and Noël Carroll, fiercely attacked the Screen theories, or the *Grand Theory*, as they chose to call it, under the aegis of science. This was something quite different from the way Screen theorists saw the justification of science in correct scientific practice rather than assumed correspondence with reality. For its proponents, cognitive science with its empirical methods seemed to offer a much firmer basis for future study also in the humanities. But for the conventionalist-minded Screen theorists this was anathema because it seemed to hark back to notions about human nature as the basis of not only human behaviour but also of all social configurations, perhaps even art and all other forms of human endeavour. This appeared to go against the all-important notion of there always being ideologically burdened options in all fields and levels of human endeavour. The cognitivists were equally, if not more antagonistic. In the introduction to the anthology *Moving Image Theory* Joseph D. Anderson suggests that "what made the conventionalists so angry was the introduction of literature from the sciences into discussion of motion pictures. They were categorically against such a thing no matter how much sense it made."[4] Earlier on Anderson has referred to conventionalism as "manifestly absurd relativism".[5] The cognitivists have, for the most part, shied away from social and political analysis, sometime even categorically claiming that this does not belong to the field of proper scientific film studies.

The claims made by the cognitivists were not well received among Screen theorists, substantially because of their realist assumptions, but no doubt also because of the merciless diatribes directed at them by some of the leading cognitivists. In terms of substance the unpalatable point was the notion that a fundamental part of perceiving and making sense of films is not based on conventions but rather on the perceptual and cognitive capabilities of the spectators. In other words, according to the cognitivists there is something "natural" about filmic comprehension. As the conventionalists saw it, something crucially important was in jeopardy. According to Slavoj Žižek the writers of the *Post-Theory* — anthology, edited by David Bordwell and Noël Carroll, "behave as if there were no Marx, Freud, semiotic theory of ideology, i.e. as if we could magically return to some kind of naiveté before things like the unconscious, the overdetermination of our lives by the decentred symbolic processes, and so forth became part of our theoretical awareness."[6] On the other hand, according to the leading formalists the crucial distinction in film studies has been between an empiricist and a the-

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[1] Another term used for *conventionalist* among critical scientific realists is *anti realist*. Realism, in turn, is sometimes used more or less interchangeably with the tern *naturalistic*.

[2] Lapsley & Westlake *Film Theory*, p. 2.

[3] Joseph Anderson explains in his *The Reality of Illusion*: "Cognitive science is not a discipline in itself but an informal consortium of researchers in several disciplines such as cognitive psychology, artificial intelligence, philosophy, linguistics, and neurophysiology who share information in an effort to understand the nature and processes of the human mind. And what has come to be called cognitive film theory is perhaps not a theory by a rigorous definition of the term, but an attempt by a growing number of film scholars to apply the thinking and research, now pouring in great volume from cognitive science, to the problems of film production and spectatorship." (p. 16).

[4] Anderson & Anderson, *Moving Image Theory*, p. 1.

[5] Anderson, *The Reality of Illusion*, p. 9.

[6] Žižek, *The Fright of Real Tears*, p. 14.

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ory driven approach. They accused the screen theorists — and not without some justification — of ignoring the distinctive audiovisual qualities of films in adhering to their top-down reductive analysis of the workings of the cinematic apparatus. Bordwell has called for a *historical poetics,* stylistic study of style in cinema in terms of production contexts and prevailing norms. Somewhat ironically in view of Bordwell's flaunted allegiances, the study of historical poetics can be conducted without any reference to cognitive theories of spectatorship. It is much more questionable, whether it really can be conducted without any reference to the way human behaviour, in real life as well as on screen, is socially constructed.

Many film scholars today associate themselves only loosely with one or the other side of this great schism, and others try not to take any stand at all. However, it is quite easy to get labelled simply by expressing views on certain critical points. There are also many who do not think that there is an unsolvable dichotomy between realistic and conventionalist or cognitivist and culturalist approaches. *Bioculturalists* such as Torben Grodal seek to bring at least selected elements of apparently diverging scholarly interests together, even if their approach tends to lean rather heavily on the cognitivist side.[7] Nevertheless, bioculturalism can be seen as a way out of an excessive realism/ conventionalism opposition, involving first of all accepting the notion of human biology as an evolutionary product which endows us with certain capabilities and potentialities which, among many other good things, allows us to create and enjoy filmic representation in certain broadly defined ways. Secondly, bioculturalism also entails the study of how cultural formations develop and eventually form an autonomous level of human being-in-the-world on the basis of the huge excess capacity for perception and cognition as well as affective and imaginary responses that have their basis in our psychological capabilities and proclivities. The way this works out in any particular case entails taking into account, in some form or other, social constructionism.

The two sides of bioculturalism have served almost as a dividing line within film studies. Bordwell for one has defined his stand in opposition to Screen theories and has left social constructionism together with culturalism in all its forms outside what he sees as the proper sphere of film studies. True enough, the strongest form of social constructionism which claims that all scientific knowledge is constructed through and through clearly is antithetical to the cognitivist-formalist project as well as to critical realist philosophy of science in general. From the point of view of natural sciences it is extremely tenuous to claim that *all* knowledge is constructed to the extent that properties of the object under study or even the objects themselves do not, at least for any practice or purpose, even exist prior to being constituted by representational practices and the social network.[8] However, the moderate form of sociology of knowledge simply explores the process by which a body of knowledge comes to be socially established as reality.[9] This opens up questions that are highly relevant to all forms of scholarly activity, and certainly not

the least within the humanities. Its applicability varies according to what sort of questions are put and how their relevance is assessed.

However, despite bioculturalist developments there does not seem to be much hope of the schism simply disappearing. There are always extremist diehards on both sides who keep the debate alive and in so doing also help to define some of the most crucial oppositions in the field. At best, they succeed in throwing light also on the underlying philosophical issues. The nature of such dichotomies should be explored to discover whether they are real or constructed (pun intended) and whether relating these oppositions dialectically with one another might reveal something important both about films and theories about films. As regards the question in hand, the two intertwined questions are, how direct is perception in the first place, and secondly is the perception of film direct in more or less the same way. Starting from the question of perception being fundamentally direct or indirect, examination of some of assumptions put forward by certain major film scholars reveals major differences of opinion even among the cognitivists.

Theories of direct and indirect perception

James Gibson, the major proponent of the *ecological theory of vision*, was convinced that the study of psychology went wrong because of the influential ides put forward by the nineteenth century psychologist Herman von Helmholtz. His main fault, according to Gibson, was the notion of the construction of perception on the basis of unconscious inference (see below). According to Gibson no cognitive activity is involved in visual perception as the environment itself provides all the information needed to discover the meaning inherent in that environment.[10] The perceiver simply "extracts the invariants of structure from the flux of stimulation."[11] Thus what we primarily perceive are persistence versus change rather than separate qualities. Depth and distances and forms and colours may be important for us but only secondarily.[12] The organism only has to direct its attention, no psychological inferences as proposed by Helmholtz need be assumed.

Gibson's principal follower in the field of film theory has been Joseph Anderson. To him the main appeal of Gibson's theory lies in that it seeks to explain perception in terms of biology rather than linguistics, as within the Screen paradigm. Anderson objects also to the concept of representation as it is used in most contemporary discourse. He specifically criticizes the idea that "it is necessary to form a mental representation of the object/event in the world in order to perceive it." He prefers Gibson's approach, which seems to offer a promising way to the study not only visual perception in general but also viewing films. This would do away with the notion of cues offered by the film so as to guide constructing meaning in favour of a theory meanings "inherent in the very interaction of a creature with its environment — or more specifically of a creature with its surrogate environment."[13]

7 See, e.g., Torben Grodal: "Bio-culturalism: Evolution and Film". Published in Anderson, & Anderson, (eds.) *Narration and Spectatorship in Moving Images*

8 Niiniluoto, *Critical Scientific Realism*, p. 271. Niiniluoto criticizes here views expressed by Woolgar in *Science: The Very Idea*., p. 65–67.

9 Berger & Luckmann, *The Social Construction of Reality*, p. 15.

10 Gibson, *The Ecological Approach to Visual Perception*, p. 127.

11 Ibid, p. 247.

12 Ibid, p. 124.

13 Anderson, *The Reality of Illusion*, p. 18–20. See also Joseph Anderson & Barbara Anderson, "The Case for an Ecological Metatheory." (published in Bordwell & Carroll, *Post-Theory*). Here the Andersons specify that Gibson's objection was to the idea that perception would necessarily involve "higher-level cognitive processes that presumably only humans possess." Instead, Gibson thought that "information exists in the environment and

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In contrast to Gibson's ecological theory of visual perception, the basic assumption behind *psychological constructivism* is that schemata begin to develop in the mind of an infant as she explores her environment and becomes acquainted with its properties. Helmholz, one of the founding fathers of this line of psychological study, insisted on the dominant role of experience in this process. Many of his followers have taken a slightly modified stance and assumed that the ability to extract invariants might be innate, but it has to be triggered off and sustained by a stimulating environment. It could be thought of as an evolutionarily produced installation programme which allows us to begin our orientation into the real world. The crucial point is that the mind actively organises information that it receives in various forms, starting from raw perceptual data. The mind constructs for itself representations of the world and the various things it contains. These representations in turn guide perception in terms of expectancies based on ever more refined categorizations. Furthermore, raw perception is always incomplete and calls for a degree of filling in. The way this works out cognitively may differ on different levels ranging from basic perception to making sense of highly structured human behavior, but in one form or other perception and understanding involve both selection and complementation of data on the basis mainly of immediate concerns. While direct visual data constantly refreshes our perception of our immediate environment, this process is guided to a substantial degree by previous knowledge and the immediate interest that we take in our environment as guided by our current concerns.[14] There is no perception of the world 'as it is', as perception is always modified by our perceptual cum cognitive apparatus and the way it has been tuned by previous experience and acquired understanding.

One of the main proponents of psychological constructivism in the field of film studies has been David Bordwell. He formulates the starting point of his theory of filmic narration as follows: "The organism *constructs* a perceptual judgment on the basis of nonconscious *inferences*." Inferences can take place principally either as *top-down* or *bottom-up* processing of information. The latter is the way the primary data of perception connects us with our immediate environment by offering us something to recognize and relate to. The bottom-up process guides and corrects the formation of the schemata. Schemata are clusters of knowledge gained and constantly modified by our engagement with our environment, which constantly and unconsciously structure our knowledge of the world so as to ease recognition of various phenomena our mind. They are mental representations at the fundamental level of storing and applying information. Schemata allow us to recognize perceptual patterns, objects, people, structures and situations and retrieve pertinent information from memory. It is a rather open concept which may include even imagery which function not only in the process or perception but also in fantasizing. In both cases, in orientating outward toward the real world and in fantasizing in one's mind, schemata selectively allocate attention.

In Bordwell's scheme the crucial point is that the perceptual cum cognitive capacities that enable us to mentally construct both our immediate and beyond the horizon environment also enable us to construct the fictional space of a fictional film on the basis of our previous knowledge and experience and of the cues offered by the film: "In watching a representational film, we draw on schemata derived from our transactions with the everyday world, with other artworks and with other films... The film presents cues, patterns, and gaps that shape the viewer's application of schemata and the testing of hypothesis."[15]

When Bordwell writes that "perception is an inferential process which reworks stimuli,"[16] he assumes on a certain level a firm constructivist stand. Although he emphasizes that spatial perception involves both top-down and bottom-up processes, his stand on this point is actually opposed to Anderson's Gibsonian ecological vision. This discrepancy at the core of the cognitivist film theory has not been extensively discussed, possibly because Bordwell and Anderson have constructed for themselves a mutual arch-enemy, culturalism and the conventionalism which it implies. Also, they are united by a naturalistic attitude, entailing what they conceive of as a rational, scientific vocation which for them is the only sensible path for film studies. Arguably, within these parameters all pertinent question regarding perception can at least in principle be debated. Even more importantly, opinions can now be revised in view of more recent developments in cognitive science.

Long since Gibson presented his ecological approach to visual perception computational theory has offered an explanation of how perception is structured so as to allow for fluent movement between more or less automatic and reflected functions, the latter calling for some form of representations against which judgements and discriminations can be made.[17] Following Roy Jackendoff we may discern certain levels of representation and learn that in neurocomputational terms the perceptual system consists of a structured repertoire of distinctions that can be encoded by the combinatorial organization of the computation mind. … this structured repertoire is built up from a finite set of primitive distinctions, plus a finite set of principles of combination that make it possible to build primitives into larger information structures.[18]

This building may be taken as an instance of data being processed on a higher level because lower level structures would simply not suffice for the task of making sufficient sense. However, all such levels are about an organism relating to a meaningful environment. There are correspondences with neighboring levels as well as holistic integrative functions at each level. Because of the excessive iconicity of the moving image, and the way most filmic devices create analogies with our perception of our lived environment,[19] it

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the perceiver has but to 'resonate' to it, to pick it up directly." (p. 352.) One might be left wondering about the exact nature of that resonation.

[14] Goldstein, *Sensation and Perception,* p. 79. Goldstein explains how vision is only partly constructed on the basis of the stimuli received on the retina and processed by the cell before reaching the Lateral Geniculate Nucleus (LGN). The LGN receives information from many sources, including the cortex, and then sends its output to the cortex. Thus the LGN appears to regulate and organize neural information as it flows from the retina to the cortex partly on the basis of previous experience.

[15] Bordwell, *Narration in the Fiction Film*, p. 32–33.
[16] Ibid, p. 100–101.
[17] Jackendoff, *Consciousness and the Computational Mind*, p. 58.
[18] Ibid, p. 47.
[19] Among these are *tracking shot* which creates a strong impression of an embodied movement through diegetic space, p*oint-of-view* shots which create an analogy with the strong instinctive tendency to turn to see what has caught the attention of another person, and *shot-counter shot* patters in dialogues scenes which mimic turn taking in dialogues in face-to-face

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seems fair to assume that to a significant degree we make sense of a classical style film in much the same way — many filmmakers have, of course, sought to develop means of expression that offer greater perceptual and cognitive challenges.

Clearly, Jackendoff's theory offers a sound extension to the still rather undifferentiated picture Anderson puts forward, even taking into account "the fundamental tenet behind the computational theory [which] is that an organism can make no judgment or discrimination without having an appropriate representation on which to base it".[20] Anderson just might concede as much, as he is prepared to accept the notion that non-symbolic patterns of activation may represent some object or feature.[21] Even more importantly as regards present concerns, Anderson points out that this has its implications also on the ecological film theory as "the perceptual systems go through the same computational procedures whether confronted with the real world or with synthesized shadows and sounds that allows for the existence of cinema." According to Anderson the notion of computation has an advantage over the notion of inference as regards explaining perception because it requires "no little green man in one's brain doing mathematics." Rather,"computation occurs not in the sense of making logical mathematical construction of the world but in the sense of cells being excited or inhibited, reaching threshold or not reaching threshold, firing or not firing."[22] Talk about little green men (or homunculus) is an argument that has sometimes been levelled against the notion of indirect perception as its critics have seen it as postponing explaining of 'who' or 'what' actually does the perceiving. One answer to this has been provided by Daniel Dennett who has attacked the notion of there being some kind of central, perhaps even localizable self to which a continuous perception of the outside world should be presented as if in a "Cartesian Theatre." His own *multiple drafts model* is based on the idea that consciousness is in fact an amalgam of a host of simultaneous mental operations dispersed round the brain. These together produce an overall effect of a temporally continuous consciousness. Dennett sees the self merely as a kind of gravitational centre of our mental activities. This notion is in perfect accord with the idea of perception being based on neurocomputational processes. This in turn has allowed for a new interpretation of notions of direct and indirect perception as descriptions of different levels of how our perceptual cum cognitive apparatus functions.

The contemporary cognitive perspective

A lot of work has been done in order to establish whether the modes of perception outlined by ecological and constructivist theories might actually be two systems or "streams" of visual perception working in parallel. Some light to these issues is thrown by research done on the two streams of processing visual information and co-ordinating related action, the ventral and the dorsal. These systems

have their root in similarly named anatomical-physiological entities located in different parts the cortex. According to Melvyn Alan Goodale and David Milner "the ventral system plays a major role in the perceptual identification of objects, while the dorsal stream mediates the required sensorimotor transformations for visually guided actions directed at those objects." Thus, depending on the situation, both streams have to deal with certain properties of objects such as size, shape, orientation and spatial location. The ventral focuses on the "enduring characteristics of objects and their relations so that they can be recognized when they are encountered anew in different visual contexts or from different vantage points. Goodale and Milner emphasize that "such operations are essential for accumulating a knowledge base about the world, exchanging information with conspecifics, and choosing among different courses of action." The dorsal system on the other hand guides visuomotor mechanisms directed at objects: "Both the location of the object and its orientation and motion must be encoded relative to the observer." This is the more dynamic system as it requires constant reassessment in respect of the movement of the observer and/or the object.[23]

Joel Norman has pointed out an extremely interesting parallel between the ecological approach and the functioning of the dorsal system on the hand, and between the constructivist approach and the functioning of the ventral system on the other. This approach also implies that direct and indirect perception should not be thought of as dichotomous but rather as a continuum.[24] Following definitions formulated by U. Neisser Norman points out that while the ventral system is exocentric as it is used to identify and respond appropriately to familiar objects and situations," the dorsal system is egocentric and enables us to "perceive and act effectively on the local environment."[25] The ventral system is memory-based and "utilizes stored representations to recognize and identify objects and events" whereas "the dorsal system appears not to have a long-term storage of information, but only very short-term storage allowing the execution of the motor behaviour in question." In normal everyday functioning we are much more conscious of data provided by the ventral than by the dorsal system. Norman further points out that the fact of the dorsal system having only a minimal memory span fits well with Gibson's idea of direct perception, which is supposed to take place without recourse to any form of memory or inference on the basis of previously acquired schemata.[26] This system is normally not even available to awareness.[27]

Empirical support for these ideas has been found in experiments which demonstrate that physical action such as picking up objects may function separately from conscious visual perception. For Gibson no mediational mechanisms such as recognition of the object is needed for the purpose of assessing the affordance of objects. In view of the research Norman discusses it would appear that there some more primary, non-representational system, the main candidate now being the dorsal system, functions so as to allow us to act

encounters as if observed by someone else (however, the camera positions are hardly ever limited to the fairly static position of such an observer). My own account of these is, for the time being, only available in Finnish ("Elokuvakerronnan luonnolliset ja luovat ulottuvuudet" (The natural and the creative dimensions of filmic narration) Published in *Luonnolliset ja luonnottomat kertomukset — jälkiklassisen narratologian suuntia*. Anthology edited by Mari Hatavara et al., 2010).

[20] Jackendoff, *Consciousness and the Computational Mind* p. 58.
[21] Anderson, *The Reality of Illusion*, p. 20.
[22] Ibid, p. 30–32.

[23] Melvyn Alan Goodale, "The Cortical Organization of Visual Perception". Published in Kosslyn & Osherson, *Visual Cognition*, p. 177–189.
[24] Norman: "Two Visual Systems and Two Theories of Perception", p. 77.
[25] Ibid, p. 78.
[26] Ibid, p. 84–85.
[27] Melvyn Alan Goodale, "The Cortical Organization of Visual Perception". Published in Kosslyn & Osherson, *Visual Cognition*, p. 207.

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without having to identify and interpret visual data. But when such skills do not suffice for coping with a situation the ventral system steps in. It has certain fundamental tasks such as to parse the visual array into different objects and events, classify those objects and their interrelations, and attach meaning and significance to them. Such operations are essential for accumulating a knowledge base about the world, exchanging information with conspecifics, and choosing among different courses of action.[28]

Processing in the ventral stream is thus directly linked to awareness and has a semantic aspect which is crucial to its functioning.[29]

Thomas Schenk has challenged this the strict segregation of the functions of the ventral and dorsal streams by suggesting that visuo-motor behavior input from both the dorsal and ventral streams tend to combine. He refers to this as integration as opposed to segregation account. Schenk focuses on visuomotor control, but his point that it is plausible to assume that the brain makes use of many of cues "to achieve the best and most reliable estimate of a target position and thereby to produce an accurate reaching movement" has wider implications as it suggests "the existence of multiple visual processes producing multiple visual cues, recruited from the entire visual cortex and combined in a flexible way to suit the requirements of the behavioural task."[30]

The notion of integration of the functions of the two streams also suggests how we can overcome the direct-indirect dichotomy as regards perception of visual images. It may even be that the two are structurally related. Approaching this issued from a slightly different angle, the philosopher Fred Dretske has attempted to solve the controversy between supporters of direct and indirect perception by the distinction between *sense perception* and *meaningful perception*. The former is "the early phase of the perceptual process that culminates in sense experience" while the latter "includes a knowledge (at least a judgement of belief) about the object being experienced."[31] Meaningful perception involves a degree of psychological construction on the basis of memory and concepts and may vary considerably according to what features a given observer has learned to take to be the most pertinent.[32]

The functions Dretske sees sense perception and recognitional perception having seem to coincide quite nicely with those of dorsal and ventral streams respectively. While some level of object perception must take place directly on the level of sense perception so as to enable us to spontaneously bodily orientate in our physical environment, recognitional perception, which may be assumed to entail a *seeing as* function, involves factors such as memory and conception and allows for a more reflected relationship to both physical and social environment.[33] Dretske emphasizes that "one might be a direct realist on sense perception but an indirect (representational)

realist on meaningful perception."[34] Furthermore, Dretske follows Helmholtz and many contemporary scholars in assuming that the visual system can be thought to "infer that something is so, formulate (on the basis of sensory input) hypotheses about the distant source of stimulation in the way that rational agents do this at the conscious level." Thus, in a "fairly literal" sense, the visual system can be said to solve problems.[35] Thus, even sense perception, as direct as it may be, functions by virtue of inferential processes in order to extract relevant information from the constant flux of stimuli. Dretske comes to the conclusion that

There is no reason why one cannot be a direct realist about the objects of perception, holding that we directly perceive physical objects (not sensations or mental intermediaries), and remain a constructivist about the processes underlying our (direct) perception of these objects. One can suppose that intelligence, some kind of thoughtlike process, is involved in the construction of internal representations without supposing that one thereby sees (or in any way perceives or becomes aware of) the constructed representations. One can, in other words, be a direct realist about the objects of perception and an indirect realist, a constructivist, about the processes underlying this direct relationship.[36]

Again, this formulation just might be acceptable to Anderson: even direct perception must have some kind of an underlying structure. The exciting thing about both Norman's and Dretske's formulations is that although we can distinguish between direct and indirect perception, the two appear to be inextricably intertwined in natural perception as they are based on distinct neural systems that produce a holistic experience of embodied relationship to, first of all, meaningful physical environment, and secondly to a social environment in which meanings are negotiated. Clearly, meaningful perception involves coming to a conclusion about a state of affairs in the environment and thus it entails an entire network of preconceptions and beliefs about the world. Perception might differ according to what beliefs the perceived holds, and as these beliefs are acquired through a process of socialization, perception is in this sense partially socially constructed. Another way of putting this is that direct perception is constructed by the dorsal stream and allows for a spontaneous orientation into the world while serving as a basis for the indirect perception functioning by virtue of the ventral stream. As was pointed above in connection with Jackendoff's theory of the computational mind, the perceptual system functions constantly on several levels guided by the actual situation and its demands ranging from bodily to social orientation, both of which may take place either spontaneously on the basis of deeply ingrained patterns of perception and reacting (bottom-up processes), or call for a more or less conscious interpretation of the environment and its demands (top-down processes).

What about film perception? Grodal points out that processing in the ventral stream is directly linked to awareness and has a semantic aspect which is crucial to its functioning.[37] Film perception,

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[28] Melvyn Alan Goodale, "The Cortical Organization of Visual Perception". Published in Kosslyn & Osherson, *Visual Cognition*, p. 178

[29] Ibid, p. 207.

[30] Thomas Schenk: "Visuomotor robustness is based on integration not segregation."

[31] Fred Dretske: "Meaningful Perception". Published in Kosslyn & Osherson, *Visual Cognition*, p. 331.

[32] Ibid, p. 343.

[33] Fred Dretske: "Meaningful Perception". Published in Kosslyn & Osherson *Visual Cognition. An Invitation to Cognitive Science*, p. 333–334.

[34] Ibid, p. 339.

[35] Ibid, p. 341.

[36] Ibid, p. 344.

[37] Melvyn Alan Goodale, "The Cortical Organization of Visual Perception". Published in Kosslyn & Osherson, *Visual Cognition*, p. 207.

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as it blocks full motor control in respect of the visual stimuli, entices us to rely more on this system: the ventral stream and the working memory […] perform functions that are highly compatible with those performed during film viewing. Viewers gain access to perceptual and emotional information; they ponder over or simulate possible actions; but they have no actual control over what happens.

Nor is there a need to respond physically to the stimuli offered by the screen as there are no objects there to be grasped or a real space in which to bodily orientate. However, although in the perception of film the ventral stream dominates, it does not follow that filmic perception would simply be predominantly indirect. We may still assume that recognition of objects in the fictional space and even responses to characters gestures and facial expression are perceived in a way that could be described as direct — as the notion has been modified by Dretske. Sometimes this directness is manifested in affective mimicry, a physical cum affective response that seeing, say, a character in tears evokes in us. Furthermore, classical film style is largely based on creating an impression of embodied relatedness to a diegetic space, which constantly alternates between being attached to certain characters (most obviously manifested in point-of-view shots) and the presence of a narrational agency which may either downplay or flaunt its quasi embodidness.[38] This can easily create spontaneous physical responses. And above all, as we have seen, notions about direct and indirect perception should not be seen as two opposed theories but rather as accounts of two different systems of perception that function so tightly together that the division between them is cognitive impenetrable.

One further point is that visual perception does not take place outside embodied orientation to physical space or psychological orientation to a social environment. Visual information is of supreme importance for us as it yield information about how people move about and relate to one another in space. Some of this information we process in a direct manner in the sense that the schemata needed for this cognitive process is so deeply embedded in our minds as to take place without psychological inference. William Flesch goes as far as to claim;

Humans have an irreducibly intuitive and accurate sense of how other humans will respond in certain situations. This response is direct and not mediated. ... We know how the others feel and what they would do; we don't work it out. Vicarious experience is an irreducible and fundamental feature of human sociability. It is as direct, in some ways more direct, as direct experience.[39]

While appreciating the notion that there is direct aspect in our perception of others, based on a high degree on our perception of their visible behaviour, on the basis of everyday experience, it is quite difficult to agree that this faculty would be completely direct. Again and again we find ourselves wondering what other people up

to, what they have in mind when they behave in some unexpected way, why they react to one another in a way that does not follow the standard scrip usually though to be appropriate in a given situation, what do they actually hope to achieve when they do something only seemingly innocent, and so on. A great part of our interest in cinema is centred on our tendency to extend such interest in our fellow beings to fictional characters.

Phenomenology of film perception

What implications does all this have to our understanding of the tasks that face contemporary film studies? For one thing, we can start dissolving the dichotomies that have haunted film studies over the past two or three decades. Just as we can appreciate that Anderson's ecological film theory is actually compatible with Bordwell´s psychological constructivism, their basically realist stand is in turn not something diametrically opposed but rather, complementary to the idea that much or perception socially constructed. Psychological and social constructionism complement each other, the one seeking to account for how an understanding of the world or representations thereof are constructed on the level of the individual mind and the other examining the formations of different kinds of notions on the level of various social configurations. Needless to say (?), both processes are highly relevant to an understanding of how films work, make meaning and interact with the rest of the real world. In practice, however, psychological and social constructionism have been taken over not only by mutually antagonistic scholarly factions but into completely different disciplines and even fields of scholarly enterprise. This fragmentation has effectively prevented the development of more comprehensive views of cultural phenomena. Quite unnecessary conceptual problems have risen even in the writing of history of cinema because of steadfast holding to certain prevailing notions about the cinematic images. Disentangling these knotty problems will serve as path to examining how the perception of cinematic images milks on the schemata which have developed through our engagement with the real world and how they in turn are modified in this process.

While conventionalist approaches have enormously enriched our understanding of the nature of representation, dogmatic adherence to certain basic notions about the nature of representation has given rise to rigid attitudes which have ruled out even the possibility that certain aspects of representation might relate quite directly to our lived experience. Conventionalist orthodoxy is displayed in telling fashion in the opening of Tom Gunning's treatise on D.W. Griffith's early years at the Biograph Company:

The primary task of the filmic narrator must be to overcome the initial resistance of the photographic material to telling by creating a hierarchy of narratively important elements within a mass of contingent details. Through filmic discourse, these images of the world become addressed to the spectator, moving from natural phenomenon to cultural products, meanings arranged for the spectator.[40]

But is there any such resistance? Gunning has adopted from Gerard Genette's narratology the opposition between showing and telling, mimesis and meaning. Yet, he appears to be somewhat un-

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[38] Grodal, *Embodied Visions*, p. 194.

[38] Vivian Sobchack offers an extremely interesting account of how this actually works out in the *The Address of the Eye*. My own view, in which I slightly modify Sobchack's theory and complement it with a theory of levels of filmic narration as theorized mainly by Edward Branigan can be found in "How Films Behave and Narrate". *Film and Philosophy*, vol 11, 2007.

[39] Flesch, *Comeuppance*, p. 33.

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[40] Gunning, *D.W. Griffith*, p. 17.

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comfortable with this. To overcome the opposition Gunning resorts to the concept of narrativization, namely, "the transformation of showing into telling, film's bending of its excessive realism to narrative purposes." From this point of view, the crucial question is how are certain features or details of photographic images picked up so as to form a narrative. Gunning's answer revolves round dissecting the question into "the profilmic, the enframed image and the process of editing."[41]

Starting from this Gunning offers a brilliant account of Griffith's contribution to the early development of cinematic narration in America. However, Gunning misses the potential for meaning *that is already there* in the images, in the potential for human engagement that a given environment offers, in what Merleau-Ponty called *natural meaning*. Any milieu we observe appears to us as a field of possibilities, as a meaningful context for action. Furthermore, natural human expressivity — on which the craft of acting is built — is always there to be exploited for cinematic purposes. By virtue of the process of photomechanical or photoelectric reproduction, all this potential for meaning is present also in photographic images, waiting to be treated by the means Gunning explores in his Griffith study. Sure, in a live action film there is likely to be a "mass of contingent details," but then again, we are marvellously well trained to cope with such masses in our daily lives. Every day we have to make sense of our fellow beings against a much greater flood of contingent details than ever in the cinema. But what is even more to the point is that any image which shows human beings — or any seemingly purposeful creatures — engaging in any kind of action contains the core element of narration: we assume that the action is intentional, that it will result in a new state of affairs, that it takes place in a social context which assigns that action and its results certain significance. We are likely to focus on that action and its meaning just like in the real world we constantly observe and asses our fellowmen on the basis of what we see and hear. In both cases we focus primarily on the situation at hand, the immediate reactions of the people we are interacting with or just observing. This is something so primary to us as social creatures that it can even be said that "we understand each other through language because we have already understood each others' actions."[42]

The filmmaker has at her disposal the cinematic means to guide the spectator's attention so as to focus it in a particular way according to certain narrative purposes. Most of these rely on the analogies between perception of the real world and film. As Bordwell has pointed out, cinematic conventions are usually built out of ordinary-life behaviours that put people's social intelligence on display. He suggests that one important function of art may well be "the opportunity it affords to test, refine, and expand our knowledge of why others do what they do."[43] In his "Who Blinked First" Bordwell discusses how blinking has to be calibrated on screen so as to convey an effect of naturalness. He points out that characters in films look at each other much more intently than people do in real life. If they wouldn't do so in what is supposed to represent an everyday

situation they would be likely to create a wrong impression of "evasiveness, furtiveness, lack of interest, or the like."[44] Thus actors tend to avoid blinking when the characters they portray are supposed to appear concentrating on what the other characters are doing or saying. They will avoid it very deliberately if they are supposed to appear strong and menacing.[45] Cinematic means are used to guide our attention and this does entail certain differences as compared to the way we perceive our natural and social environment.

One major question to be addressed when drawing analogies between natural perception and watching films is obviously the fact that in the cinema the image is a rectangle of a fairly limited size usually covering only a part of our field of vision whereas in natural perception we enjoy the experience of a limited yet apparently boundless field of vision. A preliminary answer also to this is that the limitation is counterbalanced by the way it conveys the sensation of moving around, approaching objects or gaining distance, as well as by the various ways by which our attention is held by cinematic devices such as movement on screen, gazes and gestures of the characters, sounds and lighting, etc, most of which derive their meaning from possible bodily orientation and behaviour in a given environment. In any case, the effect on our attention can be so strong that we might become momentarily unaware of our immediate environment, even of a considerable part of the screen space. Thus our own intentional activity is engaged to the extent that we become unaware of distracting factors, including many of the discrepancies between watching film and observing the real world. As regards many of the other ways in which all photographic representations differ from what the real world offers to be perceived, an analysis of the way perception works actually reveals some rather surprising analogies. Paul Messaris points out that in natural visual representation the "rendition of form and space is frequently unrelated to naturalism in the rendition of light and colour." It would therefore appear that "the *absence* of naturalistic light and colour from a picture need not prevent the application of real-world interpretational processes to that picture." All that is needed for the real-world interpretational processes to become operative is that "the picture provides the viewer with satisfactory information about the geometry of the depicted scene."[46]

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[41] Ibid, p. 18.

[42] Jean-Luc Petitot: "Constitution by Movement: Husserl in the Light of Recent Neurobiological Findings." Published in Petitot et al., *Naturalizing Phenomenology*, p. 241.

[43] Davis Bordwell, "Who Blinked First." Published in Bordwell, *Poetics of Cinema*, p. 334.

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[44] Ibid, p. 329.

[45] Ibid, p. 331–332.

[46] Messaris, *Visual Literacy*, p. 50. There are obviously differences in the perception of images and what they represent. Messaris gives a list of ten: 1) Pictures cannot reproduce the full range of brightness levels to which the eye is exposed in the real world. 2) Pictures cannot reproduce the full range of colours to which the eye is exposed in the real world. 3) Many pictures (e.g., outline drawings) do not contain information about changes in brightness and surfaces of objects. 4) Many pictures (e.g., black-and-white photographs) do not contain information about the colour of objects. 5) Ordinary still pictures (i.e., not 3-D pictures of holograms) cannot reproduce the stereoscopic effect (and attendant depth information) one gets when one looks at the real world with two eyes. 6) Ordinary still pictures (i.e., not movies of holograms) cannot reproduce the effect of motion parallax (and attendant depth information) one gets when one looks at the real world from shifting points of view. 7). Many pictures (e.g., Persian miniatures) do not reproduce the real world diminution of an objects apparent size with increasing distance from the spectator. 8) Many pictures (e.g. ancient Egyptian paintings) do not adhere to the real-world constraint that things can only be viewed from a single point of view at any point in time. 9) Many pictures (e.g., political cartoons) contain major distortions of the features of their subjects. 10) Many pictures

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What all this amounts up to is that despite the artificiality of cinematic representation we make sense of human situations in a film to a great extent by virtue of the same schemata that enable us to understand social situations we perceive in real life. Moreover, we encounter the direct vs. indirect structure also here, in making sense of story causality. András Bálint Kovács has explored how the perception of causality in watching a film actually takes place and has reached the following conclusion. He argues that the "construction of narratives depends on at least three types of mental activities that involve understanding event sequences and making predictions as to what the sequence is likely to be." These are: 1) Causal perception; 2) Conditioned prediction; and 3) Causal inference. Thus, Kovács emphasizes that "a lot of what we understand causally remains automatic or unconscious." However, many sequences of events that are not actually causally linked are accepted as the way things normally appear. Finally, depending on the film and depending on the spectator, inference might be needed to sort out more complex relationships between sequential events for which established schemata do not suffice. So here, too, we can observe the interplay of direct and indirect perception.[47]

Let us briefly examine a frame capture from Griffith's *Mothering Heart*. On a certain level we can directly recognize basic narrative elements — there is a man and a woman — on the basis of the same patterns of recognition as in our direct perception of people in the real world we make sense of the situation in terms of our largely intuitive knowledge of human behavior — even if we find the acting rather stylized (it was thought to be highly naturalistic in its time). We observe certain features to which we as humans are particularly sensitive. Even if we only get to see this frame capture without knowing the plot, we could still roughly infer the situation the couple is in from their gestures, postures and facial expressions: they are in grief, he has turned away from her in shame, the comforter the man holds and to which the woman reaches appears to stand for an absent baby while it is also about to reconnect them (lest we miss the point, the comforter is shown very briefly in extreme close-up).

The really interesting question here is how exactly is perception modified when watching a film as compared with gazing at, in a more or less conscious fashion, at the real world? A conceptual tool eminently suitable for this is the formalist notion of *motivation*. It was originally developed by the Russian formalists and has subsequently been elaborated by Kristin Thompson and David Bordwell for the purposes of film studies. They use the term to differentiate between the ways a spectator might explain to herself why certain features in the film are the way they are, i.e. whether because that is the way things are in the real world (realistic motivation), because of requirements of constructing narrative causality, space and time (compositional motivation), conventions of representation related either to visual, verbal and narrative representation in general or cinema and its genres in particular (transtextual motivation), or, simply for its own sake (artistic motivation). Artistic motivation is arguably ever present as all devices in a work of art may be assumed to be there for the purpose of producing a certain aesthetic effect. It becomes prominent when the other three types of motivation do

Expressive gestures in Griffith's The Mothering Heart *(1913). A still image does not convey the full impact of the dramatic situation (a faithless husband returning to his family just when their baby has died of sickness) but the emotional dynamics, even the imminent reconciliation is immediately apparent.*

not appear to be operative. Artistic motivation could also be defined more precisely as a category that comprises of attempts to find new ways of expression that transcend the other categories. As demonstrated in the treatment of the example at hand, this brings more conceptual acuteness to the scheme of motivations.[48] As regards perception of live-action cinematic image, different classes of motivations reflect the following aspects:

– *Realistic motivation*: We understand the live-action cinematic image primarily by virtue of its strong iconicity, i.e. the perceptual analogy it has with the real world. Perception of film is very much like natural perception because we make sense of things such as diegetic space largely on the basis of the same schemata as when making sense of real space. In this regard perception of film is also at its most direct in that observing diegetic space, time, causality and action as well as their basic human significance can be assumed to take place as directly as in observing similar real life situations. However, following Dretske we may nevertheless assume that this is possible by virtue of our perceptual cum cognitive apparatus as the underlying apparatus. Realistic motivation also covers to a degree understanding

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(e.g., stick figures) entail major omissions of the features of their subjects. (p. 46–47.)

[47] Kovács, "Causal understanding and narration," p. 63–64.

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[48] Bordwell, *Narration in the Fiction Film*, p.36; Thompson, *Breaking the glass Armour — Neoformalist Film Analysis*, p. 16–19. As I have suggested in my article "Blendings of Real, fictional, and other imaginary people" (*Projections*, vol 3, issue 1, summer 2009): Inasmuch as this scheme is applied to narrative works of art it might be improved by making the notion of artistic motivation more precise. One way of achieving this in a way that would not do violence either to the structure of the scheme or its previous history is by defining artistic motivation as whatever is found to be novel and idiosyncratically expressive in the representation. This would contrast artistic motivation more sharply with other categories of motivation, particularly the transtextual which involves resorting to the conventional ways of representation. Similarly, departures from what is observed to be realistic or from adherence to obvious compositional requirements are typically instances of finding new ways of expression. These distinctions would appear to make artistic motivation a more clearly cut category than previous formulations.

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how human psychological and social factors are at a basic level reflected in gestures, facial expressions, behavior and action. Some of this can be assumed to be direct in that they are cognitively hardwired, even if certain nuances are culturally bound. The appreciation of facial expression is a good example of a feature which hovers between what at least cognitivists such as Ed Tan hold to be universal,[49] and more culturally bound aspects such as the particular ways social hierarchy conditions people's reactions (usually, however, these are not all that difficult for a person foreign to a given culture to decipher, as most of us are aware of the existence of social hierarchies and possess at least some knowledge as to how they may differ from culture to culture).

– *Compositional motivation*: Appreciating any given phenomenon involves observing how its various elements function as parts of larger wholes. As regards the cinematic image this entails responding to the composition of the image in terms of the aesthetic, dramaturgical and narrative purposes we perceive it as serving. Appreciation takes place largely unconsciously on the basis of previous experience of films, other forms of visual representation and possibly even other forms of narration, even while focusing on plot development, the emotional responses of the characters and making hypothesis about future developments. However, this is predominantly indirect in that all this involves a degree of inference as it at least partly functions by virtue of suggestion and entails the ability to appreciate how artifice is being put into use in depicting, say, a human situation.

– *Transtextual motivation*: As standard notions and conventionalized patterns within certain genres and more general cultural conventions are largely internalized they do not as such demand much inference: the schemata is readily there allowing for easy recognition. Genres are of course cultural constructs, but at least if we accept Grodal's explanation of what makes them so effective, they appeal to certain basic physiological reactions tendencies that have emerged in the course of evolution. Thus there is an aspect that might be described as direct even in such ostensibly artificial constructs as genre films: we immediately recognize certain basic human situation and reactions to them as they are presented in a crystallized form. However, a proficient viewer with a more detached, ironically aware attitude might be able to read more meaning in the images than what merely following and enjoying the narrative calls for and be aware of how things are constructed in the image so as to produce certain effects.

– *Artistic motivation*: The way something is shot in an innovative way might offer perceptual and cognitive challenges that actually expand our horizon of expectation. This poses perceptual and cognitive challenges and calls for inference, interpreting the image in terms of previous knowledge concerning artistic

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[49] See e.g. Ed S. Tan: "Three Views of Facial Expression and Its Understanding in the Cinema." Published in Anderson & Anderson, *Moving Image Theory*.

expression and the way that relates to human perception and experience. Thus, at its purest, this is a domain mainly of indirect perception — although to some degree it can function only by virtue of its interaction with realistic motivation.

All these classes of motivation entail both direct and indirect aspects of perception, just as the perception of our real environment. But the balance shifts considerably according to the degree and quality of challenges each and every category entails. One dividing factor is, whether the inference and filling in called for takes place subliminally or consciously — this is an issue of spectatorial competence. But all these dividing lines are likely to be blurred, just like our perception constantly fluctuates between automatic reactions and awareness.

Conclusion

The basic assumption in this article has been that notions about direct and indirect perception should not be seen as two opposed theories but rather as accounts of two different aspects of perception which have their neural basis in the dorsal and ventral streams respectively, and which together produce a unified experience of an embodied and conscious visual orientation in a given environment. The interaction of the dorsal and the ventral systems is an instance of how the need to perceptually and cognitively cope with a situation requires both unconscious, immediate bodily orientation as well as a more reflective, conscious approach that involves having mental representations of the object of perception. Moving into a higher level of cognitive organization does not simply derive from the lower level but is an instance of a more sophisticated way of relating to the world. On this level inferences are made which derive partly from socially produced notions about the world. The perception of film feeds on this dual system, as the filmic experience contains both stimuli to which we respond more or less directly, and is modified by a response to aesthetic and dramatic conventions and expressive pursuits. The response even to such artificial stimuli may be assumed to have both a direct and an indirect component in that the response may at times be as immediate and even visceral as the perception of the natural cum social environment, yet it derives partly from both conscious and unconscious inference and the construction of mental representations in order to make sense of the image and its implications.

Taking into account all this calls for conceptual integration, combining ostensibly conflicting notions into a heuristically rewarding organizing frame. Unfortunately, disputes between proponents of cognitive film theory and culturalist approaches have often been conducted as if the participants had no notion of how the cognitive and the cultural are through and through intertwined in our engagement with both the real world and the audiovisual fiction we consume. Thinking of the realism/ conventionalism pair as a complementarity rather than an antagonistic opposition and appreciating the intertwining of direct and indirect perception is a decisive step forward.

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