

Visual perception, motor action, and the video game experience.

Ole Ertloev Hansen
Assistant professor, ph.d.
VR Media Lab / InDiMedia
Aalborg University
ertloev@vrmedialab.dk

We need to look not so much at *what* is experienced in play (...), but rather the *way* of experiencing what one is doing in playing. (Apter 1991, p.14)

Play cannot be defined externally by reference to objective criteria; it is a phenomenological state. (Apter 1991, p.21)

In this paper I will try to do what Michael Apter asks us to do – to look at ‘the *way* of experiencing what one is doing in playing’ video games. But in doing so I will have to disagree with the second quote taken from Apter’s text, it is not so that I disagree with the phenomenological approach, but I will argue that it can be enriched by incorporating the latest cognitive and neurological approaches to what he calls ‘the way of experiencing’. According to Torben Grodal video games are stories for eye, ear, and muscles and the way we experience these can be explained by the PECMA flow (Perception-Emotion-Cognition-Motor Action). I will examine his ideas and discuss them in relation to phenomenology. Although phenomenology in its origin (Merleau-Ponty 1994) sees itself in opposition to psychology, the blending of phenomenology and psychology in order to understand the phenomenon of optimal or focused experiences is not uncommon (Csikszentmihalyi 1990, Apter 1982, Apter 1991)

In this paper I will follow this tradition and try to synthesize the structural phenomenology represented by Apter and the cognitive approach represented by Grodal in order to show that in cooperation they are able to give a strong theoretical approach to the player’s experience of being in game.

The Video Game Experience as a PECMA-flow

One of the most basic conditions for the experience of video games is visual perception. Another feature that is acquired in order to play a video game is motor action, not necessarily hand-eye coordination, but the ability to connect the perceptions and sensations to intentional motor action in any whatsoever muscular tension. The interrelationship between perception and motor action has been known for centuries, and there has been made comprehensive descriptions of some of the basic

causalities between simple perceptions and motor actions. Theories and explanations about the more complex relation between intentionality, imagination and sensation in the context of cultural artefacts are still under elaboration. One of these theories will be discussed in the following: the PECMA flow.

PECMA is short for Perception Emotion Cognition Motor Action and the PECMA flow model as a general theory of the film experience has been developed by Professor Torben Grodal. The initiating steps for the development of the model were made in Grodal's doctoral dissertation *Moving Pictures* (Grodal 1997). In this book he gives a convincing approach to the relation between film genres, feelings or emotions, and cognition. He shows how the film experience can be seen as a flow going from perception to actual but suppressed motor action, and the degree of tenseness or emotional saturation is based on the emotional labelling and cognitive processing of the percept given. In his upcoming book *Embodied Visions* (Grodal 200x) he makes an update on the theory giving the process a new name: the PECMA flow model.

In the PECMA flow model it is anticipated that humans make use of the same general biological system – the embodied mind – used in order to make sense of and survive in the actual world, in order to understand audiovisual representations. And it is further suggested that “from a functional point of view the senses are aimed at picking up information that may support actions that implement the preferences of agents, as expressed in their emotions” (Grodal 200x, p.12). Although this quote indicates that the senses are guided by some more or less pre-reflexive experience, the most extensive description and explanation of the PECMA flow is given due to a bottom up perception model. A description that goes as follows: Light stimulates the retina and is transformed into signals that are sent to the visual cortex, here the signal is worked over by a series of processes that activates further parts of the brain in order to reinforce significant forms and activate memory patterns in search for a match. These brain processes are furthermore seen as sense-making and tied to narrative schemes.

So, if we in a bottom up way make an encounter with an audiovisual representation, the representation can due to its content and form induce different experiences in us. So-called abstract representations may stimulate the sense making processes creating a feeling of meaning although this meaning makes no ‘sense’. We cannot map the sense data onto meaningful forms or a memory match. If the representation “allow for matches with stored memories, but do not support a narrative, we will get lyrical-associative feelings” (Grodal 200x, p.13). Because narrative ‘action’ is missing the emotions will be saturated. But if there is any possibility to link form and content to an

intentional and potential active entity, the information in the representation will be treated as information of relevance, and thereby induce goal-oriented tensions. In order to evoke e.g. melodramatic feelings and autonomic reactions the representation can do so by blocking the possibility of achieving the goal, and thereby remove the possibility of relaxation.

Of course the above made presentation of the PECMA flow model can not account for even the simplest experiences, although Grodal doesn't admit this explicitly he states that PECMA exist in continual series of PECMAs and even in hierarchies of PECMAs within PECMAs, and in real life, in contrary to the film experience, he states that the flow doesn't need to begin with perception. Although Grodal has emphasised the bottom up aspects in his description of the PECMA flow and its functionalities, he doesn't ignore that it might be under the influence of top down processes. He mentions three top down aspects "that are vital for the film experience: Cuing of attention, moulding emotion and evaluation of reality." These three aspects deal with the representation's possibility of directing our focus of attention, the flexible and intelligent execution of preferences and our ability to modify belief, all of these are also active in relation to the real world in order to be alert, not to overreact and distinguish e.g. imaginations from the real. Grodal mentions that top down processes can be important in order to understand the relation between the innate and culturally acquired aspects of experience, but he doesn't elaborate on this in his short introduction to the PECMA flow model. But the reading of his oeuvre gives you the impression that in his optics culture is to be seen as a specific way of using artefacts and language to induce, model up on and play with our innate basics¹.

In order to focus upon video games let me return to the statement that the flow doesn't have to begin with perception, which means that a flow can be initiated by e.g. a cognitive reflection or a motor action, and further that the PECMA flow outside the film experience is characterised by the possibility to actually execute motor action and not just to activate our predisposed ability to engage cognitively and emotionally in hypothetical actions². As Grodal tells us "the game activity consist in seeing, hearing and doing in a simulation of a real-world interaction" (Grodal 2003a, p.130). In two articles (Grodal 2003a & Grodal 2003b) Grodal apply the PECMA flow onto video games in order to show how the model can explain the video game experience and how this experience is distinct from the film experience. According to Grodal video games rely on a series of nonverbal skills, perceptual as well as motor skills and they "will often also have a strong focus on the execution of low-level (sub)goals like simple navigation and handling processes." (Grodal 2003a,

¹ See Grodal 2003a, p.146

² This phenomenon is explained by Simulation Theory see e.g. Carruthers & Smith 1996, Currie 1995

p.131) The most obvious distinction between films and video games certainly is the possibility to act. “Like cinema, the video game screen predominantly simulates perceptions of spaces and objects that are present to the senses, but they can be influenced by actions.” (Grodal 2003a, p.139) If it is the case that spaces and objects can be influenced by actions, it will be the action that makes the change in the visual field that actually sets off the PECMA, but it is rarely the case that the action sets itself off – or is it?

Visual Perception – and intentional movement

In order to understand the appealing and engaging aspects of the video game experience, we have to understand the pleasure of movement. If the film experience is appealing because it can induce certain PECMA flows in our innate biological and neurological architecture, video games must be appealing because they allow the activation of PECMA flows on different levels and gives the possibility to experience the directing and redirecting of the PECMA parameters. Grodal’s theory lacks to give a satisfactory explanation for this kind of experience. One reason for this may be found in his approach to perception.

Grodal’s approach to perception equals in many ways what is known as the analytic approach to visual perception³. The analytic approach presupposes that perception consists of a collection of separate, isolated events, that are processed into a coherent unity. Broadly speaking you could say that in this way of understanding perception movement is input driven – we *react*. This understanding of course makes sense if your object of study is the film experience and you argue that we are forced through the PECMA flow in its simple direct forward form – bottom up driven. But if the PECMA flow is not bottom up and eventually also initiated from of another starting point, input driven perception theory doesn’t make that much sense.

In opposition to the analytic approach we find the synthetic approach. The synthetic approach presupposes that what we see is a total visual scale out of which we extract information – and one essential way of doing this is by movement. So in this case you could, broadly speaking, say that we *act* in order to perceive the environment. The synthetic approach to visual perception is also known as the ecological theory of visual perception and has its origin in the works of J. J. Gibson (Gibson 1986). The ecological approach, in a way equal to phenomenology (Merleau-Ponty 1994), argues against the causal psychological explanations (Reed 1996), but on the other hand it also argues

³ See Aumont 1997, 32ff

against the interpretational approach to agency. Setting aside this discussion you will be able to identify several similarities in the thinking of phenomenology and ecological theory. Lately Merleau-Ponty has been re-actualised in the context of recent Cognitive Science (Dreyfus 2005). According to Merleau-Ponty we do not need mental representations of skill domains and their goals in order to act skilfully. “Experientially, as one becomes an expert, the world’s solicitations to act take the place of representations as a way of storing and accessing what one has learned.” (Dreyfus 2005, p.131-132) So our active coping with a potential interactive environment doesn’t cause us to create a more and more precise representation of the environment, but to perceive it directly. “According to Merleau-Ponty, finite, involved, embodied coping beings are constantly ‘motivated’ to move so as to achieve the best possible grip on the world.” (Dreyfus 2005, p.137) This quote underlines the similarity between ecological theory and phenomenology, and furthermore it introduces the concept of motivation. “According to Merleau-Ponty, the organism’s behaviour is not simply *caused* by a feeling of how things are going, nor does the organism *infer* from the feeling what it should do next; rather, the feeling of how things are going *motivates* its behaviour.” (Dreyfus 2005, p.141) So our behaviour is not simply determined by a shift between isolated events that can cause us to act or events that we isolate in order infer upon the representation whether to act or not but rather motivated by an all-embracing feeling that kind frames the experiential situation. The existence of such feeling also makes it easier to understand why “skilful coping does not require any representation of a *goal*. It can be *purposive* without the agent entertaining a *purpose*.” (Dreyfus 2005, p.138) In an earlier work⁴ I have argued that video games can be seen as this kind of purposive purposelessness. A theoretical framework that is able to clarify the implications of this observation can be found in the structural phenomenology of play, which I will discuss in the next part. In the next part I will also show that phenomenology has another term for the possibility to experience phenomena as ‘not-real’ although they are as real as almost anything else.

Metamotivations and protective frames

In his 1991 paper “A Structural-Phenomenology of Play” Michael Apter asks some fundamental questions in relation to the understanding of the experience of play. First of all he argues for a phenomenological approach and “In doing so, we need to look not so much at *what* is experienced

⁴ See Hansen 2005

in play (...), but rather the *way* of experiencing what one is doing in playing.” (Apter 1991, p.14) he states. This leads to the questions of “what is special about the play experience, irrespective of its particular content at a given time?” or “what is the structure of the play experience?” and “how this type of experience articulates with the rest of the everyday flow of consciousness”.

According to Apter the characteristics of the play experience has to do with a specific playful state of mind, the feeling of being basically secure, unthreatened and free of duty. “In play, we seem to create a small and manageable private world which we may, of course, share with others.” (Apter 1991, p.14). To summarize the feeling and the mindset of being playful Apter uses the concept: *a protective frame*. A protective frame is basically psychological, it can be set according to the abstract rules of the game being played, but it often also takes on a physical representation such as playing fields, football grounds and the like. A protective frame would according to Grodal be a specific way of evaluating reality, but in contrary to Grodal its is not an evaluation of the world outside the controllable embodied mind, its more like an actual entering of a controlled or controllable world.

Without the protective frame, we are considered to be in a serious frame of mind, being concerned with and obliged to the ‘real’ world, a non-play universe that has no simple control and escape possibilities. In everyday life we are shifting or reversing between the two opposite states. This type of reversal between two phenomenologically opposite states correlates with Apters earlier work on reversal theory (Apter 1982). Within reversal theory it is possible to find another set of terms for the two states respectively paratelic (playful) and telic (serious). It is not so that paratelic is just another word for the same experience; paratelic has to be considered as a metamotivational state “a distinctive way of experiencing something *about* motivation.” (Apter 1991, p.16). A metamotivational state can therefore be seen as another observation of ‘the feeling of how things are going’ as it was explained by Dreyfus.

In the paratelic state the process; participating in the activity is what is important – it has its purpose within itself. In contrary, in the telic state the goal or the act of reaching the goal is most important – the goal can take the form of a representation, either physical or mental. Another difference between the two states is that in the paratelic state high arousal is experienced as pleasant in terms of hedonic tone (excitement) whereas in the telic state high arousal (anxiety) is experienced as unpleasant. The combination of a protective frame and a paratelic metamotivational state opens up the possibility to turn what otherwise seems to be unpleasant emotions into pleasant experiences. Emotions experienced in this way he calls parapatetic. Apter finds that one way of experiencing

parathic emotions is through fiction and narrative. So what Grodal explained as our predisposed ability to engage cognitively and emotionally in hypothetical actions can be labelled as parathic emotions, and thereby be connected to both the protective frame as well as the parathic state.

Conclusion

Combining neurological theory, phenomenology and reversal theory gives us a detailed approach to the philosophical foundation of the experience of being in game. The experience is characterised by the parathic metamotivational state that is the feeling that motivates our behaviour, a behaviour that seeks the best possible grip on the world, a world that we perceive direct through its solicitations to act. One way of getting a grip of the world is to move around in it, initiating series of PECMA flows, experiencing parathic emotions induced by the content and the form of the seemingly controllable world. And we do this, not because of some specific purpose, but because doing it is the purpose in itself.

References

Apter, M.J.: "A Structural Phenomenology of play" in J.H. Kerr & M.J. Apter (red.): *Adult Play: A Reversal Theory Approach*, Swets & Zeitlinger Amsterdam/Lisse 1991

Apter, M.J.: *The Experience of Motivation: The Theory of Psychological Reversals*. Academic Press, London & New York 1982

Aumont, J.: *The Image*, BFI Publishing, London 1997

Carruthers, P. & Smith, P. (eds): *Theories of theories of mind*, Cambridge University Press, Cambridge 1996

Csikszentmihalyi, M.: *Flow – The Psychology of Optimal Experience*, Haper Perennial, New York 1990

Currie, G.: *Image and Mind, Philosophy, and cognitive science*, Cambridge University Press, Cambridge 1995

Dreyfus, H.L.: "Merleau-Ponty and Recent Cognitive Science" In Carman & Hansen: *The Cambridge Companion to Merleau-Ponty*, Cambridge University Press 2005

Gibson, J.J.: *The Ecological Approach to Visual Perception*, Lawrence Earlbaum Associates, Hillsdale & London 1986

Grodal, T.: *Embodied Visions*. University of Copenhagen, Preprint (200x)

Grodal, T.: "Etories for Eye, Ear, and Muscles" in Wolf & Perron (ed.) *The Video Game Theory Reader*, Routledge New York & London 2003a

Grodal, T.: "Historier for øjne, ører og muskler" in *MedieKultur* 36, 2003b

Hansen, O.E.: "At spille for at spille." In Walther, B. K., Jessen, C. (ed.) *Spilletts verden*, Danmarks Pædagogiske Universitets Forlag 2005

Merleau-Ponty, M.: *Kroppens fænomenologi*, Samlerens Bogklub 1994 (1945)

Reed, E.S.: *Encountering the World*, Oxford University Press 1996