Computer Games as Action Systems

by Betty Li Meldgaard, Ph.D. Student, AAU

In this presentation I will describe a test set-up that has the purpose of showing how players of computer games, are involved in the process of picking up information for action from the games graphical layout.

As part of my ongoing Ph.D. studies, which take under scrutiny, the perceptual relation between the game world and the player, one of the main theses is that the player is engaged in a specific perceptual activity, encountering and manipulating the game world.

The overall theoretical approach to my research stems from James J. Gibson[1] and his ecological approach to perception. In correlation with Gibson, I use some formulations of Peter Weibel[2] that deals with the interactive media's theoretical problems. I am working on an overall assemblage of Gibson's and Weibel's formulation, because I, on the one hand, need an approach to perception that takes into account, the interdependency of perception and action, and on the other hand need a media theoretical approach that describes the dynamical involvement that is required from the user, to make the gaming system function.

Gibson studied natural perception, which is an approach that deals with the functions of the perceptual systems. It is ecological, because it describes how humans and animals get about in the world based on the information available in the environment. Humans and animals are locomotors and therefore we perceive while moving and acting. From the functional perspective passive perception is not possible and when it happens it is considered to be unnatural or indirect.

In our media dominated world, we are to some degree exposed to passive perception. We encounter media formats that don't require that we move to get the intended information. Indeed we are supposed not to move. In the case of computer games we don't move much either, but we engage in an activity that simulates that we are moving. This simulation is a demarcation of where computer games separate from other visual media.

The simulation of motion in games can be addressed more precisely, if considered as simulation of locomotion. We do not merely move around the in the game world qua the avatar or the perspective, we act as locomotors.

Moving Image and Moving Observer

[1] Ecological Approach to Visual Perception, L. Erlbaum Ass. 1986(1979)
[2] The Intelligent Image....Future Cinema, ed. Weibel & Shaw, MITPress 2003

Peter Weibel suggests that the new about interactive image systems is the convergence of moving image and moving observer. Lev Manovich[3] suggests that the new about new media is that they are navigable spaces. Moving images have been studied in relation to film, but this new convergence of the moving image and the moving observer, have not been studied in its complementarities, which is what I have chosen to do in my Ph.D. project.

I chose to look at the gaming situation as an action system with nested action systems. To understand this, an example would be to refer to first-person-perspective games as one type of action system with underlying or nested action systems. In first-person-perspective games a number of actions are made possible. The simulation of shooting, running, hitting, a.s.o. are micro levels, or again, nested actions within the games overall action system. The graphical layout of a specific game is created for the player to pick up information about possible actions. From the ecological approach the changes in the layout are specific to certain things going on. Changes' happening on the visual level is referred to as optical changes, which is a crucial part of the ecological approach to perception. It is in the optical changes that we gain information about the position of ourselves and the position of others or objects.

It holds no significance in this perceptual approach where the game is taking place or what the quests are. What's interesting is to be able to describe the different levels of the action systems and their possible modes of action.

The Test Set-Up

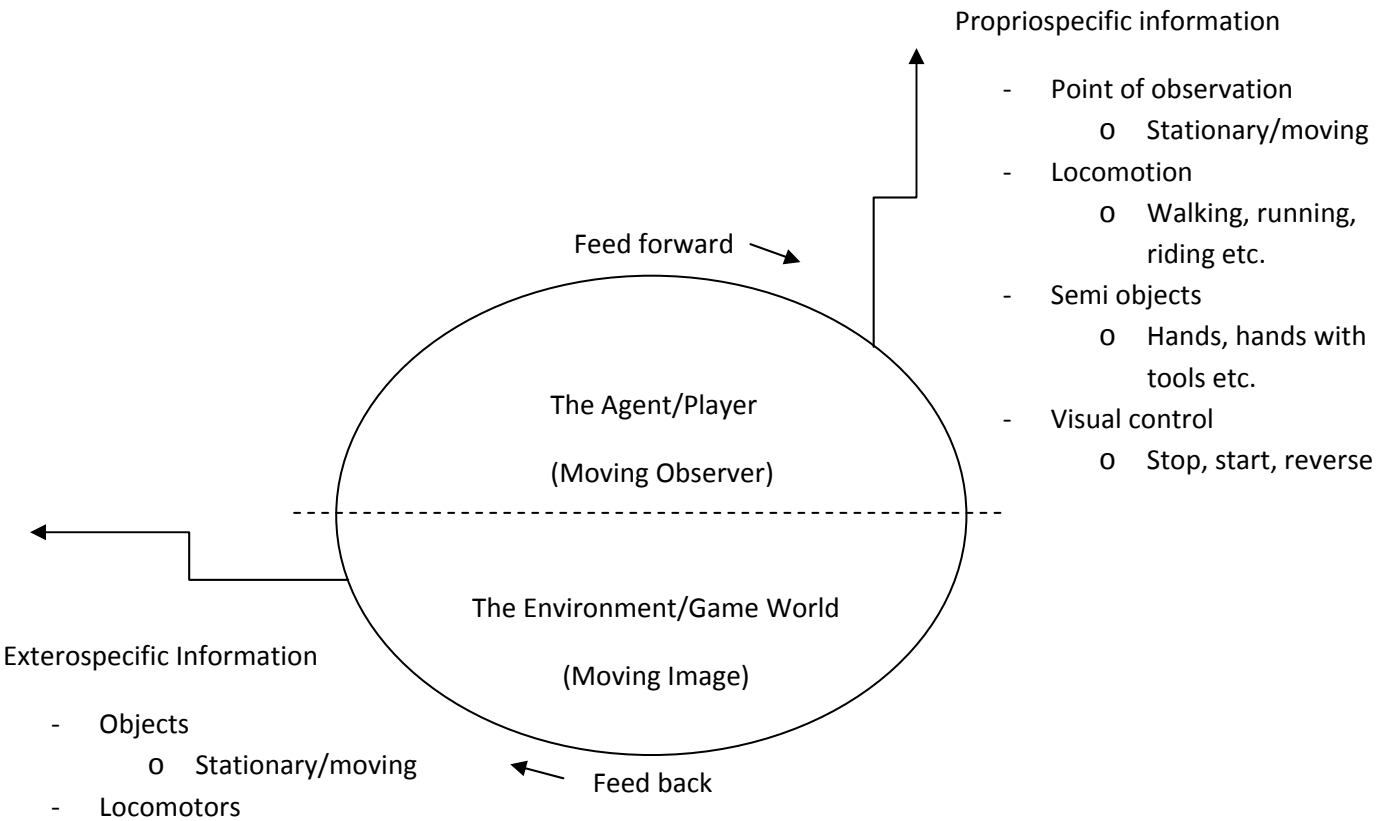
The idea of the test derives from a need to show how the player picks up information for action from the game world. Inspired by Eugene C. Goldstein[4] I have created a model that describes different features of the gaming situation. When one wishes to use the ecological approach to perception it is important to obtain information about both the player and the game world. Certain actions within a game simulate properties specific to either the environment or the player. In the optical changes that occur during the game, it is possible to point out the different levels of simulation. Or at least that is my hypotheses…..

I have chosen to separate the gamer from the gaming world, which is not really possible, but necessary in order to obtain the information that I need. In this presentation I will show a sketch of the model and point out areas of interest.

In the test I will look at the gamers input without asking the gamer and I will video-capture the changes in the game world. But before going in to that, let's look at the model….

[3] The language of new Media, MITPress, 2002, 2. Ed.
[4] Emergent Forms, Oxford University Press 1995

The Action System



The above model sketches some of the main features of the action system. Vital for the test is to specify the information and the optical changes as belonging either to or caused by properties in the environment or belonging to or caused by the player.

In the ecological theory of perception it is proposed that one of our main activities is to differentiate or specify which optical changes are caused by what.

Moving around in a car or merely walking, are activities that require our skills to differentiate, which changes are caused by what. We can make adjustment to our bodily system, when we detect that optical changes in the layout are due to our locomotive style

and support. When other things cause changes to the optical structures, we also make adjustments in order to i.e. avoid collision. Though the optical changes can be described in the same manner, whether caused by one self or others, the possible action for avoiding danger will not be the same.

In the model, I have used Gibson's terminology to describe the simulation of moving image and moving observer.

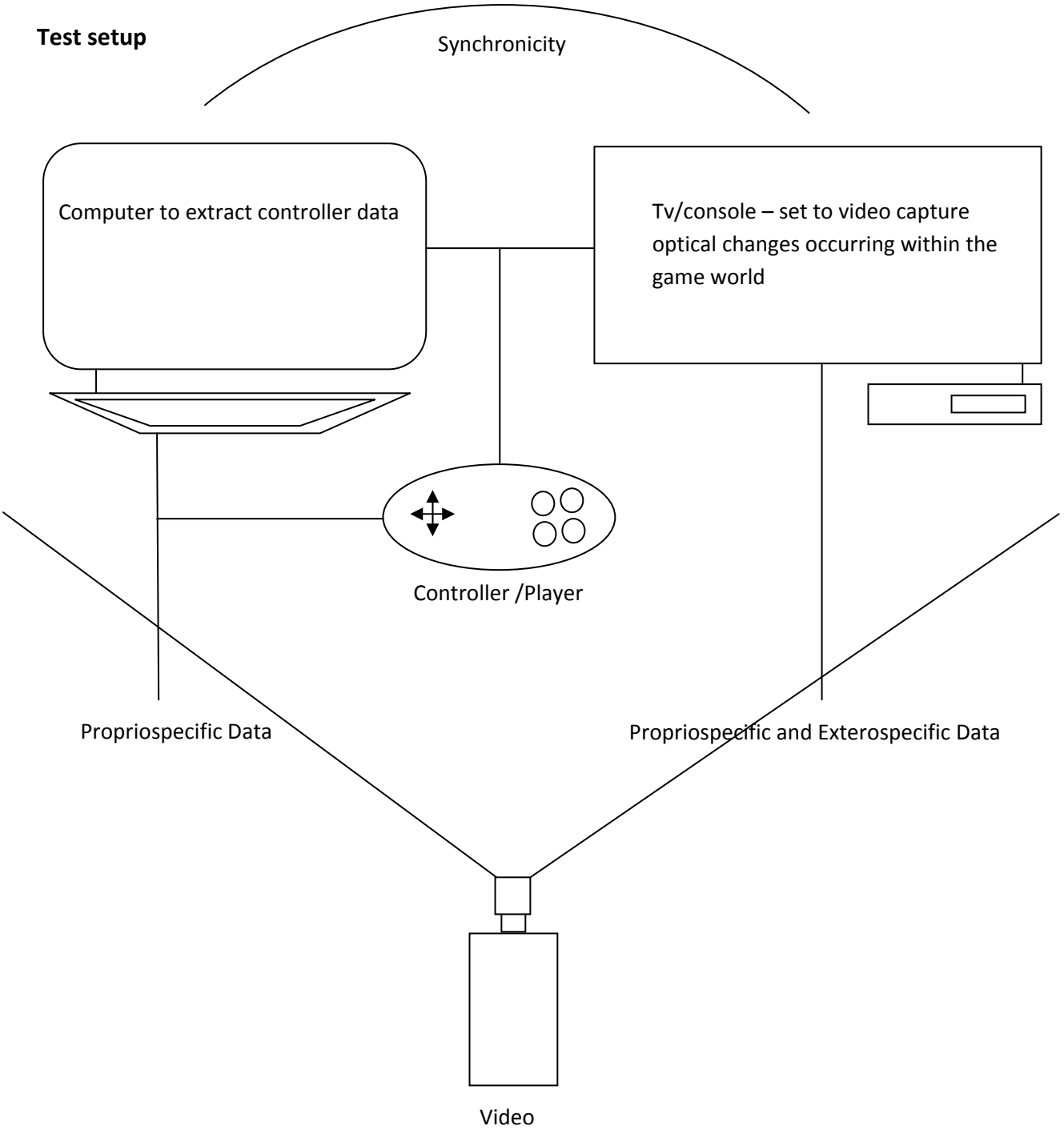
Propriospecific information refers to the optical changes caused by the locomotor/the player. Extracting information from optical changes in the layout is crucial on a number of levels. Within the action of approach, retreat is implied. Within the action of stopping, starting is implied a.s.o. The approaching of an enemy is different from the approach towards an enemy. In the first case retreat is not implied whereas in the latter, retreat is implied. Propriospecific information in the layout determines the actions and changes caused by the player.

Exterospecific information refers to changes not caused by the player that is, the actions of in game characters, moving objects etc.

The action system, viewed from the ecological perspective, can be described as the flux between the picking up of proprio- and exterospecific information, which again informs the player of the possible actions.

Below I will sketch the test set-up and comment on the functions.

Test setup



In this setup two sets of data are obtained; the data from the controller and the data from the onscreen optical changes in the layout. The idea is that it will be possible to sample the two data sets into an overview of what information caused the user to perform which actions. Because of a need for synchronicity between the two data sets, video capture has been chosen. This is a way of avoiding the time consuming work it would, be to compare the timeframe from the video and the timeframe from the controller data, if these data are captured separately.

From the controller it is possible to obtain exact specifications about the players actions as in opposition to asking the player, where the reliance on the players memory will be to imprecise. Also the actions carried out via the controller will in some cased be done so rapidly, that the player hardly will notice it and therefore can't make references. The data from the onscreen changes will be described will ecological terminology, and again, questioning the player makes no sense, since he/she will not be familiar with the discourse needed.