

Visual Perception in Digital Games

Edson do Prado Pfützenreuter (Prof. Dr.), Matheus Schmidt de Camargo Cesar (IC).

Abstract:

The study of visual perception includes physical, chemical and biological phenomena related to luminous capture – focusing on how the image construction contributes to the development of an organism's appropriate behavior in a particular environment. Similarly, game designers develop their games expecting to develop meaningful play – making use of interdisciplinary knowledge to situate the player in an artificial environment. The research intends to study the processes related to visual perception and its possible contributions to the construction of a coherent artificial environment.

Keywords: Visual perception, Games, Design.

Introduction

The study of visual perception handles with the entire process of image formation, comprising from the physical phenomena of light gathering in the eyeball to chemical and nervous reactions, occurring respectively in the retina and brain. All these mechanisms are due in some way to the evolutionary process - in a progression that culminated in the development of a sensory system that promotes the most appropriate behavior of the human organism in the environment it inhabits.

Likewise, game designers seek to develop universes with which the respective players can interact efficiently, in a system characterized by rules, conflicts, challenges and rewards. Understanding the active¹ ways in which the visual system operates might be an important tool on the development of these artificial environments.

Results and Discussion

A critical analysis of colors in natural environment points to the fact that there is a strange relationship between what is perceived by the human kind and what in fact happens in the physical world. Studies initiated by artists such as Josef Albers², and later continued by scientists and neurologists, indicate an explicit difference between the luminance (or the physical measurement of the amount of light on a surface, in cd / m²) and the perception of light - a consequence of the perceptual luminance.

This discovery points to the development of a sensory system that acts differently from a sensor in physical environmental conditions, operating as a mechanism that develops a biologically appropriate behavior, even if it means changing an information according to its surroundings (as exemplified with luminance).

From the point of view of a game designer, understanding the visual system may be a valuable information for developing artificial environments, once

it clarifies how the human organism decodes and reacts to stimuli.

The construction of these environments, however, proves to be a quite complex process - since the development of a game takes into account factors that favor a meaningful play³ - paying attention to uncertainty systems, rules, conflicts, and goals.

Conclusions

The information provided by the understanding of visual perception mechanisms are of vital importance in the design of digital games. However, it is clear that, in order to develop a meaningful experience, a game designer is supposed to pay attention to other complex elements regarding the interaction established by the players with the game system.

Acknowledgements

I thank my family and girlfriend for their unconditional love and support. I also thank my supervisor, Edson do Prado Pfützenreuter for instructing me through my research.

¹ WARE, Colin. **Visual Thinking, for Design**. Nova York, Elsevier Inc, 2008.

² ALBERS, Josef. **A Interação da Cor**. São Paulo, Martins Fontes, 2008.

³ ZIMMERMAN, Eric e SALEN, Katie. **Regras do Jogo: Fundamentos do Design de Jogos**. São Paulo, Blucher, 2012.