

# Reality play: threads on digital games

## Introduction

Digital games are hybrid media built from a mix of simulation, experience design, rule systems, multimedia, and a fair proportion of the unknown. I play games. I make game art. I teach students how to make games. Digital games are everywhere. As we become increasingly versed in the ways of simulacra, these experiences are assimilated into our culture and they become a part of us. What are they made of? How do they work? How do they construct meaning?

Digital games have been around since the first digital computers -- about forty years. However, it has only been recently that they have been the subject of critical analysis with the emergence of conferences [10], symposia [11], journals [2], books [12,14], and research centres [1] that study games. This article sets out to articulate how the gaming experience is different, from a viewpoint of art practice that explores gameplay as an important component of the 'language of computers.'

## World making

Making digital games can be seen as an extension of the practice of 'world-making.' Artists may take on the role of world builder -- creating coherent alternative worlds from patterns of information. Steven Holtzman describes this practice in terms of how in "a system of symbols to represent a view of reality, the artist shares his consciousness of aspects of that reality." [4] The representations of these worlds are made of meshes, geometric primitives, textures, materials, sound, music, text, graphics, animation and other media elements. However, they are also defined in terms of the relationships between these elements -- their behavior, spatial location, connection to parameters in the world, the meaning each representation is intended to signify and so on. The user / player is factored into this system through their agency and affect on the virtual world. This role may range from passive observer to active engagement. This multi-level system offers rich opportunities for new models of communication and expression.

In the construction of a virtual world, a number of decisions need to be made so that it works as a simulation. It is

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impossible, from a computation and design point of view, to model every aspect of reality in a virtual world. So, particular aspects of reality need to be selected and simulated in the virtual world. The result is a subset of reality that emphasizes a particular experience or way of being. A driving game is focused on the experience of driving, a first person shooter on hunt-and-kill type behavior, and so on.

Factoring gameplay into the practice of 'world-making' extends this practice by involving the player / user into the experience. Virtual worlds that set up situations and allow the player to act out scenarios are naturally quite different than static virtual worlds that enable the navigation of a single point of view through space. The rules of the game set up the potential for many different outcomes in the virtual world.

A variety of strategies for using gameplay in art have emerged over the past decade. Games that involve play with abstract systems, modifications of 3D game engines, soundtoys, and retro games are some of the genres currently being explored. A recent symposium and exhibition entitled "plaything" [11] demonstrated the diversity of approaches to game art. *Metapet* is an online game by Natalie Bookchin that allows players to train transgenic office workers. *domestic* is a game modification that immerses the player in a story space from the childhood of its creator Mary Flanagan. *Ah\_Q* from Feng Mengbo situates the artist as spectator and victim in a Quake 'fragfest.' *Rez*, designed by Tetsuya Mizuguchi, features flowing, synaesthetic gameplay with an electronica aesthetic. *Arcadia* from Eric Zimmerman's gameLab allows the simultaneous play of a number of Atari 2600-style classic games.

## Semiotic morphism and game spaces

In my own practice, I have recently been working on the intersection of semiotic morphism with digital games.

Virtual worlds have the innate ability to shift and change, mutate and transmutate, and layer multiple modes of representation. Semiotic morphism is a model for translating the same data between these different modes of representation through computation. Potentially, hybrid modes of representation may be computed by the system. It uses algebraic semiotics [3] to adapt semiotic structures into functions and theorems using algebra and set theory. Once defined in this way, "semiotic morphism allows the signified message to be mapped to various signifiers resulting in a system that

by Troy Innocent

generates different instances of semiosis. This strategy reflects the nature of the computer both as a manipulator of language and computational machine." [5]

*Semiomorph* [5] explores this idea by connecting gameplay with shifts in representation based on Goguen's theory of semiotic morphism. [3] The gameplay is described as follows:

The goal of the game is to collect enough energy points to create a semiomorph and move onto the next stage. The kind of energy you collect will shift your mode of representation between word, diagram, icon and simulation. This in turn will change the rules of play and your effect on the world.

You must avoid opposing entities and blast icons. Power-ups make you invincible for a short period of time. Muticons switch your mode of representation instantaneously.

The resulting space is one that is constantly shifting and changing, blending several forms of representation into one experience. Although the underlying structure of the space does not change, the different instances of the game objects may be simultaneously represented as text, diagram, iconographics, or simulated reality.

The separation of content and representation is part of a wider cultural logic that is characteristic of digital media.

Generally, we are familiar with the idea of the interface as a representation of data, and with the concept that "being digital means being able to reinvent yourself at the click of a mouse: morphing effortlessly from calculator to spreadsheet to word processor to video-editing console and back again." [4] The practice of game

modification is an example of this that may be viewed in terms of semiotic morphism. Game modifications involve the replacement of textures, models, sounds, animations, maps and other elements in order to create new levels of a game, or entirely new scenarios represented through the original game engine. Typically, the rules of play and underlying world remain unchanged, although more sophisticated game mods do alter the functionality of the game. Modifications by artists may subvert the meaning of a game, or transform it into a musical instrument. This has also spawned new areas of activity, most notably the practice of film-making using game engines, known as machinima. [9] In terms of semiotic morphism, the same system (the game engine) is translated into multiple forms of representation (the game mods).

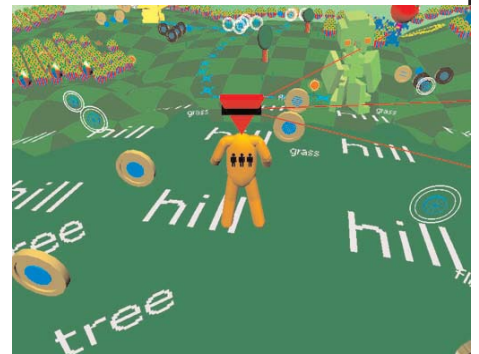
Semiotic morphism has the potential to define this process in purely computational terms. Once in this form, new blended modes of representation may be generated by the system.

In a wider context, semiotic morphism attempts the mathematical definition of different sign systems in terms of 'algebraic semiotics,' so that translations between these different systems can be computed. If different game spaces could be defined in these terms, then semiotic morphs between them could be performed. Try morphing Quake III into the Sims or Grand Theft Auto III into Super Mario Bros.

The resulting process could be described as a generative meaning system -- "a simulated world made of signs that have agency to change their own meaning, relationships and environment." [6] The key concept here is that this new 'cultural logic' may be defined as a process that can be used to compute and generate

new meanings. This may be compared to the paradigm of genetic programming [8], where a computer program writes and tests other computer programs in relation to their fitness to perform a particular task. A graphic example of this can be seen in the evolution of walking and swimming behavior by Karl Sims *Evolved Virtual Creatures* [13], who evolve novel methods of moving about a virtual world.

Different modes of representation in *Semiomorph*.



**What is the ontology of gameplay? If games create hybrid modes of being, new experiences, novel methods for the generation of meaning, then how is that perceived and assimilated by the player / user?**

In terms of the practice of 'world-making,' the idea of a generative meaning system connected to a virtual world enables the generation of multiple realities through the manipulation of rules and the processing of feedback from the user / players of the system. *lifeSigns* [6] is an example of such a system where icons generated by a system interact with one another in an artificial life simulation. The meaning of each icon emerges through data collected from the players. As a result, the system produces many different iconic languages for the meanings defined within the system.

## Ontology of digital games

What is the ontology of gameplay? If games create hybrid modes of being, new experiences, novel methods for the generation of meaning, then how is that perceived and assimilated by the player / user? Perhaps, digital games are different from other mediated experiences because of the intensity of experience often associated with them. The process of play itself creates a continuous stream of experience unlike something like web browsing, for example, which involves shifting focus from one thing to the next.

Gameplay engages players with logic and rules of the system, requiring them to engage intellectually with the game -- develop strategies, analyze behavior, track scores etc. The simulation manipulates the players' perception by presenting what appears to be a realistic 3D space, so that the virtual world is perceived as a 'real' experience. Playing games for extended periods typically leaves aftereffects on your own experience. The player may catch him or her self thinking in terms of the gameplay or world navigation in day to day experience. The perception of other spaces and experiences is changed by having also played in simulations and models of similar spaces.

In terms of perception, digital game experiences can be seen as being real, symbolic, or in-between. They may be seen as real in that they are represented through the use of all

perceptual cues of real experience, such as perspectival viewpoint, spatialized sound, immediate feedback, light and other phenomena. However, they are constructed from code -- symbols and relationships between symbols -- that is represented by this realistic simulation. In this way, they could be described as the symbolic made real -- the world model / abstraction that forms the underlying system is experienced in a mode of perception usually activated by the real world. In this way, the idea of experiences and worlds that were only possible in theory, dreams, and the human imagination is actualized in the abstract space of the computer. Factoring the computer into the process of generating these spaces extends this to the potential expression of a 'non-human imagination' as well.

This combination of elements results in a kind of hybrid way of being in the game space -- awareness that it is a simulation, but at the same time immersed and engaged as if it is a real experience. This could be described in terms of layers of being; the player is immersed in the simulation in that, perceptually, he or she is 'there,' but intellectually, the player is aware that it is a game and reads it as a mediated representation of the experience.

## Conclusion

Clearly, the recent interest in the creative potential of digital games has opened up a range of opportunities. In the way that digital games blend the construction of alternative worlds, intense engagement through simulation, and networks of meaning resulting in unique instances of semiosis, they are rich environments for new types of communication and creative expression. Deeper understandings of these characteristics of game spaces --combined with the integration of methods and techniques from artificial life and generative systems - extends this potential in the manifestation of 'generative meaning systems.'

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