Believability in Computer Games

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ABSTRACT

Computer game developers have endeavoured to provide players with meaningful experiences in their stories. Unfortunately, very few have succeeded. One reason for this is the lack of understanding of how best to present a story in an interactive environment. This is in part due to the lack of theoretical underpinnings. This paper will present an extended definition of believability as one such theory as well as the requirements and qualities required to achieve believability.

Categories and Subject Descriptors

K.8.0 [**Games**]: Believability and Computer games.

General Terms

Theory

Keywords

Computer games, believability.

1. Introduction

One of the main goals of computer games and interactive drama is to immerse the player. Murray (1997) defines that immersion as:

> ...a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool; the sensation of being surrounded by a completely other reality; as water is from air, that takes all of our attention, our whole perceptual apparatus. (pg 98)

Believability is one way of achieving immersion in narrative computer games. Believability is the suspension of the player's disbelief. One would question why believability is necessary. Simply put, because many games are no more than a medium for spectacle. This concept is best described by McKee [1] :

> Every decade or so technical innovation spawns a swarm of ill-told movies, for the sole purpose of exploiting spectacle. The invention of film itself, a

> startling simulation of actuality, caused great public excitement, followed by years of vapid stories. In time, however, the silent film evolved into a magnificent art form, only to be destroyed by the advent of sound, a yet more realistic simulation of actuality. Films of the early 1930s took a step backwards as audiences willingly suffered bland storied for the pleasure of hearing talk. The talkie then grew in power and beauty only to be knocked off stride by the inventions of colour, 3D, wide screen and now Computer Generated Images

Like films, many games are more interested in showing the latest visual effect than providing interesting stories. These visual effects are spectacles. Spectacles (as McKee implies) eventually loose their lustre and something more meaningful is needed. Stories are one way of providing a more meaningful experience in computer games. Unfortunately, those games that do have stories often have very shallow stories or very shallow gameplay. One of the reasons for this may be that games are a very different medium to films and the written word – which are often linear and non-participatory. Thus, the old theories for designing a story do not fit well with games. This problem is best described in [2] . It is my belief that believability can provide a theoretical underpinning for writing narratives in computer games. This paper will provide the basic requirements of believability in computer games. This discussion will be framed in terms of qualities and requirements that achieve believability in narrative computer games. It is hoped that this paper will provide guidance into how best to design believable stories for computer games.

2. EXTENDING BELIEVABILITY

For the purpose of this paper believability is the quality of fiction to suspend disbelief of the audience/player. This concept is more commonly know as the "suspension of disbelief" or "poetic faith". These terms were first coined by Samuel Taylor Coleridge [3] . Suspension of disbelief describes the quality of good fiction to make readers accept the unexplained or seemingly irrational aspects of story for the purpose of enjoying the story. Believability, however, is a term that has become synonymous with believable agents. A believable agent is "one who seems lifelike, whose actions make sense, who allows you to suspend disbelief" [4] . Computer games do more than present characters to the player, they also model a world. Whether this world is the orient express, a futuristic world, another planet or someone's backyard the setting and events affect the believability of a game. Therefore, it was necessary to expand the definition of believability to be more encompassing.

3. QUALITIES OF BELIEVABILITY

To achieve believability, a computer game must consider three qualities: agency, consistency and fidelity. These qualities were inspired by [5] .

3.1 Agency

 "Agency is the satisfying power to take meaningful action and see the results of our decisions and choices" [6] . Normally, the term interactivity is employed to describe this quality. However, the term interactivity is unhelpful. Murray [6] describes why:

> *Because of the vague and pervasive use of the term interactivity, the pleasure of agency in electronic environments is often confused with the mere ability to move a joystick or click on a mouse. But activity alone is not agency. (pg 129)*

Related to the concept of agency is that of affordance. According to Mateas [7] affordance is a term taken from Human-computer interface design, which describes the quality of an interface to "'cry out' for the action to take place". Mateas describes two types of affordance in an interactive environment – material and formal. Material affordance is the ability of players to interact with objects and entities in the game world. Formal affordance is the dramatic "probabilities", that is, what the author does and does not want the player to do in regards to the story. According to Mateas, when a balance is struck between the two affordances then one has agency. Agency is important to believability. It could be argued that most people accept that an action will lead to some sort of reaction. For example, if someone were to walk on autumn leaves, they would expect to hear a sound or if a person hit someone, then there should be some emotional response. Therefore, anything that breaks, or seemingly breaks, this law would be hard to believe. As agency is essentially the application of this universal law of action/reaction within the confines of a narrative, believability cannot be achieved without agency. Many games do not do this well. For example, in many games the gameplay focussing on violence, which could be perpetrated on innocent civilians. However, the consequences of this violence are not dealt with in an appropriate manner. That is, a player can inflict extreme violence on a populous without retribution or worse, the game screeches to a halt without any explanation given. One game that breaks from this norm is Outcast [8] , where killing a civilian would lead to the characters in the game becoming uncooperative. This ensured that the players actions had meaning and purpose.

It should be noted that though interactivity is a poor term, its pervasiveness in the literature makes it difficult avoid. Therefore, out of convenience, this term maybe employed in later sections.

3.2 Consistency

Consistency is ensuring that given the same state, an action will lead to the same sort of behaviour. This is a fundamental requirement of believability. This is extremely important in a game that supports agency environment where the player can do almost anything. For example, if the player uses lock picks to open a one door but cannot use the same lock picks on a similar lock then this will frustrate and annoy the player.

3.3 Fidelity

Feinstein and Cannon [9] define fidelity as "the level of realism that a simulation presents." Though this is in relation to pedagogical applications, this is nonetheless an acceptable definition. It can be argued, that fidelity in one area at the expense of another can have very negative impacts on believability. For example, the game Ultima IX [10] models weather cycles and night/day cycles. However, this modelling has not determinable affect on the character in the world. The characters are always awake and they do not run for cover when it rains. Here, the weather modelling has high fidelity, but the characters do not, leading to a break in believability. High fidelity, in all aspects, is hard to achieve with the limited resources of a computer and one needs to analyse where those precious resources should be invested and if something cannot be modelled holistically then it may be best not to model it.

4. FUNCTIONAL REQUIREMENT OF BELIEVABILITY

In previous sections, the qualities for achieving believability were described. This section will focus on what can best be described as the functional requirement of believability. This section will be organised according to narrative theory focussing on the structuralist school of thought. This was done to provide a convenient way of framing this discussion. In the structuralist school of thought, narratives can be described in terms of three layers – text, story, fabula. The fabula is a "series of logically and chronologically related events that are caused or experienced by an actor" [11] . The story is "a fabula that is presented in certain manner" [11] . Finally, the text is where "an agent relates ('tells') a story in a particular medium" [11] . This breakdown is used by narratologists (those who study stories and narratives) to frame an analysis of a narrative text. We will focus on the fabula as it is at this level that believability manifests itself. Text and story are more concerned with the presentation and telling of the story. It should be noted that even though the model being presented is based on narrative theory this does not mean that I am not siding with narrativist view in the supposed narrativist versus ludologist debate. I am only using narrative theory as a frame for this discussion and not a frame for analysing games, which is the concern of the narrativists and the view that ludologist are against. For more information on ludology see [12] .

4.1 Events

Without events a fabula would not exist. An event is defined as: "The transition from one state to another state caused or experienced by actors" [11] . Aristotle and Bremond believe that an event consists of three elements: the possibility, the event and the result (cited in [11]). To understand this structure, consider the following example:

a)   Fred wants to get an engineering degree

b)   Fred studies at university

c)   Fred becomes an engineer.

This example satisfies the requirements an event as Fred (our actor) has changed his state from a non-engineer to an engineer. In this case, (a) is the possibility, (b) is the realisation and (c) is the conclusion.

This structure is significant as it can be realised with the aid of code. That is, a programmable entity called an "Event" can be developed as part of a software framework, with the possibility, realisation and conclusion being represented within this entity. A similar structure was developed by Mateas [7], though he does not explicitly represent the conclusion. In my own work[1] [13], events are represented in a similar fashion to that described above, however, the terminology used is different.

4.2 Actors
Actors are "agents that perform an action" [11]. In the case of computer games, the best way of producing believable actors is by creating autonomous, believable agents. Autonomous believable agents ensure that the actors behave in a manner consistent with their personality. As there is significant work already done into believable agents this topic will not be covered here. For an overview of the research into this area, refer to [4].

4.3 Location
Location refers to where an event takes place. The location defines where actors are situated culturally as well as physically. In traditional mediums, this is the main significance of location. However, location has a far greater significant in computer games where the location requires modelling. It is not enough that the location is merely represented graphically. The location must also be reactive to ensure agency. This requires some modelling of physics. In this case, physics refers to the consistent interaction of forces and objects such that suspension of disbelief is ensured. This definition does not equate to realistic physics, only consistency. This ensures that stories set in fantasy landscapes, which may have magic and forces that are contrary the real world's law of physics, are not unfairly called unbelievable. That said the author should consider the audience when designing the rules of the location to ensure believability.

4.4 Time
There are two issues related to time – duration and interruption. The duration refers to the time period in which the fabula takes place. In computer games, the player sets the duration. Pacing is the quality of storytelling whereby the story alternates between relaxation and tension to improve the thrill and suspense of the story [1]. As Adams [2] discusses, having the player control the duration has caused difficulties with pacing which is difficult to set when the player is in control. The modelling of time compounds these difficulties. As such, many games do not model the passing of time, thus avoiding the problem. The game The Last Express [14] avoids pacing problems by having an elastic view of time with time speeding up and slowing down to keep up with the pace of the player. This works relatively well. Most games that do model time (including the Last Express) do not model time realistically. One second in the real world does not equate to one second in the game. Generally, the game time runs faster than real time. This helps with the pacing of the story as

well as the gameplay as it avoids having to wait long periods for events to take place.

Interruption refers to the break in the fabula to improve pacing. For example, instead of mentioning every event from morning to night, one only mentions the interesting sides of life. This poses some interesting difficulties in an interactive environment. If one were to model time in the game and still allow interruption then this may lead to some unwelcomed behaviour. For example, if an actor has a goal to be at a specific place at a specific time and game clock is put forward, for interruption purposes, then the actor may not achieve that goal and, depending on the model used for the actor, may lead to unwanted behaviour or worse, may adversely affect the consistency of the story. One answer is not to reset the clock but to speed it up and ensure that the world and actors can react appropriately.

5. TROUBLES WITH BELIEVABILITY
The definition of believability has a subjective underpinning that may be unsatisfactory to some. Adams [15] describes this phenomenon using the film The Matrix. The Matrix's main premise is that it is possible to farm human beings "for the energy their bodies produce - electricity and body heat" [15]. For Adams this adversely affects his suspension of disbelief and as this premise breaks the laws of thermodynamics[2]. If the success of the Matrix films is used as a guide, it is clear that this is probably an issue specific to a select few people – including Adams. However, it does highlight the subjective nature of believability. It is important when one is taking into account believability that an author/designer considers their audience and ensures agency and fidelity in the game

6. CONCLUSIONS
Many computer game designers have yet to develop interesting stories in their stories. One reason for this is the lack of theory behind narratives in interactive storytelling. It is my belief that the extension of the definition of believability and the use of this concept can lead to better stories in games. Believability, under my definition, is the suspension of disbelief. This is achieved by agency, consistency and fidelity. Additionally, the narrative theory provides us with a framework to achieve believability. It is hoped that believability will lead to better narratives in computer games.

7. ACKNOWLEDGEMENTS

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[1] A thesis I completed in conjunction with Christopher Logan.

[2] The laws of thermodynamics states that one cannot put more energy into a system than one can get out.

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