Virtual Storytelling as Narrative Potential: Towards an Ecology of Narrative

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Abstract. In this paper virtual storytelling is considered as narrative potential – the integration of agency and narrative. To facilitate this, an aesthetics of VEs is introduced as the context for the analysis of a popular computer role playing game. The game is analysed in terms of Perceptual Opportunities – a content model for virtual environments. From this analysis some inferences are drawn concerning the way in which agency and narrative may be successfully integrated to facilitate virtual storytelling.

1 Introduction

Storytelling is an ancient and venerable art which humans have subsumed to a variety of media for a variety of purposes. Equally ancient and as important is the enactment of ritual where attendance and participation are of primary importance. The huge and continuing marked for the novel and attendances at football matches are testaments to the power which both hold to this day. Two important technological manifestations of these would seem to be the feature film and the computer game. In the former we have the dominance of narrative over participation, while in the latter we seem to have the dominance of participation over narrative. In the Star Wars films we follow the story of Luke Skywalker - the Jedi Knight - but in the game Jedi Knight we become a Jedi Knight with our own, less grandiose stories to tell. The difference is important for virtual storytelling because we are essentially offering the user the potential to find and tell his or her own story - not necessarily the author's.

Various authors have stated the intuition that computer games and storytelling are mutually exclusive - essentially expressing the view that agency and narrative are irreconcilable, for example [1]. Despite these apparent difficulties, various forms of virtual storytelling have been proposed from a range of perspective, e.g. a more literary approach [2] and in terms of such concepts as interactive cinema [3]. This paper considers virtual storytelling from the point of view of a playable character in a Virtual Environment (VE) and views virtual storytelling as a form of narrative potential seen as a balancing of both narrative and participation and that therefore the two can co-exist in the right circumstances.

In order to better understand narrative potential it is first discussed in terms of an aesthetics applicable to Virtual Environments (VEs) in general. To support this and to provide a practical context Perceptual Opportunities (POs) - a general content model

for VEs - are introduced and their applications to virtual storytelling in particular discussed. POs can be organised into perceptual maps that offer an alternative to storyboarding and are an excellent technique for virtual storytelling design and analysis. The application of POs to gain insight into the nature of virtual storytelling will be achieved through the analysis of the computer game Shenmue[1]. From this analysis some generalisations will be made.

First, however, some brief thoughts on the nature of narrative and why 'new media' and VEs in particular are different.

2 The Nature of Narrative

As Barthes [4[points our, narrative, in a diverse range of forms and to suit a diverse range of purposes, pervades human culture across the ages. Narrative also seems to be able to adapt to and make its home in almost any communications medium. Yet characterising narrative is no simple task and yet we need to do so if we are to consider what we might mean by virtual storytelling. At one level we could characterise narrative in terms of genre, plot, characterisation and connotation. If a VE possessed some or all of these it might well be considered an example of virtual storytelling. In a more structural approach, Roland Barthes [4] identifies the following as defining characteristics of narrative:

- Levels of meaning, i.e. basic units, the level of actions, the level of discourse, as well as the linear development of the narrative structure.
- A confusion of consequence - what is caused by what - and consecution – what simple follows what.
- If the narrative arrives at a major turning point it will always seek to choose the option which will prolong its life.
- Time is relative to the narrative logic – real time does not exist in narrative.

Of course this is not the whole story (pun intended) but it will allow us to address a particular question. How does virtual storytelling differ from narrative in general? If the answer to this is that it does not then there is nothing to investigate here. This paper assumes the answer is that it does and sets out to identify some of the differences.

3 Work and Meaning

When we read a book we usually don't consider the work we are doing to facilitate meaning. We might be aware of the fact that we are transforming our perceptions of abstract symbols into words and phrases - lexia in Barthes's terminology [5] - and then into meanings. But are we very often aware of the work of holding the book appropriately, of turning the pages, of aligning our head appropriately, of moving our eyes and focusing our eyes? The work of reading is so closely allied with the

[1] Shemnue and its characters are trademarks of Saga of America Inc.

construction of meaning from written texts that we usually don't notice we are performing it. When using VEs we will always have to exercise conscious work in order to find meaning in them. Moreover, this conscious work is at the heart of the pleasure of VEs and replaces meaning almost completely in some cases. Tetris is a good example where the actual meaning of the game objects - essentially simplistic jigsaw puzzle pieces - is far less important than the work of reconfiguring them into winning combinations. The latter is the driving pleasure of Tetris.

Aarseth, for instance, has proposed the idea of textual machines to capture the relationship between users and interactive digital media applications such as VEs [6]. Experimental results are beginning to show the degree to which perceived effort overrides the potential benefit of finding meaning [7]. Thus, one of the principle objectives of VE design is to implicitly suggest to people how they might organise the work of configuration in order to construct appropriate meaning. For virtual storytelling this should mean that such work is always subservient to the construction of meaning. In other words, the work of constructing configurations is never more interesting that the meaning of these configurations. But the work of meaning, participation, is at the heart of virtual storytelling just as much as it is of VEs in general and is one of the great pleasures that make the medium so engrossing.

4 The Aesthetics of VEs

Aesthetics gives us insights into the particular pleasures communications media offer and thus help us focus on designing content best suited to a particular medium. In general it will be the case that some of the aesthetic pleasures of a medium will be common to others but there will also be some that are particular to it. VEs are no different. However, because it is a relatively new medium the aesthetics of VEs are not well understood or documented.

However, the following is what might be called the Church-Murray aesthetics of VEs [8] because it is primarily a combination of Janet Murray's aesthetics of interactive digital media [2] and Doug Church's 'Formal Abstract Design Tools' for computer games [9]. It also draws on other work on presence, co-presence and transformation. The Church-Murray aesthetics, which has been found useful in both the teaching and design of VEs, consists of:

- Agency - the sense of feeling, at least to some extent, in control is composed of:
  - Intention - the formulation of goals and plans of action
  - Perceivable consequence - seeing the VE change as a result of intentions put into practice
- Narrative potential - the accumulation of meaningful experience as a result of agency - allows users to construct their own appropriate narratives. Narrative potential thus arises from agency but is not determined by it. NB. Some commentators place story or narrative here but for reasons stated in the introduction that would seem inappropriate when viewed in juxtaposition with agency. See below for further discussion.

- Transformation - refers to the ability of VEs to, temporarily, offer users new skills and powers or even to allow them to become different people or different species entirely.
- Presence and co-presence - which refer to users' senses of not only being in a mediated environment but also being present there with others.

This characterisation of the aesthetics of VEs is not definitive and could also include the pleasure of learning how to succeed in a VE. If we consider agency in relation to various applications domains then we see that the form of agency built into a virtual shopping mall must be quite different to that built into a computer game *shoot-em-up*. In the former, shoppers must feel in complete control if they are to spend money by giving up personal credit card details. In the latter, control must be partial or the game will not be of interest for very long.

In terms of narrative potential we can comment that all human situations have narrative potential in the sense that a good storyteller could find something in a trip to the corner shop to buy a bottle of milk the basis for a good narrative. The narrative potential in shoot-em-ups is typically of first I did this, then I did that, type. The sort of narrative potential we are looking for would be far richer and far more in accordance with the notions of genre, plot and layers of meaning, for instance, introduced above. It would be the sort of narrative potential that would lead users to realise the types of rich literary experiences that VE authors intended for them rather than a mere recounting of events.

Having identified an aesthetics of VEs, in particular agency and narrative potential, we now proceed to find the mechanisms that enable them.

5 Perceptual Modeling

The Perceptual Opportunities (PO) model of the content of VEs consists of a set of syntactic categories, which can be seen as attributes of any object that might conceivably be placed in a VE [10]. These attributes specify the way in which the object is intended to function in terms of communication. The syntactic categories into which POs can be characterised identify their role in achieving purpose and it is their planned interaction that gives us the overall structure we are looking for. We might thus see POs as a possible characterisation of the *lexia*, the base units, of virtual content rather than its scene graph representation. Figure 1 (below) shows how the range of POs can be broken down into three principle forms that are briefly discussed below.

Fig. 1. A Characterisation of Perceptual Opportunities

At the first level we bread POs down to sureties, which deliver basic belief in a VE, surprises, which deliver the conscious purpose of a VE, and shocks, which are perceptual bugs that tend to emphasise the mediated nature of the VE. For a fuller discussion of POs and wider VE design issues see [8 & 10]. In this paper we are going to concentrate on surprises and the way in which they relate to agency and narrative potential.

Surprises come in three basic types:

- Attractors, which, as their name suggests, are designed to attract people's attention to possibilities for agency and should stimulate goal formation.
- Connectors are concerned with planning to achieve goals and supporting their attainment.
- Rewards again, as their name suggests, should reward people for the exercise of agency.

Attractors, connectors and rewards can be grouped in triples and each triple will characterise a basic unit of agency. Such units seeking to identify what might stimulate the formulation of a goal, what work an planning is required to achieve that goal and what rewards are on offer for all this effort. A perceptual map is a loosely grammatical structuring of POs that seeks to ensure that users construct an appropriate temporal ordering over their attentions and activities within the VE. The simplest way of representing a perceptual map is by means of a table in the following manner:

Attractors	Connectors	Retainers
Ricochets (Dynamic objects of fear)	Plan is *make for cover* Uses *doorways, walls,*	Activity is *take cover* (Local)

Goal is *find cover*	*alleyway, etc.* Work is *navigation skills*	Reward is *time to think, plan, etc.*
Movement of opponent(s) (Dynamic object(s) of fear and desire – your opponent can fight back) Goal is *find cover*	Plan is *make for cover* Uses *doorways, walls, alleyway, etc* Work i*s navigation skills*	Activity is *take cover* (Local) Reward is *time to think, plan, etc.*
Movement of opponent(s) (Dynamic object(s) of fear and desire – your opponent can fight back) Goal is *frag opponent*	Plan is *take opponent by surprise* Uses *guns and ammo and maybe cover.* Work is weapons skills and navigation etc.	Activity is *firefight* (dynamic, peripatetic) Reward is *fun + increase frag count*

Table 1. A partial perceptual map for a typical *shoot-em-up*

The possible relationships between attractors gives us differing structuring mechanisms that can form the basis of narrative potential. At any one time we may have a choice between a number of different attractors or a choice of responses to the same attractor. These equate to Janet Murray's choice points [2]. Groups of attractors and their associated rewards may form an identifiable task or action and equate with the mini-missions of the computer game world. Particular attractors may instigate challenge points, which are particular goals that have to be attained to make further progress in the VE possible.

Rather than pursue these mechanisms and their relationship with narrative potential and virtual storytelling in the abstract we will proceed to the next section where they will be illustrated with reference to a computer game that would appear to exemplify the very possibilities for virtual storytelling we are looking for.

6 The Perceptual Opportunities of Shenmue

Shenmue is a computer game, a role-playing game, and is interesting because it appears to challenge the notion that computer games cannot tell stories. In this section we will apply POs to Shenmue and come to some conclusions concerning the basis on which virtual storytelling can become a reality (again, the play on words is deliberate).

Shenmue is a quest in which we, the player, direct the principle protagonist, Ryo Hazuki[2] in his endeavors to find his father's murderers. Shenmue is a vast, interactive 3D virtual environment in which the player has to search out clues which will lead him/her to Ryo's father's killer. Despite the extensive reliance on agency Shenmue is has many of the characteristics of narrative. We have a plot, based around the quest, a genre, the detective story, we have characterisation, and we have a beautiful evocation of not only the architecture of neighborhoods but also of the extensive social relationships that are the true heart of those neighborhoods. In Shenmue we have all

[2] As with Shenmue, Ryo Hazuki is a trademark of Saga of America Inc.

these characteristics of narrative existing side by side with agency. Why should this be so despite the oft-cited intuition that games and narrative are mutually exclusive?

In the previous section we discussed the relationship between the pleasure of agency and the expression in the VE of attractors, connectors and rewards. If we look at Shemue for evidence of these we immediately come up against the problem of their sheer number and density. However, we can categorise all these into a few general types, which are:

- Examining and purchasing inanimate objects
- Interacting with active objects such as doors
- Talking to people
- Quick timer events
- Free battles
- Playing arcade games

The majority of work in Shenmue is concerned with the first four. Despite the slight differences in the means of interaction these four share a very interesting characteristic - they all reward users' exercising agency with a pre-defined sequence of actions which effectively temporarily removes users' ability to exercise agency. For instance, in the basic act of opening a door we have the following sequence of events:

1. We perceive an attractor, the door, within the field of view
2. We approach the door
3. As we come within close proximity to the door an icon representing the 'red A' button on the controller appears close to or over the door
4. We press the actual 'red A' button on the hand controller
5. The game engine rewards the users' action with a pre-defined sequence of Ryo positioning himself in front of the door, turning the door handle and opening the door, walking through the door and then closing it behind him. We can only sit and think while this sequence runs to conclusion.
6. The game engine then loads the files, which represent whatever is on the other side of the door.

Why is this so interesting? Well, in most computer games we would trigger a sensor or touch a switch and the door would open and we would walk through. But all this would be under our own volition and if we got in the way of the door we might accidentally stop it opening properly and perhaps be injured in the process. In Shenmue we loose control of the details of the act. Agency is rewarded by removal of agency. But this is exactly the interface of agency and narrative at the basic level of the units, lexia, of the perceptual opportunities of the game. Agency is rewarded by a narrative fragment.

Apart from free battle interludes and playing arcade games, the result of exercising agency is always a pre-defined, sometimes a pre-rendered, sequence. If we are talking to people this will mean a question from Ryo followed by some sort of response, not necessarily helpful or polite, from the person he has spoken to. The conversation can often be continued by another press of the 'red A' that will result in another question and response.

Multiple acts of agency are rewarded by the build up of more and more of these fragments all of which in their own way contribute to the narrative potential of the game. Unlike typical *shoot-em-ups* and *sneak-em-ups* narrative components are not

simply used to frame whole game levels or major subsections of levels. Narrative components are integrated into the game at the level of agency.

One of the consequences of this interplay of agency rewarded by narrative fragments is that the game can use extended *cut scenes* to introduce more substantial narrative material without interrupting the flow of the game. We are simply getting a bigger reward. Cut scenes can also be introduced for other reasons than agency. For instance, the fall of night is indicated by a cut scene of the night skyline of the particular district we are in. The playing of the cut scene is triggered by the time of day - Shenmue time, which runs a lot faster than real time - yet it is not a shock but a pleasant surprise made possible by the basic nature of attractors and rewards which pervade the game.

One of the main reasons for the rich levels of connotation of Shenmue is because conversations and therefore language play a central role in the information space of the game. Further, Shenmue does not have distinct levels but offers a continuous flow of interaction limited only by the storage capacity of the three CD-ROMs on which it is delivered.

Shenmue also makes use of interactive variations on the cut scene idea. Quick Timer Events, for instance, occur in certain situations and require the player to recognise an icon as representing a particular controller button flashed on screen and then press the actual button within a fraction of a second. We usually get several goes at this until we 'get it right'. Examining and picking up and buying objects also works is a similar way as interactive pre-defined sequences.

There are other interesting points to note about Shenmue. It is quite unusual for the physical interface, the controller, to be represented within the game itself. It would normally remind players that this world is mediated and that button presses are analogues for walking and running, for instance. We do not always know the pre-defined sequence we are to get. If the door is locked we might get Ryo's thoughts, a request to go away from the other side of the door and so on. This uncertainty of the outcome of exercising agency is used to great dramatic effect in Shenmue. The encroachment of the 'red A' into the game world is also used to highlight possibilities for agency, which are not obvious from the game logic the player has so far encountered.

7 POs, Narrative Potential and Virtual Storytelling

POs offer a view of the basic components or lexia of VEs in terms of agency. The organisation of these into a perceptual map allows us to consider their configuration in terms of larger structures - such as routes, choice points, challenge points and retainers - that represent the narrative potential of a VE. Narrative potential can be seen as both the degree to which such structure can accumulate to form meaningful experience and the degree to which content preserves its meaning over the course of the narrative rather than being overwhelmed by the pleasure of agency.

We can now identify a number of similarities between traditional narrative and virtual storytelling - at least in the context of Shenmue. Both have:

- Extensive characterisation – at the heart of Shenmue are the diverse range of distinctive characters, including Ryo, who we have to get to know and understand.
- Levels of meaning based on connotations not directly expressed in the text or game – we come to see the neighborhoods of Shenmue as social spaces and not geometrical, for instance.
- A confusion of the consequential and the consecutive – because narrative is integrated at the level of agency we don't immediately know what is important and what is not.

This is not to say that virtual storytelling is just narrative on computers for it is not. There are major differences:

- Barthe asserts that when a traditional narrative reaches a major choice point between alternative actions it always makes the choice that ensures it continued survival. This is clearly not the case with virtual storytelling because of agency.
- In traditional narrative forms agency is reduced to the decision to read on, view on, listen on, and so on, or not whereas virtual Storytelling requires the active expression of agency.
- This has the result that in virtual storytelling, challenge points are genuine challenges, which cannot be resolved by reading or watching on. As the player I have to solve the problem before I can proceed.
- One of the characters takes on a particular significance because it the one associated with the playable character and therefore indirectly with us the player. This is interesting because the playable character is not me with some cyborg-like exosuit, my avatar and its accoutrements, strapped over my existing self but rather an external character who I can emphasise with and control to a certain extent. But the playable character is most definitely not me, however much I empathise with him.
- Virtual storytelling, at least in the case of Shenmue, has both a relative narrative time - a consequential ordering of events - and a continuous and pervasive *real* time which, quite literally, tick mercilessly away at the bottom right hand corner of the screen. Traditional narrative has only narrative time.

8 Conclusions

In this paper we investigate the notion of virtual storytelling seen as narrative potential, which is deemed to be the reconciliation between agency and traditional narrative forms. In order to do this we have applied the perceptual opportunities model of VE content to the popular computer game Shenmue. This allowed us to characterise the basic nature of agency in Shenmue. We observed that agency in Shenmue almost always rewards action with a narrative fragment, a pre-defined or pre-rendered sequence, which has the effect of removing agency temporarily. By structuring the basic units of agency in this way the player learns to take pleasure in the accumulation of clues and information towards the resolution of the quest before being returned to a situation of agency in order to proceed.

Of course, we have only one computer game but we can begin to draw some tentative conclusions as to the basis on which virtual storytelling from a first person point of view is at least possible:

- Agency and narrative must be integrated at the level of basic units
- Cut scenes, even long ones, then become just bigger rewards integrated into the game itself
- An integrated flow of development (no levels as in traditional agency focused games)
- The extensive use of language in the form of conversational fragments, tones of voice and body language greatly increases characterisation and connotation and thus increases the richness and level of meaning associated with more traditional narrative forms.

Shenmue is a quest. Could we envision a virtual storytelling that was a psychological thriller? How about a virtual storytelling in the manner Ben Okri's mystical streams of consciousness? Can we make an effective equivalent of Jack Kerouac's 'On The Road' where the quest is about self realisation rather than the specific, measurable goals of the detective story? It is the belief of the author that such virtual storytellings are possible but that the true integration of agency and narrative must be a subtle affair. Narrative potential can be thought of as the study of the ecology of narrative - the study of the conditions under which agency and narrative may thrive.

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