Drama Online - a New Interactive Narrative Model designed for Online Play

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Resumo

Drama online é um novo modelo para o desenvolvimento de narrativas interactivas. Substitui o cariz tecnológico mais comum nas soluções para este problema, por um paradigma que tem como base o uso de comunicação num espaço online. Este novo modelo encara os jogadores enquanto co-autores de uma narrativa não linear e ao fazê-lo, mitiga as complicações que impedem o desenvolvimento de uma verdadeira narrativa interactiva.

Palavras-chave: *Narrativa interactiva, Narrativa emergente, Online*

Abstract

Drama Online is a new model for the development of interactive narratives. It replaces the often technological solutions of the past with an online based application that uses players as co-authors in a branching narrative. By using players as co-authors in an interactive play, it mitigates the issues that impede the development of a true interactive narrative.

Keywords: *Interactive Narrative, Emergent Narrative, Online*

1. Introduction

Videogames are not (solely) directed at children [20], and yet, they still strive for cultural acceptance and are mostly perceived as a children's medium [7]. This fact seems to contradict the growing demographics of videogame's audiences [20], which show that videogames are maturing alongside their audiences. Also, the steep rise of the videogame industry, in terms of cultural as well as commercial relevance, has lead to the emergence of a highly competitive market, which constantly drives games to *"become more interactive, more visually complex, and more driven by story and character"* [29]. The growing complexity of all of videogame's technical, as well as artistic, assets has spawned a wide array of debates on how such an

evolution should occur. One debate stands out - the question of whether or not games can convey interactive forms of narrative. The debate arises from the fact that most narrative theories are referent to passive means, and do not face videogame's unique asset: interactivity [4]. How interactivity can be encompassed in a narrative is a question to which no simple and effective answer exists, as *"the conflict between story coherence and user interactivity prevails in many publications"* [24]. Multiple approaches already exist, both in commercial ventures and academic studies, but no perfect solution has been attained [10], and still, interactive narrative remains a *"holy grail of game design"* [18], driving research to continue on.

The purpose of this work is to study some of the available approaches to this problem, and, using them as reference, provide a new model for the successful generation of interactive narratives for videogames. The proposed model changes the often technological paradigm of the current solutions in favor of an approach that employs online spaces as a means for engaging players in a form of interactive narrative. This paper features a simple definition of narrative and how the basis for a good narrative clashes with videogames most important feature: interactivity. An analysis on the most common solutions for the problem will be enumerated, as well as a reflection on their inherent strengths and limitations. Based on these elements, the model will be described.

2. Narrative and Interactive Narrative

Before addressing the problem, one must understand what defines a narrative. Usually, narrative is described as *"the representation in art of an event or story"* [19]. A more thorough definition can be described by enumerating narrative's three dimensions. A set of sequential, causally related events - a story; a subset of those events, given a specific order and emphasis that need not be the same as the story - a plot; the conveying of that plot in some medium to an audience - a narrative [15]. Though there is no consensual answer to what makes narratives engaging, there are a few qualities which good narratives tend to possess. At the heart of stories' dramatic arc lies a conflict [19] that serves as a fuse for the chain of events that makes up the story. The author uses the conflict as way of proposing a problem to the audience, one that should address a number of themes and issues that he feels relevant and important. As to the events that follow the conflict, they must follow a strict relationship of action and consequence, as *"causality is the connective tissue of plot"*[11]. Events are *"only meaningful insofar as they are woven into the mimetic whole"*[11], if the audience does not

understand the rationale behind the chain of events, and its cause and consequence nexus, it will perceive the plot as ludicrous or unbelievable. Another important characteristic of plot relates to its structure, as action should always have a beginning, middle and end [11]. Though formal narrative models in themselves are not a guarantee of anything, as audiences can be moved by elements that seem to have nothing to do with structure [11], a formally correct structure goes a long way of engaging the audience, by providing a promising set-up in the beginning, augmenting tension in the middle, and achieving a sense of satisfaction and disclosure in the end.

But what about interactive narrative, what defines it? According to Chris Crawford, an interactive narrative is *"a form of interactive entertainment in which the player plays the role of the protagonist in a dramatically rich environment."*[8] The problem is that if a player is awarded (true) freedom to choose his own path in a narrative, the causal links between events can become lost. *"Story is predestination; interaction is freedom. Thus the conflict"*[17] This fact is a consequence of interactive narrative's *"seemingly conflicting requirements: coherent narrative and user agency"*[22]. On one hand, narrative needs to be structurally correct and coherent, as well as follow the ideas of its author; on the other, you want the player to take an active role in it, by allowing him to affect narrative development. Present day solutions either tend to one side of the equation, or the other. The problem thus becomes: how to balance interactivity and authorial control, so that the player feels engaged, while simultaneously guiding him through a structurally sound narrative, with a proper nexus of causality and some degree of authorial control. A solution for this problem must thus face the two conflicting objectives, by solving two sub-problems:

1. Allow the player to meaningfully interact with the story unfolding, so that he/she can express his/her own views and ideas.

2. Give the author some control over the dramatic unfolding. This control comes in the form of the three vectors that define an engaging narrative: (a) define the plot's main conflict and its themes; (b) maintain characters and event's consistency in face of the player's disruptive actions and (c) control events so that flow of tension makes up for a proper dramatic structure.

3. State of the Art

In [15], the author classifies several commercial video-games' narratives according to the way in which interaction shapes narrative unfolding. The classification yields four models: 'String of Pearls', 'Branching Narrative', 'Amusement Park' and 'Building Blocks'. According to [2, 10], two major avenues have been explored in research: grammar or branching narratives [5, 27], and emergent narratives [9, 18, 26]. The following analysis will be focused on these two approaches.

4. Branching Narrative

In the "Branching Narrative" model, the player is prompted to choose which path he wishes to incur, at specific points in the story. In graphical terms, it can be represented by a flow chart that branches and merges paths in specific points in the narrative. Taken to the limit, it can be seen as a tree graph, where each decision sprouts a whole new narrative that runs completely parallel to the remaining ones. Though this model intertwines interactivity with narrative to some extent, it features one fundamental flaw: it requires a great deal of authorial work to provide the number of parallel narratives, something which consequentially, raises production costs; this fact has sprouted much criticism to such a model, by both game developers and scholars [15]. In modern videogames, adding new narrative paths involves a great deal of authorial material: written text, voice-overs, graphical animations, etc. This fact makes the development of several completely parallel narratives virtually impossible, rendering the pure tree graph an unlikely reality [15]. The solution, in commercial ventures, has been for developers to cut and/or merge points in narrative, in that way trying to re-use a majority of the narrative content. This leads to truncated storylines that end abruptly, inconsistencies, and to several detached story sequences that are made to be generic enough so that they can accommodate different choices the player might've made before, or can make afterwards. The authors' capability at delivering dramatic and cohesive event sequences becomes limited, as there are many possibilities both before and after each moment in the storyline. Research has attempted to solve the authorial issues with this model by providing narrative authoring tools that ease the authorial burden [28], or by devising formulas for the generating of the branching paths, for example, through the application of structuralist theories [10]. Predictably, the sense of a highly generic, formulaic storyline is pervasive to these solutions [2].

However, this was the first model in which the player actually got, even if only marginally, to play an authorial role in the plot unfolding. It solves the first sub-problem, as the player's role becomes closer to that of the character inside the storyline than that of a spectator. However, though it solves some of the issues of authorial control (2a), the model's logistical limitations impede it from achieving decent levels of dramatic structure or narrative cohesion [15]. Yet, the importance of this model must be emphasized: if one *could* develop all the branching paths in a parallel way, it would surely be capable of producing the intended results. This matter will be returned to when explaining the proposed model.

5. Emergent Narrative

'Emergent Narratives' are very different in nature to 'Branching Narratives'. In 'Emergent Narratives', the *"authorial activities are limited to the set-up of the story"*[1], with the development of the story being mostly handled by the interactions between the player and Intelligent Agents [1]. The first establishes structure and tension control, while the latter delivers user agency. The interaction between player and AI governed characters is what ultimately defines the plot's development.

One of the most successful examples of this model is 'Façade' [18]. Façade is an interactive drama experience, where the player plays the role of a couple's best friend, invited for dinner at their place. The couple is facing marital problems, and throughout the night, constantly puts the player in an uncomfortable position: the mediator of their discussions. Player's actions ultimately determine what is to become of the couple's future. Façade's creators' intent was to find *"a capable middle ground between structured narrative and simulation."* As it was also discussed above, a structured narrative allows for the creation of an engaging, self-contained experience, with controlled pace and tension levels. Simulation, on the contrary, allows for a higher degree for expression on the part of the player and improves agency. Essentially, Façade is an interactive drama simulator, which places the player on stage, as if he was in the presence of two (virtual) actors. The player is capable of actively influencing the outcome of the play, by interacting with the game-world. However, this is not a matter of a graph in which the player can choose the next path (as in the 'Branching Narrative' Model) as Façade behaves like a smooth simulation, running in real-time, and which can be interacted with on a *"moment by moment"* basis [18]. The player is offered no specific part in this play, being free to fully express himself in this context. To do that, he has an array of possible actions and, more importantly, he can write dialogue in a text window, which is then parsed

by a Natural Language Processing (NLP) tool. Characters are designed as behavioral agents, and their goals are modulated by the Stage Director AI. The "Stage Director" decides on which should be the course of action from a pool of possible narrative units (beats, the smallest of possible narrative units). It takes into account preconditions of each beat, the state of the world, and attempts to create the desired story arch, in this case, a proper tension arc.

Though Façade is still limited in terms of possibilities, it is able to produce a high number of combinations of events. By using similar interactivity metrics as Laurel proposed [11], Façade's authors are quick to point that, in terms of frequency, range and significance, Façade fares as well or better as previous models. In terms of counting how many possible traversals of the game are possible, it seems possible to achieve *"thousands of beat orderings"* [18]. However, it's questionable how many true and meaningful outcomes there are to the story, as most courses of action are widely similar, making little importance in the end. And despite that fact, Façade still requires a high work load to author each 'beat' and to weave it into the program's architecture [18].

In terms of emergent narratives, Façade makes for an exemplary reference on the direction that most research is being done. Like in Façade, most solutions are backed by technological solutions, namely AI techniques [3, 23, 26]. Façade uses NLP to process (some of the) player's inputs, behavioral agents to produce believable characters, and a dynamic director AI to control narrative flow and maintain structure. Despite all its successes, the problem with Façade lies exactly in the limitations that are imposed with the technical solutions that were implemented. NLP is severely limited in terms of language context and structural phrase analysis, leading to *"non-understood utterances, false positives, and an asymmetrical range of expression"*[18]. Characters as well, do not always react in the ways player expect, either because the mapping of NPL functions is limited or because their capability for interpretation of player's actions (and discourse acts) is not perfect. The Stage Director provides structural cohesion and tension pacing, but one that can never match a human-authored drama. These are all technology dependent limitations. The aim to create a dynamic, yet believable world, populated with virtual characters that enact as proficiently as real actors, while a powerful AI director channels the story into an interesting chain of events; all of this while behaving credibly as the player, unbounded by rules, can interact (and disrupt) the game-world freely, seems like utopia. As AI techniques improve, it is fair to say that these technological solutions will improve the end result. However, one must face the possibility that AI actors and

directors are not capable of a level of discourse, intellect and adaptability similar to human beings.

6. Proposed Model

The basis for the proposed model is an online architecture. Online systems, due to their communication capabilities, allow various people to be virtually present in the same space, at the same time. In theory, this can allow game-designers to use these players as virtual actors for their own interactive plays in an online space. If one can use players as actual actors for a play, then the focus on AI-controlled NPC's and Natural Language Processing would be displaced by a focus on managing the human actors. Within this context, many of 'Emergent Narrative' issues would lose their relevance. More so, the main principle of 'Emergent Narrative' could be fulfilled, by using player's creativity to co-author the story, in essence producing emergent events and dialogues which the author is oblivious to. The advantages of using people as the focus for an Interactive Narrative Model are many. People can produce believable and powerful reactions when prompted to do so, just as long as they feel the need to actively participate in a dynamic narrative construction. RPG's, LARP's and even Reality Shows tell us that much [3]. Because of that inherent capacity, the system no longer has to provide AI's to behave like real people, because the online system itself allows each player to interact with the rest. Also, because communication is realized between humans, there is no need for complex mechanisms of interaction, as online communication (text, video, sound) is more than enough for humans to interact in meaningful ways with each other (online video-games' success as socialization vehicles shows how this can be achieved). The final advantage of using people in online systems to design a dynamic interactive narrative is the absence of heavy authorial control. If the designer is able to relinquish much of its narrative authorial control unto the players, then the need for a complex authorial process is abolished. The author's work then becomes providing an engaging narrative context for players to interact upon, instead of having to author the complete story himself. To address questions of authorial control, the model will apply a simple 'Branching Narrative Model' as a structural skeleton for the plot. As the actual storyline lies in the discourse of the players, the authorial process is not very extensive, making it viable for the author to write a complete 'Branching Paths' narrative, as long as the number of events is kept low. Even so, this should be more than enough to fully achieve the basic pre-requisites for an engaging narrative (defined by points 2a, 2b and 2c). A more detailed explanation of the model follows.
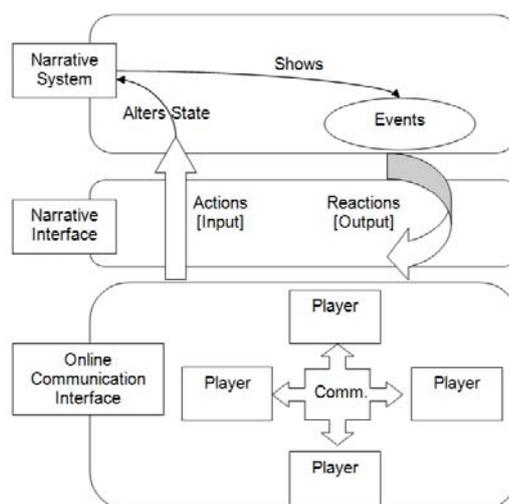
Figure 1: Conceptual basis for the model.

The 'Narrative System' shows an event which proposes a problem with different solutions. Because this problem defines the dramatic conflict, it's important that its nature is complex and multifaceted, in order to provoke different interpretations, and invite different solutions according to each player's experience. The more fracturing the problem, the better. The system then holds for players' response on how they want to tackle the problem, using the 'Narrative Interface' to propose it, and show each possible solution. The important factor here is that players have to achieve a consensus on which course to take for the solution to be accepted by the interface. If, as expected, the problem generates dissent over players, they will have to debate, through the 'Online Communication Interface', in order to reach a consensus. This debate represents the bulk of this model's narrative development. Once a consensus is reached, the narrative system generates a new event, and the process repeats. For this model, the author only has to establish a meaningful narrative context and to design a short sample of events, with simple, yet provocative outcomes that sprout debate in a small audience. This way, on one hand, the author gets the possibility to establish a strong conflict, a proper narrative structure, and an engaging experience, but on the other, it is up to the players to actually play out the parts in this interactive play. Of course, this model opens up a series of new challenges and problems. First and foremost, it is supported by the pre-condition that players will enter into a meaningful form of collaboration in terms of storytelling. It's the system's job to potentiate such a stance from the get go, engaging players in a way that prompts the desired creative urge. This problem is referenced in similar online narrative models [16, 25], and is also hard to solve in non-video-game interactive narratives. The right interface for communication between players must be found – one that allows detailed

emoting and complex dialogues to come up, but also maintains orderly discussion. Finally, the issue of players' disruptive attitudes (e.g. spamming), must be contemplated by any video-game based on this model. All these problems need to be addressed through experimentation.

7. Preliminary Experiments and Conclusions

An initial scenario was written to put the model in practice. Its aim is to translate the concept behind Ayn Rand's post-modern play, "Night of January 16" [21] into an online game. In Rand's play, a court room drama, some audience members, after witnessing the events of the story, were invited to partake the role of jury. In the end, by weighing evidence and testimony, they would determine the verdict of the defendant. In this prototype, players are cast as jury in a murder trial. In the first stage of the game, the Narrative System shows the court room drama unfold, as expected: lawyers bring in clues, question their witnesses and make their statements. Players have no impact on the game at this point, though that fact is in itself, consistent with the narrative context; during a trial, the jury cannot interfere with the proceedings, the players are jury, and so must face that limitation. Afterwards, they are taken into a closed room where they are obliged to make a decision over the life of the defendant. Hopefully, if the game's narrative is sufficiently well written, with fracturing social/moral/political topics and a great deal of subjectivity in both evidence and testimony, players should have conflicting opinions on the subject of the defendant's innocence, or lack thereof. The system poses an option, is the defendant guilty or non-guilty? Players vote on the verdict, as enforced by the game. Because of the complexity of the case, it is expected to fail in producing a unanimous verdict (essential in American criminal law for a murder trial); the situation which ensues should be in everything similar to that of the classic court room drama, "12 Angry Men" [14], with each player carrying out the role of juror. The conflict that is generated from the opposing jurors opinions should be the spark for the generation of an interactive narrative, in which players take on a pivotal role in its development. As the players strive towards a consensus, the 'Narrative System' feeds them new events, such as delivering new testimony transcripts or evidence. The development of these events allows the system to gradually increase tension, and achieve a suitable narrative structure. Once the players achieve a steady consensus, the game ends, and a final event is shown, showing the outcome of the jurors' decision.

Before committing to the development of a fully fledged application, with a proper interface, a small play test was conducted in order to test the concept. It was introduced to a group of

five people, with ranging backgrounds and experiences with videogames. The model was tested using solely text sent through an email discussion group. In this test the author acted as the 'Narrative System', sending emails with the plot events, and awaiting results on the voting's taken by the players. Interaction between him and the players was kept to a minimum, to avoid guiding of the answers. Though this small test does not serve as a proof of concept, it does allow the author to further perceive the strengths and limitations of this approach, and thus, to further improve it. Firstly, the level of discussion propelled by this small play-test surpassed initial expectations: the use of text allowed players to express their opinions regarding the narrative's events in a very eloquent and profuse way. This would be impossible if they were to interact with an AI controlled NPC. The voting system served as an excellent mechanic for introducing conflict in an online space, players were effectively forced to confront their own ideas about the storyline, and in the process gained insight over the themes of the narrative – the limitations faced by jurors in a court room ruling. Furthermore, by reading the dialogue transcript, it was clear that a majority of the players felt really engaged with the experience, and wanted to know the actual outcome of the story. How much this was due to the actual interaction mechanics or the quality of the authored narrative remains to be seen. But considering that the only means used to tell this story was the use of text, makes the potential use of a fully fledged application seem much more relevant. Another interesting fact is that players that engaged more often in the discussion were actually the ones with less experience with the videogame medium. Perhaps the model's simple interface, based on natural language, is an important factor in going beyond the traditional videogame audience. Not all went well though. Some players failed to participate in a continuous form, making their lack of engagement notorious after the initial exchanges of opinion. This fact may be related to the asynchronous nature of email communication, which tends to slow down the experience. To what extent these results are specific to the small group that undertook the test, or the actual use of an email client as a communication tool, can only be shown by further experiments. Notwithstanding, the potential for this new model warrants further testing and research. A full scale application, with a more expressive interface might do wonders in serving as a first example for a new breed of online narratives, where both author and players can freely express themselves.

References

1.Aylett, R., Louchart S., "Emergent narrative, requirements and high-level architecture," Proceedings SETN04, 2004.

2.Aylett, R., and Louchart, S., *"Managing a non-linear scenario - A narrative evolution,"* International Conference on Virtual StoryTelling, 2005.

3.Aylett R., Louchart S., "Solving the narrative paradox in Virtual Environments - lessons from RPGs", IVA proceedings, 2003.

4.Aylett, R., Louchart, S., Dias, J., Paiva, A., Vala, M., Woods, S., and Hall L. "Unscripted narrative for effectively driven characters," IEEE Computer Graphics and Applications, 2006.

5.Bernstein, M., Davis H., Yellowlees D., and Durand, David G. (eds.) "Card Shark and Thespis: Exotic Tools for Hypertext Narrative." In Proceedings of the Twelfth ACM Conference on Hypertext and Hypermedia, New York: ACM Press, 2001.

6.Boal, A. Theatre of the Oppressed, Theatre Communications Group, 1993

7.Bogost, I. Persuasive Games: The Expressive Power of Videogames. The MIT Press, 2007.

8.Crawford, C. Chris Crawford on Interactive Storytelling. Berkeley, New Riders, 2004.

9.Faas S., Theune M., Nijholt A. and Heylen D. "The Virtual Storyteller: story creation by intelligent agents." Proceedings TIDSE 2003: Technologies for Interactive Digital Storytelling and Entertainment, Fraunhofer IRB Verlag, 2003.

10.Hargood, C., Millard, D. and Weal, M. "A Thematic Approach to Emerging Narrative Structure". In: Web Science Workshop at Hypertext '08, Pittsburg, USA, 2008.

11.Laurel, B. Computers as theatre. Addison-Wesley Publishing Company, Reading, 1998.

12.L. Lindley, Craig A. *"The Gameplay Gestalt, Narrative, and Interactive Storytelling"*, CGDC, 2002.

13.M. Lindley, Craig A. "Story and Narrative Structures in Computer Games", Developing Interactive Narrative Content: High Text, 2005.

14. Lumet, S. 12 Angry Men, Orion-Nova Productions, 1957.

15. Majewski, J. Theorising Video Game Narrative. Bond University, Gold Coast, 2003, Available at http://ww.umk.pl/~majewski/jakub/mt_cont.html .

16. Manninen, T., Vallius, L., and Kujanpää, T. "Plot clusters - intertwined and replayable storyline components in a multiplayer RPG," Technologies for interactive digital storytelling and entertainment, third international conference, TIDSE 2006, Darmstadt, Germany, December 2006. Proceedings. Eds. S. Göbel; R. Malkewitz & I. Iurgel. Lecture notes in computer science nro 4326. Springer, 2006.

17. Mateas, M. "An Oz-Centric Review of Interactive Drama and Believable Agents", Technical Report CMUCS-97-156, Department of Computer Science, Carnegie Mellon University, Pittsburgh, USA, 1997. Available at http://www.cs.cmu.edu/afs/cs/project/oz/web/papers/CMU-CS-97-156.html.

18. Mateas, M. and Stern, A. "Façade: An experiment in building a fully-realized interactive drama". Technical report, Literature, Communication and Culture and College of Computing, Georgia Tech, 2003.

19. Meadows, Stephen Pause and Effect, The Art of Interactive Narrative, New Riders Press, 2002.

20. Poole, Steven. Trigger Happy, Arcade Publishing, 2000.

21. Rand, A. Night of January 16th, Plume, 1971

22. Riedl, M. and Stern, A. "Believable Agents and Intelligent Story Adaptation for Interactive Storytelling," Technologies for Interactive Digital Storytelling and Entertainment, 2006.

23. Riedl, M., Stern, A. "Believable Agents and Intelligent Scenario Direction for Social and Cultural Leadership Training" Proceedings of the 15th Conference on Behavior Representation in Modeling and Simulation, Baltimore, Maryland, 2006.

24. Schäfer, L., "Models for Digital Storytelling and Interactive Narratives", COSIGN, 2004.

25. Siegel M., "Interactive Narrative Tools", Lawrence Erlbaum Associates, 2005.

26. Szilas, N. "IDtension: a narrative engine for Interactive Drama," TIDSE'03, 2003.

27.Tomaszewski, Z., and Binsted K. "The Limitations of a Propp-based Approach to Interactive Drama," Intelligent Narrative Technologies: Papers from the AAAI Fall Symposium. Technical Report FS-07-05. Menlo Park, CA: AAAI Press, 2007.

28.Ventura, D., Brogan, D. "Digital Storytelling with DINAH: Dynamic, Interactive, Narrative Authoring Heuristic", Proceedings of International Workshop on Entertainment Computing, 2002

29.Whitlock, K. L. "Theatre and the video game: beauty and the beast" Unpublished doctoral dissertation. Ohio State University, 2004.