

The Emergent Narrative theoretical investigation

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Abstract:

This paper is part of a work in progress that aims to define a narrative theory adapted for optimal use in the Virtual Reality (VR) medium. In addition to theoretical results and findings on the development of an Emergent Narrative (EN) concept, the authors present their convictions regarding Virtual Storytelling (VS) and narrative consideration. Finally, an Emergent Narrative model is described along with a discussion on the novelty of the concept.

Introduction

In recent years, the AI community has shown a growing interest in storytelling and Interactive Storytelling (IS) and has been developing projects and theories in a number of areas [6, 7, 16, 17, 18, 20, 21]. Amongst them is the concept of Emergent Narrative (EN). Introduced by Aylett in 1999 [2], the concept has been developed at both the NILE00 and the NILE02 conferences [3, 12]. The research currently being conducted on EN is also implicated within the European Framework V project VICTEC (Virtual ICT with Empathic Agents) [23] and the European Network of Excellence project HUMAINE (Research on Emotions and Human-Machine Interaction) [11].

The EN concept aims at a potential answer to the narrative paradox [3] observed in 3D Virtual Environments (VE) and graphically represented Virtual Storytelling systems. EN seeks a character-based approach as opposed to a plot driven approach for IS and the construction of systems in which users actively participate in the narrative process in a highly flexible real-time environment, where authorial activities are minimised. The development of the story is managed by both the user and embodied Intelligent Agents and depends entirely on the interactions between each other and their environment. The research aims at finding and developing a narrative structure appropriate to the specific characteristics of Virtual Environments, combining the entertainment values of both storytelling and virtual experiencing.

Furthermore, research into the Emergent Narrative concept has been targeted at its potential in terms of entertainment, education and pedagogy. It could potentially greatly impact the design and game-play of video games or interactive entertainment performances. In addition, since a number of educational methods use themes and storytelling to engage people's emotions, one could see the study and use of narrative as a pedagogical tool for the development of Personal and Social Education (PSE) [10, 24, 25]. The Emergent Narrative concept could provide opportunities for educational and pedagogical material to be presented within a compelling, interactive and immersive Virtual Environment [23].

Part I: The Emergent Narrative Investigation

The theoretical work involved with the development of an Emergent Narrative theory relates to previous and current research and theoretical work, most of which originate in different research domains. This investigation requires the researcher to consider stories and narratives from a high level of abstraction in order to capture their essence. Stories and narratives are extremely complex processes involving interactivity, character representations, narrative dynamics, user experiences, decision-making processes, participative narrative forms and affective and social behaviours. It is also necessary to consider how far the more classic and

traditional narrative theories can be applied to this view of narrative. An Emergent narrative model is also multi-dimensional since several essential parameters such as space, time, narrative surface, user role and the nature of narrative controls have to be taken into account.

1.1: Interactive storytelling considerations

As discussed in previous publications [4, 12, 13, 14, 15], classical narrative approaches [1, 5, 19] have little to contribute in practice to a theory of emergent narrative. There are a number of reasons for this.

The role of the user is a key issue in interactive storytelling, with whether the user is considered as an author or a participant within the story having a major impact on theoretical approaches. The contradiction between authorship and participation is an important element of the narrative paradox previously mentioned. On the one hand an author seeks control over the direction of a narrative in order to give it a satisfying structure. On the other hand a participating user demands the autonomy to act and react without explicit authorial constraints. Casting the user either as a spectator, with no ability to act, or as the author him or herself avoids this problem, however it does not offer a solution for a participating user in real-time interaction within a narrative display. It also limits the storyline to a single entity. We argue that a serious consideration of the user as participant can actually present a solution to the narrative paradox, in the sense that it would encourage the emergence of several storylines while still leaving the user with the responsibility of conducting real-time meaningful actions within the unfolding narrative. The narrative paradox observed in 3D environments is a constraint only if the storyline of the narrative is one single entity to which all characters and the user must conform. Such problems do not occur when the storylines are multiple and opened to emergent behaviours and events.

However, such a user approach implies that the story must be designed in a way that enables the narrative to emerge from the interactions between the different characters, the user and their individual storylines. Such a narrative design refers to the principles of storyfication,[3] in which the experience of a character is internally transformed into story, and argues for a dynamic and synthetic rather than a static and analytical approach to narratives. A process view of narrative can only at best provide a provisional instance of the overall storyline or plot. Although themes and character descriptions are authored, the storyline emerges from their interactions with each other and the user and cannot be completely predicted. Characters are motivated by their personality traits and personal characteristics and build the story as they interact with each other. This particular view of narrative is fundamentally opposed to the Aristotelian classical view of narrative [1] and argues for a character-based rather than a plot-based approach for interactive performances [4, 12, 13, 14, 15]. A character-based approach focuses on character definition rather than plot construction, and the authorial process relies on the articulation and control of interesting characters rather than the generation of plot events.

1.2: Participative narrative findings

Since classical narrative theories and models are mainly analytical, they do not offer practical mechanisms to deal with interactivity and user integration. The investigation of the Emergent Narrative concept, in accordance with its premise of the user as a participant rather than a spectator or author, has been mainly oriented towards the study of interactive and participative narrative and performance forms and models. Genres such as Role Playing Games (RPGs), interactive and street theatre or video games are all of potential relevance to the development of an Emergent Narrative theory.

RPGs lie mainly in the realm of entertainment - although RPGs can be used for pedagogical purposes [10] - and the lack of resources such as research works, literature or publications

makes its investigation challenging. There are also a wide range of games and mechanisms for which it is difficult to produce comprehensive definitions of types and categories. The selected approach for this study is empirical and aims at identifying narrative patterns, elements or factors influencing the creation, development and unfolding of dramatic narratives and stories, using the knowledge acquisition software KATtm [8]. The success of such an approach depends heavily on the quality and level of expertise of the expert involved: the results displayed in this paper are based on knowledge elicitation sessions conducted with experienced RPG Game-Masters and writers over a 12 month period.

In the study three different types of RPGs were considered for certain specific reasons. Firstly, board RPGs were studied. Board RPG is played with fictive characters, sometimes actually with board-sized models, and is organised as a campaign; the game is composed of several sessions and usually involves a quest with a group of largely cooperating characters. The interest of this genre lies in their episodic nature and the way they handle narrative events and character development. Secondly, conflicting RPG was researched. Conflicting RPG is a variant played with conflicting character goals and personalities over a short period in a single session and is of interest for its management of narrative tension and narrative set up. Finally, Live RPG was analysed: Live RPG is played in the real world in the same type of spirit as historical re-enactment, and is relevant for its management of narrative controls on a real-time basis.

When first investigating the field of RPGs it became apparent that they shared a lot in common with the concept of Emergent Narrative and that a lot could be drawn from existing practice. Areas of the theory that are the most susceptible to be influenced by RPGs are the ones that are concerned with story management, narrative control and character definition, roles and motivations. The way the story unfolds is emergent and fits perfectly with our vision of an Emergent Narrative theory. However, the level of cognition necessary for the Game-Master role in managing and supporting this process seems beyond reach as far as Artificial Intelligence and intelligent agents are concerned. Thus the study of board RPGs on its own does not provide enough elements for a realistic theory of emergent narrative. The time dimension and particularly real-time interaction is a very important element that dramatically affects the form, nature and level of narrative control. Although board RPG is directly relevant to the investigation in terms of character development and the handling of narrative events, it proved to be irrelevant as far as narrative controls were concerned.

However, conflicting RPG and Live RPG handled the real-time element successfully and similarly, distinguishing between narrative controls that occur before the RPG game session and those that occur during the game session. In both cases, most of the narrative controls are defined and set up prior to the game taking place, emphasising the idea of the narrative as a hypothesis based on the types and personalities of the characters, their roles and the nature of the environment that surrounds them. The narrative control over the game's set-up is limited to the definition of the environment, tasks and roles. Since there is no way for the game writers to predict with accuracy the players' state of minds or histories prior to pre-designed narrative events, it is virtually impossible to guarantee how they will affect the players. The plot is highly provisional and its meaningfulness is almost totally dependent on the way the character roles have been written. Such an approach encourages the development of sub-plots and individual or relatively small group storylines. The design generally consists of a hypothetical storyline composed of several hypothetical plot elements, each of which involves several groups of a number of characters. Plot elements should be inter-related with at least another plot element, their interaction ultimately defining the storyline of the game session [Figure 1].

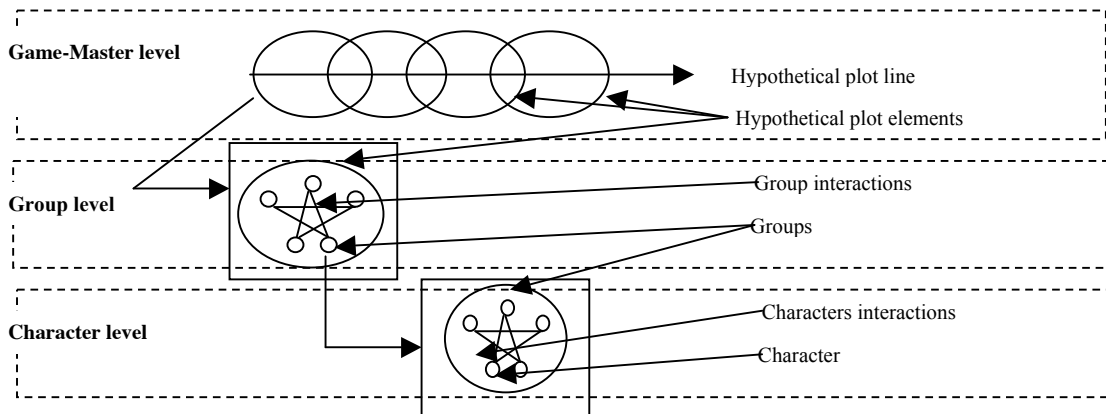


Figure 1: Storyline decomposition for interactive participative narrative forms

Since there are inevitably a large number of events that occur but are not predicted or anticipated and may even go unnoticed by the game writers or players, conflicting and Live RPGs generally conduct a debriefing session at the end of the game. Here each player describes their individual storyline, along with their understanding of the overall game plot to the other players. This session helps individuals to understand the role they played, either consciously or unconsciously, in the unfolding of the game narrative, and the reasons for other players' behaviours, thus refining and completing the individual storification processes.. Interventions from the Game-Master that allow some sort of narrative control during the game session are limited to the timing and unfolding of narrative and dramatic events and the use of dedicated agents that act for the interest of the dramatic unfolding and obey directives emitted by the Game-Master. However, such practice is not general and would only limit direct interaction with the players to an influential rather than an authoritative status.

The study of interactive theatre and street theatre were also essential in the consideration of an Emergent Narrative theory in bringing know-how, rules and mechanisms in defining characters for interaction. Specific attention must be brought to characters if they are to be designed for an interactive environment, for example they must be given a back-story, a history, and a set of motivations. Such attention would bring depth to characters and help to define their believability and credibility. Video games were also studied in order to identify mechanisms that would bring emotional depth to characters [9]. However, the study of video games surprisingly failed to deliver practical narrative elements for a theory of Emergent Narrative. Although it is undeniable that the way characters and environments are presented in video games is of interest to a theory of Emergent Narrative for graphical environments. In fact, this has a stronger impact on content development than narrative structure. Video games have shown, in general, a classical and conservative approach to narrative considerations.

To conclude, certain elements have been identified that are essential to an Emergent Narrative theory within participative and classical narrative approaches. However, it must be noted that what is theoretically feasible is not always practically realisable; the fact of practical applications of part of the theory in the field of RPGs is encouraging concerning the success of such an approach. The findings of the investigation could be briefly summarised within the following set of rules [**Table 1**].

Rule 1	The story must be perceived as a process, in a dynamic rather than analytical way.
Rule 2	The plot is at best hypothetical. It is composed of interrelated hypothetical plot elements.
Rule 3	Plot events are written before performance, certain types of events outcomes can be controlled.
Rule 4	Narrative authoring is done before rather than during the performance.
Rule 5	The storyline is created as the different characters interact with each other, in real-time.
Rule 6	Environments and props must be complementary to the hypothetical plot or plot elements.
Rule 7	Characters must be written for interaction, implies rich, deep and emotionally engaging traits
Rule 8	The user must be considered as a participant to the performance rather than a spectator or author
Rule 9	The user should be encourage to act in role and should be penalised for not doing so.
Rule 10	The user(s) enjoyment and interest are the only reasons for the performance to take place

Table 1: Emergent Narrative essential rules

Part II: A unique narrative definition:

In many ways, the Emergent Narrative approach differs from both classical narrative theories and interactive or participative practices. While these differences can be clearly established regarding narrative theories on the grounds that interactivity is generally not taken into account or omitted, more subtleties differentiate the Emergent Narrative concept from participative practices, such as the various forms of RPGs or videos games. The narrative definition of the EN concept, although clearly and directly inspired by these practices, has been intended in order to maximise the benefits of each work or practice studied. It would be wrong, for instance, to deny any sort of impact or interest from classical narrative theories or practices. Although they are important and constitute the basis for all reflections on this narrative matter, other narrative forms have been identified as more relevant and influential for this particular research topic, mainly due to the consideration of the user and the role they should be playing in a Virtual Environment.

The concept being defined has drawn a lot from RPGs and their studies are recognised as the most influential part of the research investigation. The Emergent Narrative concept possesses many similarities with the different forms of RPGs studied. However, rather than details, the main interest was in understanding the narrative controls exercised by the Game-Master and the roles of the players, in addition to the way the whole game session is managed and how the overall definitive plot unfolds.

Practically, board RPGs have influenced the vision of the user / player in the sense that its implication within the rest of the environment and the depth of character required is crucial for any interesting development and making this type narrative approach successful. On another hand, the fact that board RPGs are by their very nature episodic in the majority of cases fitted poorly with the real-time requirements, its impact being mainly limited to character and environment definitions. The way that characters are defined in Conflicting RPGs has also been very influential in so far as these games are designed to only last a few hours. Such design means that it can be considered in terms of computational experimentation. The characters are defined with conflicting objectives and personalities. Such features present the majority of the required elements for the emergence of dramatic unfolding and events. However, the narrative controls exercised by the Game-Master are very limited and such an approach requires the Game-Master to build artificial means of keeping the players from expressing their differences too early in the game session. Whilst board RPGs provide us with the means of defining characters and environments that fit together and

set up a certain level of coherence, conflicting RPGs brings the means to take such an approach in real-time on a computational basis, through a particular character design and a short timescale. The Live RPGs' real-time narrative control is the element that ties the Emergent narrative approach together. Conflicting RPGs are short and interesting in terms of the dramatic certainties that would almost automatically result from their original designs. However, the narrative controls exercised by the Game-Master in Live RPGs could potentially help in EN in gaining some narrative control over parts of the narrative unfolding. The introduction, for instance, of a character working and acting as a dedicated agent to the emergence of interesting situations or the generation of pre-scripted, but in terms of conclusion undetermined narrative events could possibly be the key in tying the Emergent Narrative concept together and help in making it computationally realisable. Although there are many computerised RPGs available to play on-line over the Internet, it is essential to mark the difference between their achievements and our ambitions as researchers in the narrative field. The characters encountered in this type of RPG are mainly other humanoid players and possess largely human skills and cognition systems whereas technical encounters with a narrative weight and purpose sent by the Game-Master are Intelligent Agents or Avatars. The EN theory and future system implementation intends that no human input should be passed into the system apart from user inputs, not only in terms of technical encounters but also other players' roles should be fulfilled by Intelligent Agents.

The influence of video games, as previously indicated, should also not be underestimated. Although often too conservative in its narrative approach, video games have nevertheless shown in Freeman's analysis [9] some very interesting techniques and artefacts in order to make experiences and game-play emotionally engaging and immersive.

Part III: Emergent Narrative model:

3.1: The Emergent Narrative model articulation

Since the model proposed for development is essentially dynamic and based on various types of interactions and mainly hypothetical in terms of narrative display, it develops a particular narrative articulation. Whereas one can say of stories that they generally respect the format of "beginning, middle and end", one would also find that such an approach is not applicable to the concept of Emergent Narrative, and would actually pose severe restrictions to its application. The overall plot articulation of the model is actually closer to a "Back-stories, role allocation, interaction, debriefing" format, and the "beginning, middle and end" sequence being only applicable to the interaction part of the model, although it can only be determined analytically in the post-session debriefing.

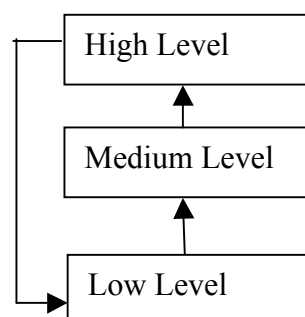


Figure 2: Interactive participative narrative flow

There are several levels of action and involvement in an Emergent Narrative model. There is a high level that corresponds to the role played by the Game-Master in RPGs, a medium level that is fulfilled by the different characters' actions and interactions and a low level composed

of narrative events, different types of environment and attracting and repelling narrative elements. The originality regarding this type of interactive and participative design is that there is no direct link or communication between the high and medium levels. The Game-Master does not communicate with the players or characters but tries to influence (or not as the case may be) their decisions and actions through the lower level of the system, making a hypothesis concerning how characters and players would react to changes on the low narrative level. Such a distinction can only be envisaged in interactive media and cannot be formulated within classical narrative approaches [Figure 2].

3.2: The Emergent Narrative controls

In accordance with its articulation, an Emergent Narrative model would possess several different layers of narrative controls or general controls over the unfolding of the story in display. The high-level of the model is the level where the drama manager is operating. It basically functions at a high-level of abstraction in accordance with the general storyline. The role of the story manager is to monitor the level of activity within the system and determines its dramatic potential and interest. Since this role is based on an ontogenic definition [22], it transmits a representation of the different options available and their hypothetical potential in terms of dramatic impact on the different characters. However, this action selection mechanism does not select character actions apart from those of its dedicated agent, but intends to alter general variables shared between all the different characters.

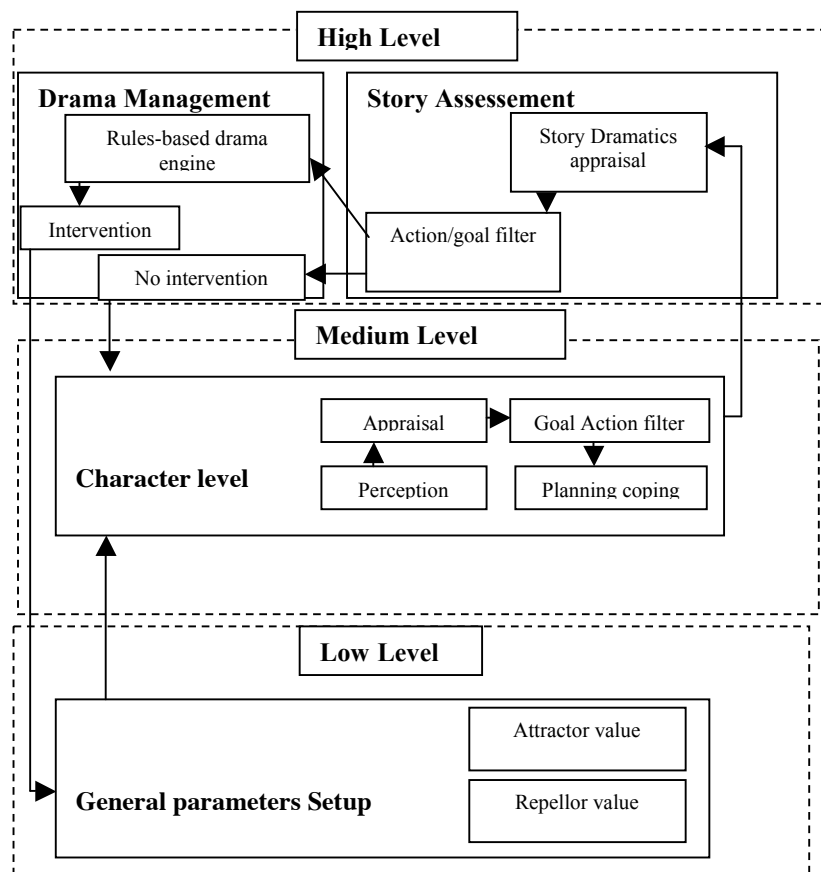


Figure 3: An Emergent Narrative Model

Whereas there is an idea of appraisal and assessment to the high-level of the model, the low-level is only executing whatever has been decided by the drama manager and does not interfere directly with the general story or experience that is in progress.

The medium level is the most complex level of the system. Characters must be able to react appropriately to the stimuli transmitted by the changes made on the low-level parameters

whilst still assessing their values regarding their goals and strategies. Their actions and interactions are then sent to the drama manager, who intervenes if there is a sense that the general dramatic interest of the story is diminishing.

Conclusion

This paper marks the end of our investigation on the theoretical perspective of the narrative question within Virtual Reality and Virtual Environments. Work is currently being carried out on implementing some of the ideas discussed in this paper in order to demonstrate the validity of the theory. We have seen in this paper that alternative and participative storytelling approaches present a certain relevance to a solution for the narrative paradox encountered in Virtual Environments. Additionally, experience and expertise in dealing with the interactive dimension is an essential factor in reaching a satisfactory solution.

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