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A Critical Reflection on the Use of Storytelling and Game Technology to Motivate Children to Deal with Socio-Critical Issues

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ABSTRACT
This paper reflects the potential and challenges in the combination of storytelling and role play game approaches to sensitize children for socio-critical topics. Different facets of storytelling and gaming are reviewed that support the hypothesis that role play games can be utilized to support childrens' intrinsic motivation to deal with socio critcal issues. Furthermore prominent approaches from the area of characer based emergent narrative are reflected and the possible benefits of their application in socio-critical role play games are indicated, both concerning the player's immersion and the presentation of the underlying social topic. Finally, the most relevant outcomes of the analysis are summarized and further research is outlined.

Keywords
Storytelling, emergent narrative, digital educational games, role play games, socio-critical issues

INTRODUCTION

Since human kind, Storytelling has been used to provide and to share personal experiences (knowledge) or to teach young people social and ethic values. Global, societal topics like the progressing climate change, religion or genetic engineering demand an ongoing public discussion. Hereby, in the modern society it is not enough to deal with common facts, but to form and to dispute an own attitude. Hereby, children need to be prepared and encouraged for those topics since they are expected to participate and to be taken aware as equivalent dialog partner as soon as they have grown up. In this regard it is important to encourage childrens' intrinsic motivation of being concerned with the world.

Storytelling and gaming technology – e.g. in the framework of educational role play games – provide excellent chances to reflect (and/or to teach) basic ethical and social values in a compelling, suspenseful manner. Similar, modern literature and films often try to combine a fantastic or action rich story with social criticism or visions.

As an illustrative example, an interpretation of the fantasy novel *Drachenfeuer*, written by Wolfgang and Heike Hohlbein [13] is introduced: Within the story a young hero is drawn into an epic conflict between two fantasy races. One of the named races believes that the only way to survive is to reawake and to take control over an ancient dragon creature. The dragon, as a surrogate for real weapons of mass destruction introduces the whole range of ethic and social controversies associated to this topic. The young reader is lead through a fascinating story where the hero is continuously confronted with the heterogeneous positions of the implied controversial topic. Thus the reader is forced to participate in the hero's various moral decisions triggered by the dispute about the moral justification of his mission. As the story takes place both in the fantasy world and the real world, the statements presented can be easily transferred to the real world subject by the reader.

Other examples in the field of literature represent the famous classic novel *1984* by George Orwell [20] – which describes life in a preventive acting surveillance state, calls attention to the importance of free speech and (digital) media, and is commonly accepted as a warning message illustrating possible results of the increasing surveillance – as well as *Sofie's World* [6] as a widely known work of youth literature aiming to stimulate basic philosophical or social discussions among children and adults.

In the following, the authors – all with a background in computer science – focus on digital media and analyze the potential and limitations of storytelling facets and game-based approaches to encourage young people to deal with socio-critical issues and build their own opinion.

CURRENT APPROACHES

Similar to cinematic films video games are able to cover socio-critical issues analogue to literature, whereby their direct visual impression increases the level of immersion

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by the consumer. Additionally video games bring in the interactive dimension (→ Interactive Storytelling[1]). Prominent examples in the field of Story-driven games include role play based computer games (RPGs) like the *Gothic* series, *The Elder Scrolls IV: Oblivion* or *Risen*[2]. Compared to books and films as non-interactive media – neglecting 'interactive' cognitive processes by readers or spectators – players take an active role in video games and influence the unfolding process of non-linear stories. Thus integrating socio-critical topics with an RPG's story helps to comment on different aspects of the controversal topic while making it come to live for the player. The content rich and interactive virtual (audiovisual) worlds of RPG's provide great possibilities to candy socio-critical issues and the popularity of RPGs make them more attractive to a wider range of people. Furthermore, many games – especially (massive) multiplayer online RPGs, but also RPGs described above – do have huge communities, in which the games' world and its properties are actively and lively discussed throughout the internet. This promises great potential of RPGs augmenting the players social awareness to initiate public discussions.

The *Eduventure*[3] project of Wechselberger et al. [22] already demonstrates that it is possible and meaningful to utilize RPGs for educational puposes. They utilize the famous RPG *The Elder Scrolls IV: Oblivion* for teaching history in a Story-based, Adventure-like manner. In their work they stress and consider some core features that are important for a successful and motivational design of games for educational purposes: Firstly, educational games need to be playful. This concerns a compelling gameplay as well as an appropriate audiovisual game design. The relevance of fun in educational games also has been stressed by Nacke [19]. Secondly, the game should provide appropriate feedback to the player – both in terms of gameplay and learning effects. Games should not be 'teacherized' to avoid that they loose their motivating potential. Instead, seamless learning integration is envisioned without destroying the flow [5] and gameplay experience. This can be achieved by the direct integration of (learning) content within the game world and by avoiding plain informatory texts or video sequences. This implies that the player (=learner) has to acquire knowledge by exploring the game world and (learning) assessment is realized by game relevant tasks instead of additional, extra learning parts – mostly implemented as additional windows. In a first evaluation of Eduventure it became obvious that younger children even didn't recognize that they played an educational game [22]. The insights of the Eduventure project, state that RPGs that use metaphorical game worlds can allow the player to experience very complex topics, alike history, in a subtle, but successful manner.

Another important outcome of the Eduventure project is the fact, that a motivational, immersive game design is also related to a suspenseful story [22]. For that, in the course of 80Days[4] [8] and previous projects [12], the Serious Gaming group at the Multimedia Communications Lab – KOM at TU Darmstadt has elaborated first methods and concepts for Story Pacing [11], authoring [9] and the control of DEG [8] based on the concept of Narrative Game-based Learning Objects (NGLOB's) [7]. NGLOB's aim to provide a ground for adaptation and personalization taking the storytelling as well the gaming and the learning context in consideration. Similar to active participation and immersion, adaptation and personalization promise to increase the motivation for learning, too.

In RPGs virtual characters are used both as non-player character to transport knowledge or to provide a particular perspective on the game's world and as 'digital assistant/mentor' of the player in the form of an avatar respectively playable character (PC). From Virtual Human Scenarios [10] we know that especially for NPC's it is necessary that they are 'believable', intelligent and pro-active (with own goals) instead of being implemented as inflexible 'pure chat bots', only reacting to questions of users. *Oblivion* and *Gothic II* tackled this problem by giving their NPCs daily routines. But nethertheless NPCs that only passively serve quest related issues are hardly perceived as interesting characters. This is closely related to the concept of presence [16]. Only convincing (i.e active) characters can be used to increase the (active) involvement of players and to increase the immersion of players [14]. Hence believable autonomous characters should be used to support the player's involvement into the socio-critical RPG.

A lot of research has been investigated into Character-based Storytelling and emergent narrative with several distinct facets. The approaches addressed here offer valuable concepts to model different aspects of lifelike characters for RPGs.

(1) For the communication between the player (or PC's) and NPC's, dialogue-based Storytelling systems have been elaborated. The most prominent example in that context represents the system/interactive drama Façade[5], introduced by Mateas and Stern [18]. Hereby a user/player can 'interact' with the two main characters Grace and Trip (including 'touching' or 'kissing' them). The resulting story emerges from the dialogue among the characters

[1] Integrating Research in Interactive Storytelling (IRIS) – Seventh Framework Programme http://iris.scm.tees.ac.uk/

[2] http://www.gothic.de, http://www.elderscrolls.com, http://risen.deepsilver.com

[3] http://www.eduventure.de

[4] 80Days, EU FP7, 4.1.2 Technology-enhanced Learning, www.eightydays.eu

[5] http://www.interactivestory.net

dynamically defining their future relationship. Spierling and Iurgel [21] also tackle the use of virtual characters as dialog partners for users by building classical discussion rounds consisting of two (active) NPC's (with distinct goals and background knowledge) and a player, discussing with them, similar to Façade. Characters that are able to communicate themselves and thereby to represent an own position are helpful, especially for an RPG covering socio-critical aspects. Own attitudes, desires and goals help the player to accept presented statements, because people believe beings, but not artificial dummies.

(2) Concerning the simulation of believable NPC behavior, Cavazza and Charles propose the use of planning algorithms and Hierarchical Task Networks (HTN) to model the goals and needs of NPC's [3], whereby the goals are recursively decomposed to subtasks. Different variants for particular tasks improve the flexibility and broaden the story space (i.e. to increase the number of possible story lines of character interaction). Thereby HTNs have the potential to model adaptive and believable behavior for subsidiary characters that will make the game's world to be perceived more lifelike (as not scripted) and thus to support the player's state of presence.

(3) Aylett et al. [1,2] focus on emergent narratives and provide concepts for character based storytelling used for educational purposes like efficient anti-bullying education. Their demonstrator FearNot! developed in the EU-funded project VICTEC uses a three act story model together with emotion driven characters [2]. The characters are able to adapt their behavior to advice given by the playing child. Such way children can observe the results from a safe position and can exploratory search for a solution. Observed learning performance is related to an empathic link of the playing child with the mentored artificial character [1]. Thus, not only victims and children unaffected by bullying can deal with what it means to be a victim, but also the (possible) offenders. Likewise empathic links to virtual characters could be used support the acceptance of positions shown by NPCs (especially mentor characters) by the player.

SUMMARY AND CONCLUSION

Apart from films and literature, especially RPG's and Storytelling approaches provide excellent possibilities to sensitize for complex and controversial socio-critical issues. The basic idea is to 'embed' – in a subtle manner – the societal topics into playful, compelling and explorative, story-driven environments in order to increase the intrinsic motivation to deal with the issues – usually not 'No. 1' topics in the daily life of children and youth people. The main potential of RPGs is to cover differentiated perspectives on the discussed topic enabling users (players, kids) to jump into a role and to explore the topic from different perspectives in a playful manner. Interactive Storytelling concepts provide the chance to increase the excitement and immersion of the players by use of a) well-proven dramaturgic concepts (plot, story models) and b) realistic behaving characters – finally resulting in a more immersive gameplay experience and a higher state of presence [16] of the player. Besides, character-based approaches with believable characters promote the players learning performance by the utilization of emphatic links to the game world.

Though, current approaches show that RPGs are well suited to increase the awareness for socio-critical issues, there are still (technical) challenges and limits in order to implement a well working framework for socio critical role play games. The biggest challenge is to combine the multi-faceted storytelling and gaming technology and to provide an integrated approach. This results in the often cited 'Narrative Paradox' [17,18], which describes the discrepancy of author-controlled narrative structures on the one side and highly interactive emergent storytelling and gameplay on the other side. The simple question is how to combine both approaches considering all context information (player/learner model; narrative context; and now plans and goals of NPC's). The aim is both a) to 'guarantee' a suspenseful story and b) still to provide an intelligent, open, dynamic and adaptive environment .

Concerning believable characters the approaches for planning [3], for dialogue-based interactive storytelling [17,21] and emergent narrative [1, 2] are promising. Though, further research has to be investigated to improve the scalability [4]. Planning systems like HTNs alone lack of dramaturgy aspects, and running systems such as Façade [17,18] – with around 20 minutes of play – indicate the huge effort in authoring such highly flexible, 'intelligent' environments. For scalability issues it seams logical to organize NPCs hierarchically (groups, story function, etc.) and to apply different models of behavior simulation to the individual levels of the hierarchy. Attention must be drawn to the restriction of the introduced computational and authorial effort,'StoryTec' [9] provides a first step for a cost-effective authoring and run-time framework of general Story-based DEG and is continually enhanced regarding adaptation and personalization functionality within the course of the 80Days approach [7,8].

From a game design and application oriented point of view the player should be faced with the underlying social topic in a subtle manner as seen in the Eduventure project [22]. Learning performance should be the result of the player's identification and involvement with the game's world and it's characters. If the target group are children, an exiting, playful gameplay experience and an intuitive user interface [2] decides over success or failure of a Story-driven game utilizing intelligent characters. Further, replayability with varying gaming (learning) paths represents a key factor to motivate kids to play such serious games more than once and to support the learning performance.

Finally there is a strong need to investigate RTD efforts into the evaluation of demonstrators and prototypes,

especially with regard to the qualitative and quantitative measurement of user experience effects such as motivation, immersion or joy within story-based digital educational games [15,19].

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