

Designing Meaningful Participation: Analyzing Contribution Patterns in an Alternate Reality Game

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ABSTRACT

This article presents an analysis of participation patterns of an Alternate Reality game World Without Oil. This game aims to bring people together in an online environment to reflect and share insights about oil dependence. We present a series of participation profiles based on a quantitative analysis of 1554 contributions to the game narrative made by 322 players. We build on these profiles to suggest a preliminary outline of design challenges for building effective interactive learning environments that foster meaningful participation.

Author Keywords

Alternate Reality Games; ARGs; Participation; Learning

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI):
Miscellaneous.

INTRODUCTION

The idea of using games for learning is commonplace in discourse on education today [e.g., 3, 12]. Alternate Reality games (ARGs) are a specific set of games that are based on collaborative problem solving and storytelling. These games have been part of the gaming landscape since around 2001 as transmedia entertainment or promotional pieces for product launches [5, 7, 8]. Recently, a second wave of ARGs seeks to address societal issues (e.g., poverty and hunger) through widespread collaboration. These simulations function as “public pedagogies” that engage a wide range of audiences. It’s been further argued that such environments are a powerful means of engaging participants in awareness-building, collective intelligence, and participatory forms of learning [6, 9, 10]

However, much of the current literature on the success of ARGs as educational environments relies heavily on the

observations of ARG designers and developers [e.g., 1] as opposed to empirical evidence of the learning outcomes (with few exceptions such as [2]). If we are to take the claims of ARG proponents seriously, we need to address key questions, among them: what are the kinds of engagement fostered in these environments?; and do those engagements support the learning objectives sought by their designers?

This paper presents a preliminary study of one ARG, called World Without Oil (WWO) to address the above questions [13]. Based on quantitative analysis of player responses, we put forward a set of participation profiles that characterize different levels of engagement. We draw on these participation profiles to outline a set of challenges for designing ARGs that foster sustained engagement and desirable learning outcomes.

BACKGROUND AND PREVIOUS WORK

ARGs are multi-player narratives that involve online and offline participation using a variety of tasks, challenges, puzzles, and prompts to engage players in co-constructing a fictional scenario. One or more “puppet masters” guide the narrative and serve as architects of user participation by drawing on player engagement to alter the narrative flow, encouraging specific forms of participation, or redirecting player efforts. As an emergent, interactive problem-based story, the ARG genre combines elements from live action role-play, transmedia storytelling, and cooperative games.

One of the key characteristics of ARGs is the requirement for players to perform tasks or act in the world and then document and report these actions as part of their participation in the game. The online and offline components constitute different kinds of engagement that may be considered a kind of “move”. Some moves are public, as when a player documents or responds to the game through social media, a blog post, or a public action at the prompt of other players or the puppet masters. Some of these moves may be private, as when a player changes his awareness, behavior, or attitude concerning the topic of game play. The moves, in aggregate, constitute the narrative of the game. One can argue that multiple narratives are created in this process: the personal or private narrative, comprised of the individual’s self-constructed “story” of the game and their part in it, and the social or public narrative, which is the

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GROUP ’14, November 9–12, 2014, Sanibel Island, Florida, USA.

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<http://dx.doi.org/10.1145/2660398.2663778>

combined effort of all the players including the puppet masters.

The interplay between these public and private narratives is where ARGs have the potential to be rich spaces for learning and knowledge construction. As players engage in reflection on their own moves and the moves of others, they are experiencing a form of learning through individual and collective storytelling and listening [4]. The quality of this learning depends on the level and quality of the participatory opportunities offered by the game narrative, and the extent to which players engage with the narrative and each other [11]. Thus, analyzing participation patterns in these collaborative narratives is an important aspect of understanding how ARGs work as informal learning environments.

WORLD WITHOUT OIL

World Without Oil (WWO) is a massively collaborative imagining of the first 32 weeks of a global oil crisis. Designed by Ken Eklund (Creative Director) and Jane McGonigal (Participation Architect), the game aims to bring people together around a shared concern, namely getting them to reflect and share insights about oil dependence with the aim of devising plausible and effective courses of action in response to it. The design team sought to elicit this response by posting the news of an imaginary oil crisis on their website for the period of 32 days starting April 30, 2007. Each day represented a week of the crisis. Players engaged with the game by imagining how such news might change their life and local environment as well as the steps they were taking to respond to this imaginary crisis. WWO is a learning environment based on two central concepts that are highlighted by the designers: positive behavior change and collective intelligence.

Positive Behavior Change

The first concept central to the design of WWO is that individuals are creative and capable of initiating change, yet in real life they lack the motivation to change or take action. As a result, the game aims to provide motivation and remove the negative pressures associated with making changes in real life. According to McGonigal, real life can be “fixed” by creating scenarios and reward systems that motivate people to act in more positive ways. These scenarios can be applied to a range of tasks and activities ranging from household chores to “saving the world” [9].

Collective Intelligence

The second concept that is central to the design of WWO is the ability of a diverse group of people with different life experiences to devise innovative solutions to complex problems. Being experts in their own needs, it is individuals who can best imagine how their everyday practices might change in a hypothetical situation such as an oil crisis. By engaging in realistic scenarios and stories, players are contributing to a collective intelligence on the issue of oil dependence. Through their participation, players learn by

heightening their awareness of environmental issues and changing their behavior in ways that lessen their dependence on oil. At the same time, the entire community can learn from the players’ responses because they present a diversity of ways that one might prepare for and/or survive in a world without oil. These two kinds of learning depend on active participation by players. In what follows we analyze and reflect on this participation.

METHOD

According to the WWO website, over 1900 people signed up as players and submitted over 1500 stories with over 60,000 active observers [13]. However, these numbers tell us very little about the character of participation, and how individual contributors shaped the game narrative. To better understand participation patterns at a granular level, we constructed a database of participant contributions – an aggregate record of the game narrative – that we could explore both quantitatively and qualitatively.

Basic metadata about participation in the game is hosted in two places: on the archived WWO site itself and in an offsite archive set up by the game designers in partnership with the Internet Archive’s Wayback Machine. While the WWO site still exists, many of the links to the original posts are no longer valid. The game archive captured 94% of the content from the posts made during the game’s duration of 32 days (with some gaps most likely related to participants deleting their own posts prior to the construction of the archive). Our database includes 86 audio files, 1274 blog entries, 116 images, and 75 videos.

FINDINGS

It has been noted that World Without Oil attracted 60,000 unique views and over 1600 contributions from players across several continents [13]. At face value, these seem like impressive numbers. However, when exploring in detail we see that engaged participation was not as broad as these numbers might suggest. Furthermore, our analysis reveals high attrition rates among participants early in the simulation, and a small number of contributors authoring the majority of the narrative.

Participation Patterns

The overall participation trend shows a sharp decline at the beginning, with the first day being the highest participation date, strong declines over the first five days, and then steady decline in posting with a brief uptick at the end (Figure 1).

If we use participation in the game narrative as one measure of engagement, we can break participation into three groups: limited, moderate and high engagement. We considered limited engagement 4 or fewer posts (an average of once per week of the simulation or less); 227 of the 308 participants (excluding designers) fall into this category, accounting for 367 posts. Moderate engagement was set at 5–9 contributions to the game; 38 participants engaged at this level, accounting

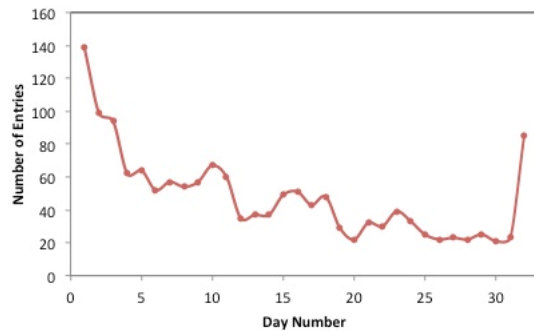


Figure 1: Total number of entries per day versus days passed

for 244 posts. There were 43 high-engagement players, those who submitted 10 or more posts accounting for 827 posts.

With an open game narrative like WWO, one would expect there to be more persons interested in observing the simulation than active players constructing the narrative. However, we see the ratio of engaged participants to lurkers even smaller than expected. The 30 most frequent participants (top 10% by number of posts) accounted for roughly 50% of contributions. The 60 most frequent participants (top 20%) accounted for roughly 67% of contributions. These ratios are slightly better than the 80-20 rule, a marketing maxim which suggests that 20% of customers produce 80% of sales. However, the number of unique hits on the site during the 32 days of the simulation numbered over 60,000. The number of contributors, then, is less than 1% of all those who expressed interest in the simulation itself. Furthermore, we see that the ratio of highly engaged participants to all participants is exceptionally small, with only a few dozen contributors accounting for most of the narrative, and over 50% attrition of active contributors at the midway point of the simulation.

Player Participation Profiles

Game participation patterns, when examined at the level of the individual contributor, reveal a number of “profiles” or clusters of participant behavior:

Toe-Dippers – These players posted a single contribution, or in 13 cases contributed two times on the same day, but thereafter did not contribute again. We identified 150 players as Toe-Dippers, 46.6% of active contributors. The majority of Toe-Dippers contributed early in the game; 57% contributed in the first five days and 87% in the first 16.

Lurkers – These players also posted a single contribution to the game narrative, but on the final day of the simulation and with some evidence in the post that they had been reading and engaging with the WWO story. We identified 18 Lurkers, comprising 5.6% of contributors. We call out this group as they demonstrate the kind of summative reflection that may be overlooked by exploring the player profiles strictly algorithmically.

Drop-Outs – These players posted frequently in the early days of the simulation then fell away by the middle, with no posts past the mid-way point of the game. We labeled 65

players as Drop-Outs, 20.2% of players. Of these, 24 players posted 3 or more times in the first five days, but were not heard from again, suggesting initial excitement that did not lead to continued engagement.

Late-Comers – Late-Comers were players who joined the game in the second half of the simulation, contributing regularly between days 20 and 32. Some of this later interest may have been driven by documentation of WWO on public radio, which partially funded the development of the game. The Late-Comers account for 15 players, only 4.7% of active contributors. This includes some participants who did not actively contribute to the game narrative until the final week.

Regulars – Only 39 players (12.1% of active contributors) participated steadily throughout the game, posting 5 or more times (greater than once per week) including posts in the final days of the simulation. We used standard deviation to account for post spread to eliminate players who may have posted a flurry of contributions in the final week (distinguishing Late-Comers from Regulars). The Hyper-Engaged, a subset of this group, totaled 9 players, posting more than 25 times apiece. Although they comprised 1/8 of the players, this group – along with the game designers – submitted nearly half the narrative content.

DISCUSSION

In this section, we go back to our research questions and discuss how this initial overview of participation begins to answer them. *What are the kinds of engagement fostered in these environments and do those engagements support the learning objectives sought by the game designers?*

At the most basic level we see a high drop in participation after the first few days, raising the question of how varied mechanisms such as diverse storylines, feedback, or varied kinds of content may be used to sustain participation. For example, an important element in maintaining player interest in games is feedback. Ipsatic feedback (how you are doing relative to your own prior play) and normative feedback (how you are doing relative to all players) permit participants a richer understanding of the game and how their contributions construct the game narrative. Real-time feedback during the game – such as personalized reminders, return prompts, or other tools commonly employed by commercial sites and social networks to increase and sustain user engagement – may also be used productively to sustain interest and engagement in the game.

The participation profiles outlined in the previous section enable a more detailed assessment of participation in WWO than has previously been possible. They also serve as an analytical tool to guide thinking about meaningful engagements in such environments. For example, we might consider the presence and contribution of “Toe-Dippers” and “Drop-Outs” in the overall success of the game as a learning environment. These players are able to enter the space because of the low barrier to participation and no commitment requirements. Ease of entry to the game is

arguably important for inviting people to try a novel experience; furthermore it helps create the excitement and sense of collective mission that is key to building momentum. At the same time, these players may misguide more committed players and masters regarding the game's initial success.

The Hyper-Engaged players pose a different but related challenge. These players' engagement and participation is important to the success of the game, as their frequent contributions keep the narrative fresh and moving. At the same time the intensity of their participation might dominate the flow and direction of the narrative at the expense of marginal voices. This goes against one of the central concepts of ARGs: their ability to bring together players with diverse backgrounds and experiences, thus enabling the entire player community to learn.

Future ARGs might employ the profiles developed from this exploration to balance the number of "Toe-Dippers" and "Drop-Outs", increasing long-term engagement and improving the likelihood of fostering learning and change from the game experience. While the algorithmic nature of the profiles may change to suit a particular game experience, the five profiles we propose can serve as patterns off of which participation designers can craft better game mechanics.

FUTURE WORK

The construction of a database to analyze participation patterns has permitted us a unique view of WWO. This view stands in contrast to the mainstream discussions of ARGs that rely heavily on overall participation statistics and anecdotal evidence from designers or a small set of players. Our preliminary analysis shows that participation is varied across players in ways that may inhibit some of the stated learning objectives. Our next step in this direction is qualitative analysis of the content generated by players to gain a better understanding of how participants develop their personal story in the game, how the collective narrative of the game unfolds, and whether and how these narratives indicate individual or collective learning by the participants.

CONCLUSION

Extended multi-player game experiences have a variety of players and participation levels. A balance of player types and commitments is required for an environment to support learning. We suggest that cultivating effective play, particularly that which leads to learning and change, demands cultivating commitment from more than a handful of devoted contributors. Understanding, predicting, and designing for player participation will likely result in more powerful game experiences. Our future analysis will complement this initial work by enabling more nuanced and

comprehensive understandings of ARG play with implications for the design of other interactive learning environments.

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