Roles People Play: Key Roles Designed to Promote Participation and Learning in Alternate Reality Games

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ABSTRACT

In this paper, we outline specific roles that are used by designers of Alternate Reality Games (ARGs) to help promote and sustain player participation and provide educational scaffolding. These roles were derived through analysis of a representative sample of ARGs and two case studies of small scale, education-based ARGs. In particular, we found that the approach that designers take to incorporate in-game protagonists (“protagonist-by-proxies” and “protagonist-mentors”) can influence the ways in which 1) players gain access to the disparate narrative and ludic elements within an ARG and 2) designers can integrate collaborative learning opportunities authentically into the narrative and gameplay.

Author Keywords

Alternate Reality Games; serious games; design; collaboration; participation; social roles.

ACM Classification Keywords

K.4.0 [Computers and Society]: General; K.3.0 [Computers and Education]: General.

INTRODUCTION

Identifying key roles that individuals play in games is an important research strand in human-computer interaction (HCI) and related fields in the social sciences [32]. Studies that inform our understanding of social roles have been applied to improve the design of social technologies [40,52,70] as well as enhance cooperative, multiplayer game play [7,57,61,76]. This paper extends research on the design and influence of social roles in multiplayer games with a focus on a popular collaborative play experience known as the Alternate Reality Game (ARG).

An ARG is a form of transmedia storytelling [33] whose narrative context is not bound within any single communications platform or media type. An ARG is also a

type of pervasive game, with interactive elements that are “woven into the fabric of the real world” [8:1], such as messages and clues that are scattered and hidden in billboards, in websites, phone calls, text messages, or books [39,45]. If *Alice in Wonderland* were adapted as an ARG, for example, a player might receive a text message from the Rabbit that contains GPS coordinates to an encrypted clue, which the player could upload to a discussion forum for other players to help decode, then email the results to the Mad Hatter to advance the story.

Player collaboration is a primary design goal for ARG designers, who strive “to create puzzles and challenges that no single person could solve on their own” [46:203]. Indeed, players in ARGs often successfully navigate the same problems that workers in knowledge organizations¹ face, such as making sense of disparate data distributed across multiple media, or defining and coordinating problem-solving tasks [15,25,39,46]. Players in the ARG, *I Love Bees (ILB)* organized themselves into different sub-groups, each representing competing theories about story data they had collected, in order to determine the best interpretation and collective plan of action [46,57]. Because of the success with which players collectively operate in many ARGs, they also offer insight into potential designs for collaborative methods and tools that support knowledge organizations and learning communities [8,25,39,58]. By “learning communities,” we refer to diverse social groups that emphasize social interaction, active and situated learning [19,71]), and can be formal (e.g., in a school, classroom, or professional organization), or informal (e.g., an after-school club, social media network) [42].

Although successful collaborations are a key characteristic of ARGs, many ARGs fail to 1) attract sufficient participation and/or 2) promote and scaffold learning (especially for younger or more inexperienced players). For example, two ARG design teams targeting youth and young adults in informal learning contexts struggled to recruit players [69,73]. Despite a strong marketing plan and a

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¹ We define knowledge organizations as those whose primary interactions depend on the transfer of information, typically via communications technologies [6,25,66].

robust mixed reality design, Sylvan et al. [69] were not able to develop and sustain an adequate player base for their environmental science game for older teens (15-17 years old), *Canaries in a Coalmine*. Although the registration page for *Canaries* logged 2000 – 3000 visits during its initial launch (August 2011), only 75 players actually registered; approximately 20 players posted content; and only 10 players engaged in the chat sessions required to advance the game’s storyline [69]. Even after the designers revised and re-released the game based on lessons learned from the first release, “a sustainable community did not form” [69:5]. Similarly, *ARGOSI*, an ARG that targeted undergraduate students (18-21 years old), failed to recruit and sustain a substantial player base [N. Whitton, personal interview, January 2011]. *ARGOSI* was designed to support undergraduate students as they transition into university life and learn to use library/research resources at a university in the U.K. While several hundred students were targeted, only about 10-20 students completed the ARG [73].

Relatedly, participation patterns in some ARGs reveal how designers can miss the mark for promoting productive collective action and learning, and instead, create an echo chamber of player opinions and attitudes that may appear effective in the ARG’s fictional context, but would be ineffectual or even erroneous when applied to “real-world” problem-solving situations [31]. For example, players in *World Without Oil (WWO)* [18] shared personal narratives about their efforts to survive a global oil crisis that added a human interest touch to community efforts; however, they often failed to develop effective sustainability solutions that were grounded in factual, evidence-based research [30].

Consequently, investigating the social roles that ARG creators integrate into their designs to promote and sustain participation can inform the design and implementation of future ARGs and similar transmedia experiences, especially in learning contexts [8,25,46,57]. Categorizing these social roles can also enhance our understanding of the ways in which problem-solving communities self-organize and offer options for designers to explicitly engineer mechanisms for more productive roles into future designs [25,47,57]. While previous, focused studies of specific ARGs have laid the groundwork for such categorizations [15,25,31,45,57], the research presented in this paper aims to extend these individual accounts by developing a broader framework of social roles that support participation in ARGs overall.

This paper makes the following contributions to games-based research and social computing design. First, we identify specific social roles that are considered critical by ARG designers for engaging and sustaining player interest, participation, and collaborative sense-making (i.e., how social groups work toward a shared understanding of a situation or problem, and develop strategies to address it [4,17,59]). To do so, we studied a select sample of past ARGs and interviewed several ARG designers, focusing our analysis on the question, “*What key social roles have*

ARG designers used to promote and sustain participation, and model positive learning behaviors within learning communities?” Second, we present two case studies to examine how specific roles from our framework were designed into the storylines for two ARGs that target youth (13 – 17 years old). Of note, the two case studies were implemented in two different learning contexts: 1) a middle school social studies class and 2) a public library summer reading program. Our case studies detail the ways in which ARG designers tried to integrate characters that modeled positive and productive learning behaviors.

RELATED WORK

We situate our study within the context of previous studies on social roles in ARGs and similar mixed reality experiences. We also draw from research in videogames to lay the groundwork for our study’s approach.

Related Research on Roles in ARGs and Mixed Reality Experiences

Current research on ARGs largely attends to actual game play and player participation [15,45,46], and their implications for design [57,76]. Several studies have conducted detailed qualitative analyses, offering thick descriptions of the ways in which ARG player communities self-organize to solve problems [24,58] or develop community resources to support collaboration and sense-making [15].

For example, Peyton et al. [57,58] analyzed the military language and culture that *ILB* players adopted to collect and make sense of scattered clues as they propelled their play toward a successful endgame. These roles were determined by leadership behaviors that were mapped to military tropes: players organized themselves into “platoons”, “squads”, and “armies” or advocated for promotion of peer players to higher ranks like “general” or “lieutenant” [58]. Similarly, based on her analysis of multiple ARGs, Dena [15] developed a typology of game resources that players create to support their sense-making, along with a framework regarding the types of players who create these resources. Player-created “tiers of interaction” [15] include story fragment aggregators or recaps (e.g., “trails” or game guides), puzzle-solving tools (e.g., code charts, alphanumeric converters, and decryption toolsets such as those found at ARG community sites like “Unfiction,” <http://www.unfiction.com/resource/otools/>). From an educational perspective, player-produced game resources are exemplary forms of participatory culture and community knowledge production [8,15,34], because they reformulate and remix ARG designer content (i.e., “primary producer”) into formats that enable novice and non-players to access and enjoy distributed, often complex narratives. Indeed, some studies have found that spectators, or more passive consumers of ARGs and related mixed reality games represent a social position that is just as important to designers to consider as other more active roles [5,53].

The military roles that *ILB* players assumed as they tackled its puzzles and challenges offered a productive self-organizing strategy that has attracted the interest of knowledge management organizations [24,25] and education communities [36,51,73]. In contrast, Jafarinaiimi et al.'s [30,31] analysis of the roles players assumed in *WWO* underscores the educational limitations of an ARG design that failed to attract players with opinions and data that expanded beyond the narrow set of sustainability practices continually proposed by the design team.

Instead, the player roles that Jafarinaiimi et al. [30] identified reflect the *WWO* designers' inability to sustain meaningful participation. For example, *Toe-dippers*, *Late-comers*, and *Drop-outs* [30] were able to quickly and easily contribute to the *WWO*'s community dialogue on sustainability due to an easy-to-use online site design and the low barrier to entry that its designers gave ("Tell us YOUR story"). However, these players did not consistently contribute and typically stopped playing after a short time (e.g., one week). Furthermore, most of the *Regulars* and members of the design team did not offer feedback that challenged players to move beyond micro-sustainable actions (e.g., ride a bike to work) or extended their knowledge about sustainability in general (e.g., find and share factual resources rather than offer subjective, often misleading personal stories). The player roles that Jafarinaiimi et al. [30] identified from *WWO* participation profiles suggests strategies for designing ARGs that result in more innovative problem-solving solutions; however, [30] stopped short of examining how designers might design and implement ARG character-based roles to promote more meaningful participation. In addition, the inconsistent cycles of participation that *WWO* players exhibited [31] underscores a challenge that designers of ARGs [69], related community-based games [50] and online communities alike [41,44] must address: what social roles, toolsets, or other components can be integrated into these experiences to promote and sustain participation?

In their investigation of the design of a mixed reality game related to ARGs, Gonzales et al. [21] found that even "a wacky, volunteer scavenger hunt" like the "Greatest International Scavenger Hunt the World Has Ever Seen" (*GISHWHES*) revealed the same sorts of "user roles" that have been found in professional IT organizations [21:955]. The main difference between scavenger-hunt-based games like *GISHWHES* and ARGs is the primacy of story, and the player community's role in enacting the story as they interact with its transmedia elements. From a learning perspective, designers of the mixed reality game, *Operation: Citadel*, defined various roles for the docents who helped guide players through a history-based experience in a national historic site [76].

Overall, these studies have analyzed player participation patterns to derive their role sets from the roles and behaviors that *players* and player communities assume to

collaborate and support their own engagement. In contrast, our study shifts its analytic focus to the ways in which *designers* endeavor to create and employ characters within the ARG narrative to promote participation and collaboration. We also examine the ways in which ARG designers can craft special player roles during gameplay to monitor and enhance player engagement. Furthermore, these studies focus their analysis on specific ARGs. Our study's goal is to build upon their analysis by examining a broader sample of ARG to derive a more generalized framework that may be used by designers of ARGs and similar collaborative game-based experiences, such as *GISHWHES* [21] and *Operation Citadel* [76].

Related Research on Roles in Videogames

From a traditional videogame design perspective, many game-based learning studies over the past decade have investigated the ways in which role-playing activities (e.g., "playing an environmental scientist") enable players to adopt epistemic frames, or ways of knowing and working within specific in-game contexts that can transfer to "real world" contexts [62,63]. This learning sciences' work has emphasized the knowledge-building [64] and scientific inquiry practices [67] of youth players as they develop their own identities while assuming different social roles in multiplayer videogames [65]. Similarly, our case-study analysis explores the ways in which various social roles that designers create can help advance design-based research on technology-mediated social participation [60] and learning in learning communities such as ARGs.

More broadly, Isbister [29] established videogame design considerations for crafting in-game characters (i.e., non-player characters or NPCs) that can promote higher engagement and participation by players. To develop her "common social roles" taxonomy, Isbister [29] examined videogame NPCs along several design dimensions that lead to role formation, such as:

- *Power dynamics and hierarchies* (e.g., "minions" are designed to engage in unthinking service and loyalty to a player or group of players);
- *Interdependence* due to complementary abilities and overlapping or competing objectives (e.g., "allies" and "enemies" may possess similar levels of skill, but an enemy's goals run counter to player objectives);
- *Defining interaction moments* (e.g., "minions" mirror player excitement over successes or cheer when the player faces obstacles; "mentors" act as player guides by providing training or new information that players need).

Our case-study analysis of the roles that ARG designers create is grounded in Isbister's framework [29]. The social roles we identified are closely related to the psychology-based naming conventions that [29] established (e.g., "allies," "enemies"), but we use terms that hew more closely to the narrative roots of ARGs (e.g., protagonist, antagonist). In addition, we use the case studies to highlight

ways in which ARG characters can be designed to enact their roles across Isbister et al.'s dimensions (e.g., specific interaction moments and power hierarchies).

The remainder of our paper will proceed as follows. First, we provide a brief summary of designer-created roles from a sample of existing ARGs. Next, we review two case studies on the roles and behaviors assumed by ARG characters and players to promote player participation and collaborative learning. Finally, we touch on limitations of our current analysis and plans for future work.

METHODS

The analysis presented in this paper is part of a larger design-based research project to explore ARGs as collaborative sense-making systems and authentic, participatory learning environments [7,8,10,11,26]. For this paper's more focused study, the following research question guided our analysis: "*What key social roles have ARG designers used to promote and sustain participation, and model positive learning behaviors within learning communities?*"

We designed our study in two phases, using a qualitative, case-study approach [74]:

1. Our goal for the initial part of this study was to identify and categorize community roles that exist in ARGs, whether they are: 1) created by designers prior to game launch or 2) crafted to emerge during gameplay. To that end, we analyzed a sample of existing ARGs and transmedia experiences and solicited interviews from designers of these ARGs and transmedia experiences.
2. In the second part of our study, we reviewed the design processes followed by two different ARG teams who were developing their experiences for teenagers learning contexts (a classroom in a public middle school and a public library's summer reading program).

Data Collection

We followed a purposeful sampling strategy [13] to select a set of existing ARGs and transmedia experiences for our analysis, using the following criteria:

- *Identified as "seminal" or model ARGs by designers and scholars.* For example, *The Beast* is commonly referred to as the "first" large-scale ARG [39,45], and *ILB* was both an early ARG and a wildly successful marketing campaign (over 100,000 active players and 3 million more casual players and observers) [39,45,46].
- *Distinguished by mission or purpose.* For example, early ARGs served as marketing tools in the entertainment industry. Others were designed to raise awareness of and mobilize action in response to major social issues, such as an impending global oil shortage (*WWO*) [31,47] or disaster preparedness and solving the world's clean water crisis (*Urgent Evoke*) [20,27,47]. A small number were designed with educational goals in mind, such as information literacy practices and environmental science (*ARGOSI*; *Black Cloud*) [51,73].

- *Distinguished by primary narrative delivery platform.* A growing number of print books extend their stories into other media, such as character blogs, websites for fictional businesses, working phone numbers and email addresses (*Cathy's Book*; *Personal Effects: Dark Art* [8,28,68]). While these book-based ARGs feature active online community sites where readers/players can share information, personal interpretations, and questions, they can be experienced with little to no online interactions.

We selected at least two ARGs in each category to review in detail, focusing on the social roles and behaviors that designers developed for in-game characters and game runners. We also conducted a literature review for available research studies and design documents such as archived player community websites (e.g., *urgentevoke.com*) and player walkthroughs (e.g., *Lostpedia*) related to our sample.

In addition to the sample of existing ARGs that we reviewed, we also analyzed interview recordings and transcripts for a diverse set of 17 game designers and researchers who have experience producing ARGs or studying ARGs and similar immersive learning experiences. Eight of the interviewees are established professionals in the entertainment industry (transmedia designers and producers). The rest of the participants included game studies scholars, librarians, and museum professionals. Two of the ARG experts have produced ARGs specifically for undergraduate-level educational environments [36,73]; three have produced ARGs targeted for teenagers and tweens [16,51,56,72]; and one designed ARGs to support informal learning in museums [22,23]. Our diversity of ARG designers helped us gain insights about professional practice, as well as non-professional contexts such as secondary school environments.

To evaluate how designers *applied* elements of our community roles' framework in practice, we used a case study framework [74] to investigate two small-scale ARGs. They were both targeted at younger players (13-17 years old) in learning contexts. The first ARG case study (C1) was designed for a formal education environment: a middle school social studies classroom. The second ARG case study (C2) included two ARGs that were played across two summers as part of public library summer reading program. The design team for C1 included the authors (university researchers and a creative writer), while the design team for C2 was comprised of two youth service librarians at a public library and three teenagers (12-16 years old).

Data Analysis

Because our study included qualitative sources of data such as interviews, recordings of design meetings (for our two design cases, C1 and C2), field notes from design sessions (C1, C2) and gameplay with study participants (C1), we used a qualitative coding approach. Our iterative coding approach was inspired by grounded theory [12,13], in that we did not have preconceived categories. Rather, we let the data drive the categories that emerged. We coded data

collaboratively to help reduce the biases of any single researcher. We focused our analyses on the social roles and behaviors that designers developed for in-game characters and game runners.

KEYSTONE ROLES USED BY ARG DESIGNERS

Based on our analysis of existing ARGs and interviews with experienced ARG designers, we identified five types of *keystone* roles that designers have developed. *Keystone species* are those whose presence is essential to the survival of an ecosystem [49]. In ARGs, keystone species (i.e., roles) can help players become and remain engaged as they progress from launch to endgame. We divided our keystone roles into two categories:

- *Narrative-Centric, defined pre-game.* These roles include characters who are integrated into the narrative pre-game and whose social roles remain distinct from players throughout gameplay. Three social roles fall within this category: 1) the “*Protagonist-by-Proxy*”, a character who is part of the overall narrative but works as a close ally and informant to the player community [3]; and 2) the “*Protagonist-Mentor*” who acts as the ARG’s help system and authority figure, often directing the players to complete specific missions and offering training or advice that enables them to do so; and 3) the “*Antagonist*” (whether an individual “villain” or organization), that can serve as a primary source of conflict to engage potential players to participate and existing players to become more invested in helping the protagonists [37,77].
- *Gameplay-Centric, designed for and emerging post-launch.* These ARG social roles may be established and assigned pre-game, but very little narrative content or player interaction is developed pre-game. These roles are activated for engagement after the game is launched. Members of the ARG design team who assume these gameplay-centric roles have been dubbed *Gamerunners*, since they essentially drive gameplay once the ARG is launched. Two social roles fall within the *Gamerunner* category: 1) *Community Conduits*, who are responsible for dynamically reporting player activity to designers; and 2) *Planted, or Proxy Players* who may be introduced as characters within the narrative, but who interact with the player community as insiders and often, player role-models and guides.

Because our case studies focus on the design of the narrative-centric keystone roles of protagonist-by-proxy and protagonist-mentor, we address the gameplay-centric social roles first. We highlight the ways in which these roles were implemented by drawing upon our sample of existing ARGs and interview transcripts. Since these designer-created roles are closely related to the ARG player community from a functional perspective, we also touch on the ways in which ARG players have assumed similar gameplay roles to promote participation and support sense-making.

GamePlay-Centric (Gamerunner) Roles

Because of the ways in which ARGs distribute content, a key problem is keeping track of what is being found, who is finding it, what they are doing with it, and how it fits into the overall story. For designers, the question is: how do we connect our players to the distributed narrative content, and with each other? For players, the question is: how do we collectively keep track of what we have, and how does it fit into the mystery we are unraveling? The solution on both sides has been a social one: make sure someone is watching, responding to, and preserving community interactions. This role is best described as a *conduit* that ensures any and all interaction data about gameplay is being shared effectively and efficiently among ARG designers and players, and among players themselves. In ARG design circles, the role of the community conduit is known variously as the Community Lead (*ILB*), Participation Architect (*WWO*), Community Liaison (*WWO*), or Moderator (*The Beast*).

During *The Beast*, the core design team shared the responsibility of monitoring and responding to any and all player reactions [S. Stewart, personal interview, Dec 17, 2010]. For their next ARG venture, *ILB*, the same design team felt the community-monitoring task was so important that they recruited a “Community Lead.” The *ILB Community Lead* was responsible for checking “every known source of information written about the game, including discussion groups, ...mainstream media and blogs” [39:39]. The community lead would also file a daily report that the design team would use to make “instant story updates and adjustments as needed” [39:40]. Since then, a Community Lead or Community Liaison has been a standard member of the ARG design team. *WWO* listed three Community Liaisons and one “Participation Architect” in its project team credits [18]. Jane McGonigal, *WWO*’s Participation Architect, called it “a fancy way of saying my job was to help make sure every single player found a way to contribute meaningfully to the collaborative effort” [47:305]. Community Leads can be a primary means for ARG design teams to engage and sustain player participation.

Player communities have devised their own equivalent forms of community support. These players are typically more active players who establish themselves as forum or chat room moderators. They help organize content and categories on community wikis or other game-based repositories, and tend to “bring new players and lurkers into the community through fun and welcoming discussion” [45:46]. Community leads and/or moderators can be instrumental to players in terms of keeping track of information [15] or recruiting new participants with skills the existing community might be lacking (e.g., asking who knows how to read esoteric lute tablatures in *The Beast*) [S. Stewart, personal interview, Dec 17, 2010]. Community liaisons in player communities have also become key figures in the preservation and evolution of ARGs as a

genre. Several early player community leads moved on to become ARG designers themselves, while others established and maintain prominent ARG gaming/critique communities (e.g., Unfiction, ARGnet, and ARGology).

The role of *proxy-player* emerged through our analysis of ARGs with more open-ended narrative structures [11] whose design goals are often to raise awareness around a social issue (e.g., *WWO*, *Urgent Evoke*). For example, members from the *WWO* design team seeded the community site and other social media with the initial news of an impending oil crisis. During the game, these proxy players created blog posts alongside players, encouraged existing players to contribute their coping stories and strategies, and invited potential players to join. The proxy-player role includes a subset called *Mentors*, who are essentially “super-players” or volunteers who are charged with welcoming and orienting new players, encouraging players individually to sustain participation, and providing feedback to ARG Community Conduits throughout the game. For example, in addition to designating community leads and proxy players within its own design team, *Urgent Evoke* also recruited *Mentors*, special players who publicly championed one or more fellow players [2].

It is important to note that the support functions that community conduits, proxy-players and mentors provide are not unique to ARGs – other studies have identified individuals who serve similar roles, such as founders/leaders [40], mediators [44,54] and elders, or mentors [38].

Narrative-Centric: Protagonist-by-Proxy

The “*protagonist-by-proxy*” is a core keystone species – and staple interactive dynamic – used by ARG designers as they develop an ARG storyline. Novelist/screenwriter and transmedia author, J.C. Hutchins, coined the phrase to evoke the ways in which ARG players function as “both passenger and driver of the narrative” [3]. The protagonist-by-proxy is an ARG character who seems to discover the story in tandem with the players. During game-play, the player is presented with the same artifacts and information – such as URLs, copies of documents, photographs, email addresses, or phone numbers – as the in-game protagonist. Players have the chance to unearth secrets that this character may not have, but needs, and s/he has the means to communicate new information to the players. The protagonist-by-proxy often asks players for help in solving some problem that is initially perplexing, but increasingly threatening.

For example, in *ILB*, the web-master of the site asked players for help in getting rid of what looked like a hacking program that was breaking her site. In *ARGOSI*, a college student named Viola asks for help in uncovering the mystery of a letter that she found in her grandmother’s attic. From an information literacy perspective, the protagonist-by-proxy often models productive information-seeking and problem-solving behaviors that the players can emulate. In

Personal Effects: Dark Art (PE:DA), for example, the in-game protagonist Zach enlists the information search and retrieval skills of Rachael, his girlfriend, who is also a “fact-checker” for the New York Journal-Ledger. Similarly, in the *Cathy’s Book* transmedia series for young adult readers, the lead protagonist, Cathy, has a best friend, Emma, who models expert information search and retrieval skills, similar to *PE:DA*’s Rachael for players to emulate.

Players often see the in-game protagonists as people “just like them,” and are motivated to regard them as both mentors and investigative partners. At times, the in-game protagonist not only seems like a partner in the player community, s/he actually breaks into the “real-world” of the players. The actress who portrayed Rachel Blake, the in-game protagonist in the *Lost Experience*, participated as an audience member in Comic-Con 2006. During a panel with the producers of the *Lost* TV show, she took an active part in the question and answer period, causing a scene that drew cheers from other audience members when she accused the producers of hiding information about the Hanso Foundation, a fictional organization within the *Lost Experience* narrative [43].

Narrative-Centric: Protagonist-Mentor

Just as videogame narratives benefit from including characters who act as the gameplay “help system” [29] or game guide, ARGs designers implement protagonist-mentors. These narrative-centric social roles support player sense-making from a more authoritative vantage point than the protagonist-by-proxy. As a player ally who is uncovering information alongside the player, the protagonist-by-proxy is typically unable to provide higher level, omniscient information about the game narrative, or training guidance and advice on game challenges. A protagonist-mentor offers a character-driven device that authentically fulfills this role. This role has been most evident in ARGs created with learning goals in mind. For example, in *ARGOSI*, the protagonist-by-proxy, Viola, needed help to navigate the university library databases that would help her solve the map-based puzzles that she encountered throughout the game [N. Whitton, personal interview, Jan 2011]. Because the ARG was also promoting information literacy activities for new university freshmen, the *ARGOSI* design team wanted to establish that there was an authoritative, credible educational resource to support gameplay [N. Whitton, personal interview, Jan 2011]. The protagonist-mentor, Percy Root, who was a fictional librarian at the local university, was created to fulfill this role. His blog posts were publicized at the beginning of the ARG, and provided links to Viola’s main website as well as pointers to university databases and helpful tips about using them. Similarly, the character Alchemy, the leader of the social action movement in *Urgent Evoke*, was featured in the ARG’s trailer and introduced the first mission and gameplay guidelines. In *Black Cloud*, an ARG designed to introduce youth in an urban public high school to urban air pollution issues, the protagonist-mentor was not a person,

but an anthropomorphized “cloud” that provided players the means to monitor and improve air quality in their neighborhood [51]. Our case study analysis provides more detail regarding the protagonist-mentor role.

Narrative-Centric: Antagonist

In literary studies, the antagonist represents ideals that directly oppose the protagonist [14]. Antagonists can be a single character/person, a group of people, an organization or institution, or even an idea that serves as a major source of conflict for the in-game protagonist, and by extension, the player in an ARG. Like the protagonist-by-proxy, well-designed antagonists can motivate potential players to participate and become more invested in helping a protagonist.

The fictional Hanzo Foundation from the *Lost Experience* was the same shadowy group depicted in the *LOST* television series and represents a classic antagonist organization. *The Lost Experience* players not only supported their protagonist-in-proxy Rachel Blake in face-to-face settings, as noted earlier, they also contributed to her online efforts to uncover the Hanzo Foundation's secret and shady practices (by cataloguing information found across the Internet in game-resources such as *LOSTpedia*) [48]. Similarly in *ILB*, players gradually uncovered and shared details about the antagonist Artificial Intelligence (AI) character, the Flea, which turned out to be the source of the protagonist's memory loss and an espionage AI built by the *Covenant*. In the HALO videogame whose story was the backdrop for *ILB*, the *Covenant* was a fictional military alliance of alien races and portrayed the ARG's major antagonist [46].

C1: ARCANE GALLERY OF GADGETRY (AGOG)

Our first case study details the ways in which we designed a protagonist-by-proxy into an ARG developed for a formal education setting and targeted for teenagers (13-15 years old). The participants in the case study included the design team (five adult researchers and one creative writer) and 60 eighth grade students who played the game (13-15 years old) along with their teacher and school librarian. The game itself took place over a 2-week period in a public school in the U.S [7,10]. The students played primarily during American History class sessions (daily classes, Monday-Friday, 50 minutes each). Slightly fewer boys participated than girls: 44% boys (n=26), 56% girls (n=34).

Data collected and analyzed for C1 included field notes recorded by the authors/*AGOG* designers during gameplay, meeting notes from design sessions (before and during gameplay), player interaction logs stored on the *AGOG* community site, and a player survey given to players during a post-game debrief/focus group. The post-game player survey collected demographic data on the players (gender, ethnicity) and posed short answer, open-ended questions about the ways in which players used specific design features/tools available on the *AGOG* player community website, and game-based activities and features they liked, disliked, and found challenging (or not).

AGOG was launched when university researchers recruited middle school students to help inspect a set of historical documents and artifacts for the Smithsonian museum. To join the game, students accepted the researchers' invitation to become part of a modern version of a special society that was allegedly established by Benjamin Franklin, a prominent, “founding father” figure in U.S. history. The players then learned that their primary responsibility as key members of Franklin's *Junto of Enlightened Naturalists and Inventors for a United Society* (JENIUS) was to curate a special subset of inventions from the U.S. Patent Office known as the Arcane Gallery of Gadgetry (*AGOG*). As they progressed through the game, players discovered that several *AGOG* documents carried clues to a secret message whose pieces they had to collaboratively find, decode, reassemble, and share with an in-game protagonist, “April,” to help prevent a devastating reversal in historical events (a change in the outcome of the U.S. Civil War). April was designed as a mechanism for presenting story bits to players, pointing out clues, and sharing in their efforts to decode Morse-encoded and encrypted messages that would help them “save history” (as described by several players during the post-game focus group and survey). April's primary function as a protagonist-by-proxy emerged gradually throughout the design evolution of *AGOG*.

Midway through the design process, as the narrative and player challenges were being developed, we explored multiple design options to fragment and then distribute the narrative in ways that were accessible to teen players (e.g., with partial information on the community wiki, with clues embedded in facsimiles of historical documents) [10]. Most of these solutions, however, required that players take the initiative to find and read the wiki data to uncover the clues. As the *AGOG* creative writer, Ann Fraistat, noted in her post-game interview, these passive, text-based narrative elements required little “interaction” from players beyond reading about them. They covered a rich, complex mythology and backstory, but players could not directly interact with them as they could with a “live” character:

*“My first task was to create the ‘narrative bible’... it was like, oh, yes, I’ll go write sort of like a history novel, y’know? When we started talking about how to actually design this game and incorporate players (laughs). ...It made me think about-- for our teen players-- how it would be great to have some kind of grounding force. ...A lot of the narrative components were more the mythology side of things, and we had trouble reconciling all that mythology with the fact the players need to **play** this game, and the mythology wasn’t really **playable**. April was a playable narrative element that we could put in there that would ground it for middle schoolers. It was important to me to try to make her cool, even in the setting of this, y’know, like it’s hard when you’re trying to relate to some kids who might be kind of like, “eh, school, whatever.” I was hoping to help pull them in by having someone who they could relate to a little bit (A. Fraistat, personal interview, June, 2011).*

Thus, April Gravure (“April G.” to players) was created as *AGOG*’s protagonist-by-proxy, whose main function was to share expository elements via videos and personal blog posts. Based on databased traces of player activity on the community site and a post-game survey, April’s video blog posts proved to be one of the most engaging design elements for players. They would often replay April’s daily video blog posts multiple times to ensure that they uncovered all the clues they thought she might reveal to them. Figure 1 shows players watching (and re-watching) April’s latest post.

Figure 1: Teen players listen carefully (and repeatedly) to April’s daily video blog about *AGOG*’s mysteries.

In addition to meting out story events via almost daily videos and personal blog posts, April modeled information search behaviors that the players’ librarian and teacher were trying to promote (e.g., [1], and helped respond to players’ requests for help via live, interactive chats with players [7,9]. Almost 20% of the chat messages on the *AGOG* player community site involved players asking April for specific help on game missions and badges, or voicing their support. For example:

1) Henry >> April: *"Hii April, my name is henry and these missions are hard especially cryptographer first mission"*

April >> Henry: *"Hey Henry. Yeah, the one with all the morse code... People from the last class said you guys had some JENIUS people there today, right?"*

2) Ben05 >> April (asking for her help to make out the morse code sketched out in her notebook (a picture of which she included in a blog post): *"As a chryptotographer, it is diffucult to read your morse code. please give me a hint"*

April >> Ben05: *"Blake, here's the morse code broken down: -- - - - / . - - . - . - . - - / - . . - ."*

3) Kailee >> April: *"hey how r u doin... i know im with u"*

April >> Kailee: *"I'm doing okay--safe for now! How's training going?"*

Kailee >> April: *"its goin ok for now! i saw ur video its great and ill do anything 2 help ... i just need allitle help on my missions"*

Kailee >> April (at end of a class session): *"yeee april nice talkin 2 ya!!!!!!!!!!!! talk 2 u 2marrow!!!!!!!!!!!!"*

April also provided an engaging and accessible means for following and piecing together the fragmented narrative and related factual historical elements [7,9]. As evidenced by chat messages during the game, during the post-game focus group in which players engaged in a final live video chat with April, and the post-game survey, most players exhibited a strong connection to their protagonist-by-proxy. Several players noted that April was a major reason why they participated: *"I helped April G"*; *"I tapped the code for April"*; and *"April was in trouble and we had to help her."*

To support the players’ perspective of April “as one of them,” April was portrayed as a student. However, to support the middle school teens’ aspirations to interact with older, more experienced youth, April was a 21-year old college sophomore. Her college-age status piqued the interest of several players: during the end-of-game focus group the research team held for *AGOG*, a handful of the male players inquired whether April had a boyfriend.

A fictional Ambassador to JENIUS provided players with guidance as the *protagonist-mentor*. The JENIUS Ambassador was depicted as an all-knowing leader in the society, and provided information to players at pre-scripted stages in the narrative. For example, he introduced the players to the tenets of JENIUS (e.g., importance of respect for others and careful evaluation of information). He also delivered the game’s Final Mission orders and presented endgame congratulations. Because the Ambassador was characterized as a stereotypical authority figure, his interaction with the players was one-way only. He did not engage in dialogue with them, but presented direction via pre-recorded podcasts. Players were initially interested in the JENIUS Ambassador when April wondered aloud how he had earned so many badges, or JENIUS training certifications: several players investigated his profile page to find out more about the badges that they might earn. Many showed and shared their pride when he mentioned specific individuals by name, based on training missions they had completed.

A secret society known as the Scientific Confederate Alliance for Revolution (SCAR) presented players (and April) with an *antagonist* organization who, like *AGOG*’s protagonist-mentor, the Ambassador, never interacted directly with players, but were referred to indirectly in clues on the community site, or overheard in a conversation recorded by a hidden April on her phone. SCAR offered excitement and motivation for many players, as demonstrated in this excerpt from a player blog post:

Ben: *"As you know, last week we observed April G’s notes on her phone recording. The morse code translated out to be Message Across Time. This is obviously linked to the*

Kairograph, which can send messages in the past, present, and future. SCAR is obviously on the hunt for this. We need April to write that message on the 15th!!!! We need to work together for clues & find out why SCAR wants April. You can talk to me about my blog at Ben05."

C2: SUMMER READING PROGRAM MYSTERIES

Our second case study followed the design process used by two public librarians and three teens as they developed two ARGs (over the course of two summers) to promote their summer reading programs. This case study offers a design-based view into the evolution of approaches that the public library team employed to make the traditional ARG format more accessible to youth (13-17 years old) and to encourage greater participation by their local community in library events.

For the first ARG, known as "*Find Chesia*," the librarians and teen designers attempted to follow design principles applied to adult-based ARGs, but found that, rather than engaging their target population of tweens and teens in a collaborative sense-making adventure, they were confused by the lack of direction and concerned with Internet privacy issues [H. Owings, personal interviews, November 2010 and September 2012]. For example, the lead adult designer, a youth services librarian, received feedback from her library's "Teen Advisory Board" that most individuals who attempted to play were unsure that they would be allowed to follow the Twitter feed that was established for one of the in-game protagonists, because they were not allowed by their parents to create accounts on social media networks such as Twitter. The teen designers themselves also noted that they were uncomfortable playing some of the online characters that they had developed for the game narrative, because they were adult characters, not teenagers like themselves. They reported that much of their apprehension stemmed from discussions at school and at home about the dangers of misrepresenting yourself online [H. Owings, personal interviews, November 2010 and September 2012]. As a result, initial participation in the ARG itself was quite low (less than 10), with less than 5 players actually completing the ARG.

The following year, the library design team developed an ARG whose multimedia content was delivered primarily through one community website ("The Mystery Guest", [16]). Furthermore, the protagonist-by-proxy model that they employed presented the teen designers as players themselves, who found clues and shared their thoughts and questions for the rest of the player community in more "natural voices" than the first ARG [H. Owings, personal interview, September 2012]. Not only did the teen designers feel more comfortable, the target teen players also felt more connected to these in-game characters, given their closeness in age and vernacular [H. Owings, personal interview, September 2012].

The lead librarian also decided to include an additional authoritative in-game character, to help provide the direction and guidance that the previous ARG lacked. As she concluded, "*In an adult-run game, if there's not clear*

directions, adults might take the initiative to create [their own] directions... but teens really, they're just, well, they're in a culture of education and they are looking for directions on how to do [ARGs]... Once they know the structure they are more than happy to respond. We found that with a librarian character, they had someone to look to that would give them direction... whereas our teen characters kind of filled in the storyline" [H. Owings, personal interview, September 2012]. The C2 design team also dubbed the Librarian character as "*the voice of reason*" for players, who could "*give hints on how you would answer the problem, or how you might find the solution... things that we didn't do in the beginning, because we thought [teens] could figure it out on their own*" [H. Owings, personal interview, September 2012]. Community participation jumped by a factor of four—to about 23 players total—with eight core players throughout the 12 week summer ARG [16]. Feedback from the library's Teen Advisory Board was also more complimentary: teens reported higher levels of engagement and enjoyment.

DISCUSSION AND DESIGN IMPLICATIONS

Considering the protagonist-by-proxy and protagonist-mentor from Isbister's design dimensions, which organized NPC roles by *power dynamics* (least to most dominant) and *defining interaction moments*, both case studies offer ARG designers with strategies for using these roles to engage players and promote their sustained participation.

In particular, both case studies highlight narrative-based character design techniques for crafting a protagonist-by-proxy who possesses characteristics that are *relatable* to an ARG's target demographic. Like Isbister's *sidekick* and *ally* roles, protagonists-by-proxy are peers, "unequivocally on the player's side" [29:234] and can "make the player really feel he or she has a back-up and help give the player the feeling of being on a supportive team" [29:237]. For example, April was a student, like *AGOG*'s middle school players. She fretted about her skill and effectiveness in tackling JENIUS training missions in the same ways that the teen players did. Similarly, the teen designers in C2 who acted as proxy players (rather than adult characters) in their second ARG were more comfortable and more accessible to their peer player audience. In contrast, the Ambassador (C1) and Librarian (C2), as protagonist-mentors, conveyed "far more power in the game world" and took a "leadership role in guiding the player" [29:238], and is analogous to Isbister's own *Mentor* role.

Beyond the character-specific, narrative features that define the protagonist-by-proxy and protagonist-mentor roles, designers can use different media platforms/channels to underscore their *power dynamics* and enable specific types of *defining interaction moments*. A protagonist-mentor like the JENIUS Ambassador remained dominant, not just in title and temperament, but also in the media he used to communicate with players. He always prescribed player actions and tasks; his communication was one-way and omniscient. Players never "chatted" with the Ambassador; likewise, they never "saw" him in a video as they could with April. April used the

same media channels as *AGOG*'s players, and her video blogs were created with a homegrown, hanging-out-in-my-bedroom quality that is familiar to most teenagers. Many of the key moments between April and players occurred due to the dynamic, "live" interaction afforded by the *AGOG* community site's Chat feature, coupled with the fact that the April was active during the times that the middle school players were most active (during their *AGOG* class sessions).

As noted in several communications genre analysis and new media studies [35,55,75], different media support "different communicative practices" [35:519], and can represent "the purpose, content, participants, location, timing and form of communicative action" [75]. Different media platforms/channels afford different directionality, volume, and timing (e.g., one-to-one, one-to-many; synchronous, asynchronous) [35]. Future ARG designers could establish more ways for the more authoritarian protagonist-mentor to exploit one-to-many, asynchronous media, while a protagonist-by-proxy and proxy player – on the same communicative level as players – would gravitate toward peer-to-peer or many-to-many, synchronous platforms.

While April was viewed very much as a peer and ally to *AGOG*'s players, she was also slightly older and wiser (college sophomore), someone who the players might aspire to in high school and beyond. Thus, April could also serve as a model for the learning behaviors that *AGOG* was trying to promote. She would explicitly guide player actions, giving them new story information and ideas for what to do with it, as well as summarize the "story so far." In short, April provided the positive feedback that Jafarinaimi et al. [30,31] found missing in their analysis of the design weaknesses of *WWO* that limited productive player participation practices.

Like player-produced game resources that enable non-players to access and enjoy distributed, often complex ARG narratives [15], the protagonist-by-proxy and protagonist-mentor roles offer interactive means for players to access and learn from ARG content. These key roles can help designers create experiences that fulfill the participatory learning promise that many ARG proponents have touted.

LIMITATIONS

The roles we have described do not reflect a comprehensive typology of the social roles and associated interaction behaviors that can be engineered within ARGs and similar community-based transmedia experiences. Just as multiple types of social roles (or characters) exist in video games [29] and related collaborative gaming communities [46,76], ARG designers can and do integrate a number of character-based roles that were not covered in detail here. For example, in more traditional video games and role-playing games, antagonist or enemy roles are often covered in great detail [29]. Indeed, the enemy role can be "one of the most popular and enduring NPC types in [video] games" [29:241] that can engage existing players or incite new players to participate. In this paper, we focused our analysis on ARG community roles that influence player participation through largely

positive interaction, such as "protagonist-by-proxy" and "protagonist-mentor," both of which act as allies to the player. The *antagonist* role, while identified and touched on, was given only cursory review for its potential effect on player engagement and learning.

CONCLUSION AND FUTURE WORK

We have identified several "keystone species," or specific roles and associated behaviors that designers can implement to positively impact player participation in ARGs and similar interactive transmedia storytelling experiences. Specifically, we have highlighted approaches used for incorporating these roles in ARGs designed for learning contexts. In contrast to previous studies of ARGs that focus on social roles and behaviors assumed and enacted by players/player communities, our analysis reveals social roles explicitly created by designers. Designer-crafted social roles can be integrated into the ARG narrative (e.g., protagonist-by-proxy) and enacted during game play (community conduits, proxy-players). Our study builds upon early work such as Yule et al. [76], who describe the role of docents in a mixed reality game designed to promote visitor engagement with a historic site.

The keystone roles we have outlined hold implications for use in the design and play of ARGs for learning. Educators (whether in informal or formal education contexts) or older students could assume roles as community leads and encourage more hesitant players. The protagonist-by-proxy could be used to model target literacy practices as well as motivate players on a peer-to-peer level. Due to the protagonist-by-proxy's narrative-centric role, much of the character's interactive content can be created in advance of game launch and thus offer opportunities for reuse. We are currently developing and experimenting with a more comprehensive design typology of ARG social roles and associated modes of interaction within a larger, NSF-funded project to design ARGs that support Science, Technology, Engineering, Arts, and Math (STEAM) learning.

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