Creating and Sharing Records of Multiplayer Online Game Play: Practices and Attitudes

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Abstract

Online games offer multiple ways for players to interact. Recordings of these interactions are used for a variety of purposes. Such recordings raise ownership issues similar to those arising from the use of other online media. This paper presents an analysis of the attitudes and practices of 241 online gamers, 36% of whom reported recording gameplay and 29% of whom reported watching or accessing records of gameplay. We use a series of scenarios and hypothetical statements to elicit reactions to varying features of the production and use of these records; the parties involved, the type of records, and how they are used may all influence perceived ownership rights. Players are more sensitive to the recording and reuse of in-game textual communication than they are to recordings of avatar activity in the virtual world. Particularly negative reactions were elicited by scenarios that proposed a search capability over players' textual communication or the reuse of such in-game communication in the software publisher's advertisements. Additionally, players are skeptical of institutional archiving of such game content, although 50 year embargos on access brought attitudes in line with those for other media.

Introduction

Massively-multiplayer online games (MMOGs) entertain tens of millions of players. Players interact with the game and with each other's avatars in a virtual world; these interpersonal interactions may also be supplemented through alternate communication channels such as chat.

As co-creators of the virtual worlds which they inhabit, players are important stakeholders in the disposition of in-game content. Their avatars' activities and communication have become inexorably intertwined with professionally-authored game content. The complexities of in-game content were revealed when MMOGs became the subject of digital preservation efforts (Library of Congress 2010), which highlighted not only the need to preserve game engines, but also game worlds, and what goes on within them (McDonough et al. 2010). These efforts revealed that MMOG players felt they had rights to records of in-game activities and communication.

But ownership issues go well beyond the archives. Many records of in-game activity created via screen capture or logging software are already shared or published, e.g. as YouTube videos or as publicly searchable in-game chat logs. In-game activity is becoming persistent and accessible in ways that are neither intended nor necessarily desired by MMOG players.

To understand issues associated with the recording and reuse of in-game action and communication, we investigated the attitudes and practices of 241 players of multiplayer online games (MOGs), a broader category that includes team or group oriented games.

Specifically, our study seeks to understand MOGs as part of the complex ecology of user-contributed social media content that we increasingly rely on in our creative and professional efforts. Although a legal system of copyright—along with labeling conventions like Creative Commons—can help to govern reuse, in our everyday lives reuse is constrained instead by an evolving fabric of social norms. What are these norms? How are they changing? This study characterizes these norms, identifies trends, and compares reuse expectations among media types.

We begin this paper by discussing prior research on recording gameplay and how gaming communities record and reuse this material. We then describe our method of eliciting social norms for recording and reuse and talk briefly about the study's participants, who are self-reported MOG players, focusing on in-game practices salient to the study. Finally, we present participants' attitudes to the recording and reuse of in-game content in our scenarios and discuss how these attitudes compare to those for other forms of social media.

Related Work

To design this study and understand its implications, we draw on two areas of related work. The first focuses on how and why game play is recorded; the second draws on studies of in-game communication among players and how they form communities. Understandings of what players talk about, how they view their relationships with their fellow players, and how online games influence real life interactions will help inform how records of in-game communication are likely to be received.

Creating and Using Records of Game Play

Game play is recorded for a variety of important reasons: to address cheating or other unwanted behavior; to share skillful or humorous gameplay; to create data sets for development or research; and to preserve game-related content. We discuss each, with an eye to who creates them, what they contain, and the reason for their production.

The immense popularity of MOGs has spurred an increase in the number of ways to cheat (Webb and Soh 2007). Some forms of cheating can be squelched by improving backend and communication protocol design, but other behavior can only be addressed after the fact. Game providers use records of play, in the form of logs of changes to the virtual world and communication between players, to cope with cheating or other unwanted behavior (Kabus et al. 2005). These logs are used to identify players who have taken advantage of bugs to undermine the on-line economy and to identify players who harass others.

Players may also capture and mix videos of gameplay, creating a genre called *machinima* (Pace et al. 2013). Some of these videos are educational: they show other players how to do something in the game or exemplify strategy. Others are entertaining: they show off the player's skill or are humorous. These videos are most often created during play using standard screen capture tools and thus record not only the intended activity, but also what other nearby avatars are doing; they often capture the chat log for the area too. Figure 1 shows a portion of a screen capture that includes public local and map-level text communication.

A third form of record is created to develop research data sets and to preserve the virtual world for long-term

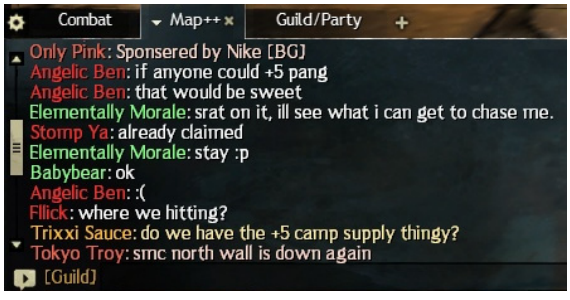

Figure 1. Chat window as part of video.

availability. For example, the World of Warcraft avatar history dataset documents about 91,000 avatars over a three year period (Lee et al. 2011). Some researchers use screenscraping or bots to capture and generate data for their own research, while others gain access to the game publisher's logs. Taylor et al. (2012) ask players to answer a series of questions in the form of a travelogue that describes their play experiences.

The game archiving community has not reached a uniform vision about what to keep. Some efforts focus on preserving the game engine and the pristine data so that the game may be run in the future. Winget and Sampson (2011) focus on capturing design discussions and the game development process to gain a better understanding of the game's intent (much like saving a writer's notes or an artist's sketches to document a major work's evolution). Finally, some efforts focus on preserving in-game activity as well as the game itself to provide a glimpse into living virtual worlds (Internet Archive 2009; McDonough et al. 2010; Stanford 2012; Winget 2011).

Player Communication and Player Communities

Researchers use records of gameplay within MOGs to investigate cooperation and communication among players. For example, the travelogues mentioned above were used to develop models of player expertise (Taylor et al. 2011; McArthur et al. 2012). The results of these analyses inform our expectations of how players are likely to perceive the recording of their game play.

One early result of such studies is that different virtual places have different types of communication (Ducheneaut and Moore 2004). This is natural since players engaged in different activities often co-locate. This variability makes it likely that players will react differently to the recording of game activity in different locations.

Communication among players takes many forms. According to Seay et al. (2004), more players reported using all in-game chat modes (broadcast, guild, group, and private) than reported using out-of-game channels. The top three reasons for communicating (all with 76 or 77% of players reporting use) were to get or give game advice, to coordinate activities, and to engage in small talk or social exchanges. This third category indicates that significant personal (as opposed to game-centered) discussion will be included in comprehensive archives of game activity.

Communities of players form at many scales. Temporary groups form to take part in short term tasks (Bardzell et al. 2008) while many games include guilds to support more permanent and larger groupings of players (Ducheneaut et al. 2006). Additionally, out-of-game communities form around the game (e.g. writing the FAQ and populating the discussion forums) (Sherlock 2007). Groups form among players known only within the game, players known from

online game forums, and among players who already know one another. As such, the content of group-level activity records will vary as to whether the players' out-of-game life makes its way into the record.

Method

This study is part of a series of studies in which we investigate social norms connected with social media ownership. These studies explore how social media creators and users feel about saving, reusing, and removing content from online venues; content types addressed include microblog posts (Marshall and Shipman 2011a), photos (Marshall and Shipman 2011b), videos (Marshall and Shipman 2013a), and user-contributed reviews (Shipman and Marshall 2013). An in-depth analysis of this method and lessons learned can be found in (Marshall and Shipman 2013b). As in these studies, we recruited qualified participants on Mechanical Turk and administered a media type-specific questionnaire following best practices from the literature (Dow et al. 2012; Downs et al. 2010; Ipeirotis et al. 2010; Jakobsson 2009; Kittur et al. 2008); In this section, we discuss how this method was used to study recording and reuse of action and communication in MOGs.

We recruited US-based Mechanical Turk workers who have established at least a 95% acceptance rate for their prior work. Participants who completed the task (called a HIT) received typical payment, in this case 50 cents, regardless of whether we used their data or not. The HIT and the questionnaire itself emphasized that participants should have experience playing online multiplayer games. This self-selection was corroborated through analysis of responses to demographic and practice questions.

The MOG questionnaire included 11 demographic questions, 8 multiple-choice or open-ended questions about MOG-related practice (e.g. what games participants last played), and 26 seven-point Likert-scale questions about stakeholders' rights in specific situations (e.g. whether it's okay for a player to record another player's avatar's humorous actions and post that video to YouTube). The questionnaire used 2 reading comprehension questions as a check to ensure data quality.

Responses to Likert-scale questions were analyzed using the Wilcoxen signed-rank test (a non-parametric test for comparing related samples) to handle the non-normal distributions. Responses to parallel questions are compared using bar charts (Figures 3-11) to visualize relative levels of agreement with varying premises.

Scenarios and Questions

We developed scenarios and legal-style hypotheticals (Rissland and Ashley 1986; MacCormick and Summers 1997) that identified specific stakeholders taking concrete actions. This is important because the hypotheticals must expose the case-based reasoning that people use to evaluate a particular right rather than the heuristics that they might use as a short-cut for the majority of cases. Also, by providing scenario details, there is less room for variance due to differing assumptions and interpretations. The order of the scenarios and hypotheticals is designed to explore when a generally accepted behavior becomes unacceptable. Figure 2 shows the scenarios and hypothetical statements; we refer to the numbering on the hypotheticals in our discussion of attitudes and emerging social norms.

The scenarios explore how opinions change when the recording entity is the game company versus when it is one of the other players, when the place being recorded is a public place versus when it is a semi-private place (e.g. a guild hall), and when the content being recorded is avatar actions versus text chat between players. The scenarios also introduce reuse characteristics such as the addition of a funny voice-over to the screen capture video or the development of a web service for all players of the game.

The scenarios were developed to be realistic; that is they reflect observed types of records and reuse situations. The participants' descriptions of their own practice confirm that they have encountered similar situations.

Responses and Reliability

We received 251 responses (the number requested) to the questionnaire in 27 hours. To ensure data quality, we used a demerit system in which a respondent's data was discarded if two or more of the following occurred: a wrong answer to a reading comprehension question, no answer or a nonsense answer to an open-ended question, responding to all Likert-scale questions with the same answer, or a work time of under 5 ½ minutes (less than 50% of the average work time for the HIT). Applying these conservative criteria, only 10 responses were removed.

Demographics

We use a small number of demographic descriptors to characterize the study's participants; this allows us to compare them to norms from other research. Consonant with other MOG research (Yee 2006), males (153 or 63%) significantly outnumbered females (85 or 35%).

birth year v. gender	Female	Male	(blank)	Total
50s or earlier	6			6
60s	1	4		5
70s	16	28		44
80s	42	85	3	130
90s or later	20	36		56
Total	85	153	3	241

Table 1. Participant age and gender.

The massively multiplayer game Worlds of Mario has been a huge hit. Players from all over the world take part in individual and group quests, collect resources and craft new items, act as middlemen in the virtual world's economy, and just hang out so they can interact with other players of the game.

As part of the game, players are encouraged to form guilds and use their in-game resources to build guild halls that are semi-private spaces where guild members can meet. Over the years, many of the long-time players have quit engaging in the original game's quests and now spend much of their time chatting with other players and enjoying the game's flexibility; their avatars can interact with one another using gestures, dancing, etc.

BioSoft, the game's developer, records all activity and communications in the virtual world to use when they evaluate changes and additions to the game. The activity log includes all the information needed to replay the physical actions in the world while the communications log captures all the public and personal communication that takes place in the game. Using these two logs, BioSoft can recreate any activity from the game at a later date. These records also help Biosoft determine how to resolve complaints against players.

Daniel and Emily play Worlds of Mario. They often joke with each other publicly and find ways to make their avatars the center of attention in Lighthaven, the largest public city where many players hang out to meet other players and to trade equipment and goods.

H1. BioSoft can save Daniel and Emily's activity logs.
H2. BioSoft can use recordings of Daniel and Emily's in-game activity (e.g. their avatars' synchronized dancing) in their advertising.
H3. BioSoft can save Daniel and Emily's in-game communication logs.
H4. BioSoft can use Daniel and Emily's in-game communication logs (e.g. jokes about non-player characters) in their advertising.

Matt also spends time in Lighthaven and finds Daniel & Emily's activity amusing. He creates a video of Daniel and Emily's antics using screen capture software.

H5. Matt can save the video he made of Daniel and Emily's avatars dancing and joking about non-player characters.
H6. Matt can share this video of Daniel and Emily's in-game activity with his friends on Facebook.
H7. Matt can publish the video of Daniel and Emily's in-game activity on his YouTube channel.

Matt becomes bored with Worlds of Mario and redoes the video of Daniel and Emily's in-game activity with a funny voice-over.

H8. Matt can save the modified video of in-game activity on his local disk.
H9. Matt can save the modified video of in-game activity on his cloud storage account (e.g. in Dropbox).
H10. Matt can share the modified video of in-game activity with his friends on Facebook.
H11.Matt can publish the modified video of in-game activity on his public YouTube channel.

John records all of the text-based communication that is taking place in Lighthaven. He has a program that extracts those text messages that include information about what people are buying and selling and at what price.

H12. John can save all of the text-based communication.
H13. John can save the extracted information.
H14. John can share the extracted information with members of his guild.

John finds there is a huge demand for the extracted information, so he creates a web site where players can search for the going price of in-game items.

H15. John can provide the public access to the extracted information.

Visitors to John's site discover he has more than just the in-game commerce information; he has all of the recorded textual communication. They ask him to make the whole text log searchable.

H16. John can provide search-based access to the whole text communications log.

Andrew and Coleen are members of the same guild, but they also know each other out of game—they work together. When they meet in their guild hall, they discuss a wide range of topics including the news of the day, workplace politics, and the occasional personal issue. Other guild members can listen in, but players who are not members of their guild cannot eavesdrop on them.

H17. BioSoft can save the guild hall activity logs.
H18. BioSoft can use images of players' guild hall activity in their advertising.
H19. BioSoft can save the players' guild hall communication logs.
H20. BioSoft can use their recordings of players' guild hall communication in their advertising.

Trey is another member of the guild and records the textual communication in the guild hall so guild members can catch up on each other's activities.

H21. Trey can save the text from the guild hall activity.
H22. Trey can publish segments of the text on his blog.
H23. Trey can create a website that allows public searches over the text from the guild hall.

Given its tens of millions of players, Worlds of Mario is an important cultural artifact. With the permission of BioSoft, the Library of Congress is archiving the logs of in-game activity and public communication with the goal of preserving the game's world and stories as well as the in-game culture for researchers, or even the general public.

H24. The Library of Congress should have the right to give researchers the ability to explore the collection immediately.
H25. The Library of Congress should have the right to give everyone (the general public) the ability to explore the collection immediately.
H26. The Library of Congress should have the right to give everyone (the general public) the ability to explore the collection after 50 years have passed.

Figure 2. Scenarios and questions concerning recording and sharing of in-game activity.

The ratio of 69 students to 172 non-students (or 29%) aligns with our earlier studies, which varied between 24% and 36%. Participants were mainly young and well-educated. 23% were born in the 90s or later (compare to 16% for podcasts, the youngest respondent pool of the earlier studies). While 193 (80%) of the players have attended at least some college, this is lower than the average for the earlier studies (91%). Thus the game study participants skew male, younger, and less educated than other Turk survey-takers who use social media.

Practices

One key consideration for this study is participants' experiences playing, recording, and using recordings of online games. Our previous studies found that participants'

attitudes are crucially influenced by their experiences with the media type in question; these experiences help them reason about the hypotheticals and answer open-ended questions about reuse. They are more apt to have a nuanced view of reuse, and are less apt to take extreme positions if they have engaged in reuse themselves (Marshall and Shipman 2013b). To this end, we asked participants to report on their own gameplay.

Games Played

By their own reports, participants are seasoned gamers. The vast majority (94%) reported playing at least two MOGs; 43% said they played more than five. About half (51%) spent more than 5 hours per week gaming, and about 10% spent more than 20 hours per week gaming. Social desirability bias (Antin and Shaw 2012), coupled with the difficulty of accurate self-assessment, suggests participants may have underreported the time they spent.

As a secondary check on our recruiting criteria, we asked participants an open-ended question about the games they have played recently. The popular multiplayer game *World of Warcraft* dominated participants' responses (90 reported recent play). *Call of Duty*, the next most popular game (30 players), is a first-person shooter expanded into an MOG. Other common MOGs included *League of Legends* (15 players), *Runescape* (15 players), *Guild Wars 2* (11 players) and *Star Wars Old Republic* (10 players).

In-Game Recording Experiences

About 1/3 (87/241) of the participants have recorded game play, their avatars, in-game communication, or screen snaps. Three-quarters (64/87) of the recordings were made to share, often via YouTube or another streaming service. Fourteen other instances were recorded with an unspecified intent. Only 9 were recorded for personal use.

Participants described making three types of recordings: video excerpts (50), screenshots (42), or logs (8). Most participants who recorded games had good explanations of why they had done so; specific reuse motivation has been an important factor in guiding social norms, allowing people to determine whether the reuse is justified. Open-coding the responses revealed eight reasons for recording: for entertainment or humor (35); for illustration (31); to review strategy (13); to capture in-game accomplishments (11); to make tutorials or how-to videos (7); to report inappropriate behavior or support adjudication (7); to report bugs (5); and to support in-game commerce (2). For example, MG226 reported recording for entertainment: "*An impromptu conga-line started mid-game. I set it to Gloria Estephan music and shared it on my clan's forum*." As MG180 pointed out, it is common to use one's avatar or another game element as a profile picture: "*I have used [screenshots] in forum signatures.*"

Did participants use other people's records of gameplay? 69/241 said they did. Of those, 49 cited strategy development as the dominant reason (e.g. "*I have searched YouTube for tips on leveling up faster*." [MG108]). Strategy development can focus on skillful players, challenging places or situations in the game, leveling up, new features, fight strategies, and resource collection.

Entertainment was the second most common reason for using other players' recorded games (26 participants mentioned entertainment). Entertainment was seldom invoked for its own sake; instead it was often coupled with strategy development. For example, MG151 answered "*Mostly videos for entertainment, sometimes to solve a problem that occurs in game (as in a video walkthrough). I've probably read chat logs published in the past as well if someone posted them online because they were laced with drama or something*." Watching or recording gameplay solely for entertainment is likely to be under-reported because it is a fairly lightweight activity.

Other less common reasons included recording on their guild or group's behalf (5), previewing a game prior to purchase (3), reusing the content (3), or reviewing footage of someone cheating (1).

In-Game Communication

Almost all participants reported communicating with other players in MOGs. We were interested in finding out who this communication was with and what it was about.

Participants often played with people they knew or had regular contact with outside of the game (92/241), including real-life friends (72), family members (10), a partner (8), or housemates (2); 44 other contacts were unspecified (e.g. friends of unstated origin). Players described bringing people with them into the game, or moving with them from game to game.

Although some participants never (52/241) or rarely (48/241) chat about the real world, most allow it to creep into their conversations, thus increasing privacy concerns; 86 participants said they occasionally talk about the real world and 54/241 (over 22%) said they talk about it often.

Specific reports of in-game conversations cited small talk, politics, current events (some with emotional impact), and more occasionally, deeply personal matters (sometimes with other players they only know from online). MC213 described conversations about current events: "*Mainly just major news stories. Michael Jacksons death / Elementary school shooting.*" Others treated in-game communication as an extension of real-world socializing; e.g. "*I communicate… with my real life friend, Wyatt, about how our jiujitsu class was...*" [MG127] By contrast, some guilds build close social ties that allow their members to share personal feelings (e.g. *"…In our guild it is not at all unusual for someone to openly discuss sex or*

relationship issues in open guild chat. It is a gay/gay friendly guild, so chat can be rather entertaining all of its own." [MG230]). Thus experiences vary greatly, shaping participants' expectations of and need for privacy.

Attitudes

As the previous section described, interactions in games take multiple forms that are familiar to the participants. We first explore the responses to scenarios that cover recordings of in-game action (e.g. a screen capture of a group of avatars in a city or guild hall). Then we discuss responses to parallel scenarios that involve recordings of textual communication among players in the same game locations. All scenarios and hypotheticals are shown in Figure 2; the remaining figures use Figure 2's numbering.

Action

Recording in-game action is mostly uncontroversial as we might expect from the participants' reports of their own practices; since they do it, they are less apt to think it's inappropriate. Yet there are nuances to test: should the game publisher be able to record players' activities? Does it matter where in the in-game world these activities take place? Participants are more apt to agree that the software publisher (BioSoft) can record public action than a player can (Wilcoxon signed rank test, $p<.03$); they may feel that the publisher owns much (if not all) of the game's graphic design. Also, participants may harbor the implicit expectation that the publisher uses such recordings to improve the game, e.g. to identify virtual objects that unintentionally clip other objects. The top two bars in Figure 3 show responses to these two cases, the software publisher saving a recording of two avatars dancing, and a player saving the same thing.

All in-game places are not regarded as equally appropriate venues for recording. The top and bottom bars in Figure 3 show that while participants accept BioSoft's recording of avatar action in public places (88% think it's okay), when BioSoft records guild hall action, acceptance drops significantly to 76% ($p<.001$). That 17% of the participants disagree to some extent that the publisher has the right to record action in the guild hall may indicate that players apply real-world public/private distinctions to virtual world recordings; as discussed earlier, guild membership may reflect real-world relationships.

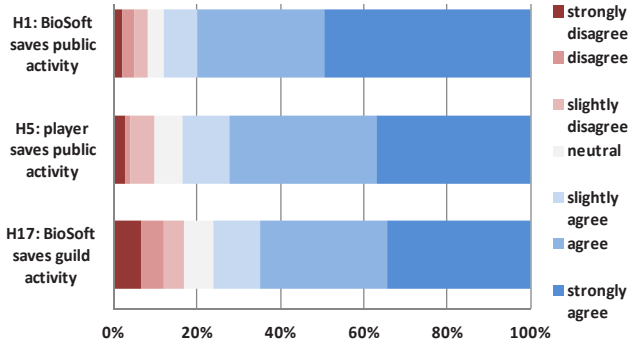

Figure 3. Responses to saving in-game action.

Sharing/Using Action

What can a player or publisher do with the record of action beyond simply saving it? Figure 4's top bar shows a significant decrease in acceptability when a player shares a recording with his Facebook friends instead of just saving it locally ($p<.001$). Acceptance continues to drop when he publishes the recording on YouTube ($p<.001$ vs. sharing). While 83% agreed to some degree with a player's right to record action in the public space and 77% agreed with his right to share that recording with friends, only 68% agreed that he could publish the video on YouTube.

Figure 4 shows that participants disagree more strongly with the software publisher's right to use recordings of public action in advertising (*BioSoft uses public activity*) than they do with players' rights to share records of public action with their Facebook friends (*player shares public activity*, $p<0.001$). By contrast, there is no significant difference between the publisher's right to use recordings of public action in their advertising and players' right to publish records of public action on YouTube. One interpretation of this result is that the publisher's commercial use of the recording (a source of concern in prior studies of social media reuse) is offset by their claim to the software environment. Finally, the publisher's use of guild hall action in advertising is more controversial than other reuse ($p<.001$ compared to use of public action); 35% of participants disagreed to some degree with this right.

Players' Rights to Remix

It is relatively common for players to record and remix in-game action; this is one form of machinima. Normally players record the activities of their own avatars/toons. In our scenarios, players have recorded other players' avatars dancing and joking without their awareness or consent.

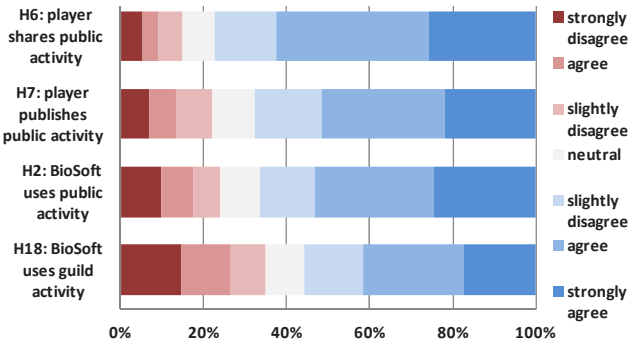

Figure 4. Responses to reuse of action recordings.

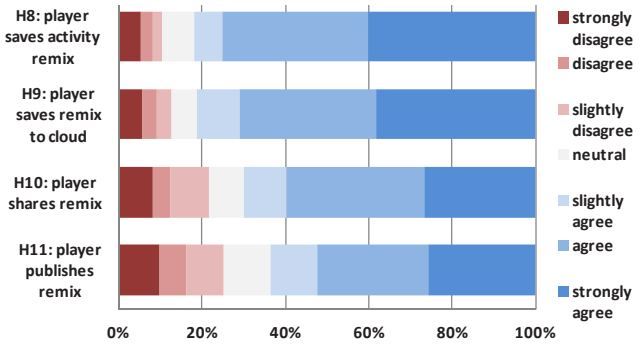

Figure 5. Actions with remixed action recording.

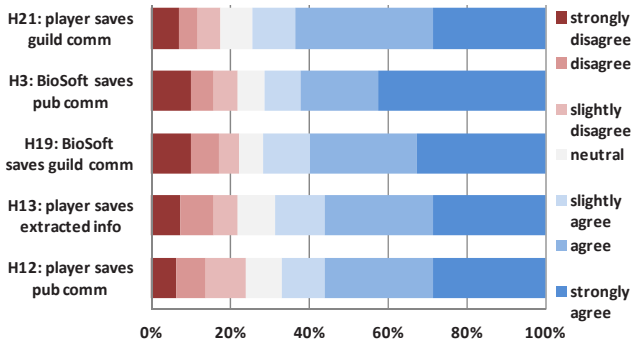

Figure 6. Saving text of in-game communication.

Figure 5 shows that the act of creating and saving the remix is not very controversial when it captures a public portion of the virtual world. The results for sharing and publishing the remix are similar to the results for sharing and publishing the unaltered recording of public action. While there is slightly more disagreement with the players' rights to save, share, and publish the remix than the unedited recording, this difference is not significant ($p>.2$) for saving or publishing and is barely significant for sharing ($p<.05$). Additionally, there was a weak effect when comparing saving the remix to one's personal computer and saving the remix to cloud storage ($p<.05$). As Odom et al. (2012) point out, storing digital possessions in the cloud creates a diminished sense of control; thus, participants may feel less ability to guarantee that it has not been inadvertently shared or made public in this situation.

Communication

We expected records of in-game communication among players to be more controversial than recordings of visual activity since the communication streams are modeled after more ephemeral forms like chat or instant messaging. If we compare all five pairs of hypotheticals about recorded communication with the analogous statements on recorded action, participants disagree far more strongly with each in-game communication variant ($p<.005$ for one, $p<0.001$ for others). We go on to compare specific hypotheticals.

Saving Communication

Pairwise comparison shows saving in-game communication is more controversial than saving in-game action. Among the scenarios for saving textual communication, there is little to no statistical effect attributable to who is doing the saving or what is being saved ($p=.051$ for furthest pair). All variants elicited around 20% disagreement. Surprisingly, the most positive response was elicited by the player saving his guild hall's communication stream (H21). Because reactions to other hypotheticals highlighted the expectation of privacy in virtual spaces constructed as private places, we expected this to be a controversial recording. We have also seen that the reuse context trumps other features, so perhaps the recording's purpose (it enabled guild members to catch up on one another's activities) mitigated the privacy concern. Limiting the recording to posts about in-game commerce (buying and selling of in-game items, H13-H15) had no significant effect (see Figure 6's *player saves extracted info*), indicating that these posts are neither more valuable nor more private than other communication.

Sharing and Publishing Public Communication

Just as recording public conversation is more controversial than recording public action, so too is reuse of conversational recordings. Sharing the recordings is naturally more controversial than simply saving them, but the motivation behind sharing the recordings is important to our participants. When the shared/published content was limited to those messages about in-game commerce (buying and selling items), the number of responses with some degree of agreement only decreased slightly, from 68% for saving the data (Fig. 6, H13) to 64% for sharing the data. (Fig. 7, H14) There was no effect when we varied whether the information was shared with members of the player's guild or with the world in general via a web site.

When participants were asked whether a player could make the complete recording of public communication searchable, positive responses dropped to 41% ($p<.001$ compared to publishing extracted segments). Participants also expressed a negative view of the software publisher's right to use public in-game communication in their advertising; more than half objected to this practice.

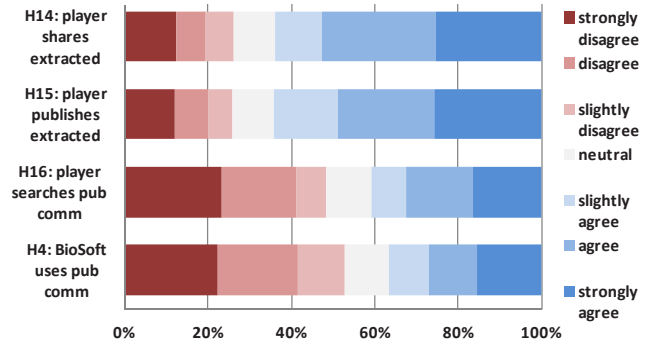

Figure 7. Reuse of public communication.

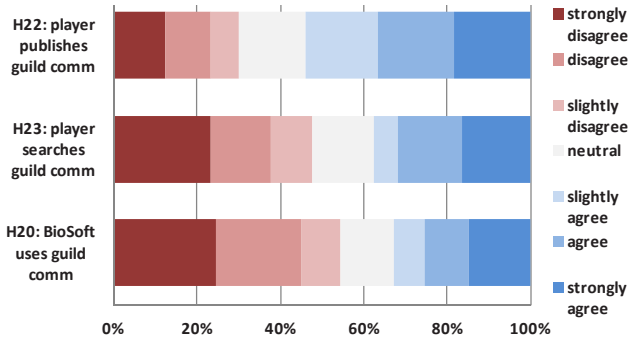

Figure 8. Reuse of guild hall communication.

Sharing and Publishing Guild Hall Communication

Figure 8 compares three cases of providing public access to guild hall textual communication. Participants reacted mildly positively to a player publishing segments of text from guild hall communication on a public blog (H22); 54% agreed to some extent. However, if the same content was made searchable, participants' reactions became substantially more negative (agreement sank to 38%). This effect is significant ($p<.001$). When asked about the software publisher using the guild hall communications in their advertising, agreement went down to 33%.

Participants evaluated two pairs of parallel hypotheticals about sharing and publishing textual communication. In the first case, the recorded text originated from the public city (H14, H16); in the second case, it was recorded from the guild hall (H22, H23). Results were nearly the same regardless of whether the communication was collected from the public city or the guild hall.

Institutional Archiving

Recent calls for archiving MOGs and other virtual worlds (Library of Congress 2010; McDonough 2010), coupled with reported difficulties in doing so, suggested that we investigate institutional archiving of online games. We did this by exploring reactions to a scenario in which the Library of Congress (LoC) archives the MOG (both the action and public communications). Because we suspect that constructing the archive is less controversial than providing access to it, we tested three access conditions (immediate access for all; immediate access for researchers; and access for all deferred by 50 years). Our prior studies have included parallel institutional archiving scenarios for specific media types; we can thus compare the MOGs results with responses associated with other forms of social media.

Figure 9 shows the response to immediate public access to the new archive. The contrast is dramatic. Educational recordings, podcasts and popular public web videos are mostly uncontroversial in this most lax access condition; product reviews, photos, and tweets are more controversial, with almost 40% of respondents indicating some level of

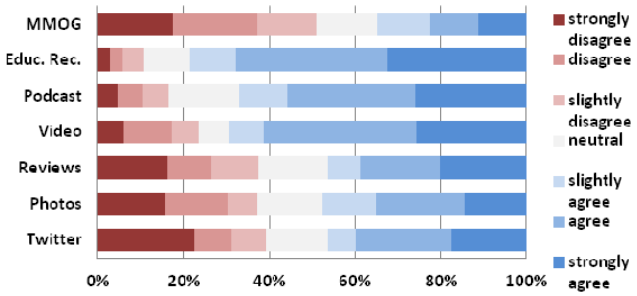

Figure 9. Immediate universal access (H25).

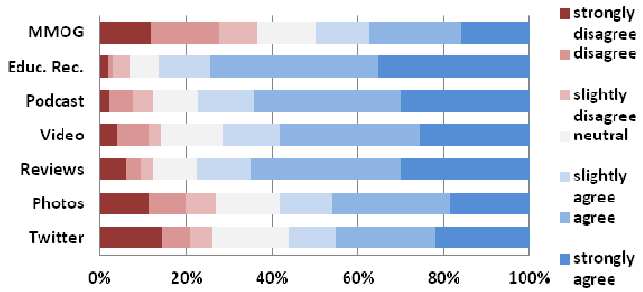

Figure 10. Immediate researcher access (H24).

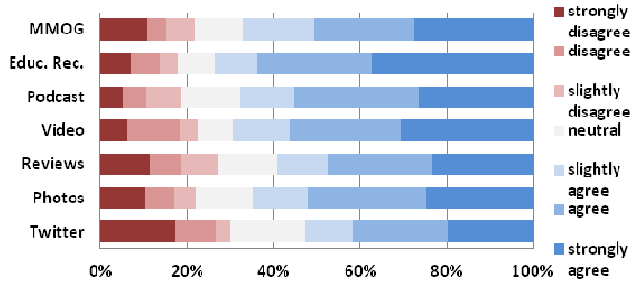

Figure 11. Universal access in 50 years (H26).

discomfort at providing immediate access to these media type-specific institutional archives. Over half of the participants (51%) reject the idea of immediate public access to the MOG archive. Although all of the hypothetical archives contain user-contributed media that is currently published (and public) on the Web, more gamers have a negative view of general access to the game play archive than do users of other social media.

What happens when we restrict access to researchers (thereby implicitly limiting the way the data in the archive will be used)? Does this ease participant concerns? Figure 10 shows that it does to some extent; negative responses are reduced to 37%. However, access to game play data is still viewed with substantially more skepticism than comparable access to the other media types. Could it be that archiving game play data is just viewed as less appropriate than archiving other social media?

Access embargos are one way archival institutions address privacy and related concerns. Figure 11 shows the effect of a 50 year embargo. This access limitation is more

effective than the prior one; responses for MOG data come into line with the other media.

Comparing Figure 11 with 9, we see that the effect of embargos is not consistent across media types. Making people wait to access media that are for public good (educational recordings) or already have a more traditional serialized publication process (podcasts) elicits a somewhat negative reaction. The 50 year embargo is more effective when it can be used to ameliorate concerns associated with less formally published media types; content hosted on these sites can be withdrawn (e.g. Amazon product reviews and public Flickr photos and YouTube videos). Thus the embargo is most helpful when it temporarily limits access to archives of content that was not initially published nor meant to be accessible, such as MOG recordings.

Discussion and Conclusion

Players invest countless hours in MOGs, developing their avatars' skills and appearance, and interacting with others in the game's virtual environment. It is no wonder that they feel ownership of in-game content and ambivalence about the software publisher's rights to the world they've had a hand in creating and colonizing. Players feel sufficient ownership to create their own game records, especially if they are motivated by practical concerns (e.g. strategy reviews, skill demonstrations, producing tutorials, reporting inappropriate behavior or bugs) or creative pursuits such as creating machinima or illustrating profiles.

Our analyses of other media types have found that content owners reason about rights from at least 4 perspectives: (1) the context in which the content was created, including its original purpose (e.g. was it created as advertising? as educational material?); (2) the context in which the content will be reused, including the reuser's intent (e.g. is the reuse satirical? commercial?); (3) the content itself, and the expectations derived from its genre or form (e.g. is this a recording of a landscape or a populated city street?); and (4) clues offered by the legal or technological system in which the media is embedded (e.g. Is it on a public website? Is it covered by copyright or fair use exceptions? Do technological affordances suggest particular actions, like the ability to save content locally?). This type of reasoning gives rise to social norms.

So, given this framework, what can we expect players to believe about their rights to game content? We recognized from the outset that perceptions of rights may be divorced from actual legal concepts (Aufderheide et al. 2012). Game records are a complex mix of media types and genres, and they are created through an equally complicated system of authorship.

Records of in-game action (e.g. avatars dancing together) seem analogous to personal videos, candid or scripted. Likewise, visual privacy strictures would seem to flow from real-world analogies: in recent times, video is often recorded in public places with little objection, but there is still a sense that you can't film in a private place without permission. Because we are talking about social norms, and not real laws or legal precedents, we look to actual behavior (and not to what is on the books in a given country or state). Indeed participants felt more sanguine about sharing and using activity records from public places in the game. As the framework we describe above suggests, when the reuse context is recognized as appropriate (e.g. highlighting clever avatar behavior), participants had little objection to sharing or publishing it.

What of records of in-game communication (e.g. chat logs from the game's virtual city)? Other studies (and indeed real-world archiving efforts) have found a greater sensitivity to the reuse and republication of text communication, especially communication that is personal and relies on privacy through obscurity to keep ostensibly sensitive content out of the public eye. We know from our survey that players' in-game and out-of-game worlds were intertwined: They formed guilds/groups with friends and relatives and many reported discussing out-of-game topics (including quite personal topics) within the game. Thus, we can compare the chat logs to other semi-public communication like tweets: people expect to save them without barriers, but are more conservative about their reuse (Marshall and Shipman 2011a). Indeed, participants found search over textual portions of in-game communication the most disturbing.

The form of reuse participants found the most problematic was advertising, especially if player communication was involved. By contrast, reuse of textual communication to support in-game commerce was regarded less suspiciously, perhaps because it is similar to the original purpose of the communication.

We began this study motivated by an interest in institutional archiving; thus we paid close attention to player attitudes about access to MOG archives. We were aware that such archiving could be controversial (McDonough et al. 2010); what access restrictions would make a MOG archive more palatable? We expected some skepticism to public access; indeed, it is more controversial than public access to other types of online media. This relative negativity may be due to multiple characteristics: like tweets, in-game communication may rely on privacy through obscurity; and like photos, in-game records may be personal.

We were more surprised by the overwhelmingly negative reaction to researcher access to this hypothetical game archive. This sensitivity should be taken into account when researchers generate data sets for studies of communication and collaboration in online games. A 50-year embargo on access to the game play data ameliorated

those concerns, bringing attitudes in line with those for other media; yet a 50-year embargo is not practical for the research in question.

What do these results suggest about the future of copyright? As online media types become more complex and venues for sharing them become more numerous and varied, this is a question of immense importance. Our research and that reported elsewhere in the literature suggests that personal ownership is understood socially, not legally, and that while people take a certain number of cues from technological affordances ('share with' buttons) and labeling systems (e.g. Creative Commons), they also neither pay careful attention to these cues nor understand them. Games are an interesting bellwether for testing perceptions of ownership of complex new media forms. By analyzing different contexts of creation and reuse, and by considering the content itself, it is possible to anticipate certain sources of controversy and to plan for them.

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