

# Digital Detritus: What Can We Learn From Abandoned Massively Multiplayer Online Game Avatars?

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## ABSTRACT

Massively Multiplayer Online Game (MMOG) player data has been used to investigate a variety of questions, ranging from the sociality of small groups, to patterns of economic decision making modeled across entire game servers. To date, MMOG player research has primarily drawn on data (e.g. server-side logs, observational data) collected while players (and their avatars) were actively participating in the gameworld under investigation. MMOGs are persistent worlds where avatars are held in stasis when the player logs out of the game, and this is a feature that allows players to return after an extended absence to “pick up where they left off”. In this paper we explore the sorts of information that can be gleaned by examining avatars after their creators have played them for the last time. Our preliminary findings are that “abandoned” avatars still contain a wealth of information about the people who created them, opening up new possibilities for the study of players and decision making in MMOGs.

## Keywords

Avatars, *RIFT*, Massively Multiplayer Online Games, MMOGs, abandoned accounts

## INTRODUCTION

Observations of players within Massively Multiplayer Online Games (MMOGs) have been of use to researchers studying questions ranging from investigations of computer mediated interpersonal communication between players in small, temporary groups (Eklund and Johansson 2010; Nardi and Harris 2006) to “big data” investigations that map patterns of player behaviour across game servers (Williams, Kennedy, and Moore 2010; Williams et al. 2009; Feng, Brandt, and Saha 2007). MMOGs have been fruitful, as well, for macro level analyses of economic decision making (Castronova et al. 2009) and have provided a space to learn more about black and grey market trading (Ahmad et al. 2010). However, research to date remains heavily focused on investigations of current players. Whether it takes the form of participant observation of players collaborating in real time within a gameworld (Chen 2012; Eklund and Johansson 2010), or the use of log data being used to retrace a player’s in-game actions and activities (Yee et al. 2011; Feng, Brandt, and Saha 2007), player research has drawn on data collected from actions while the player’s avatar is still active within the gameworld.

Proceedings of 1<sup>st</sup> International Joint Conference of DiGRA and FDG

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While most of this research is focused on the observation of players as they are active in a gameworld, this does not mean that avatars cease to exist after the player exits the game. Instead, the affordances of most MMOGs mean that not only are avatars the in-game representation of the player, but these avatars also serve as a digital time capsule preserving all achievements, wealth, and items collected to date. Avatars not intentionally deleted by the account owner<sup>1</sup> or banned by the game's developer remain in stasis as long as the MMOG remains operational – even if the account owner stops paying their monthly subscription fee for the game. This charitable support of abandoned avatars is strategic, of course, allowing for the option in the future that if a former player wishes to re-activate their account, their avatar(s) will be there, unchanged from the last time they played them.

In this paper we argue that the persistent worlds of MMOGs also provide an interesting site for a different sort of investigation beyond tracking the actions of players while they are actively playing. Specifically, we describe the investigation that arose after we asked ourselves: what can be learned by examining the artifacts left behind after an avatar has been played for the last time? In addition to allowing lapsed players the opportunity to return to a game and “pick up where they left off” avatars continue to hold on to a wealth of information including what armor and weapons they had equipped, how much currency had been accumulated, progress through the game's story arc or quest log, and so on. Drawing on a dataset of avatars that were used as part of a research study for a limited duration, we explore what sorts of information players leave behind, and present some suggestions about how researchers might interpret this data to learn more about MMOG players. This dataset of avatar ‘time capsules’ provides unique opportunities to gain insights into avatar customization, and to examine decision making in regards to what items a player values as “worth keeping” in their inventory. We argue that studying “virtual abandonment” (of both avatars and their ‘property’) provides a productive new approach to studying players that exceeds and contextualizes observation of in-game, active play.

## Motivation and Context

To collect the data for this investigation of avatars no longer in use, we revisited the avatars created by participants of the lab-based study described in Jenson et al. (2013). Here we focus on a sub-set of research participants encountering *RIFT* (Trion Worlds 2011) for the very first time (N=141). These participants represent a variety of gaming experiences, ranging from first time digital game players, to MMOG experts with extensive experience playing *World of Warcraft* (Blizzard Entertainment 2004) and other fantasy-themed MMOGs that shared many of the same mechanics and affordances as *RIFT*. In the case of this specific study, the individuals who created the avatars discussed in this paper will never play them again. Participants were invited to come to a university lab to play *RIFT* co-located in pairs or small groups. However, since the *RIFT* accounts were owned by the researchers, once the project concluded participants no longer had access to the avatars they had created and played throughout the study.

While the avatars we discuss were created for a research study share similarities with “throwaway accounts”, we are hesitant to refer to them as such. The term throwaway account is not typically used in relationship to MMOG play, but it is used in other contexts to describe the creation of an anonymous username or account for temporary use not linked to a user's primary account. Throwaway accounts are used as if they were a completely separate identity, such as creating a temporary account to share personal or controversial information without having to associate these messages with their primary

account on Reddit.com or similar sites (Leavitt 2014; Bergstrom 2011). Discussions of throwaway accounts assume an intention of temporality on the part of the creator (“one time use only”) and/or that the user behind this throwaway account intends it to be a specific account unrelated to their “real” username to be used for one or a limited number of interactions in a particular venue with the identity of the person behind the account remaining anonymous. We do not consider these avatars to be “throwaways” because the identities of the players behind the avatars were very much known to the research staff as participants were interviewed and surveyed about their gameplay history and habits. We also note the avatars we studied would also not be considered “alts”, slang for a second or alternative avatars. Alts are typically linked to a player’s main MMOG account (Ducheneaut and Moore 2004). These alts are often played in tandem with main avatars, for example being used for profitable in-game professions to maximize cash flow or funnel supplies to main or other avatars associated with a player’s account (Consalvo 2009, 413).

The avatars and inventories examined in this paper were from a lab-based study investigating whether offline attributes can be distilled from observing online play within the fantasy-themed MMOG *RIFT*. All participants played on *RIFT* accounts owned by the researchers but we remain reluctant to consider these avatars as throwaways. This reluctance comes from observations relayed in previous articles where we have demonstrated that despite study participants not playing on their personal MMOG accounts, they treated their avatars as if they were playing “for real” (Jenson, Bergstrom, and de Castell 2013), spending considerable effort and time on their avatars’ names and appearances. We noted that “...we were surprised by participants: by the time that they took to set up their avatars, the time they took naming that avatar, and time and energy they exerted in ‘really’ playing the game” (Jenson, Bergstrom, and de Castell 2013, 2). In these important respects, we demonstrate, even when avatars are created in the “artificial” play environment of a university lab, their abandoned avatars are still very much playing “for real”.

## **USING TRACE ETHNOGRAPHY TO FOLLOW THE ACTORS**

With roots in institutional, documentary, and historical ethnography, trace ethnography is a method of document analysis that accounts for both human and non-human actors in order to produce thick descriptions of interactions within a computer-mediated environment. In their 2011 paper serving as an introduction to trace ethnography, Geiger and Ribes argue that traces of individual users abound in the logs of today’s technological systems, and through careful decoding of these logs, researchers can piece small data points together to create rich qualitative accounts of an individual user’s actions within a broader sociotechnical system (p.1). Much like how advertisers compile snippets of information based on websearch patterns to learn intimate details of our private lives (see for example, the oft-repeated example of Target being able to tell when a woman is pregnant long before she announces it to anyone else, detailed in Hill (2012) trace ethnography is very much an exercise in putting puzzle pieces together in order to better understand a whole.

Trace ethnography has primarily been used to study the Wikipedia community (Geiger and Ribes 2011) and draws heavily on the quantitative data logs that track editing and deletion of content on the site. Each Wikipedia editor’s interaction with the site leaves behind a publically accessible record of their actions, and these traces are legible to other community members (Geiger 2016). Similarly, MMOG players leave behind a trail of data each time they log into their gameworld of choice. Logs of data collected at the

server level have been fruitful for research on MMOG players (Williams, Kennedy, and Moore 2010; Williams et al. 2009; Feng, Brandt, and Saha 2007) but requires collaboration with the game's developer in order to gain access to these logs.

While the data presented herein was not collected at the server level, the underpinning philosophies of trace ethnography are still helpful to our own investigations. Specifically, we argue that the traces of individual users that Geiger and Ribes tease out of the logs and then piece together into qualitative snapshots to illustrate how particular editors interact with and understand themselves in relationship to the larger Wikipedia community are applicable here. Similarly, the items left behind in an avatar's inventory act as data traces, providing information about what the player felt was worth keeping. In this paper we describe some preliminary analyses of the items left behind in a player's inventory (both valuable and not), their overall wealth, as well as choices made about avatar customization when spending skill points.

### **DIGGING FOR DATA: WHAT SORT OF QUESTIONS CAN WE ASK USING THIS DATASET?**

Taking seriously Warmelink and Sitonen's (2011) argument of the importance of being explicit when describing data collection protocols to avoid "reinventing the wheel" in game studies, this methods section is presented in two parts. First, we describe our data collection protocol for a lab-based study where the avatars in question were originally created. This study was part of VERUS, a longitudinal, multi-site project that asked whether and how a player's offline characteristics could be identified by means of observation of MMOG play in both a university computer lab (Jenson, Bergstrom, and de Castell 2013; Bergstrom et al. 2015; Bergstrom, Jenson, and de Castell 2012; McArthur and Jenson 2015) and public settings such as LANs (N. Taylor et al. 2014; N. Taylor et al. 2015). The second half of this methods section details the types of data that can be harvested and how we collected it from these abandoned avatars. It is hoped that presenting methods explicitly will allow for replication by other researchers interested in similar questions to our own.

### **VERUS: An Observational Study of MMOG players**

At the time of our study, *RIFT* was a new addition to the fantasy MMOG marketplace. We recognized this as an opportunity to investigate what learning to play a new MMOG might look like, and how prior game experience shaped that developmental trajectory. We invited 141 participants to play *RIFT* in one of two computer labs housed on university campuses. Both labs were outfitted with iMac computers with Parallels installed (a software suite that allows for the use of Windows-only software on a Mac computer) and hardware typically associated with PC-gameplay (a full-size keyboard and a multi-button mouse). Participants were recruited via poster advertisements placed around the campuses and through gaming events held in the areas surrounding the universities. As one of the VERUS study goals had been to learn more about how leadership plays out in small groups of MMOG players, we encouraged participants to recruit their friends to join them in the study. Potential participants interested in VERUS were asked to contact a scheduling assistant via email, and after a short series of questions to determine if they met the recruitment criteria, eligible participants were invited to visit one of the university labs to play *RIFT* and scheduled in groups of 2 to 4.

Upon arrival at the lab, we described the study to the participants and after answering any questions they had about the project, they were invited to sign informed consent documents indicating they agreed to participate in VERUS. All participants took part in a

fifteen-minute intake interview intended to assess their experience playing MMOGs specifically and digital games more broadly. Then all participants completed an extensive 91-item survey that included detailed questions about demographics and history of gameplay. Upon completion of the survey, each participant was logged into one of the *RIFT* research accounts owned by the study. Other than playing on the same server and asking all participating in the co-located session to choose the same faction (Defiant or Guardian), participants were given free reign to customize a *RIFT* avatar of their own choosing (including race and class, as well as personalizing the physical features and name of their avatar). To prevent any inadvertent influence over avatar selection, researchers left the room during the avatar creation process. A detailed discussion of participants' avatar creation process is outlined in McArthur and Jenson (2015).

Once they were satisfied with their avatar customization, participants were asked to play through the *RIFT* new player starting zones for approximately 45 to 60 minutes. During this time, screen-capturing software ("Screenflow"), an inexpensive program for Mac computers that can be used to simultaneously record video from the webcam and everything happening on screen, as well as record audio from both in-game and from an external microphone) was used to record everything that was happening in-game and capture the participant's facial expressions and verbal utterances. Keylogger software was used to record keystrokes and mouse movement using the freely available software entitled Recording User Input or "RUI" (Kukreja, Stevenson, and Ritter 2006). Upon completion of the 45 to 60 minutes, participants were invited to return for a subsequent gameplay session. Of the 141 participants, 29 (20.6%) returned for at least one more 60-minute gameplay session. This resulted in a dataset through which we could observe where and how proficiency in *RIFT* increased over time, providing insights into how both novice and experienced MMOG players learn to play a new game (Bergstrom et al. 2015).

At least two researchers were on-site and in the lab, tasked with observing the gameplay session. They took detailed field notes during gameplay, and upon completion of the play session, all researchers involved in the session had a debriefing to compare field notes, conduct an initial assessment of the participants MMOG expertise using the framework detailed in Taylor et al. (2011), as well as flagging any instances where they felt they may have inadvertently influenced participant behaviour. Finally, we note that further information about data collection protocols for VERUS and the analytical toolkit provided by using RUI is outlined in Jenson et al. (2013) and Bergstrom et al. (2015)

### **Collecting data from avatars no longer in use**

As earlier explained, it is only because VERUS participants created avatars on accounts owned by the prior research project described above that the study of abandoned avatars described in this paper is possible. Had VERUS participants been using their personal accounts (or trial accounts registered under their names), we could never have explored the value and significance of this kind of 'digital detritus' that, because usernames and passwords remaining in the possession of the research staff, afforded the opportunity to revisit their avatars long after the participants had left the lab.

After the observational component of the study was completed and no new avatars were to be added to our dataset, we began to explore the kinds of information "left behind" on these lab-based *RIFT* accounts. A research assistant logged into each *RIFT* account and catalogued a range of types of information, then gathered the following specific information from each avatar created as part of VERUS:

- The abilities (e.g. offensive attacks, healing spells) that had been placed on the avatar’s action bar, and to what hotkey they were assigned (Figure 1, highlight A);
- The selections (if any) of soul tree(s) and the talents/abilities unlocked via soul tree selection (Figure 3);
- The armor and weapons equipped in each available slot (e.g. chest armor, ranged weapon, etc.) (Figure 2, highlight A);
- A complete catalogue of everything currently held in the avatar’s backpack (i.e. their “inventory”), especially the armor and weapons held in the inventory but not currently equipped (Figure 2, highlight B);
- The total amount of currency currently held in their inventory (Figure 1, highlight B).



**Figure 1: A screen capture of the default *RIFT* user interface (UI) showing the spells/abilities that have been placed on the avatar’s action bar (highlight A). The amount of currency currently being carried by the avatar is also visible (5 silver), as indicated by highlight B.**

In addition to the above, immediately upon logging into the game to conduct data collection, we captured the amount of time each avatar had been active in the *RIFT* gameworld (this metric is achievable by typing “/played” into the game’s chatbox and pressing enter). We also took note of the quantity of each item held by an avatar (both equipped and in their inventory) and its worth if sold back to a vendor. This was used to calculate each avatar’s liquid cash and total assets, and the relationship between length of playing time and rate of wealth accumulation. Transcribing all of the above data resulted in a spreadsheet that catalogued all of the items collected across the entire VERUS dataset. By bringing each avatar’s information out of the game client and into a spreadsheet, we also ensure this data remains accessible into the future, should Trion Worlds change their policies about maintaining characters on inactive accounts or if the MMOG were to close. This matters because although this initial study concentrates on wealth as a supplementary metric for expertise, several additional sources of information remain to be explored, such as the significance of abilities (on the players action bar), the

use of hotkeys, the particular armour and weapons equipped, and what the players themselves either disposed of, or declined to collect (where we had evidence they could have collected it had they seen it as valuable for their future needs).



**Figure 2:** In this screen capture a VERUS participant is comparing between two possible weapons that can be equipped by their avatar. Their avatar's equipped items are visible at highlight A. All items currently held in the avatar's possession (but not currently equipped) are visible in their open bag located at highlight B.

## DISCUSSION

Having detailed how we collected this data, we describe the specific investigations we conducted through closer examination of these abandoned avatars. While the research reported here is exploratory in nature, we describe the initial insights gleaned from this dataset, focusing on two major areas. The first is how revisiting VERUS avatars allowed a finer grained understanding of player choices in regards to avatar customization than could be determined by observation or interviews alone. The second is that we demonstrate how the use of a player's inventory and amassed wealth serves as an alternate metric to assess a player's expertise. Taken together, these investigations also serve as evidence that even though VERUS participants were playing on temporary avatars, in most cases, they were still playing to the best of their abilities and in that respect playing “for real”, that is, not appearing to demonstrate the negative observational effects argued by Williams (2010) to justify the need for unobtrusive, server-side data collection techniques.

### Revisiting Player Choices About Class Specializations

In previous work (Bergstrom, Jenson, and de Castell 2012) we used a smaller subset of this dataset (N=82) to examine whether a player's experience with fantasy-themed MMOGs influenced their choice of avatar and/or role in game. That work critically examined the assumptions surrounding gender and choices made about which role to play in a multiplayer game e.g. that women tend to take on healing/support roles (Yee et al. 2011; Huh and Williams 2010). Here we revisit that study from the standpoint of a “rubbish theory” (Thompson 1979) approach to the re-valuation of ‘detritus’ typically disregarded in digital games research.



**Figure 3:** In this screen capture, a VERUS participant is examining their soul tree before determining where to spend points to customize their talents and abilities.

In addition to having access to each avatar and therefore being able to look at the choices that participants made, a major reason we were able to conduct this study is because *RIFT* departs from other MMOGs in that it offers an increased level of customization not seen in comparable games (e.g. *World of Warcraft*). *RIFT* asks players to customize their avatar almost immediately. Before entering the gameworld, players begin by choosing from only four playable classes (“callings”): mage, cleric, warrior, or rogue. Then, as a reward for completing their first quest, players can pick their first (of three total) “souls”. These souls serve as a further customization of the avatar’s abilities and should be viewed as an analogue to *World of Warcraft*’s class specializations. Each soul falls into one of four categories, healing, damage, tanking, or enhancement and an avatar can have up to three souls active at any time (Figure 3).<sup>2</sup> This is a departure from other MMOGs: *World of Warcraft*, for instance, requires players reach level 10 before being able to select specialization (an achievement that would require a few hours of gameplay for those players not intimately familiar with the *World of Warcraft* starting zones). As well, *RIFT* allows for a greater range of class customization, for example clerics (akin to a priest in *World of Warcraft*) can take on the role of a healer, damage dealer, or even a tank. Furthermore, the avatar can pull from abilities from all three specializations at the same time.

When logging back in to each account and navigating to each avatar’s soul tree, we immediately observed that almost every VERUS participant took the time to customize their avatar by selecting at least one soul. Only 3.5% of our participants did not complete this quest, while 36.6% obtained one soul, 48.9% obtained two souls, and 11.0% obtained all three souls. Having the majority of participants make at least one soul choice provides us increased granularity in regards to player choices, as not only were we able to collect data about what class they played, but we also had information about what role they intended to play in the game. By having up to three active souls, with the abilities of each soul active and ready to use at any time, *RIFT* players can fine-tune their avatar’s specialization and offers a higher degree of customization than comparable MMOGs currently available for play. Our analysis of player soul choices found that novices tended to be more experimental when customizing their characters, but players with previous

experience playing fantasy-themed MMOGs tended to fall into stereotypical patterns (e.g. females playing a priest and taking on a healing role). With expert MMOG play tending to flatten, our findings highlight the need for further explorations of MMOG novices, both in how they learn to play, but also how norms and expectations are indoctrinated.

This information about what soul choices they made, when put into conversation with the spells and abilities placed on their avatar's action bar provide an additional level of insight into how the player intended to play their avatar. For example, when we view a player who chose both a healing and a damage soul, we can infer that they probably intended to take a hybrid role in *RIFT*, assisting with dealing damage against hostile monsters yet simultaneously being able to heal their fellow group members who are facing the brunt of the attacks. And yet, when we look at their action bar and see that only see damage-dealing spells placed on it, a different story begins to emerge – despite having access to both healing and damage-dealing spells, this player has decided to focus only on combat. In future research we intend to probe this action bar data further. By combining it with the keylogger data collected via RUI, not only will we be able to know what abilities each player deemed important to put on their active action bar, but we will be able to determine exactly how many times they used them over the course of their play session(s).

### **Rethinking Player Expertise**

In using this data to learn more about the choices players make in terms of the avatars they selected and the roles they chose to play in *RIFT*, this 'time capsule' investigation builds on our previous work to articulate measures of player expertise beyond hours spent and levels attained (N. Taylor et al. 2011). To that end, our first investigation involved taking expertise assessments made by means of the multimodal expertise assessment framework described in Taylor et al. (2011) and detailed in Table 1 below, and comparing it against the data collection described earlier in this paper. Specifically, we examine the items left behind in each avatar's inventory as a lens to learn more about participants' game knowledge and skill.

In our previous work we have argued for the need to move beyond of number of hours spent playing a game being used as a proxy for a player's expertise, see for example Reeves et al.'s (2009) exploration of expert *Counterstrike* play. Time spent in a gameworld also factors into Huffaker et al. (2009) and Shim et al.'s (2009) studies of MMOG players. However, in these two examples it is a player's efficiency (how quickly a player can move from lower to higher levels) that is measured. Instead, our work is more in line with that of Bjork and Linderoth (2010), Linderoth and Bennerstedt (2007), Taylor (2006), and other studies that are less concerned with making a generalizable quantitative model of expertise, and are, rather, small-scale qualitative studies concerned with the cognitive, embodied, and discursive competencies that are developed as one becomes familiar with a particular gameworld.

*RIFT*, like many other MMOGs, features player verses environment (PVE) content as a means to gain experience to "level up" (increase the strength of the avatar), to complete mission/quest objectives, and as a way to accumulate wealth. For readers unfamiliar with this particular genre of games, players can enter into combat with hostile game-controlled monsters. If combat is successful and the player defeats the monster, they are rewarded with XP (experience points) and then the player can loot the corpse of the now dead foe. Often, this corpse has treasure, which can take the form of particular items needed to complete a quest, new weapons and/or armor that can be equipped to strengthen an

avatar’s power, or useless items that can be sold to NPCs for gold (colloquially known as “vendor trash”). These trash items usually do not offer any particular use value other than to be sold for money. In the starting zones of *RIFT* there are many low-level attackable monsters, most of which will have vendor trash on their corpses.

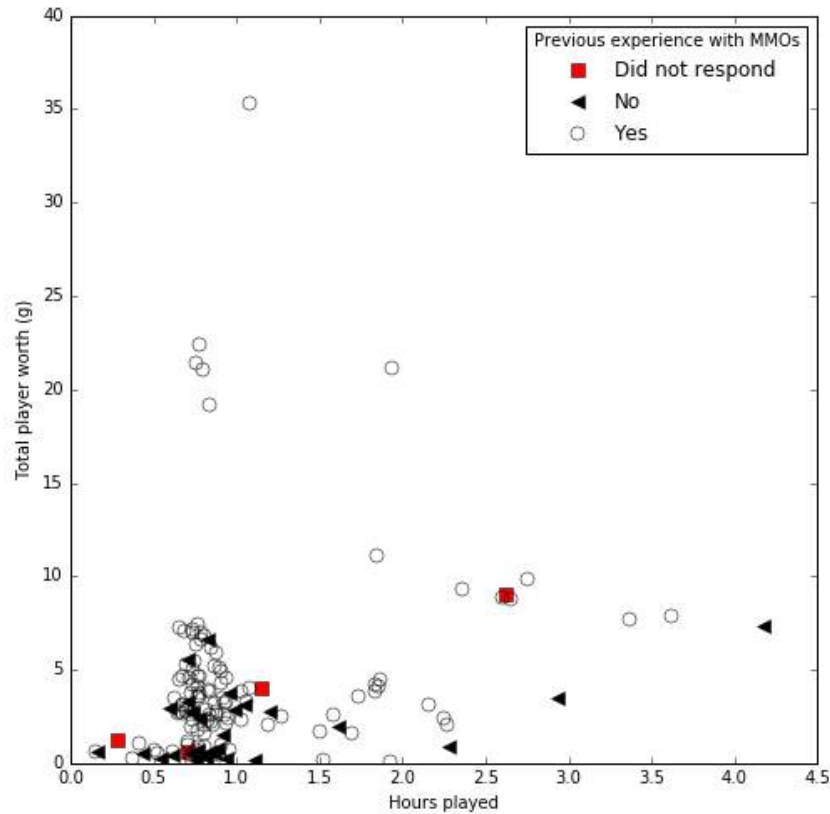
Type of Expertise	Description	Example Metric
Investment	Time and/or resources committed to gameplay	Length of time an avatar has been active in the gameworld “/played”
Discourse	Mastery of the social language associated with the gameworld under investigation	Familiarity with game-specific slang; ability to share information with other players using the in-game communication system
Game Knowledge	Ludic and/or narrative understanding of the mechanics of the gameworld under investigation	Knowledge of the different abilities of classes and/or the roles each class is typically expected to play
Skill	Operational proficiency in the gameworld under investigation	Writing customized scripts/macros; Multitasking (e.g. working on multiple quest objectives at the same time)

**Table 1: Summary of Taylor et al.’s (2011) expertise construct.**

Despite none of our participants having previous experience with this particular MMOG, we know from our observational notes that the majority were able to figure out the basic mechanics of the game: how to initiate combat with an enemy monster, how to pick up items from corpses, how to accept a quest, complete its objectives, and then return to the appropriate NPC to hand the quest in and begin a new one. While researchers were on hand to help if they became stuck, participants were encouraged to troubleshoot and use the in-game tutorials to navigate their way through the *RIFT* starter zone. Some displayed more operational proficiency than others, but only 3.5% of VERUS participants failed to complete the first quest in the game.

We examined the remnants of each participant’s inventory to see how much gold they had accumulated, but also to see if they had any vendor trash in their avatar’s bags. From this, we could determine if players were collecting loot – another demonstration of technical proficiency in this particular gameworld. Here we were looking for two markers: the existence of vendor trash in an avatar’s inventory (an indicator they had determined how to fight a monster and loot its corpse) and whether the avatar had any gold (an indicator that they had both collected vendor trash and sold it to NPCs).

On the basis of the items left behind in each avatar’s inventory, we conducted a cursory exploration into the significance of avatar wealth: could avatar wealth be related to player skill in playing *RIFT*? We note that in this case we are using the conception of “skill” explicated in Taylor et al.’s (2011) expertise framework referenced above. We calculated the net worth of each avatar in our data set, by adding the value of liquid cash in the avatar’s possession with the total value of each item held in their inventory. Figure 4 represents the amount of gold acquired compared with the amount of time an avatar was active in *RIFT*.



**Figure 4: Accrued wealth as a function of time spent playing *RIFT*. Circles indicate that the research participant previously played MMOGs (n=107), triangles indicate first-time MMOG players (n=30). Participants who did not respond to this question are indicated with a red square (n=4).**

We found that while the majority of participants clustered around the same level of wealth acquisition (as evidenced in Figure 4) there was a noticeably wide spread between the poorest and the wealthiest participants. Six participants had accumulated zero cash, and their inventory wealth (10 silver coins)<sup>3</sup> came from the value of the bread and water left in their bags. All new avatars begin the game with the clothes on their back (which are quickly replaced by quest rewards and items looted off monsters), and a small amount of food and water. In the case of these six participants, their bags were empty aside from these items, and from this observation two possible scenarios emerge. The first is that the participants sold everything they had accumulated over their play sessions and then spent and/or gave away all but 10 silver coins. The second (and far more likely scenario) is that they did not collect the loot from any corpses as they played, suggesting inexperience with the convention.

At the other end of the avatar affluence spectrum, we observed one player with rate of gold per hour far exceeding anyone else in this dataset. When we looked at this player's inventory, we found they had a collection of books which, when sold to a NPC, would be worth a considerable amount of gold. Upon further investigation, we discovered these are optional lore items that could be picked up in the starting zone. This, we argue, is evidence that this player (despite not having previously played *RIFT*) had enough MMOG-specific knowledge to be able to recognize important items that were in no way related to any tasks or objectives associated with quests in that zone.

From further exploration of these two extremes, we hypothesized that the wealth acquired by an avatar can be used as an indicator of player proficiency. As described above, participants were asked to indicate whether they had prior experience playing MMOGs before visiting our research labs, then each VERUS participant was asked to complete an extensive survey about their history playing games generally and MMOs specifically. A total of 107 participants had prior MMOG experience, while 30 indicated that they had not previously played a game in this genre (4 did not provide an answer to this question). It is perhaps unsurprising that the very wealthy player just mentioned indicated they had played MMOGs. More surprising was that two of the six poorest players also indicated they also had played MMOGs prior to VERUS.

To further test the hypothesis that avatar affluence is significantly correlated with player expertise, we would need to more rigorously standardize experimental conditions. For example, since participants played in groups of 2 to 4, it is possible that players with previous MMOG experience were not able to play *RIFT* to the best of their ability as they may have spent the majority of their time helping a less-technically skilled player in their group. Furthermore, by looking only at the remnants in an avatar's inventory, we are missing information about whether a player with no prior MMOG experience was able to accumulate wealth only because of the aid of another participant and/or researchers. Therefore, in future investigations we will ensure that all participants have the same conditions playing in the lab (playing alone, rather than in groups, and without researcher help) to control for outside assistance. While our exploration of avatar wealth as a metric to evaluate player skill is still in its emergent stages, we argue that it offers further evidence that hours spent playing can only ever provide a partial picture in the study of player expertise.

## **MOVING FORWARD**

In this paper we provided a framework to approach the study of abandoned avatars. The data set analyzed in this article was partly one of convenience – the study design of our original project had participants playing on researcher-owned accounts, providing us access to the entire participant pool's avatars long after they had left the universities' computer labs. The fact that single-use avatars created for a research study contained such a wealth of information points towards an untapped resource to explore player-avatar relationships. Rather than presuming that a lab-based study would suffer from Hawthorn Effects (Williams 2010) and participants, knowing they are being watched will change their behaviour, we have argued here that VERUS participants played their avatars to the best of their abilities, what we have called “playing for real”. If we are correct, then the significance of our findings likely apply to play outside as well as within lab-based environments, and the study of abandoned avatars can be a fruitful approach for other researchers interested in MMOG players and the decisions they make. In the closing section of this paper, we offer some possible applications of this research that may be of interest to those studying why players quit, as well as providing a way to continuing studying particular games after their developer shuts them down.

## **Studying former MMOG players**

Moving forward, the study of abandoned avatars could add much needed knowledge to the study of former players, an area of games research that remains persistently understudied aside from the work of Dutton (2007) and Pearce (2009). In Dutton's work especially, he describes some rituals of quitting such as giving away items to friends and guildmates who plan to continue playing *World of Warcraft*. This brings up interesting avenues of future research surrounding investment in particular avatars – while VERUS

participants certainly played “for real”, they knew that they would no longer have access to their *RIFT* avatars after they left our lab and we did not observe anything akin to the quitting rituals described by Dutton.

Recent work by Bergstrom (2016) has complicated the idea that “quitting” means a permanent departure from a game. Through interviews and surveys with former MMOG players, Bergstrom found that while some players knew they had made a permanent departure from a particular game, and others indicated they were taking a temporary break due to external constraints on their playtime, a third group was unsure whether their departure was permanent or temporary. Here an investigation of the inventories left on accounts marked inactive may enable better prediction of who will reactive their account, and who will not return. Just as Feng et al. (2007) found they could predict which players would cancel their *EVE Online* (CCP Games, 2003) by looking for particular patterns of how often a player logged into their account, we propose that a more quantitatively driven study of player inventories can provide indicators that anticipate who will quit and who will continue to play a particular MMOG.

### **Studying MMOGs after they are shuttered**

No MMOG lasts forever. Eventually, once paying customers numbers have waned or the developer has folded, the servers hosting a game will be turned off for the very last time. In recent years we have seen the closure of MMOGs such as *City of Heroes* (2004-2012), *Earth & Beyond* (2002-2004), *Faunasphere* (2009-2011), *Star Wars Galaxies* (2003-2011), *Tabula Rasa* (2007-2009) or highly anticipated MMOGs that never make it out of development, such as CCP Game’s *World of Darkness* (cancelled in 2014). In the appendix of Consalvo and Begy’s (2015) *Players And Their Pets* the authors describe the gameplay and mechanics of *Faunasphere* as the game is no longer available for play. The reality of *Faunasphere*’s closing is that “simple yet essential pieces of information that are easy to take for granted have been lost as well” (p. 123). There is a growing interest in the archiving of digital games, such as Museum of Modern Art’s permanent collection of video games. And yet as Macdonough et al.’s (2016) evaluation of the MoMA’s acquisition of *EVE Online* demonstrates, preservation of a MMOG is extremely complicated and preservation is partial (at best).

It is hoped that our preliminary investigations of virtual ‘rubbish’ might be fruitful for nascent conversations about how game scholars can continue to investigate a particular game after it has been shuttered. What we have shown here is that a snapshot of an avatar contains valuable information about the player who created it, even if that person will never reanimate this avatar. Of course, it requires some forethought to collect these snapshots before the game shutters, but we stress that all of the data discussed in this paper is contained on an Excel spreadsheet. Game developers usually provide some notice that a MMOG will be shutting down, which could provide researchers with enough time to “crowdsource” from players as the game sunsets, asking them to complete a webform or a Google document with data about their avatars.

### **Final Thoughts**

Well established disciplines, particularly archeology and anthropology, have made significant advances through the study of refuse, waste, detritus, what has been discarded or left behind long after human agents who used these artifacts have left the research site. The unearthing of Atari ET cartridges dumped in the New Mexico desert captured popular attention (first as an urban legend, then as reality) about what happens to games when they become trash. Beyond this sensational story, we see from the work of

Swalwell (2007) and Guins (2014) there is still a wealth of information waiting to be found by following the lifecycle of hardware, even after it becomes obsolete. The point of this exploratory study has been to propose, and to provide some preliminary evidence, that player studies, too, may have much to learn from the retrieval and analysis of artifacts that provide insights into the agents who created and used them, however temporarily. Such untapped approaches, we suggest, can increase the granularity and precision of predictions and explanations of key concepts (like ‘expertise’) and contribute an enduring storehouse of data derived from ‘digital detritus’.

## ACKNOWLEDGMENTS

This research was supported by the U.S. Air Force Research Laboratory under contract FA8650-10-C-7009. We would also like to thank Carole Chan for her time spent cataloging the *RIFT* player data discussed in this paper.

## ENDNOTES

<sup>1</sup> We note that *World of Warcraft* has now implemented a “grace period” where deleted characters can now be restored. More information is available at: <https://us.battle.net/support/en/article/world-of-warcraft-character-undelete>

<sup>2</sup> Not quite a healing specialization, enhancement souls add helpful buffs to their fellow party members. For more information about all four varieties of *RIFT* souls see: <http://www.trionworlds.com/rift/en/game/classes/ascended-class-system/>

<sup>3</sup> For readers unfamiliar with the *RIFT* economy: 100 silver is equal to one gold coin.

## BIBLIOGRAPHY

- Ahmad, M.A., B. Keegan, D. Williams, J. Srivastava, and N. Contractor. 2010. Trust Amongst Rogues? A Hypergraph Approach for Comparing Clandestine Trust Networks in MMOGs. In *Proceedings of the Fifth International AAAI Conference on Weblogs and Social Media*.
- Bergstrom, K. 2011. “Don’t Feed the Troll”: Shutting down Debate about Community Expectations on Reddit.com. *First Monday* 16, no. 8. <http://firstmonday.org/ojs/index.php/fm/article/viewArticle/3498>.
- . 2016. “You Don’t Ever Stop Playing EVE Online, You Just Take a Break”: Rethinking What It Means to Quit a Massively Multiplayer Online Game. In *Proceedings of 1st International Joint Conference of DiGRA and FDG*.
- Bergstrom, K., J. Jenson, and S. de Castell. 2012. What’s ‘Choice’ Got to Do with It?: Avatar Selection Differences between Novice and Expert Players of World of Warcraft and Rift. In *Proceedings of the International Conference on the Foundations of Digital Games*, 97–104. ACM Press.
- Bergstrom, K., J. Jenson, R. Hydromako, and S. de Castell. 2015. The Keys to Success: Supplemental Measures of Player Expertise in Massively Multiplayer Online Games. *Journal of Gaming & Virtual Worlds* 7, no. 1: 101–121.
- Bjork, S., and J. Linderoth. 2010. Pickup Groups as Situated Activity Systems, Game Design and Social Rules in Left 4 Dead presented at the Association of Internet Researchers, Gothenburg, Sweden.
- Blizzard Entertainment. 2004. *World of Warcraft*. Irvine USA.

- Castronova, E., D. Williams, Cuihua Shen, R. Ratan, L. Xiong, Yun Huang, and B. Keegan. 2009. As Real as Real? Macroeconomic Behavior in a Large-Scale Virtual World. *New Media Society* 11, no. 5: 685–707.
- Chen, M. 2012. *Leet Noobs: The Life and Death of an Expert Player Group in World of Warcraft*. New York: Peter Lang.
- Consalvo, M. 2009. There Is No Magic Circle. *Games and Culture* 4, no. 4: 408–417.
- Consalvo, M., and J. Begy. 2015. *Players and Their Pets: Gaming Communities from Beta to Sunset*. Minneapolis: University of Minnesota Press.
- Ducheneaut, N., and R.J. Moore. 2004. “Let Me Get My Alt.” Digital Identit(es) in Multiplayer Games. In *Proceedings of The CSCW2004 Workshop on Representation of Digital Identities*.
- Dutton, N. 2007. Participatory Quitting: Quitting Texts and World of Warcraft Player Culture. Masters Thesis, Ohio University.
- Eklund, L., and M. Johansson. 2010. Social Play? A Study of Social Interaction in Temporary Group Formation (PUG) in World of Warcraft. In *Proceedings of DiGRA Nordic 2010: Experiencing Games: Games, Play, and Players*. [http://www.digra.org/dl/display\\_html?chid=10343.55072.pdf](http://www.digra.org/dl/display_html?chid=10343.55072.pdf).
- Feng, W., D. Brandt, and D. Saha. 2007. A Long-Term Study of a Popular MMORPG. In *Proceedings of the 6th ACM SIGCOMM Workshop on Network and System Support for Games*, 19–24. ACM Press.
- Geiger, R.S. 2016. Trace Ethnography: A Retrospective. *Ethnography Matters*. <http://ethnographymatters.net/blog/2016/03/23/trace-ethnography-a-retrospective/>.
- Geiger, R.S., and D. Ribes. 2011. Trace Ethnography: Following Coordination through Documentary Practices. In *44th Hawaii International Conference on System Sciences*, 1–10. IEEE.
- Guins, R. 2014. *Game after: A Cultural Study of Video Game Afterlife*. Cambridge, Massachusetts: MIT Press.
- Hill, K. 2012. How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did. *Forbes*. <http://www.forbes.com/sites/kashmirhill/2012/02/16/how-target-figured-out-a-teen-girl-was-pregnant-before-her-father-did/#48382c0634c6>.
- Huffaker, D., J. Wang, J. Treem, M.A. Ahmad, L. Fullerton, D. Williams, M.S. Poole, and N. Contractor. 2009. The Social Behaviors of Experts in Massive Multiplayer Online Role-Playing Game. In *Proceedings of the 2009 IEEE International Conference on Computational Science and Engineering*, 326–331.
- Huh, S., and D. Williams. 2010. Dude Looks like a Lady: Gender Swapping in an Online Game. In *Online Worlds: Convergence of the Real and the Virtual*, ed. W. Bainbridge. New York: Springer. <http://www.vwobservatory.com/wp/?p=143>.
- Jenson, J., K. Bergstrom, and S. de Castell. 2013. Playing ‘for Real’: A Lab-Based Study of MMOGs. In *Selected Papers Of Internet Research*. <http://spir.aoir.org/index.php/spir/article/view/790>.
- Kukreja, U., W.E. Stevenson, and F.E. Ritter. 2006. RUI: Recording User Input from Interfaces under Windows and Mac OS X. *Behavior Research Methods* 38, no. 4: 656–659.
- Leavitt, A. 2014. When the User Disappears: Situational Non-Use of Social Technologies. In *A CHI 2014 Workshop Considering Why We Should Study Technology Non-Use*.
- Linderoth, J., and Bennerstedt, U. 2007. This Is Not a Door: An Ecological Approach to Computer Games. In *Situated Play: Proceedings of the 2007 Digital Games Research Association Conference*, 600–608.

- Macdonough, K., R. Fraimow, D. Erdman, K. Gronsbell, and E. Titkemeyer. 2016. On the EVE of Preservation: Conserving a Complex Universe. In *Internet Spaceships Are Serious Business: An EVE Online Reader*, by Marcus Carter, Kelly Bergstrom, and Darryl Woodford. University of Minnesota Press.
- McArthur, V., and J. Jenson. 2015. Plans and Co-Situated Factions: An Evaluation of Avatar Affordances in Rift's Character Creation Interface. *Journal of Gaming & Virtual Worlds* 7, no. 1: 77–99.
- Nardi, B., and J. Harris. 2006. Strangers and Friends: Collaborative Play in World of Warcraft. In *Proceedings of the 2006 20th Anniversary Conference on Computer Supported Cooperative Work*, 149–158. ACM Press.
- Pearce, C., and Artemisia. 2009. *Communities of Play: Emergent Cultures in Multiplayer Games and Virtual Worlds*. Cambridge, Mass: MIT Press.
- Reeves, S., B. Brown, and E. Laurier. 2009. Experts at Play: Understanding Skilled Expertise. *Games and Culture* 4, no. 3: 205–227.
- Shim, K., M. Ahmad, N. Pathak, and S. Srivastava. 2009. Inferring Player Rating from Performance Data in Massively Multiplayer Online Role-Playing Games (MMORPGs). In *Proceedings of the 2009 IEEE Social Computing (SocialCom-09). Workshop on Social Intelligence in Applied Gaming*. Vancouver, Canada.
- Swalwell, M. 2007. The Remembering and the Forgetting of Early Digital Games: From Novelty to Detritus and Back Again. *Journal of Visual Culture* 6, no. 2: 255–273.
- Taylor, N., K. Bergstrom, J. Jenson, and S. de Castell. 2015. Alienated Playbour: Relations of Production in EVE Online. *Games and Culture* 10, no. 4: 365–388.
- Taylor, N., S. de Castell, J. Jenson, and M. Humphrey. 2011. Modeling Play: Recasting Expertise in MMGOs. In *Proceedings of the 2011 ACM SIGGRAPH Symposium on Video Games*, 49–53. ACM Press.
- Taylor, N., J. Jenson, S. de Castell, and B. Dilouya. 2014. Public Displays of Play: Studying Online Games in Physical Settings. *Journal of Computer-Mediated Communication* 19, no. 4: 763–779.
- Taylor, T.L. 2006. *Play Between Worlds: Exploring Online Game Culture*. The MIT Press.
- Thompson, M. 1979. *Rubbish Theory: The Creation and Destruction of Value*. Oxford ; New York: Oxford University Press.
- Trion Worlds. 2011. *RIFT*. Redwood City, USA.
- Warmelink, H., and M. Siitonen. 2011. Player Communities in Multiplayer Online Games: A Systematic Review of Empirical Research. In *Proceedings of DiGRA 2011 Conference: Think Design Play*. Utrecht, NL.
- Williams, D. 2010. The Mapping Principle, and a Research Framework for Virtual Worlds. *Communication Theory* 20, no. 4 (October 1): 451–470.
- Williams, D., M. Consalvo, S. Caplan, and N. Yee. 2009. Looking for Gender: Gender Roles and Behaviors Among Online Gamers. *Journal of Communication* 59, no. 4: 700–725.
- Williams, D., T.L.M. Kennedy, and R.J. Moore. 2010. Behind the Avatar: The Patterns, Practices, and Functions of Role Playing in MMOs. *Games and Culture* 6, no. 2: 171–200.
- Yee, N., N. Ducheneaut, M. Yao, and L. Nelson. 2011. Do Men Heal More When in Drag? In *Proceedings of the 2011 Annual Conference on Human Factors in Computing Systems (CHI '11)*, 773–776. ACM Press.