

“Alone Together?” Exploring the Social Dynamics of Massively Multiplayer Online Games

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ABSTRACT

Massively Multiplayer Online Games (MMOGs) routinely attract millions of players but little empirical data is available to assess their players’ social experiences. In this paper, we use longitudinal data collected directly from the game to examine play and grouping patterns in one of the largest MMOGs: World of Warcraft. Our observations show that the prevalence and extent of social activities in MMOGs might have been previously over-estimated, and that gaming communities face important challenges affecting their cohesion and eventual longevity. We discuss the implications of our findings for the design of future games and other online social spaces.

Author Keywords

Online communities, Massively Multiplayer Online Games, social dynamics, activity metrics.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Massively Multiplayer Online Games (MMOGs) have become a phenomenon of growing cultural, social, and economic importance, routinely attracting millions of players [23]. The “social factor” is often advanced to explain their popularity: in the words of one player, “it’s the people that are addictive, not the game” [13]. Indeed, most of the activities offered by a MMOG (e.g. developing a character, fighting monsters) are already present in single player games. What makes a difference for many is apparently the shared experience, the collaborative nature of most activities and, most importantly, the reward of being socialized into a community of gamers and acquiring a reputation within it [9, 25].

But while HCI researchers [3, 5, 6, 17] and others [1, 4, 9, 24, 25] have begun to investigate these popular entertainment communities, there is still surprisingly little data available to understand how MMOGs function as social worlds. In particular, most of the current online gaming research tends to be based on self-reports obtained from the players using interviews [24], surveys [17], or ethnographic observations [3, 21]. Except for [6], no studies are based on data obtained *from the games themselves*.

To address these limitations we study social activities in MMOGs based on longitudinal data collected directly from games. We use this data to compute “social accounting” [2] metrics allowing us to assess, for instance, how often players group with each other and how this affects their progress in the game. This provides us with a solid empirical foundation to better understand these complex social worlds. In this paper, we report on our study of World of Warcraft, the most popular MMOG in the United States. We focus on three aspects of the game: play time, grouping (in the context of “quests” or missions), and guilds (longer-lived player associations). We describe the unique properties of massive gaming communities and what they can teach us about the design of successful online social spaces. In particular, we analyze the prevalence and extent of social activities to better understand if and how a game’s “social factor” can really contribute to its success.

WORLD OF WARCRAFT

A more “casual” multiplayer game

World of Warcraft (WoW) was launched to great acclaim by Blizzard Entertainment in November 2004. While it is based on a classical formula inherited from Massively Multiplayer Online Role-Playing Games (MMORPGs) that has been available for many years, WoW is clearly the genre’s first breakthrough hit. The game sold out during its first store appearance, attracting more than 240,000 subscribers in less than 24 hours (more than any other PC game in history). Its subscriber base expanded to 1.5 millions in March 2005, later to reach 4 millions [23].

It is interesting to note that earlier, Warcraft-themed games had been released by Blizzard – but none were MMORPGs. These games were immensely popular and it is quite probable that WoW’s initial growth was fueled in part by a migration of their fan base to this new game genre. As such,

WoW helped broaden the appeal of MMORPGs by introducing them to a new audience.

As in previous MMORPGs, WoW players first create an alter ego by choosing from eight different races (e.g. dwarves, orcs) and nine different character classes (e.g. mages, paladins). Once their character is created, players can begin questing in Azeroth, a medieval-fantasy world broadly inspired from the works of authors such as J.R.R. Tolkien. Azeroth is an extremely vast and richly detailed 3D environment. Players can fight dangerous creatures (which may include other players) and explore the game's two continents alone or in the company of others while undertaking quests. This allows them to earn "experience points" and reach progressively higher "levels" (60 is the current maximum), improving the abilities of their character and acquiring powerful items along the way.



Figure 1 - World of Warcraft's interface

Unlike previous MMORPGs however, WoW's most important claim to fame is its accessibility. MMORPGs have often been criticized for being "time sinks" requiring repetitive, "grinding" tasks to gain experience points and progress. As a consequence, they tend to be most popular among "power gamers" who have an instrumental game orientation [21]. Most game analysts, however, have emphasized how WoW's design rewards all players, whether they decide to play one hour or twenty hours a week [10]. For instance, characters are considered to be in a "rest state" when they are not in the game. When players return to a well-rested character they temporarily accrue 50% more experience points – and this for as long as they have rested. As such, the more time players spend between gaming sessions, the longer an experience bonus they get. This has been designed to allow the more casual players to catch up with their more "hardcore" counterparts. Numerous other enhancements (see [10]) designed with a similar philosophy have been implemented to help WoW attract a much larger subscriber base than its competitors.

Interface

Players interact with the game and other players through an interface that closely resembles those of previous online games (see Figure 1). At the bottom several rows of buttons

allow players to perform game-related actions such as casting spells or turning on special abilities. Players communicate with each other by typing text in the "chat box" at the lower left of the screen. Several communication channels are available: private, one-to-one "tells"; group chat; guild chat; "spatial" chat (heard by all players within a certain radius); and finally "zone chat", which reaches all the players in a given zone of the game (zone chat is further subdivided into four channels: general, trade, local defense, and "looking for group").

Servers and world geography

In order to break down the game's large subscriber base into more manageable units, players must choose a specific server to play on. Each server can host a community of about 20,000 players (there are 107 servers available in the U.S.). Three server types are available. The most common is PvE (player versus environment) where players cannot kill other players by default, unlike PvP (player-versus-player) servers. The third server type is RP (role-playing) for players who prefer to "stay in character" during the game.

On each server the world of Azeroth is divided into two continents, each further subdivided into zones. Players can freely travel across these zones, either on foot or by using various forms of public transportation (e.g. boats). However, each zone is home to creatures of a particular level range (e.g. Tanaris is a 40-55 zone) and could prove deadly to lower-level players. Each race has a capital city (e.g. Ironforge for the dwarves) that plays an important role as transportation hub and place of commerce. Some of these capitals also host an auction house where players can trade objects on an open market. As such, they tend to be densely populated and frequently visited.

RESEARCH METHODS

We began our study of WoW with a virtual ethnography [8] and started playing the game right after its launch in November. All authors created a main character and several "alts" (secondary characters) on different servers. We picked different character classes to get as broad an overview of the game as possible. We joined guilds, and participated in the community's regular activities (quests – alone or in groups, guild raids, player-versus-player combat, etc.). This provided us with a rich qualitative background to frame our analyses.

We later moved to a complementary, more quantitative research approach. WoW has been designed such that its client-side user interface is open to extension and modification by the user community. In addition, the game offers by default a "/who" command listing the characters currently being played on a given server. These two features have allowed us to develop a custom application to take a census of the entire game world every 5 to 15 minutes, depending on server load. Each time a character is observed our software stores an entry of the form:

Alpha,2005/03/24,Crandall,56,Ni,id,y,Felwood,Ant Killers.

The above represents a level 56 Night Elf Druid on the server Alpha, currently in the Felwood zone, grouped ("y"), and part of the Ant Killers guild. Using this application we have been collecting data continuously since June 2005 on five different servers: PvE(High) and PvE(Low), respectively high- and low-load player-versus-environment servers; PvP(High) and PvP(Low), their player-versus-player equivalents; and finally RP, a role-playing server. Overall we observed 129,372 unique characters. We then used the accumulated data to compute a variety of metrics reflecting the players' activities.

THE SOCIAL DYNAMICS OF LARGE-SCALE GAMING COMMUNITIES

Playing time and leveling

Since MMORPGs are often described as extremely time-consuming, and WoW actively tries to counter this trend, we started our analysis with an examination of playing time. The average play time per character over a week was 10.2 hours. Given that players are known to play multiple characters on their accounts, this average is probably substantially higher. In fact, it may not be much smaller than the reported average of 21 hours of weekly play for this game genre [27].

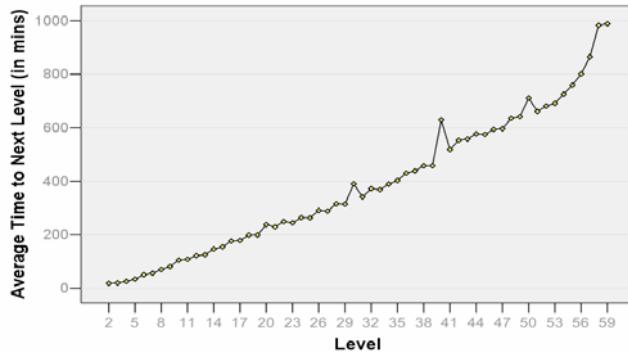


Figure 2 - Average time required to reach a level

We then analyzed how much time players spend moving from one level to the next (Figure 2). The progression is roughly linear with a mild dip at level 39 and a large spike at 40. In other words, it takes people slightly less time to get to level 40 (playing harder) but then much longer to get to 41. The curve also becomes steeper after level 53. Also of interest is the mild "step" effect throughout - leveling time is shorter at odd levels and longer at even levels. For example, the average time to reach level 40 is 446 minutes, but the average time to reach level 41 is 622 minutes.

This data illustrates how instrumental game objectives strongly affect a MMORPG player's behavior. Reaching the 40th level in WoW opens the possibility of riding a mount – a way to travel across the world 60% faster, and a significant social status marker of being a “high level” character. This apparently encourages players to “work harder” to reach this coveted objective, resulting in a

significant reduction of time spent at level 39. However mounts are not free: players need to pay about 100 gold pieces (a significant sum of game money) both for training and for the mount itself. This explains the “crash” in leveling time right after reaching 40: players simply spend more time gathering cash than earning experience points and progressing towards the next level. The “step” effect is a milder version of the above. Characters get access to new abilities at even levels – therefore, they work harder to reach them and spend less time at odd levels.

Overall, our data indicates that a player's leveling time can be obtained with the following equation:

$$\text{Leveling Time (in mins)} = (\text{Current Level} \times 14.0) - 44$$

If we assume that current level 60s spent these amounts of time while reaching level 60, then the average level 60 character has an accumulated play time of 15.5 days - a total of 47 8-hour work days, or roughly two full months of work days. A staggering 15% of all characters in WoW are currently level 60 and have played the equivalent of two man-months in the short eight months since the game's release. The 10 day accumulated play time occurs around level 48 (25% of characters in WoW are at least this level). It is again important to note that we are counting characters and not players. Actual play time would be higher for players who have multiple characters.

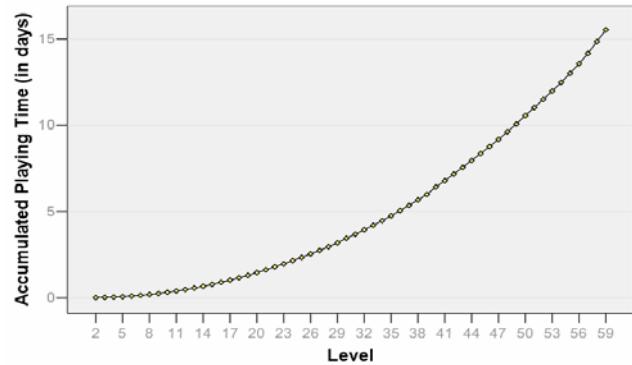


Figure 3 - Average accumulated play time by level

The average play time rises only slowly, but very regularly (Figure 3). This indicates that WoW is a well-balanced game where difficulty increases gradually with the possibility of progress always within reach – a reward cycle that made previous MMORPGs addictive [24]. In fact, the curve above is reminiscent of Skinner's concept of operant conditioning [18]. WoW begins with almost instant gratification but, as soon as the player masters the initial tasks and they become trivial, they are replaced by slightly more difficult tasks – along with the promise of better rewards (e.g. more skills, travel to new zones, etc.). Before long one-click rewards disappear and players find themselves spending dozens of hours trying to obtain a new sword, or spending “just a few more minutes” to reach the next level. Game designers know the power of such a reward structure [12] but putting it into practice is not

necessarily trivial. The fact that WoW offered such a smooth progression curve “out of the box” (the game has not been changed substantially since its launch) points at the time and care that went into designing its internal mechanics.

The “social factor:” grouping patterns

WoW encourages players to form groups using two classic mechanisms. First, character classes have specific abilities that complement each other (e.g. Priests are the best healers, Warriors the best melee fighters, etc.). As such, grouping with players of a different class should increase efficiency. Second, many quests and dungeons in the game are simply too difficult to be tackled alone. Players have to form either a party (5 players maximum) or even a raid (40 players maximum) to have a chance to win the powerful items available in these difficult locations.

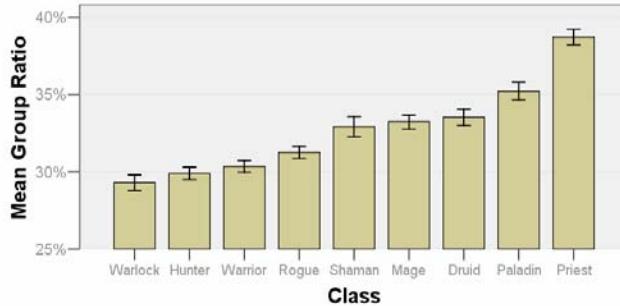


Figure 4 - Average time spent in a group, by class

Despite the complementarity of classes however, some stand a better chance of survival alone than others. For instance, Hunters are accompanied by a powerful pet, effectively allowing a single player to control a two-character unit. In the words of the players we talked to, this makes Hunters a more “soloable” class. We computed the average time spent in a group for each class and the numbers clearly reflect their “soloability” (or lack thereof) – see Figure 4. The differences are significant, $F(8,129372) = 152.99$, $p < .001$, with the most soloable class (Warlocks) spending about 30% of their time grouped versus the 40% spent by Priests at the other end of the distribution. Interestingly, the more “soloable” classes tend to be the most popular. When we computed the class distribution over the entire population, the three most-played classes (Warrior, Hunter, and Rogue) were among those spending the least time in groups (less than 32%).

We wondered however if grouping behavior changed as characters gained in level. It appears time spent in groups increases about linearly with levels to stabilize at around 40%. There is then a strong increase in grouping starting after level 55 and, starting at level 59, more than half of play time is spent in a group (Figure 5).

Another interesting aspect to consider is the impact of grouping on progress in the game. We split characters into four bands of grouping ratio (e.g. characters in the 0-1% band were almost never observed to be in a group) and then

plotted the average time it took them to complete a level across all the levels. As Figure 6 shows, characters who are never in a group consistently level faster than characters who group at any frequency. In fact, the former are about twice as efficient in leveling as the latter.

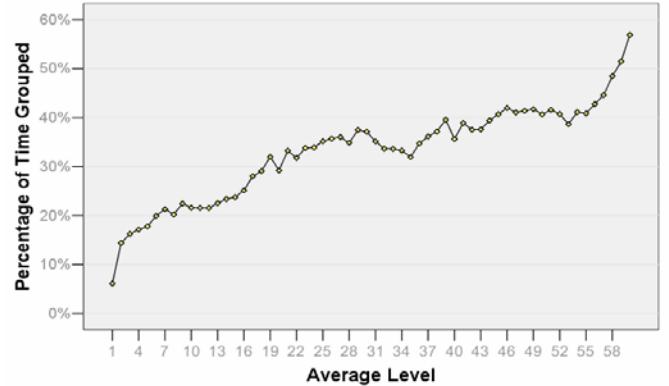


Figure 5 - Fraction of time spent in groups, by level

This data paints a more nuanced picture of the social nature of MMORPGs than was previously available. Grouping is apparently an inefficient way to level and many players are not observed to be in a group until they are past level 55. Players prefer “soloable” classes and it is only in the very late stages of the game, where dungeons are simply too difficult to enter alone, that the grouping rate rises. Therefore WoW seems like a game where the endgame is social, not the game as a whole. One player summarized this situation nicely by saying that WoW’s subscribers tend to be “alone together:” they play *surrounded* by others instead of *playing with* them. We discuss this important phenomenon in more detail later in this paper.

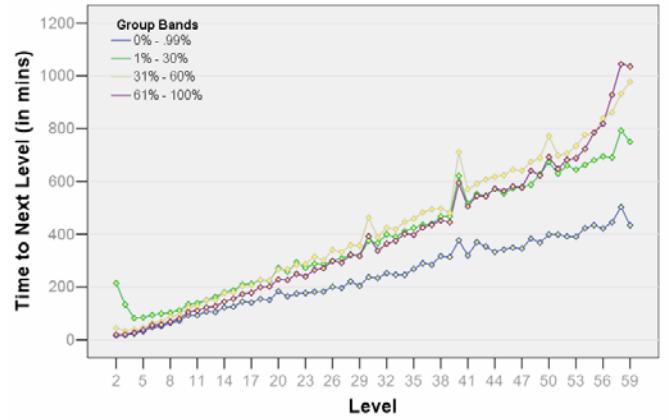


Figure 6 - Impact of grouping on leveling time

Persistent relationships: guilds and their impact

Above we observed grouping practices in the context of quests – short-term missions players have to accomplish to earn experience points. However, there are also longer-lived player associations in WoW: the guilds. Guilds are often cited as another important factor contributing to MMORPG’s popularity. They are the place where most of a

player's important relationships are formed and frame a player's social experience in the game [9, 17, 24]. Our data shows that, overall, 66% of WoW's characters are in a guild. Moreover, this number increases to 90% for characters level 43 and above. This last number is quite close to data obtained from earlier games [24].

Impacts of guild membership on playing time and groups

Since guild membership is so prevalent, we measured the effects it has on playing time. It has been proposed that guilds put "social pressure" on their members to play longer [17]. Indeed, guilds often organize raids and other events requiring planning, which could create a sense of obligation for the members. An ANCOVA with guild status as the independent variable, weekly playing time as the dependent variable, and average level as the covariate revealed that players in guilds spend more time in the game than others, $F(1,120505) = 552.87$, $p < .001$. Our data therefore seems to confirm the "social pressure" hypothesis.

Plotting playing time against level by guild involvement shows another interesting trend: playing time is more stable after level 40 for guilded players and fluctuates more for non-guilded ones (Figure 7). As we mentioned earlier, being close to new skills (at odd levels) increases playing time while being far away from new skills (at even levels) decreases playing time. It seems that this effect could be stronger for non-guilded players who have more control over their playing time and weaker for guilded players who are also playing for social obligations, especially in the latter stages of the game where dungeons and instances often require several hours of group play to be completed.

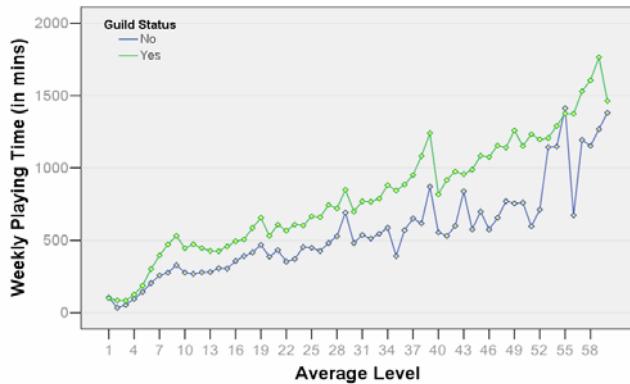


Figure 7 - Guild membership and playing time, by level

Characters belonging to guilds also group more often and this effect becomes more pronounced over the levels. In an ANCOVA with guilded (yes/no) as the independent variable, average grouping ratio as the dependent variable, and level and playing time as the covariates, the effect of being in a guild was significant, $F(1,120505) = 927.84$, $p < .001$. For example, between levels 41-60, characters in a guild are in a group about 43% more often than characters not in a guild, after playing time has been controlled for. It therefore seems that being in a guild facilitates finding and forming an ad-hoc quest group.

Size of guilds and commitment levels

All guilds are not created equal: there are significant variations in their size. 17.5% of characters were observed to be in a guild that no one else was observed to be in during the sample period - i.e., a "one-person guild". The average guild size was 14.5 (16.8 if one-person guilds are excluded) – much smaller than reported in previous survey data [17]. The median was 6 (9 if one-person guilds are excluded), and the largest observed guild had 257 members. The 90th percentile of the distribution is 35, a fairly low threshold that apparently few guilds manage to pass.

We also tried to evaluate the players' level of commitment to their guild. Of 2,744 guilds observed during a one-week period in June, 21% were not observed again during a one-week period in July. However, many of these guilds (19%) were only observed with one character in June. If we only take into account guilds with more than one member the "death rate" is 13%. Of the guilds that were observed in both June and July ($N = 2168$), the average change in guild size was exactly 0. In other words, on average, guilds did not grow or shrink over this one-month period. This was somewhat surprising given that we might have expected guilds to grow over time. In fact, if we exclude all "one-person guilds", the average change is mildly negative (-.13). On the other hand, the range of change in guild size was quite large (largest loss: 103; largest gain: 87).

Overall this tends to indicate fairly low levels of commitment to guilds, perhaps lower than previously reported [17]. The "death rate" is high with almost a quarter of the guilds disappearing each month. Within the surviving guilds the "churn rate" is also high, with a large fraction of the members leaving to be replaced by new ones. It highlights the difficulty of managing and sustaining these entertainment-based communities.

Social networks in guilds

Finally, we tried to evaluate the kind of social environment provided by a guild. We built social networks for each guild in our sample using two different methods: one to assess the guild's *potential for sociability* and the other to quantify *joint activities*.

With the first approach, players are connected to each other if they are observed online at the same time, irrespective of their game location (the strength of the tie is proportional to the time two characters overlap). The resulting network reflects the range of opportunities for social interaction in a guild. Indeed, it connects players who have the opportunity to chat using the "guild" channel and who are listed in the "guild members" window each time a player logs on. In other words, it lists the range of guildmates known (but not necessarily talked to or played with) by each player. In social networking terms, these connections could be called weak [7] or "bridging" [15] ties.

Our second type of social network connects players who are observed to be in the same zones of the game, excluding the

major cities. Such a network highlights players who are spending time together, grouping with guildmates to run quests and visit dungeons. These are stronger, “bonding” [15] ties based on mutual interest in the same game activities.

We computed each guild’s social network degree density (Table 1) [22]. We limited this analysis to guilds having 6 members or more (densities in small networks can often be unreliable [22]). The numbers were surprisingly low: on average, it seems that players know at most 1 out of 4 members of their guilds, and play only with 1 out of 10 (Table 1, row 1). Guilds are sparsely knit networks – a surprising finding, considering the effects they have on play patterns. Moreover, density is inversely correlated with size (-.15): as guilds grow, it becomes more difficult to know and play with most of the members.

Guild size		Co-Presence	Co-Location
All > 6	N	4205	4205
	Mean	0.27	0.09
	Median	0.23	0.06
6 – 15	N	1779	1779
	Mean	0.31	0.12
	Median	0.29	0.08
16 – 30	N	889	889
	Mean	0.27	0.08
	Median	0.25	0.07
31 – 60	N	618	618
	Mean	0.22	0.05
	Median	0.20	0.04
61 – 120	N	367	367
	Mean	0.18	0.03
	Median	0.17	0.02
> 120	N	244	244
	Mean	0.17	0.04
	Median	0.14	0.01

Table 1 – Social network densities

Since guilds tend to be sparsely knit, we then tried to identify cohesive subgroups within them. We performed a k-core decomposition [22] for each guild in our five size categories, using the co-location networks. Each k-core is a subgraph where each player is adjacent to at least k others. The main core (the k-core with the largest k) gives the size of the most cohesive subgroup (Table 2).

sizeband	N	Minimum	Maximum	Mean	Std. Deviation
6 - 15	1779	0	11	3.59	2.232
16 - 30	889	0	17	6.40	3.042
31 - 60	619	0	39	8.64	4.424
61 - 120	367	1	54	12.14	8.050
> 120	244	1	68	21.78	16.489

Table 2 - Main core size for the five guild categories

The ratio of main core size to guild size is inversely correlated with size (-.17), decreasing from 37% to 12%. In other words, growing a guild has diminishing returns as far as forming tight play groups is concerned: a smaller and smaller fraction of the additional recruits will join the core. Still, our data illustrates why having a large guild can

remain beneficial. Note that, for guilds with 16 to 60 members, the average main core is between 6 and 9. Considering that the maximum quest party size in WoW is 5, this probably means that the core players in these guilds have formed at least one, sometimes two stable quest groups. Guilds with 61 to 120 members probably have 3 such groups. And finally, guilds with more than 120 members have a large enough core (about 22) to form a credible raid group in order to tackle the toughest dungeons.

We also observed that players belonging to the core of a guild do not simply play with many guildmates, they play with them longer. We computed that, on average, any two members in a guild spend 22.8 minutes playing together over a 30-day period, while for core members the average is 154 minutes. Guild cores are “tight” sub-groups. Finally, our data shows that a large majority (65%) of guilds have a single core group. A few guilds (13%) have two cores, and fewer still (4%) have three.

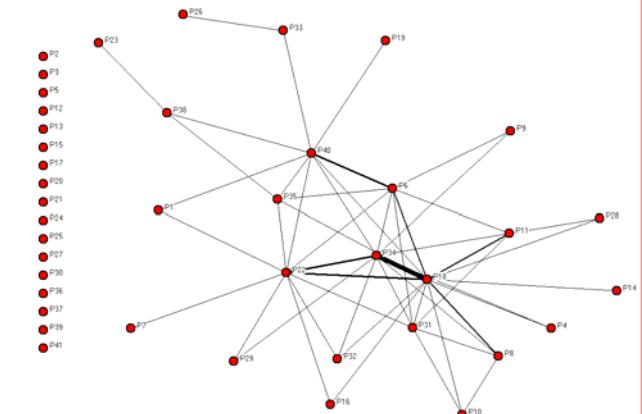


Figure 8 – Co-location network in a medium-sized guild

Figure 8 illustrates the co-location network for a typical, medium-sized guild. Out of the 41 members, 17 were never observed in the same zone as another guildmate. Among the 24 remaining there is a main core of 8 players actively playing together, with a really active central trio (their thick ties show they spend a lot of time together). The other 13 players are only peripherally connected and play with 2 or fewer guildmates.

Differences between servers

The metrics we reported above are based on observations across all servers. We explored whether or not the type of server had a significant impact on our results. In particular, our hypothesis was that PvP servers could have larger guilds with players more inclined to grouping – both would simply increase a player’s chance of survival (a common occurrence on PvP server is to be “ganked,” that is, to be killed by other players while traveling alone). However the differences were surprisingly small overall. Characters on PvP servers played about an hour more (70 minutes) per week, and grouping rates differed in the direction we hypothesized (30% of time spent in groups instead of 25%, across all 60 levels). No other differences were apparent.

Since the differences are quite small, we are confident the type of server does not seriously affect the playing patterns we observed. With this in mind, we will now discuss the implications of our findings.

DISCUSSION

Designing a successful massively multiplayer game

Our analyses shed light on many of the unique properties of WoW, some confirming earlier studies of competing MMORPGs and others more surprising. Above all it seems clear that, despite claims to the contrary, WoW's success cannot be entirely explained by its "casual" nature. While players tend to log into the game less than in its earlier competitors, WoW still consumes a very significant amount of leisure time from its subscribers.

If WoW is not more casual than its predecessors, what makes it so successful? Multiplayer game designers maintain, "MMORPGs are COMMUNITIES. Not games" (emphasis from the original text) [11]. However, our data shows that game design cannot easily be ignored. While WoW does not appear at first to be a particularly sociable environment, it clearly has an addictive and carefully crafted reward structure. WoW truly is "a virtual Skinner box" [24], smoothly increasing reward and difficulty and reinforcing player commitment along the way. Players are always on the edge of opening up new abilities, of discovering new content. The increase in playing time right before new abilities become available illustrates how easily players can be driven by such rewards. As such, WoW is an interesting experiment in the psychology of motivation and the determinants of "fun" [12].

The importance of game design versus the community features of MMORPGs might be best illustrated by comparing WoW to one of its competitors, Star Wars Galaxies (SWG). The latter was explicitly designed to emphasize the more social aspects of multiplayer gaming, but was also widely criticized as having one of the most intensive "grind" of the genre [6] – in other words, a player's progress was nowhere near as smooth as in WoW. And SWG, targeting the same audience as WoW, never reached the massive number of subscribers WoW attracted within the first few months of its launch (it is estimated that SWG's population peaked at around 300,000 subscribers [23]). This shows that, as the multiplayer games market gets bigger and more choices become available, players might favor good game designs over rich social environments. Therefore, to paraphrase the earlier quote, we would like to emphasize that "MMORPGs are BOTH games and communities."

However the above is not meant to imply that the social dimensions of MMORPGs are nonexistent and should be neglected. In fact, we believe instead WoW points at a different approach to designing games for social play.

The other players: friends or audience?

When asked about the reasons behind their attraction to MMORPGs, most players answer by mentioning "the social factor:" it is the presence of other people in these games' worlds that sets them apart [13, 17, 27]. Studies of earlier MMORPGs refined this picture by emphasizing the importance of joint activities and time spent in groups [9]. However, our study of WoW shows that grouping may not be what most players are after. Indeed, a large number of players stay outside of groups for most of their tenure in the game. Of course, we know that not all players enjoy socializing [1]. Still, considering how large WoW's population is, the lack of grouping cannot be entirely attributed to playing styles.

These numbers, complemented by our ethnographic observations of the game, have led us to a different definition of the role of other players in MMORPGs. While many of WoW's subscribers play alone, we believe they prefer playing a MMORPG to playing a comparable single-player game because of a different kind of "social factor." Indeed, the other players have important roles beyond providing direct support and camaraderie in the context of quest groups: they also provide an *audience*, a sense of *social presence*, and a *spectacle*. We believe these three factors can help explain the appeal of being "alone together" in multiplayer games.

Interacting with an audience

To begin, it is important to mention that MMORPGs are in essence reputation games - an avatar wearing powerful items, for instance, is essential to the construction of a player's identity. It broadcasts the player's status to others and rewards him or her with a sense of achievement [26]. And without an audience of other players to whom these items could be displayed, the game would make little sense. The ability to construct an identity as an "uber" or "elite" gamer is where MMORPGs are truly social worlds – grouping with others can be just a means to an end, which can be sidestepped depending on playing style [1, 26]. Put differently it is not "the people that are addictive" [14] but rather, "it's the image of myself I get from other people."

To use an analogy, playing WoW is therefore like playing pinball in a crowded arcade, where spectators gather around the machine to observe the best players. For instance, densely populated cities in WoW (e.g. Ironforge) serve as a meeting point where players can showcase their latest accomplishments. In fact it is not uncommon to see level 60 avatars, wearing powerful sets of armor and weapons, simply left standing by their players in front of the auction house for everyone to admire!

We believe multiplayer game designers should take such behaviors seriously. Rather than focus entirely on design strategies to encourage people to group, it could be worthwhile to simultaneously *design for audience/player interactions*. "Community" in MMORPGs tends to have been narrowly defined, with references to mythical old

villages [11] where everybody knows and interacts with everybody. It is important to recognize that, as WoW illustrates, a large community of gamers can thrive in a context where relationships are much more indirect. Providing more ways for players to play not only for themselves but “in front” of others would build on this trend. Interestingly, CHI researchers have recently proposed a set of guidelines to “design for the spectator experience” [16]. While the latter does not deal with games directly, it certainly points at an interesting avenue for future research.

Being surrounded by others

Sociability in WoW is much more diffuse than in other MMORPGs: as our data illustrates, the opportunities for small, intense interactions in the context of groups can be rare. Interestingly however, WoW still does not feel like an “a-social” environment. We believe that the design of WoW’s communication system greatly contributes to this feeling. Indeed, WoW’s chat channels are not limited by distance. Each zone has a “general” channel broadcasting to all players present and, for guild members, guild chat transmits text across the entire world. While this may at first appear unrealistic, it leads to an important side effect: a sense of *social presence*.

Indeed, even if few players decide to chat in these channels, the fact that they are open to a very large fraction of the population makes it easy to build a critical interaction mass. Therefore, while playing WoW, one is always surrounded by background chatter in the general or guild channels. This gives a strong impression of playing in a world inhabited by other people, even if these people are not immediately visible. Players can jump in and socialize whenever they see fit, not when they are directly in the company of others. People in these channels can also be tapped for information about the game when needed. To use another analogy, playing WoW can be like reading a book in a densely populated café – while one may not necessarily choose to interact with the other patrons, the sense of being in a public social space is attractive enough for people to conduct individual activities there [14]. This is how WoW can be more than a single-player game and yet less of an intense social experience as one may have expected.

Laughing at and with others

Finally it is important to mention that other players, even complete strangers, can be a constant source of entertainment. While traveling in Azeroth we witnessed countless antics and humorous interactions: an impromptu dance performance by a group of characters waiting for a boat, for instance, or a gnome wearing a deep-dive helmet in Ironforge’s crowded auction house. Other players are important in MMORPGs because they are a *spectacle*. Maximizing opportunities for humor therefore greatly contributes to the social atmosphere of a game and its eventual success.

Here again WoW’s designers have clearly leveraged this idea: the game world often has the undertones of a comedy, with many humorous objects that can be appropriated by the players (e.g. the deep dive helmet mentioned earlier and a 20-lb catfish that can be used as a weapon), non-playing characters with memorable lines, etc. In fact, the game even offers a “/silly” command allowing characters to instantaneously utter a random, humorous “voice emote.” Such seemingly unimportant details are in fact significant factors in the social life of a multiplayer game.

Managing large entertainment communities

Our observations show that an overwhelming majority of guilds have 35 members or less (90th percentile), with a mean of 14.5. The “churn rate” is high, with many members leaving regularly to be replaced by new faces. Moreover, only a small fraction of each guild’s population (about 10%) truly engages in joint activities. Overall our data gives the impression that growing a guild to a significant size and sustaining it over time is a difficult task, perhaps more so than managing groups in other contexts. From a game producer’s standpoint this is clearly problematic since, as we have seen earlier, guild membership encourages players to play more and to group more.

A variety of reasons could explain this phenomenon. First, despite their attachment to the game, WoW remains a leisure activity. When pressed with other constraints from the “real world” pulling them away from the game, many players probably have no qualms abandoning their guild. For guild leaders, retention is therefore a difficult issue. Entertainment-centered electronic communities may be inherently limited in their size and growth potential by the simple fact that they are trumped by more “serious” pursuits. Note however that the picture is far from uniform: guilds are often cited as a source of addiction to MMORPGs because of the social obligations they create [27], an hypothesis we confirmed with our data. And it seems that guilds in previous MMORPGs were larger and longer-lasting [17]. Therefore it may be that we are observing a phenomenon unique to WoW (and possibly to future MMORPGs if they reach WoW’s scale), where a fraction of the population is indeed playing more “casually” and is less attached to the game’s social groups.

Moreover, guilds can usually be divided into a core group actively playing together and more peripheral members who barely interact with their guildmates, if at all – these latter players probably develop much less of an attachment to their guild. We also saw that joining the guild’s core becomes more and more difficult as the guild’s size increases. We believe these cohesion problems can be explained in great part by a game mechanism shared by all MMORPGs: leveling.

Indeed, players with a level difference of 5 or more cannot group together (the lower level players simply die too quickly or, if the group visits a low-level location, the higher level players do not earn experience points). This

creates asymmetries that can be damaging to the game's social groups. Indeed, it is highly probable that each guild's core is made of the guild founders and their friends who started playing at the same time and synchronized their progress in the game. As such, they can easily form well-balanced quest groups. Later recruits (or players who fell behind by not playing for a while), however, can only play in a group with guildmates if enough players of the same level have also joined. In other words, if guild officers recruit new members sporadically and without considering their level, it is quite probable that the recruits will remain isolated and eventually leave.

This trend reverses only for "endgame" guilds that recruit high-level players exclusively (usually 55 and above) to focus on the toughest areas of the game, or for guilds that have survived long enough to have a high proportion of high-level players. Since levels are capped at 60, most members remain within a viable level range and can play with any guildmate. Based on our ethnographic observations, it seems that many of the largest guilds on each server fit this definition, reinforcing our hypothesis that a guild's size and cohesiveness are affected by level differences.

The above analysis points at a tension in MMORPGs between hours of weekly playtime and the maintenance of relationships: if players step off the "leveling treadmill," for even a short time, they quickly cannot play with their friends effectively anymore. WoW's "rest" feature attempts to mitigate this but loses effectiveness as the leveling gap between players increases. Therefore, and by their fundamental design, MMORPGs might not support casual-social-play very well, and this could be another reason why we see so much "solo play" in WoW. In contrast, virtual worlds that do not involve leveling, such as Second Life or Guild Wars, can support casual-social-play much better.

Another important issue affecting the social life of MMOGs is the time and effort required to manage a persistent group. As we saw earlier, growing a guild requires regular recruitment of cohorts of players with identical experiences, which can be time consuming and difficult. The officers also need to make sure that the current members keep up with the game and stay at a level where they can find company within the guild. Finally they also need to make sure the members' skills complement each other – a surplus of mages, for instance, is counter-productive since they cannot form a well-balanced group. Beyond recruiting and personnel management, officers also face other difficulties that increase with the guild's size, such as scheduling group activities or managing the guild's inventory of resources (guilds often create pools of equipment) [20].

Considering the above, it is clear that players need more tools to help insure that their guild survive and prosper. Currently most games provide limited in-game resources for monitoring guildmates' online status, level, and rank. In addition, players have traditionally set up their own online

forums in order to manage their guilds from outside the game. While some companies (e.g., Sony Online Entertainment for EverQuest II) have begun to offer these web-based resources to players as part of their subscription package, more can be done to help guilds. For example, one useful feature would be "public rosters" listing membership and levels for each guild. This way players could make sure they join a guild with potentially compatible players. But in fact, this idea could be pushed even further by releasing tools to the community to help it understand its own interactions. For instance, game producers could offer simple social network visualizations such as ours to help players distinguish between the more social and more fragmented guilds. The activities of each guild could also be automatically summarized (e.g. "The Keepers of the Sword spend 20% of their time in the Molten Core"), allowing players to join groups corresponding to their playing style. In essence, we are suggesting that online games would greatly benefit from social navigation tools just like other, more "traditional" online social spaces (e.g. [19] in the case of newsgroups). This could help grow guilds beyond their current small sizes, where the volume of information to manage is small enough not to require external sources of support.

CONCLUSION

In this paper we used longitudinal data obtained directly from the most successful US MMOG, World of Warcraft, to assess the players' social experiences in these virtual worlds. Our observations show that, while MMOGs are clearly social environments, the extent and nature of the players' social activities differ significantly from previous accounts. In particular, joint activities are not very prevalent, especially in the early stages of the game. WoW's subscribers, instead of playing with other people, rely on them as an audience for their in-game performances, as an entertaining spectacle, and as a diffuse and easily accessible source of information and chitchat. For most, playing the game is therefore like being "alone together" – surrounded by others, but not necessarily actively interacting with them. Based on WoW's success, this suggests alternative design strategies for online games (and online spaces more generally) where encouraging and supporting direct interactions might be less important than designing for the "spectator experience" and a sense of social presence [16].

Expanding on the above, our data also indicates that, while grouping in the context of "quests" or missions might not be what most players are interested in, longer-lived player associations (the guilds) have significant impacts on play patterns. Guilds facilitate the formation of groups when they are needed, encourage players to play more often and more regularly, and act as an important and ever-present source of support and socializing via the "guild chat" channels, where guildmates are always available. However, guilds are apparently facing several challenges that can affect their growth and longevity – and therefore, the

growth and longevity of the game itself. In particular, managing a guild can be more difficult than it needs to be due to the absence of good social navigation tools. One of the core game mechanics in MMOGs, leveling, inherited from pen-and-paper role playing games, also has damaging impacts on the game's social fabric. Indeed, differences in levels can be enough to reduce a guild's cohesion and probably play a role in the heavy "churn rate" among the members. While WoW tries to mitigate this problem with its concept of "rest state," it is clear that more could be done to truly encourage casual social play.

Still, our analyses also show that a carefully crafted reward structure, such as the one WoW's designers have assembled, can contribute significantly to a game's success. The rewards available after "just a few more minutes" of playing function as a virtual Skinner box drawing the players deeper into the game. Therefore, WoW illustrates how a careful combination of addictive game design with a "looser" social environment can help MMOGs break the coveted one million subscribers barrier. It remains to be seen if such a combination can be sustained over time, or if alternative approaches are needed to grow multiplayer games even further.

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