The XFire Online Meta-Gaming Network: Observation and High-Level Analysis

When you play a number of games, not as ends unto themselves but as parts of a larger game, you are participating in a metagame. (Dr. Richard Garfield [8])

ABSTRACT

Online Meta-Gaming Networks are Internet-based communities of (computer) game players that extend in-game functionality by focusing on the relationship between game sessions, on what happens in the meantime between game sessions, and on the relationship between games. Motivated by the popularity of these game-related networks and by the growth of their importance—many major game developers have started to operate their own online meta-gaming network—, in this work we analyze a long-term observation of XFire. Using long-term, large-scale data that we have collected, we present a high-level, marginal distribution- and time-based analysis of XFire: its global network, player activity, user-generated content, and social structure. We find that XFire is a slowly growing network whose players spend collectively in-game over 100 years, every hour. We quantify the "hardcore"-ness of XFire players, and find that a significant fraction of them have played over 10,000 in-game hours. We also find that XFire community members are routinely engaged in the creation and consumption of game-related media, such as screenshots and videos.

1. INTRODUCTION

Online Meta-Gaming Networks (OMGNs) such as Valve's Steam, Sony's PlayStation Network, and Xfire are for tens of millions of players an important way of integrating in a like-minded, game-oriented society. For example, the almost 20 million gamers participating in the XFire online meta-gaming network may discuss and share game-related media related to over 2,000 different computer games. Understanding the characteristics of meta-gaming networks can lend important help to the design and tuning of OMGNs. However, despite an increase in these network's popularity over the past two decades—one of the first meta-gaming networks was built by America Online (AOL) in the early 1990s—, the characteristics of meta-gaming networks remain relatively unknown. In contrast, much previous work has focused on observing and analyzing other platforms for community-creation [12,14] and media-sharing [2,13,15,19]. To address this gap, in this work we report on the long-term observation and resulting high-level analysis of XFire.

Characterizing OMGNs is important for the design and operation of OMGNs. The need for timely and adequate OMGN deployments pressures system designers and operators into taking, on short notice, important decisions about system scalability, security, and usability. Such decisions can greatly benefit from a good understanding of the community size, structure, and activity. For example, provisioning the resources needed for the operation of an OMGN can benefit from an understanding of the evolution of the number of OMGN users, coupled with statistical information about the resource consumption incurred by each user. Inadequate designs can have disastrous consequences, such as the forced shut-down of the Sony PlayStation Network, following a security breach [22].

OMGNs may differ significantly from other (Internet-based) communities and social networks. Meta-gaming networks may add to the study of human communities [9,10] a new dimension, which stems from their competitive (even adversarial) context—most participants in OMGNs are gamers. Due to their multi-game coverage, OMGNs such as XFire may also be different from the communities that form around individual game titles, for example Massively Multiplayer Role-Playing Game World of Warcraft [4] or the casual online social game Fighters Club [17]. Similarly, studies of OMGNs may complement earlier studies of in-game player activity and behavior [3,6] with an out-of-game component.

Our long-term objective is *to create a theoretical and practical foundation for study of analyzing meta-gaming networks*. Much work needs to be done to achieve this objective, among which observing and analyzing OMGNs raise important challenges. The quantitative assessment of OMGNs is made more difficult by the decentralized system designs and by the confidential nature of the data. Often, observing without the cooperation of the OMGN operators is the only way to obtain data. Since human communities are subject to attrition and evolution, to be conclusive data need to be obtained over long periods of time. Even when data are obtained, the problem of extracting useful information from them may require new models and algorithms. As a first step toward our long-term objective, our main research question is, in this work, *What are the characteristics of an Online Meta-Gaming Network?* To answer this question, we focus on the observation and high-level analysis of the XFire network, where by "high-level analysis" we mean the analysis of marginal distributions for a number of important characteristics. Our main contribution is threefold:

1. We propose a method for the study of OMGNs, which is based on repeated observation and high-level analysis (Section 3).
2. We collect a long-term dataset from XFire (Section 4).
3. We present a high-level analysis of the XFire dataset, which focuses on the global network (Section 5), on gaming activity (Section 6), on user-generated content (Section 7), and on social structure (Section 8).

2. BACKGROUND ON OMGNS

In this section we present the context required to understand OMGNs. Context is particularly important for large-scale quantitative studies such as ours, increasing familiarity with the subject (needed to plan observational studies) and allowing for an understanding of potential measurement biases. We first introduce meta-gaming and OMGNs, then discuss the focus of this work on a particular OMGN, XFire.

Meta-gaming, defined as "the game beyond the game" [8], refers to game-related (but mostly not in-game) connections between people. The meta-game connections can affect both positively and negatively the way players think about and act within the game. A large number of players may be persuaded by the social pressure of their game-friends and game-peers to continue playing a game or a game genre over many years. A community of players may exchange information and educate its weaker members about the best strategies of a game. A group of players may collude to influence the outcome of a tournament [16]. A poker player may purposely lose a hand to better understand the bidding behavior of an opponent [8].

An Online Meta-Gaming Network is an online social network [10, 12, 14] that allows its participants to manage their metagame connections, through the following set of **core features**: (instant) messaging; file sharing; screenshooting (capturing and publishing screenshots), videoshooting (capturing and publishing videos); screencasting (live streams of image as seen on the computer; approx like broadcast; etc.

One of the earliest metagaming networks was built for *Neverwinter Nights*, an early MMORPG hosted by AOL since 1991. For this game, the emergence of in-game guilds of like-minded players triggered support from AOL, with installed and operated forums [1, p.160]. One of the first metagames launched simultaneously with the online social game *Animal Crossing* (*Dōbutsu no Mori*), Nintendo, in 2002 (2001). In *Animal Crossing*, players use the metagame network to exchange messages and to send in-game objects as gifts; socialization, both in-game and through the metagame, is the key feature of the game [11, Ch.6].

Tens of millions[1] of players have joined recently online metagaming networks such as XFire (`http://xfire.com`), Valve's Steam, Sony's PlayStation Network, Microsoft's XBox and Games for Windows Live, and Zynga's integration with multiple social networks (a distributed OMGN). All of these networks offer all the core OMGN features, with different implementations.

3. A METHOD FOR STUDYING OMGNS

In this section we propose a method for the study of OMGNs that is based on repeated environment observation and its high-level analysis. Our method addresses two main problems, the collection of data from OMGNs and the focus of analysis.

Our method is based on the principles of *observational studies* [20] [18, Ch.6.5], that is, that the study does not involve the intervention of the investigator; instead, the investigator can only observe (record and analyze) the environment. The alternative of using intervention studies, that is, studies in which the investigator can alter one or more factors affecting the environment to later study the effects of the alteration, is often unethical and rarely feasible. The negative impact of this (forced) choice is that the root causes of the observed situations cannot be established rigorously.

We further base our method on a repeated cross-sectional design. Among several types of designs for observational studies, *cross-sectional* designs focus on the observation of a part of the environment at a single moment of time. A *repeated cross-sectional* design uses the data and/or results of several cross-sectional studies of the same environment; to improve the statistical relevance of the results, the repetition is periodic. The cross-sectional design can capture net effect changes, such as overall increases and decreases of the population, trends in the population taste and activity, etc., and can support the evaluation of marginal distributions (such as the probability and the cumulative distribution function, or the *PDF* and the *CDF*, respectively) for a wide range of OMGN characteristics. Alternatively, longitudinal designs would sample over time the same population, sometimes of the same age, which could lead to improved statistical power for the study but is impractical for OMGNs due to attrition; surveying and case studies are impractical for OMGNs, where demographic information is unavailable before the study.

Bootstrapping the data collection process Because the members of the OMGN are not known before the study (the *bootstrapping problem*), the data collection part of our method needs an adaptation to the context of OMGNs. We propose an approach for the bootstrapping problem, based on *participant self-selection*, where we first observe the participants to the discussions and media-sharing activities of the network for a period, then use them to bootstrap the traversal of the network; exploiting the high-connectivity of social graphs, by traversing only one further connection in the social graph, information may be obtained about a significant fraction of the OMGN members. If incomplete, the traversal should use a random selection of connection traversal. As a possible alternative, unbiased sampling methods are difficult to develop and depend on the properties of the network, which may be unknown before the study, to reduce the bias introduced by bootstrapping [21].

Observed environment variables With the specific goal of building in the future systems that can better and more efficiently support OMGNs, we focus on four main components of the operation of OMGNs: the global network, on gaming activity, on user-generated content, and on social structure. For the *global network*, we focus on the size of the community and on the time spent collectively by the OMGN members in-game. At the level of individual players, we focus for the *gaming activity* on the number of games played, of the time spent in-game (both for all games and for each game, individually). The *user-generated content* analysis focuses on the production and consumption of content, where content may be any multi-media product that an OMGN member may share with other members. The analysis of production follows the counts of produced items per player

[1]We will show in Section 5 that XFire is a community of about 20 million players. The Sony PlayStation Network had at least 77 million accounts [22].

Table 1: The XFire community datasets.

	Bootstrap	Global Network	Player
Period	May 2008 to	Sep 2010 to	Sep 14–16
	Sep 2010	Jun 2011	2010
Samples	1/hour	1/hour	1
Size [GB]	9.2	6.5	15.7
Players	65,908	*not applicable*	544,902
Game genres	25	25	*not applicable*
Games	1,100+	1,400+	*not applicable*

and further per game. The analysis of consumption follows the counts of views or other types of uses of produced items. Last, the *social structure* follows the creation of connections in two types of communities: structured (guilds, clans, etc.) and free-form (friends, buddies, etc.)

Application We describe in Sections 4 through 8 the application of our method on XFire, which we select as an exemplar of OMGN. Among the OMGNs introduced in Section 2, XFire is the only popular network that is not affiliated with any individual game producer and does not include direct game sale as part of its business model. As a consequence, XFire is reveals more information per player than the other OMGNs and does not have a visible incentive to bias recommendations for popular games and derivative multi-media, such as screenshots and videos.

4. DATA COLLECTION AND CLEANING

In this section we present the procedure used for collecting data from XFire. The data were acquired without the cooperation of the XFire operator, which is similar to our previous experience with many large-scale communities. The acquisition process is periodic, and consists from a combination between crawling and parsing web data. Our data collection process contains three parts: data collection for solving the bootstrap problem (see previous section), followed by separate data collection for the global network and for the individual players. We have written in Python custom tools for each part.

Data summary XFire offers rich information concerning members, games, and game genres. A summary of the collected datasets is presented in Table 1. Overall, we have collected data over a period of more than 3 years, out of which the last 10 months have produced the data analyzed in Sections 5 through 8. The Global Network dataset does not include detailed player information; the Player dataset does not include detailed game and game genre information. Over the period covered by these datasets, we have suffered an infrastructure downtime that affects under 1% of the samples in non-adjacent short periods.

The Bootstrap dataset Our collected XFire data includes member identifiers in the pages related to game genres and individual games; the included members have published game-related content or have been part of a popular community or event. (We intend to investigate the correlation between members and games in a future analysis of this dataset.) We have collected in the Bootstrap dataset (Table 1, column "Bootstrap") information about all the 25 game genres and an evolving number of games tracked by XFire over a period of over 2 years. We have identified in this dataset over 65,000 players.

The Global Network dataset Our collected XFire data includes information about in-game use for each game (in hours, updated every day) and for the most played four games (in minutes, updated at every access), the number of registered and online players (updated at every access), a grouping of games by genre, etc. (We intend to further analyze this rich dataset in the future.) The duration of in-game presence is recorded by the tools provided by XFire, which are installed by each player's gaming system. For this dataset, there are no missing data: when taken, samples are complete. Although cheating is possible, we believe that the closed-source nature of the official tool and the openness of the community prevent wide-spread mis-reporting.

The Player dataset For this dataset we have followed the two-step procedure detailed in Section 3: we first collected information from the over 65,000 members identified in the Bootstrap dataset, then collected information about all their recorded friends. For the former, we were able to retrieve information only about 61,229 members; for the former, we were able to collect information about 483,673 more, randomly selected out of the 1,393,090 friends identified in the first step. In total, we have collected detailed, recently-updated information about over 500,000 XFire members: the number of friends (limited by XFire at 1,000), the list of joined communities and their sizes, the list of played games and time spent in them, etc. The total time spent for each game is measured from the date of the player registration, which may be as early as 2003, when XFire was launched. (We intend to further analyze this rich dataset in the future.) The reporting of time spent in-game is done with the same XFire tools as for the data present in our Global Network dataset.

Members or players? A member of XFire does not necessarily need to play games. We have analyzed the Player dataset and found that only 25,208 members (5.01%) have not played at least one game or at least one total hour over all played games. As a consequence, we will use in this article the terms "member" ("user") and "player" ("gamer") interchangeably.

5. ANALYSIS OF THE GLOBAL NETWORK

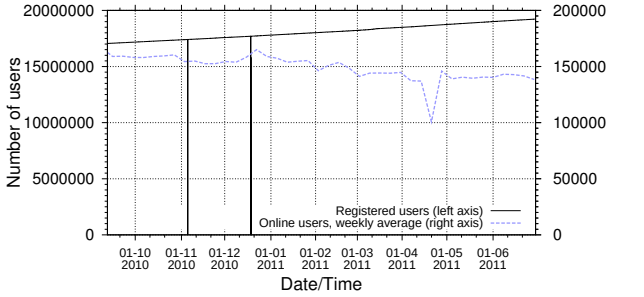

Figure 1: Number of players registered and online, over time.

Registered and online players: XFire is a slowly growing community, with a slowly decreasing online presence of about 1% of its registered users. Figure 1 depicts the number of players registered and online, over time. There are about 20 million registered players in XFire. The number of registered users keep a steady increasing rate (330,000 or about 2% more users per month) during the observed pe-

riod. Assuming the same growth rate, the XFire community will reach in 2012 about 21.5 million registered players. The number of online players has an average of about 150,000 or 0.8% registered players, with a peak around 165,000 near the Christmas holiday; the online presence seems to be slowly decreasing (about 2% per month). For comparison, RuneScape, which is a free MMORPG that maintains an OMGN, has a much lower ratio of online players, about 200,000 out of over 135 million registrations (0.15%).

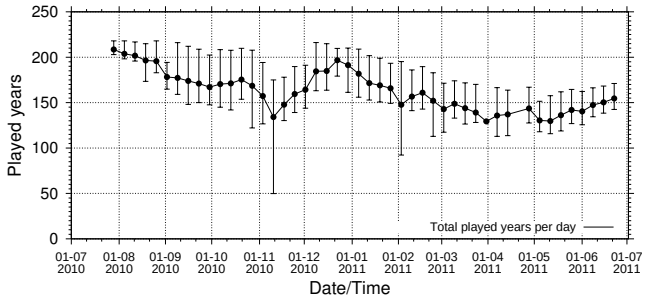

Figure 2: Time spent collectively in games by the XFire community, per hour, over time. Curves represent weekly averages; error bars represent weekly minima and maxima.

Collective in-game time: XFire members spend collectively over 100 years playing, every hour. Figure 2 depicts the time spent collectively in games by the XFire community, per hour, over time. The total time spent on games shows monthly effects: players play longer during the August and December vacations. In August, the total time spent on games per hour exceeds 200 years.

6. ANALYSIS OF GAMING ACTIVITY

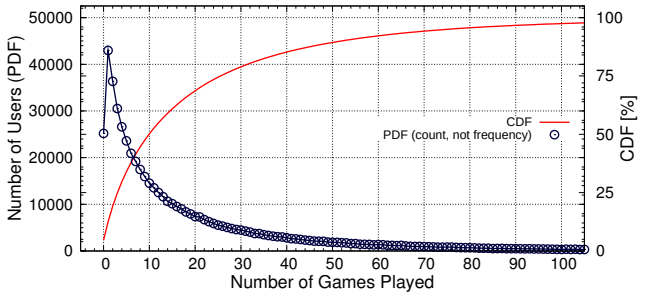

Figure 3: Number of games played in total, per player.

Player activity, played games: The average XFire gamer has played over 20 games. Figure 3 depicts the number of games played in total, per player. (In Figure 3, the Cumulative Distribution Function (CDF) is depicted against the right vertical axis, while the Probability Distribution Function (PDF) uses the number of recorded observations instead of relative frequency and is depicted against the left axis; we use this graph structure for each subsequent depiction of a Pareto (combined PDF and CDF) graph.) The number of games played by player is rather heterogeneous. The average number of games played by player is 21 while the maximum value is 1,989. Less than 5% of registered users did not play at least one game (see also the discussion at the end of Section 4). More than 50% of the registered users played at least 10 games. The graph indicates that the distribution of number of games played by each player could be long-tailed, because on a re-plotted graph with log-scale vertical axis the PDF curve looks like a straight line. This further indicates that an exponential distribution may be a good model for the number of played games.

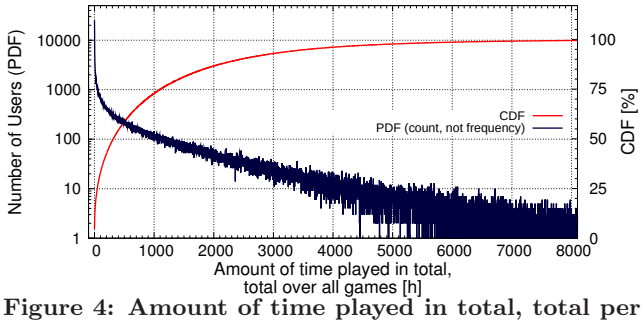

Figure 4: Amount of time played in total, total per player (over all games played by one player).

Player activity, total play time: The average XFire player has spent over a month in-game. Figure 4 depicts the amount of time played in total, total per player—computed over all games played by the player, for each player. On average, each player spends in total about 875 hours (over 36 days) in-game. The distribution of amount of time played in total is long-tailed. About 15% of the XFire users played for less than 10 hours; at the other extreme, over 25% of them played for over 1,000 hours. Surprisingly, we found 1,241 (2,977) players who spent over 10,000 (8,000, or about the duration for obtaining a PhD!) hours online; the fraction of 0.228% (0.546%) is significant for a player population that nears 20 millions. The maximum total played time is 33,392 hours (3.8 years). Such long total play time may be explained by the "hardcore"-ness of some of the players (although it exceeds by far previously reported numbers [7]), or by the ability of players to *multi-clock*, that is, to play simultaneously several games that count towards the total played time (for example, two or more browser-based games such as Zynga's FarmVille and Mafia Wars).

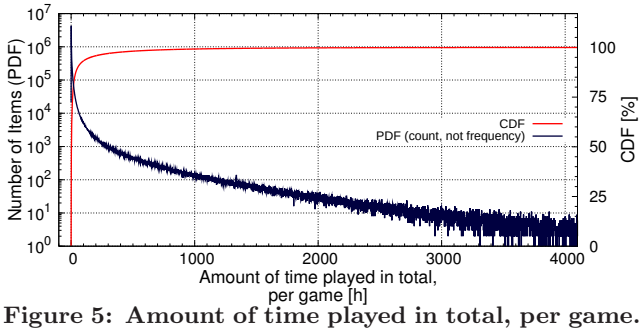

Figure 5: Amount of time played in total, per game.

Player activity, play time per game: The average time spent with a game by a player is below one week, assuming 8 hours of play per day. Figure 5 depicts the amount of time played in total, per game. The popularity of games is highly skewed. Although the average time played per game is 43 hours, the median time played per game is 3 hours and about 90% of the items represent games played for less than 48 hours. At the other extreme, one games spent about 3.7 years in only one game.

7. ANALYSIS OF USER-GENERATED CONTENT

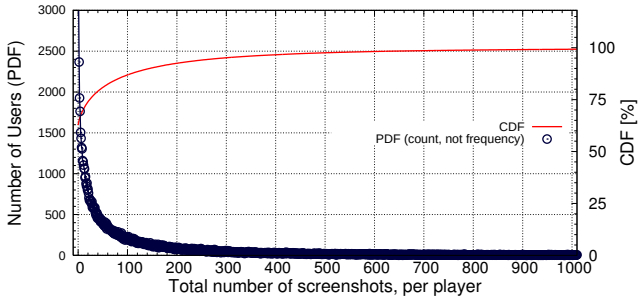

Figure 6: Total number of published screenshots, per player.

Content production, screenshots and videos: Screenshot production has a highly skewed distribution, with the top producer having over 8,000 publications. Figure 6 depicts the total number of published screenshots, per player. About 60% of players did not publish any screenshots; 80% of the players published less than 45 screenshots. The large imbalance between the maximum of 8,000 screenshots and the other values indicates that a Zipf distribution may be a good fit for the production of screenshots, but re-plotting the with the horizontal axis in log scale (not shown) indicates that even an exponential distribution may be a good fit for the data. We have found a similar distribution for the production of videos, but with much lower produced units. About 90% of players did not publish any videos. On average, each player produces only about 1.25 videos, with a maximum number of published videos of only 222.

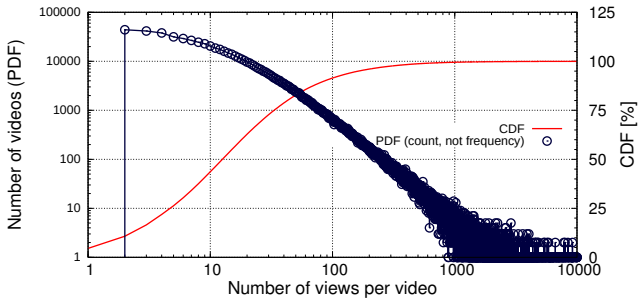

Figure 7: Number of views of published videos, per player.

Content consumption, videos: Video consumption (viewing) has a highly skewed distribution, with the highest viewed content item totaling over 130,000 views. Figure 7 depicts the number of views of published videos, per player. On average, each video was viewed by 53 times. The popularity of videos is highly skewed: 60% of videos were only viewed less than 20 times, while the most popular video was viewed by 131,641 times. The relative straight line in the tail of the probability distribution function (PDF) suggests that the popularity of videos can be modeled using a power-law distribution, such as Pareto, which is commonly used to describe the distribution of wealth in some countries, the degree distribution of the World Wide Web graph, etc.

8. ANALYSIS OF SOCIAL STRUCTURE

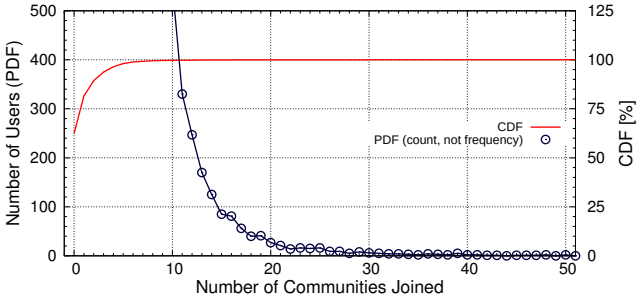

Figure 8: Number of communities joined, per player.

Belonging to structured communities (player guilds): Most players do not join a structured community; when they do, they usually join only one community. Figure 8 depicts the number of communities joined, per player. About 60% of players did not join any community. Most of the players only join less than 10 communities. The average player joins 1 community, while the maximum communities joined by a single player is 246 communities. The PDF of the number of joined communities suggests an exponential distribution.

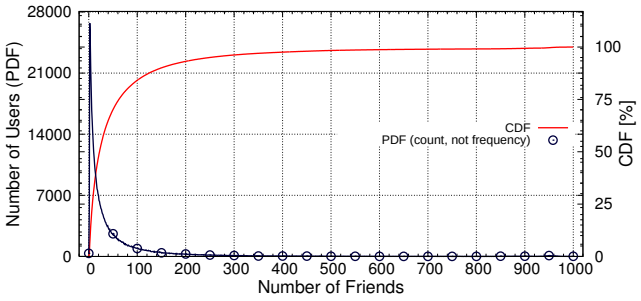

Figure 9: Number of friends, per player.

Belonging to free-form communities (player-to-player friendships): XFire players are "social creatures"—the average player has over 60 friends, and about 15% of the players have more than 100 friends. Figure 9 depicts the number of friends, per player. On average, each players have 63 friends, which is smaller than average friends number of Facebook (130 friends per person) [5] but still indicates a large social circle. Less than 0.06 % of players have no friends. About 15% of players have more than 100 friends. Because the maximum allowed number of friends in XFire is 1,000, we do not find extremely long friend lists. We observe a power-law-like tail of the distribution number of friends, which is similar with social network research of friendships within a game club [17].

9. RELATED WORK

Our work complements the large body of work on the characteristics of human communities and social networks [9,10], of in-game player activity and behavior [3,6], and of observing and analyzing platforms for community-creation [12,14] and media-sharing [2,13,15,19].

The analysis of large-scale online social networks is closest to our work. Previous work in this area[2] has investigated social

[2]Following the anonymization guidelines of the MMVE 2011 Call for Papers, we do not include here our own work.

networks such as FaceBook, Orkut, and Flickr [14, 15]; the systems and social networks underlying media publishing sites such as Youtube and LiveJournal [2, 14, 15]; the loose community built around the the instant messaging network Microsoft Messenger [13]; etc. The social structure of the online game World of Warcraft [4] and the online casual game Fighters Club [17] have also been investigated. We have compared our results with selected results from these previous studies throughout this work.

10. CONCLUSION AND ONGOING WORK

The emergence of Online Meta-Gaming Networks pressures system developers and operators to answer questions that require a timely and comprehensive study of their characteristics. In this work we have proposed a method for studying the characteristics of OMGNs. Our method is based on the theory of observational studies and employs a repeated cross-sectional design that we have adapted to the specific problems of OMGNs, such as bootstrapping the data collection process and selecting appropriate environment variables to observe. Our method focuses on four classes of environment variables, all of which are important for the design and operation of OMGNs and underlying infrastructure: the global network, on gaming activity, on user-generated content, and on social structure. Our method further proposes a high-level, marginal-distribution-based analysis of the observed variables.

We use an implementation of our method to study, that is, observe and analyze, XFire, which is a popular OMGN that services about 20 million users playing over 1,500 games. Our study reveals several interesting observations:

1. OMGN players spend collectively in-game over 100 years hourly;
2. A significant fraction of the players are "hardcore", having played over 10,000 in-game;
3. OMGN members are routinely engaged in the creation and consumption of game-related media, such as screenshots and videos;
4. OMGN members are "social creatures", having on average over 60 friends.

We plan to further analyze the XFire datasets introduced in this work. While the richness of the datasets allows us to foresee many avenues for analysis, we will in particular investigate the correlations between the variables reported in this study. We also intend to correlate our findings with a similar study of Steam's Valve, which we plan to conduct starting from the traces, albeit much less detailed, that we have already collected starting over the same period as the Players dataset presented in this study.

11. REFERENCES

[1] M. Burton. *Dungeons and Desktops: The History of Computer Role-playing Games*. A K Peters Ltd, 2008. Kindle Ed. (451 pages).

[2] M. Cha, H. Kwak, P. Rodriguez, Y.-Y. Ahn, and S. B. Moon. I tube, you tube, everybody tubes: analyzing the world's largest user generated content video system. In *IMC*, pages 1–14, 2007.

[3] K.-T. Chen, P. Huang, and C.-L. Lei. Game traffic analysis: An mmorpg perspective. *Computer Networks*, 50(16):3002–3023, 2006.

[4] N. Ducheneaut, N. Yee, E. Nickell, and R. J. Moore. The life and death of online gaming communities. In *CHI*, page 839, 2007.

[5] FaceBook Inc. FaceBook Statistics. `http://www.facebook.com/press/info.php?statistics`.

[6] W. Feng, F. Chang, W. Feng, and J. Walpole. A traffic characterization of popular on-line games. *IEEE/ACM Trans. Netw.*, 13(3):488–500, 2005.

[7] T. Fritsch, B. Voigt, and J. H. Schiller. Distribution of online hardcore player behavior: (how hardcore are you?). In *NETGAMES*, page 16, 2006.

[8] R. Garfield. Metagames. Horsemen of the Apocalypse: Essays on Roleplaying, 2000. Reproduced as Lost in the Shuffle: Games Within Games, `http://www.wizards.com/Magic/magazine/Article.aspx?x=mtg/daily/feature/96`.

[9] M. Girvan and M. E. J. Newman. Community structure in social and biological networks. *Proc. Natl. Acad. Sci., USA*, 99:7821–6, June 2002.

[10] M. Granovetter. The Strength of Weak Ties: A Network Theory Revisited. *Sociol. Th.*, 1:201, 1983.

[11] J. Juul. *A Casual Revolution: Reinventing Video Games and Their Players*. MIT Press, 2009.

[12] J. M. Kleinberg. The convergence of social and technological networks. *CACM*, 51(11):66–72, 2008.

[13] J. Leskovec and E. Horvitz. Planetary-scale views on a large instant-messaging network. In *WWW*, pages 915–924, 2008.

[14] J. Leskovec, K. J. Lang, A. Dasgupta, and M. W. Mahoney. Statistical properties of community structure in large social and information networks. In *WWW*, pages 695–704, 2008.

[15] A. Mislove, M. Marcon, K. P. Gummadi, P. Druschel, and B. Bhattacharjee. Measurement and analysis of online social networks. In *IMC*, page 29, 2007.

[16] C. C. Moul and J. V. Nye. Did the soviets collude? a statistical analysis of championship chess 1940-1978. *Journal of Economic Behavior & Organization*, 70(1-2):10–21, May 2009.

[17] A. Nazir, S. Raza, and C.-N. Chuah. Unveiling FaceBook: a measurement study of social network based applications. In *IMC*, pages 43–56, 2008.

[18] NIST/SEMATECH. e-handbook of statistical methods. Online Book, 2003. `http://www.itl.nist.gov/div898/handbook/`.

[19] J. A. Pouwelse, P. Garbacki, D. H. J. Epema, and H. J. Sips. The bittorrent p2p file-sharing system: Measurements and analysis. In *IPTPS*, pages 205–216, 2005.

[20] P. R. Rosenbaum. *Observational Studies*. Springer Verlag, 2nd. edition, 2002.

[21] D. Stutzbach, R. Rejaie, N. G. Duffield, S. Sen, and W. Willinger. On unbiased sampling for unstructured peer-to-peer networks. *IEEE/ACM Trans. Netw.*, 17(2):377–390, 2009.

[22] H. Tabuchi. Sony says parts of playstation network will be back online this week. NYTimes article, 2011. `http://bits.blogs.nytimes.com/2011/04/25/sony-playstation-network-hacked/`.