

# Gender and Social Network Dynamics in a Large Massively Multiplayer Online Game

## Extended Abstract for Meaningful Play 2014

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Online games allow users to assume identities that are unburdened by offline biases, thus potentially serving as “social levelers” that facilitate equal exchanges across genders (Steinkuehler & Williams, 2006). However, research suggests that they are not fulfilling their potential, and instead “gender gaps” that occur offline are also manifested in virtual worlds (Collier & Bear, 2012). Studies in various MMOs have produced descriptive statistics about how men and women differ in their sociodemographic profiles and play styles (Williams et al, 2009, Lehdonvirta et al 2014), yet systematic examinations of how men and women engage in social interactions in these worlds remain scant. How do men and women build social relationships in these worlds? Does gender influence community participation and network dynamics online, in ways offline gender norms would predict? These questions not only would help us better understand the extent to which gender disparities exist in these worlds, but also may illuminate how gender disparities come into existence as player networks develop and mature over time.

This on-going project aims to answer these questions by examining how women and men’s networks form and change over time, and what attributes predict these changes. In addition, this project will examine social behavior *across multiple cultures*, in the US, Japan and Brazil, offering an international comparison unprecedented in previous research. It will draw from a unique large-scale longitudinal dataset from Travian, including both behavioral logs and survey data from users in 23 countries, representing each cultural group in the GLOBE study (House et al., 2004). The data used in this study are part of a larger research program on collaboration (Gallenkamp, Picot, Welp, Wigand, & Riedl, 2011; Riedl, Gallenkamp, Picot, & Welp, 2012; Tumasjan & Strobel, 2012; Wigand et al., 2012). Travian is one of the most popular multi-national browser-based strategy games in the world. Players set out as chieftains in their own villages, and collaborate as well as compete with each other to be the only winner (per server) at the end of the game. Every game has a duration of approximately one year, and our data of 12-month covered games on multiple servers in their entirety. It runs on numerous countries in six continents. Each country has its own dedicated server, where up to 25,000 players of the specific country can interact in their own native language. Based on the findings from FeatureSelector, a computational tool for massive game log analysis (Cai et al, 2014), we selected the US, Japan and Brazil to be included in the current analysis.

From the log data, we reconstructed the complete alliance, trade, communication, and troop support networks among players throughout the 12-month period. Our preliminary results showed that male players significantly outnumber female players, with Brazil having the highest male to female ratio (3.61:1), followed by US and Japan. Men are also more likely to play longer, with Japanese playing the

longest, compared to Brazilians and Americans. Alliances are semi-permanent player organizations where collaborative play is often supported and encouraged among members. Men tend to switch alliances more often than women, and spending less time in each alliance.

Men and women also differ significantly in terms of their network structures. Men are more likely to have a larger degree centrality in trade, communication and troop support (outward) networks, meaning that they have more trading partners, talk to more people, and send troops to more players. The only exception in this trend is Japan, where men and women tend to have little to no difference in their network centrality. These findings have interesting implications in light of gender role theory and cultural differences of these three countries. For example, Japanese players tend to join fewer alliances and staying much longer in them, which is consistent with their collectivistic culture. In our presentation, we will discuss these and other implications in further detail.

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