Seminar Paper

Advanced Topics in Social Network Analysis

A Qualitative Analysis of a Team Fortress 2 Social Network

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Introduction

The Gaming Industry is one of the most dynamic and fastest growing of our time, from the arcade culture to the widespread integration of household gaming consoles and home gaming PCs, whose steadily rising popularity, performance and inter-connectivity is allowing for more and more growth in the range and permeability of gaming and gaming culture. With its widespread popularity and its ever-increasing influence, through the acceptance of gaming culture as mainstream, the gaming world is becoming a crucial field of study for better understanding of online communities and social interaction. In this paper we will expand on the academic field of Online Social Network Analysis through the examination of a selected social network from the gaming world as a microcosm of online social interactions. The paper will draw on Social Network Analysis, Sociology and Communications theories to further expand the understanding of on-line interactions on a network scale.

Current gaming focused research leads in two main directions, social consequence whether they be pro social or anti social. There is also however a smaller developing trend of study within the Social Network Analysis field that uses the data collected by computer game makers to study network structure as a variable of its own. In this research the findings of this trend within the computer game research will be used to conduct a qualitative Analysis of a small friends list network from Team Fortress 2. The data collected will be compared and contrasted with established Sociology and Communications theories, the expected results and variances will then be explained using the findings of Social Network Analysis research.

The Research draws the Two Step Flow communications theory (Lazarsfeld, 1948), and a slightly more refined version of the theory (Katz, 1957), to deduce relevant information on the interaction between companies, hardcore gamers and more casual gamers. The study will also draw predominantly on Mark Granovette work on Social Network Analysis.

Background

The game being studied in this paper is Team Fortress 2, it is an iconic part of the one biggest and most diverse gaming corporations, Valve Inc. The Company set itself apart from its inception, it started out by releasing half life, an arcade style first person shooter than ran on the Doom engine (Dunn, 2013), the distinction between it and the many similar games of the time, were that valve let the game have a long shelf life, keeping it as their main game for about six and a half years. Their next move involved purchasing Team Fortress, the prequel to the game studied in this paper. Despite the fact that both games were already released, the company took an unusual route for the early nineties and two thousands encouraging the enthusiastic modding communities by releasing SDK (software developments kits) for free. Modders, are gamers/developers who modify games with the intention of creating new content and game play.

The most successful mod to come from this new type of development was Counter-Strike, the creators of which were hired by Valve and were able to successfully release one of the biggest games of the era. This new consumer interaction which enlisted the company's audience into their development proved hugely profitable and while many other companies have now encouraged modding communities, none have been able to market it as well as Valve. This concept of utilising communities in order to create content has become a staple of internet culture, but few have seen the profits the gaming world has.

An interesting example of the success of modding is exemplified by looking back to Warcraft, a Blizzard real time strategy game which spawned not only an entourage of hugely popular mods but also a handful of brand new gaming genre's. The game involved commanding an army, hero, and production city simultaneously while trying to wipe out your opponents. The high multi tasking demand put on the player led Blizzard to create a few simpler variations of the game, Starcraft, wherein the hero no longer existed, and World of Warcraft where the hero was the only character controlled by the player. Many of the fans of the original game continued playing it however and modders continued to create new gameplay. The most influential of these mods was DOTA or Defence of the Ancients developed and maintained by Icefrog, who's notoriety is in part due to his

Anonymity. DOTA marked the beginning of the MOBA, multiplayer online battle arena game genre, which is currently the forerunner in popularity amongst the competitive e-sports gaming world. After approaching Blizzard with the intention of developing the Mod into a fully fledged game and being rejected, Icefrog joined up with Valve and began working on a sequel to the original mod. At the same time a separate gaming company, Riot Gaming, developed the next big game in the new MOBA genre, League of Legends. League of Legends and DOTA2 are currently two of the biggest games competitive e-sports with annual competitions sporting millions in prize money and millions of dedicated fans.

Team Fortress 2 is the sequel of the 1996 Team Fortress mod for the game Quake developed by id software. The incorporation and utilization of mods, even when developed from other companies games seems to be a core value in Valve's business model, a kind of be all that you can be for computer games. Considering this, Valve was chosen as the appropriate company for this study, and Team Fortress 2 as relatively new and still popular game with readily available data on the community was a prime candidate for studying network structure as a variable in gaming communities.

Related Work

Theory

The Research draws the Two Step Flow communications theory (Lazarsfeld, 1948), and a refined version of the theory (Katz, 1957), to deduce relevant information on the interaction between companies, hardcore gamers and more casual gamers. The theory is a political communications theory based on a research of voting behaviour which examined and questioned voters regarding where they got the information they used to base their voting decisions. This research assumes a similar information flow in other fields. The research found that the information flow could be modelled as such that official sources would be tuned into by a select knowledgeable few known as opinion leaders, who then distil the information and communicate relevant opinions to their friends family and acquaintances. In this way the opinion leaders were the ones to critically evaluate official sources, and frame the relevant information accordingly. This research assumes the computer games and game manufacturers as official sources or media outlets, opinion leaders as hardcore gamers, modders and game reviewers (such as youtubers) and the voting public as the casual or bulk of regular gamers.

The study will also draw predominantly on Mark Granovette work on Social Network Analysis. Granovette is one of biggest academic contributors to the field of social network analysis and his work on the strength of weak ties (Granovette, 1973) and embeddedness (Granovette, 1985). Similarly the Social Network Analysis concept of the Tipping Point (Gladwell, 2000) will be used in conjunction with the aforementioned theories to compliment the framework within which this paper is written. These theories and concepts are further developed on the related works section of this paper.

Prior Research

While a significant amount of research has been conducted at the intersecting fields of computer games and Social Network Analysis, the questions most of them seem to address are the significance of Social Network Analysis as a variable? and how serious of a subject are video games in realm of social sciences? There is also the more commercial side of research in general that attempts to answer the questions of information flow and eWOM, electronic word of mouth (Chen et al, 2014; Hayat, Brainin & Neter, Forthcoming) . This paper deviates in these fields by combining the robust studies measuring the validity of Social Network Analysis measures such as on Virtual Brokerage and Closure (e.g., by Hayat & Mo, 2015; Shen et al, 2012; Mo et al, 2015), Social capital, self-esteem, and use of online social network sites (Steinfeld et al, 2009; Hayat, Lesser & Samuel-Azran, Forthcoming) and more widely applicable research such as Granovette's work and Lazarsfeld's two step flow theory (1948).

Granovette's book *The strength of weak ties* (1973) answered a major question regarding the application of Social Network Analysis, by being able to empirically show the significance of network structure on something as basic as finding a job, he was able to highlight the significance of this field of study. His research analysed the impact of network structure on job searching, the findings showed that people in networks with many weak ties were much more successful job hunting than those with mainly strong ties. What this means is that certain network structures are contextually advantageous, and these network structures have measurable variables.

In his work on embeddedness (Granovette, 1985), the significance of Network structures is extended beyond just being a contributing variable, and an argument is made that it is in fact an inextricable variable, one wherein the context of economics must always be considered. While this argument was made in the contexts of economics, the implications extend to all social roles, the impact of relationships (e.g., Hayat & Lyons, 2010), culture, moral, culture and politics (e.g., Hayat, Samuel-Azran & Galily, 2016) are all contributing factors to network structure which in turn impact the individuals within them.

Shen et al's (2014) work on video games was able to empirically show both the advantageous nature of video games as an eco system for network structure research and to further substantiate the quantifiable aspects of network structures and their relation to individuals. The study focused on Social Capital when defined as the value the individual can get from the social relations. In the context of an MMORP this value was given as success and enjoyment within the game. The social relations were defined in network terms as Brokerage and Closure. Brokerage as a term relates to concept previously introduced in Granovette's (1973) the strength of weak ties, instead of defining term as individuals to whom the subject has weak ties, acquaintances or simply distant friends, because of the amount data that is available in such games the study defined it more concretely as brokers, people with a greater diffusion of ties, meaning players who's friends are not friends with each other. This creates a more diverse network wherein players are not exposed to redundant information, skills, resources and strategies. As such players known as Brokers with a high brokerage score were expected and then later shown to progress much more quickly in game and gain more achievements. On the flip side Closure as related to Granovette's strong ties, refers to players in dense networks where all the friends are friends with each other. As was expected the converse was expected for these players, what was also shown however was that these players generally trusted their friends more. This measure of trust as predicted by the closure of players is introduced as bonding social capital.

What this study was able to introduce with regards to the significance of network structure, is that player's overall experience can be predicted using social network structure variables, if one was to assume a causal relationship it would also be reasonable to deduce that by controlling for these variables it would be possible to shape these aspects of the person's game play. The replication of Granovette's work in this research using its robust controls and the surplus of available data and resulting in the same findings also suggests that research conducted within games can to an extent be generalized to non-game social settings.

With regards to the current research this paper supports Shen et al's use of Social Network measures and variables as predictors for game play, allowing for a better understanding of each of the individual players examined using their location within the network. Additionally it supports the concept that the findings which are made possible through the computer game platform can be contextually generalized to other none game related networks, such work place, academia and other online communities.

Additional work in the field of Social network analysis serves to tie together the social network variables commonly used to examine individuals with more commonly studied psychological phenomenon. Social capital, self-esteem, and use of online social network sites (Steinfeld et al, 2008) used Facebook as a platform to examine the psychological well being of students. The research contrasted Facebook usage with psychological well being of students, utilising Facebook usage as the independent variable wherein the time students spend on Facebook was measured, this was then expected to have an impact on the students psychological well being, the dependent variable. The interesting aspect of the study as it relates to this work, was the usage of network measures as contingent variables, used to emphasize and explain the main subjects being studied more so than to focus on them individually. In this manner the research was able to show the indirect link between the two variables being studied by analysing the bridging social capital afforded to participants who used Facebook heavily in large heterogeneous social networks. The use an additional research field which in this case was Social Network Analysis, also enabled the research to better explain the context necessary for Facebook to have this positive effect. It was made possible to show that it was users who suffered with low self esteem who gained most from the use of Facebook, wherein the affordances that Facebook offers, which is mediated interaction served the more shy students more so than the rest. The significance of this research is that it further expands the utility of the field of Social Network Analysis, whose measures are often overlooked due to the indirect nature of their interaction. Instead of focusing on cause and effect phenomenon it is also possible to use Social Network Analysis in more in depth research in order to explain those phenomenon

Tipping Point by Malcolm Gladwell (2000), takes a none-network approach to understanding fads, crowds and information flow, as opposed to using the network structure to predict information flow he uses individuals from within the network, connectors, mavens and sales men. When relating these to the Social Network field it is easy to see the relations, connectors would be very central nodes within the network, mavens would be the specialists or experts and sales men would be the charismatic such as the PR department of marketers. These concepts can however also be applied to gamers wherein the social gamers would be the connectors, the hardcore gamers would be the mavens and salesmen would simply be those who come up with most catchy slogan as develops naturally with player's nature. In MMORGs some of these ideas were explored with the introduction of allowing guilds to be formed within the gaming platform and each players expertise within the guild determined based on rank within in the guild or even avatar level.

Combining all the aforementioned theories and concepts developed in the various fields with their complimenting and interlocking ideas, it becomes clear that these studies on social interaction, economic nature, psychological implications, and network analysis can be used to garner and develop rather significant insights into both individuals within networks and the networks themselves and accordingly make significant predictions with regards to how various manipulations may affect the participants. What this study proposes is that within the gaming eco-system, the readily available data, clear and definitive goals and its similarity to external social networks allows for extensive research with more controls to help further understand Social Networks. Accordingly this research suggests that combining all the previously mentioned studies, can be used to better understand the information which can be collected from a sample network within this eco system? The hypothesis therefore is that through analysis of the network structure it is possible to make predictions regarding both individuals and the network itself within the gaming eco system using theories developed in none gaming social scenarios.

Methodology

The research conducted was both qualitative and descriptive, the researches gathered a sample from the prescribed population with the intention of comparing the available data and its subsequent analysis with previously validated theories. In this way the study supports the video games platform as a research methodology which can be generalized to the general public.

The population being studied in this paper is computer gamers on online platforms where social interaction is encouraged through chat options, friends lists, guilds etc. the gamers in particular also have to be self contained within the platform as an eco system, in this study the platform chosen was Steam which offers friends lists, chat options, in and out of game trading, groups, developer starter kits to allow for player created content, a platform for sharing player created content, avatar cosmetics which once again can be traded. The overall population however combines that of this study and referenced studies to provide additional external validity to future computer game based social network research.

The sample was chosen from the game Team Fortress, one of Valves iconic games which is both freely available on Steam and also fully integrated into the Steam platform. The game is a product of Valve's initiative to involve its fan communities in its development of software, which highlights the companies view of the value of understanding and interacting with game development company's communities. The game is also expected to incorporate a new MMR match maker rating system which will introduce a new competitive aspect to the game, which may allow it to take a similar route to Counter Strike or Dota 2, if this does take place the data available in this research may be useful for future researcher to analyse how the introduction of a new competitive aspect affects network structure. The actual sample was chosen by choosing a player at random, whichever was first encountered by the researchers and who's profile was set to public, this player friends list was then requested through the API and the friends lists of all his friends was also created and as such creating a two degree's of separation ego network.

The Data was collected using the openly available Steam API, a dedicated server which one can sign up for by becoming a Steam developer which is once again freely accessible. The server sends automated responses with the requested data, because the sample size in this research was relatively small the requests were processed manually and the data inputted manually. For larger scale studies, programmes can be written to collect data extremely quickly and without too much manpower. The initial player, alias participant 0 had a friends list of only six other players, once those six players friends lists were pulled a total of ninety three participants were chosen and their information requested through the API and collected. Additional information was requested and collected by the researchers according to its relevance and availability.

The collected data was and then input, rather appropriately, into a modded version of Excel which was altered to specialize in Social Network Analysis NodeXL. In this programme a number of Analysis were conducted to produce a graph showing each participant as a node and their friendship as a connection between each node. This graph gave an overall overview of the network as a whole. The data was then run through a series calculations to get Social network analysis measures for the entire network and individuals in the network such as the various centrality measures. An additional important note to make is that despite the large amount of accessible data the sparse nature of the network meant that an accurate clustering co-efficient was not calculated.

Results

The results of mapping the various connections in NodeXL created a graph seen below, it is clear from the graph that there are few very central individuals with a high degree centrality. There are also a small number extra nodes with a low but existent degree centrality of greater than two but less than five. It is clear that by Social Network Analysis standards this network would not be defined as a community (Wellman et al., 2012) with a clustering co-efficient of 0.4 or higher. The clustering co-efficient is the measure of the number of connections within a network divided by the number of possible connections within a network and can be used to attest to how well connected the community is.

Created with NodeXL (<http://nodexl.codeplex.com>)

Participant zero, or the initial user upon which this network was built only has a degree centrality of six but still features strongly toward the centre of the graph, this would be expected due to the nature of how the sample was collected, because this is a two degrees of separation ego network it is expected that he would show prominently even when his degree centrality is relatively low. The results illustrate participant zero's role in the construction of the network despite his low degree centrality by scoring him second highest on betweenness centrality, the measure through which each node is as closely connected to every other node through him. He also scored highest his Closeness centrality measure alongside the participant with the highest degree centrality alias Mr. popular. Participant zero scored second highest by a small margin on his Eigenvector centrality measure which takes into account the most factors in calculating centrality, this of course would be as expected, since the Eigenvector centrality measures the importance of a node within a network and Participant zero was the node around which the network was constructed. Game play for Participant zero, he had the twenty ninth most in game achievements out of eighty three (64), he had the twenty first most items in game out of thirty three (45), and he has the twenty second most time played out eighty three (6256).

Mr Popular, the participant with the highest degree centrality, had the highest of all the centrality measures, considering his direct connection to over half the network this seems obvious. Mr Popular had the twenty second most in game achievements out of eighty three (113), he also had the twelfth most time played out of eighty three (14024) in the network.

To compare the relative success of the major nodes within the Network the average number of achievements earned by players was eighty three, the average number of player items was one hundred and twenty six and the average time played was seven thousand five hundred and eighty seven minutes. Considering these figures both of our most central nodes under performed, when considering alongside that the player with the most achievements alias Super Gamer with two thousand and thirty six minutes played and five hundred and eighteen achievements it becomes evident that central nodes game time to performance ratio is sub-par.

Discussion

The first insight offered by the results suggests that the gaming eco system, similar to outside eco systems are context aware, the results were a bit surprising in that they gave an insight into the type of game that Team Fortress 2 is. The game consists of repeating rounds of territorial control, capture the flag and control point, after each round the game is completely reset, teams are shuffled and you start again, the characters are comedic caricatures and the overall feel of the game is that of a fun loving shoot em up. With this in mind the network structure took the shape of a sparse, high degree but low density network similar to what you would expect of something like a party or night club. Accordingly the more social gamers such as Participant zero and Mr popular ended up under performing because of what can be assumed as their goal in the game being more so for the sake chilling with mates as opposed to Super Gamer who got the most achievements with less than a fifth of their time played. Therefore this research would argue that this network structure is more suited for a fun and games approach but in general will lead to under productivity.

The second insight offered by this research see's the under utilisation of information flow and the Mavens/Opinion leaders (Gladwell, 2000), (Lazarsfeld, 1948), they do not achieve important positions within the network due to the lack of competitiveness or seriousness. A potential prediction for future research, once the MMR system is introduced to Team Fortress 2, would be that power players such Super Gamer would take more central role within the network and that Social gamers such as Participant Zero and Mr Popular's network position will become secondary on the other hand their position within the network as it is currently will allow them to utilize the opinion leaders/mavens and as such their performance would improve. To incorporate aspects of Shen et al's (2012) research on social capital, brokerage and closure, one would expect the introduction of a more cluster and bridge orientated network, or a more robust once more permanent incentives such as MMR are introduced. Comparatively, the current network structure gives the impression of being purely social, and lacking in the additional motivations shown in their research such as trusted clusters and bridging mentors.

Unfortunately, the available data was not sufficient to fully answer the research question, but rather it was just able to provide some support toward the insight afforded by examining network structure. As such, the hypothesis is supported, and offers to further strengthen previous studies on the value of network structure and network variables on understanding communities. The important answer provided by the data as viewed by the researchers is that network structure is heavily influenced by the motivations of communities. If these motivations are temporary and fleeting as in Team Fortress 2 the network structure ends up being sparse and to a certain extent random. If the motivations are more structured and competitive as is seen in Granovette's (1975) work on job searching or even Shen et al's (2012) on MMORPG games the network structure becomes more concrete and begins to follow patterns that relate more strongly to research conducted by Gladwell (2000) and Lazarsfeld (1945) with important individuals occupying central positions within the network.

I think the insights introduced in this study would be valuable to future research as mentioned previously in reconstructing this research once the competitive aspect has been introduced and examining the subsequent effect to the network structure. As such one limitation of this research is as a result of lack of time not being able to continue this study in a longitudinal fashion and compare and contrast the network structure over time. Additionally and in the same line of thought, it may be of value to re-examine traditional online social networks such as Instagram and Facebook wherein the scoreboard is removed (number of likes, followers, shares, etc.) and see if the opposite may also be true, that by removing a competitive aspect the network structure would be compromised and begin to follow a more random and sparse structure.

Conclusion

Gaming platforms not only offer an efficient and robust eco-system within which to study network structure but also a variety of network types which can be related to different types of networks. The industry itself is one of the biggest in the world, and has thus far made extensive use of its own networks, communities and fans. This research is just one example of the usefulness of both Social Network Analysis as a field of research and Computer Gaming as a platform through which to utilize big data. While this research failed to implement the theoretical framework to the network, it was able to show the limitations of that theoretical framework and the importance of particular network structures to being able to successfully implement particular theories. Additionally this research was able to show that despite this limitation important and relevant information can still be garnered from an in depth qualitative analysis of the Network structure within just a simple understanding of the communities context. The hypothesis in this research was supported and a partial answer was provided for the broad research question.

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Appendix

Vertex 1	Vertex 2
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76561198148113785	7656119
76561198149237454	7656119

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Vertex	Color	Shape	Size	Opacity	Image File	Visibility	Label	Label Fill Color	Label Position	Tooltip
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76561198034574769										
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76561198205970008									
76561198207751988									
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A Qualitative Analysis of a Team Fortress 2 Social Network

[illegible]

Readability Metric	Value

Minimum Degree	1
Maximum Degree	55
Average Degree	2.022
Median Degree	1.000

A Qualitative Analysis of a Team Fortress 2 Social Network

Minimum In-Degree	Not Available
Maximum In-Degree	Not Available
Average In-Degree	Not Available
Median In-Degree	Not Available

Minimum Out-Degree	Not Available
Maximum Out-Degree	Not Available
Average Out-Degree	Not Available
Median Out-Degree	Not Available

Minimum Betweenness Centrality	0.000
Maximum Betweenness Centrality	3483.000
Average Betweenness Centrality	92.366
Median Betweenness Centrality	0.000

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Minimum Closeness Centrality	0.003
Maximum Closeness Centrality	0.006
Average Closeness Centrality	0.004
Median Closeness Centrality	0.004

Minimum Eigenvector Centrality	0.000
Maximum Eigenvector Centrality	0.021
Average Eigenvector Centrality	0.011
Median Eigenvector Centrality	0.017

Minimum PageRank	Not Available
Maximum PageRank	Not Available
Average PageRank	Not Available
Median PageRank	Not Available

Minimum Clustering Coefficient	Not Available
Maximum Clustering Coefficient	Not Available
Average Clustering Coefficient	Not Available
Median Clustering Coefficient	Not Available

SteamId	Achievements (TF)	PlayerItems	Time Played (Min)	Number of Groups
76561198053783902	profile not public	permission denied	-	profile not public
76561198057612441	profile not public	permission denied	-	profile not public
76561198098787581	profile not public	permission denied	-	
76561198100804737	profile not public	permission denied	-	
76561198120939126	profile not public	permission denied	-	
76561198121607034	profile not public	permission denied	-	
76561198124175171	profile not public	permission denied	-	profile not public
76561198126752265	profile not public	permission denied	-	
76561198147112715	profile not public	permission denied	-	
76561198150321509	profile not public	permission denied	-	
76561198121046738	412	permission denied	2706	
76561198074532482	293	permission denied	38258	9
76561198113490250	217	permission denied	71480	
76561198126005089	202	permission denied	38511	
76561197992942411	193	permission denied	10267	7
76561198101489666	186	permission denied	12925	
76561198152532873	113	permission denied	14024	10
76561198170942770	97	permission	3565	

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		denied		
		permission		
76561198150135022	81	denied	2731	
		permission		
76561198142431796	61	denied	4824	5
		permission		
76561198132684906	39	denied	947	4
		permission		
76561198218941020	32	denied	402	2
		permission		
76561198086062224	25	denied	626	8
		permission		
76561198082034292	20	denied	283	
		permission		
76561198065652166	19	denied	306	0
		permission		
76561198149237454	19	denied	555	2
		permission		
76561198205970008	18	denied	837	
		permission		
76561198067201275	17	denied	638	
		permission		
76561198129085144	14	denied	231	0
		permission		
76561198086567298	13	denied	249	3
		permission		
76561198109890199	13	denied	251	
		permission		
76561198207751988	13	denied	233	
		permission		
76561198023084904	10	denied	258	1
		permission		
76561198087307481	10	denied	210	3
		permission		
76561198124847087	10	denied	341	
		permission		
76561198156506310	7	denied	364	5
		permission		
76561198118492542	5	denied	200	
		permission		
76561197984503593	3	denied	116	2
		permission		
76561198150617017	3	denied	30	
		permission		
76561198153498776	3	denied	60	
		permission		
76561198034574769	1	denied	29	8

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76561198150324900	1	permission	20	0
		denied		
76561197991562767	0	permission	16	4
		denied		
76561198053277219	0	permission	0	7
		denied		
76561198055426325	0	permission	0	1
		denied		
76561198063637267	0	permission	0	1
		denied		
76561198063905710	0	permission	0	2
		denied		
76561198085434442	0	permission	0	
		denied		
76561198085696758	0	permission	12	
		denied		
76561198087535915	0	permission	0	0
		denied		
76561198099400043	0	permission	0	
		denied		
76561198115197700	0	permission	0	
		denied		
76561198124353746	0	permission	0	0
		denied		
76561198138972128	0	permission	16	
		denied		
76561198141878688	0	permission	0	0
		denied		
76561198144494256	0	permission	0	
		denied		
76561198148113785	0	permission	0	0
		denied		
76561198149394684	0	permission	0	
		denied		
76561198180391006	0	permission	0	5
		denied		
76561198239562328	0	permission	0	0
		denied		
76561198093434893	182		436	27398
76561198075881583	313		434	42967
76561197974046961	373		420	1770
76561198079466268	221		378	18379
76561198071036862	303		329	48252
76561198065438271	352		295	94605
76561198117404218	193		220	23226
76561198060377021	119		200	6899
76561198136062360	217		198	44324

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76561198091551547	170	168	11224	
76561198091618683	50	144	2047	12
76561198068747085	294	136	31795	
76561198078805664	213	118	11154	
76561198049098104	221	117	7877	8
76561198044333695	368	106	12473	84
76561197980844910	275	102	4829	54
76561198156949251	136	95	2132	
76561198042153111	198	89	6899	12
76561198049950417	197	73	10913	17
76561198028688215	36	54	1631	22
76561198149180078	64	45	6256	4
76561198118095458	518	41	2036	
76561198042625076	44	41	1707	10
76561198085552072	13	24	725	3
76561198088588549	21	17	881	
76561198108502306	13	9	602	
76561198124502654	8	7	75	6
76561198067689729	5	4	26	4
76561198063542775	1	3	14	36
76561198130651979	2	1	103	
76561198145139833	0	0	0	1
76561198152844530	0	0	0	4
76561198172592282	0	0	0	2

76561198149180078	76561198129085144
76561198149180078	76561198132684906
76561198149180078	76561198148113785
76561198149180078	76561198149237454
76561198149180078	76561198152532873
76561198149180078	76561198239562328
76561198129085144	76561198149180078
76561198129085144	76561198149237454
76561198132684906	76561198057612441
76561198132684906	76561198065652166
76561198132684906	76561198074532482
76561198132684906	76561198079466268
76561198132684906	76561198085552072
76561198132684906	76561198086062224
76561198132684906	76561198086567298
76561198132684906	76561198087535915
76561198132684906	76561198091618683
76561198132684906	76561198124175171

76561198132684906	76561198124353746
76561198132684906	76561198141878688
76561198132684906	76561198142431796
76561198132684906	76561198149180078
76561198132684906	76561198239562328
76561198148113785	76561198149180078
76561198148113785	76561198180391006
76561198149237454	76561198028688215
76561198149237454	76561198042153111
76561198149237454	76561198049098104
76561198149237454	76561198055426325
76561198149237454	76561198060377021
76561198149237454	76561198067689729
76561198149237454	76561198075881583
76561198149237454	76561198087307481
76561198149237454	76561198093434893
76561198149237454	76561198117404218
76561198149237454	76561198124502654
76561198149237454	76561198129085144
76561198149237454	76561198145139833
76561198149237454	76561198149180078
76561198149237454	76561198150324900
76561198149237454	76561198152844530
76561198149237454	76561198156506310
76561198149237454	76561198172592282
76561198149237454	76561198218941020
76561198152532873	76561197974046961
76561198152532873	76561197980844910
76561198152532873	76561197984503593
76561198152532873	76561197991562767
76561198152532873	76561197992942411
76561198152532873	76561198023084904
76561198152532873	76561198034574769
76561198152532873	76561198042625076
76561198152532873	76561198044333695
76561198152532873	76561198049950417
76561198152532873	76561198053277219
76561198152532873	76561198053783902
76561198152532873	76561198063542775
76561198152532873	76561198063637267
76561198152532873	76561198063905710
76561198152532873	76561198065438271
76561198152532873	76561198068747085
76561198152532873	76561198071036862

Connections

76561198152532873	76561198078805664
76561198152532873	76561198082034292
76561198152532873	76561198085434442
76561198152532873	76561198085696758
76561198152532873	76561198088588549
76561198152532873	76561198091551547
76561198152532873	76561198098787581
76561198152532873	76561198099400043
76561198152532873	76561198100804737
76561198152532873	76561198101489666
76561198152532873	76561198108502306
76561198152532873	76561198109890199
76561198152532873	76561198113490250
76561198152532873	76561198115197700
76561198152532873	76561198118095458
76561198152532873	76561198118492542
76561198152532873	76561198120939126
76561198152532873	76561198121046738
76561198152532873	76561198121607034
76561198152532873	76561198124847087
76561198152532873	76561198126005089
76561198152532873	76561198126752265
76561198152532873	76561198130651979
76561198152532873	76561198136062360
76561198152532873	76561198138972128
76561198152532873	76561198144494256
76561198152532873	76561198147112715
76561198152532873	76561198149180078
76561198152532873	76561198149394684
76561198152532873	76561198150135022
76561198152532873	76561198150321509
76561198152532873	76561198150617017
76561198152532873	76561198153498776
76561198152532873	76561198156949251
76561198152532873	76561198170942770
76561198152532873	76561198205970008
76561198152532873	76561198207751988
76561198239562328	76561198067201275
76561198239562328	76561198132684906
76561198239562328	76561198149180078

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