Leadership in MMOGs: A Field of Research on Virtual Teams

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Abstract: As our need for collaboration constantly grows, new tools have emerged to connect us in social networks, supporting the development of online communities, such as online games and virtual worlds. MMOGs (Massively Multiplayer Online Games) and MMORPGs (Massively Multiplayer Online Role-Playing Games) are complex systems, in which players are self-organized and collaborate in guilds; constantly improve to remain competitive, visioning the enemy's and guild's reaction. Nevertheless, these are considered to be important leadership skills for the real world, revealing multiple similarities that link the gaming world and the real world. However, despite the significant amount of educational research and the growing interest of the scientific community in MMOGs, there is a lack of empirical research considering the cognitive and social aspects of these games. This paper outlines the theoretical rationale behind a doctoral research project which is currently in progress and examines the leadership skills that can be developed in a self-organized community of MMOGs. The main questions that this project attempts to address are: What characteristics related to the social nature of MMOGs activate leadership skills? What MMOGs can teach us about the design of successful online social spaces and activities for teaching leadership skills in virtual teams? In order to address these issues, this paper presents a theoretical framework for analyzing the social interactions in multiplayer games, within the context of community of practice, connectivism, self-organization and activity theory. This framework aims at examining the creation of communities and the development of leadership skills in MMOGs, in order to explore the role of leadership in these virtual teams. The study of the social structures of a group and the leadership skills that can be developed in a MMOG should result to specific design principles that could be used as design methods for developing effective collaborative environments for virtual teams.

Keywords/Key Phrases: MMOGs, MMORPGs, leadership, virtual teams, activity theory, connectivism, self-organization, communities of practice

1 Introduction

Advances in internet technologies have brought changes in our everyday life and workplace and as our need for collaboration via internet constantly grows, new tools emerge to connect us in social networks and support the development of online distributed communities (Haste 2001; Schrage, 1990). This has led to the creation of social media, such as collaborative projects (e.g. Wikipedia), blogs and microblogs (such as Twitter), content communities (such as Youtube), social networking sites (such as Facebook), virtual social worlds (such as Second Life) and virtual game worlds (such as World of Warcraft- WoW) (Kaplan & Haenlein, 2010).

During their interaction with these technologies, users spend thousands of hours "analyzing new situations, interacting with characters they do not really know, and solving problems quickly and independently" (Beck & Wade, 2004), developing problem solving and collaboration skills (Reich, 1992). It is claimed that online communications facilitate groups of people coming together over the network to discuss any issue imaginable, to ask questions and share provocative insights to which others can respond (Lessig, 2001). These online social environments can evolve into "online learning communities" when they foster participants to actively engage in sharing ideas with others, fostering knowledge sharing (Gibson, Aldrich & Prensky, 2006). In these online communities "knowledge is generated through social interaction, through which we gradually accumulate advanced levels of knowing, according to theories derived from Dewey and Vygotsky" (Anderson & Kanuka, 1998).

Moreover, Information and Communication Technologies (ICT) have allowed the evolution of traditionally organized firms to networked firms where work is performed by virtual teams (Jarvenpaa & Leidner, 1999). Over the years, team-based work units have become increasingly more prevalent and there has been an emphasis on distributed virtual teams (Bell & Kozlowski, 2002).

Virtual teams are "groups of geographically and/or organizationally dispersed co-workers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task" (Townsend et al., 1998, p. 17), and as Bell and Kozlowski (2002) state they "will play an important role in shaping future organizations, we know relatively little about them".

Despite the benefits from virtually distributed work (such as high flexibility), there seem to be some difficulties associated with coordinating and controlling virtual work (Bell & Kozlowski, 2002), arising the important issues of team orientation and team coherence. Moreover, leadership is thought to be an essential element for success in virtual teams (Bell & Kozlowski, 2002; Yoo & Alavi, 2004). A leader's role in a team is to develop the members of his/her team into a coherent, seamless, and well-integrated work unit, focusing "on the enactment of team orientation and coaching to establish team coherence" (Kozlowski et al., 1996).

Leadership theories have developed over the years, and various models have been applied to many domains, such as corporate organization, politics and economies. From the Leadership Grid (Blake & McCanse, 1991), to path-goal theory (House, 1971), Transformational leader (Bass, 1985) and Gerstner and Day's LMX (Leader-Member Exchange) theory (Gerstner & Day, 1997), researchers are trying to find out "what makes an effective leader".

In the case of face – to- face team working, leadership skills are usually needed to lead a team by influencing a group toward a shared goal, framing reality for others, giving purpose to collective effort, starting evolutionary change processes (Yukl, 2006). However, in an ever increasing networked world where "business becomes increasingly distributed and virtual in nature, what kinds of leaders might emerge and what attributes will they have?" (Reeves et al., 2005).

Many unknown aspects of leadership in virtual teams seem to be yet unknown (Bell & Kozlowski, 2002) and more empirical studies of leadership within virtual teams are needed (Yoo & Alavi, 2004). The limited research on leadership in virtual teams suggests that a successful team needs guidance, some structure, and effective communication, but leadership is typically examined indirectly if at all (Martins, Gilson, & Maynard, 2004). As Lisk, Kaplancali and Riggio (2011, p.2) state "by examining leadership in context, researchers can understand leadership in a specific situation, and they can use this knowledge to inform predictions in a similar situation that has not yet fallen under the lens of science".

Moreover, despite the significant amount of educational research and the growing interest of the scientific community in MMOGs, there is a lack of empirical research considering cognitive and social aspects of these games (Steinkuehler, 2004). This paper outlines the theoretical rationale behind a doctoral research project currently in progress, which examines the leadership skills that can be developed in a self-organized community in MMOGs. In order to address these issues, this paper presents a theoretical within the context of community of practice, connectivism, self-organization and activity theory. The study of the social structures of a group and the leadership skills that can be developed in a MMOG should result to specific design principles that could be used as design methods for developing effective collaborative environments for virtual teams.

2   Leadership in Virtual Teams: The case of MMOGs

When people form collaborative groups they have a shared goal that cannot be reached by any group member alone, they cooperate by communicating with the other group members (Stohl & Walker, 2002). This cooperation can overstep organizational borders, is not tied to a place or time, and the group can also operate as a team, without a formal leader (in such a case leadership is shared).

In a MMOG, the players create large groups called guilds, which are naturally formed groups, fulfilling the definition of collaborative groups (Siitonen, 2009). These virtual teams are formed spontaneously, and the learning processes occur naturally and continuously (Steinkuehler, 2004). In MMOGs, players are self-organized into communities around a game activity, yet "this self-organisation results in the development of a range of capabilities towards which the players are not directly striving, but are fundamental to mastery within the environment" (Galarneau, 2005).

The social structure of MMOGs (and MMORPGs) is thought to explain their popularity, offering opportunities for shared experience, collaboration, reward and reputation in the group members. In these complex systems the groups and communities have to fulfil increasingly complex tasks, often requiring precise coordinated effort and high levels of communication and collaboration, increased with the complexity of the tasks at hand (Siitonen, 2009). Thus, as Siitonen (2009) states "it is not surprising that leadership, both formal and emergent, is an integral element of the social organization

of many player organizations". The social organization and the dynamics of group structure and role – playing in MMOGs have been studied in previous studies (Koster, 2005; Reeves et al., 2005), stressing the importance of the community in these games and focusing on issues of leadership and leadership communication, which can have drastic effects on the operation and social cohesion of online groups.

Moreover, as Klabbers (2006, p.18) state, "free-form games are self-organising, or self-respoductive (autopoietic systems). However, these definitions of have received only minor attention in the literature". Online games, such as MMOGs, represent an important element of a networked society and of digital culture, and the experience in games challenge many of our traditional views of game, play and society (Corneliussen & Rettberg, 2008, p. 7). Understanding these complex forms of participation in communities and environments such as MMOGs, where learning is the forerunner of the game is critical (Steinkuehler, 2004).

Lately, the scientific community focus its attention to the development of leadership skills, which can be enhanced or developed in virtual worlds and multiplayer games, and their transferability to real life and work situations. A number of researches, as the representative example of IBM, studied the identification of employees with leadership skills in virtual worlds and explored the characteristics of leadership in a popular MMOGs called Word of Warcraft (IBM, 2006; DeMarco, Lesser, O 'Driscoll, 2007; IBM, 2007; Kahai, Carroll, & Jestice, 2007). According to these studies, leadership behaviors appear to be relevant in both gaming and corporate environments (IBM, 2006; 2007), and that MMORPG leadership approaches can be used to improve leadership effectiveness within the enterprise (Reeves et al., 2007). By leveraging the lessons from online gaming environments, companies can gain a better understanding of the ways in which the next generation of leaders will need to operate in the future (IBM, 2006; 2007; Reeves et al., 2007).

MMOGs are thought to enable players to self-organize, develop skills and change roles, providing opportunities for taking risks, seeking for improvement and accepting failure through collaboration and communication channels. In such collaborative environments, a leader must be able to inspire players, urging them to collaborative in order to achieve shared goals.

In MMOGs, guild leaders seem to recruit, organize, motivate and direct large groups of players toward a common goal in a distributed, global, hyper-competitive and virtual environment (IBM, 2007). A guild leader must make decisions quickly, often based on incomplete information. These kind of qualities of gifted gaming leaders seem to be similar to those needed in a corporate setting (IBM, 2006; 2007).

In search of leadership skills in MMMOGs, IBM conducted a study in a popular MMOG called World of Warcraft (WoW), taking into account the leadership behaviors described in Sloan Model (Ancona et al., 2007), which has been used for analyzing distributed leadership (Reeves et al., 2007).

According to this model (Reeves et al., 2007), "leadership skills are:
- *Visioning* – Setting a vision for what that organization can be in the future
- *Evaluating* – Gathering information to determine strategic risks for the organization
- *Collaborating* – Leveraging the value of connections and relationships to overcome organizational barriers and accomplish key activities
- *Executing* – Getting the most out of followers and achieving desired results".

Using the Sloan Leadership Model (Malone, 2004; Ancona et al., 2007), usually applied for analyzing distributed leadership, Reeves et al. (2007) revealed that leaders in MMOGs have important leadership skills such as sensemaking, visioning, relating, and inventing. In general, good leaders have at least a minimal competence on all four capabilities, but no leaders are perfect on all dimensions.

This study revealed that leadership behaviors appear to be relevant in both gaming and corporate environments. Important skills such as self-organizing and regulating behaviors seem to be more appropriate in an increasingly flexible and virtual environment. However, collaborative behaviors where found to be vital to leadership success within MMORPGs and will be increasingly so within corporate environments, where more than ever, employees are becoming increasingly distributed and virtual, with different culture and social needs, are expected to collaborate and share their knowledge

(IBM, 2006; 2007). The best gaming leaders build credibility by first creating strong personal relationships with their followers, revealing the most important skills in these games; the ability to communicate, organize and activate guild members (IBM, 2006; 2007). According to the implication of these findings, virtual leaders should focus on developing trust among the members of their team, visioning the future and communicating with a diverse team of people, making quick decisions based on scarce information and giving immediate feedback and rewards (IBM, 2006; 2007).

Moreover, other studies highlight as important leadership skills the ability for conflict resolution, discipline, motivation, coordination, nurturing and emotional support, delegation, training, retention, recruitment, scheduling, and politicking (Castronova, 2005; IBM, 2006; IBM, 2007; Reeves et al., 2007). According to the findings of these studies, there are lessons to be learned in corporate environments form the paradigm of leadership in MMOG.

This social and constantly changing collaborative world of MMOGs seem to be a good example of connectivism in full practice and an interesting field of research concerning the distribution of knowledge across the network of players.

3   The need for research

Most players of MMOGs, usually state that the most attracting feature of this game is "the social factor" (Ducheneaut, Yee, Nickell & Moore, 2006) emphasizing the importance of joint activities and time spent in groups (Goh, 2010). As Galarneau (2005) states "MMOGs, in particular, present a tremendous opportunity to explore a nascent area of media convergence, while understanding how the naturally occurring phenomena of self-motivated social learning, sociocultural participation, and collaborative problem-solving can be leveraged into other contexts". According to Gee (2008, p.34), "such games hold out the potential for the discovery of new forms of social organization, new ways of solving social problems, and new ways of researching and testing collaborative learning, knowledge building, and performance. MMOGs, in particular, "present a tremendous opportunity to explore a nascent area of media convergence, while understanding how the naturally occurring phenomena of self-motivated social learning, sociocultural participation, and collaborative problem-solving can be leveraged into other contexts" (Galarneau, 2005).

While many researchers have focused on usability issues concerning gaming environments and their ability to immerse or attract players, there is still surprisingly little data available to understand how MMOGs function as social worlds (Ducheneaut, Yee, Nickell & Moore, 2006). Despite the scientific community's focus on understanding the social interaction that occurs within the limits of virtual worlds, the majority of research focuses on using scientific methods of empirical investigation of the interaction of people with their virtual worlds, offering little empirical data to assess the social experiences of players and the social nature of virtual worlds (Steinkuehler, 2004; Bonk & Dennen, 2005; Ducheneaut, Yee, Nickell & Moore, 2006). Moreover, there is such a lack of empirical research considering cognitive and social aspects of these games (Steinkuehler, 2004; 2007).

On this basis, there is a need for researching the social structures formed in these multiplayer games through their interactions with their players. Important issues concerning MMOGs are associated with the sense of community developed in these games, the group structure, the endogenous and exogenous factors that stimulate their users, the collaboration between users, and cognitive skills such as decision making, problem solving, and develop leadership characteristics (Bonk & Dennen, 2005; Ducheneaut, Yee, Nickell, Moore, 2006; Sidorko, 2009; Papargyris & Poulymenakou, 2009; Wyld, 2010; Konetes, 2010).

Such studies can shed light on the factors that enhance the effectiveness of virtual environments and promote the creation of user communities. The study of social structures and relationships between individual and social factors should reveal ways to develop cognitive, emotional skills and social skills, such as leadership skills in the context of virtual communities. These can be important life skills for surviving, living with others, and succeeding in a complex society. Life skills as "those skills that help an individual to be successful in living a productive and satisfying life" (Hendricks, 1996, p.4). In real life, leadership can be an important life skill, such as communication and interpersonal skills.

Leadership in MMOGs seems to influence commercial leadership in the future in different ways (Reeves, 2007). However, despite the growing scientific interest in this issue, understanding leadership in virtual gaming settings is still in the beginning stages and many questions remain about

what characteristics and leadership styles are more effective within MMOGS (Goh, 2010). The potential of these popular environments should be studied in order to exploit and enhance the capabilities of educational and training virtual environments. It is important to understand how to achieve the development of skills in unconventional environments, in contrast to the conventional classroom environment to promote educational theory and practice beyond the preset limits and stereotypes (Lave & Wenger, 1991, in Steinkuehler, 2004). Scientific results in view of these skills in MMOGs and MMORPGs can be used to improve leadership effectiveness in real life, enterprise and training settings, and revealing ways to educate the next generation of life leaders.

4 A theoretical framework for analyzing the social interactions in Multiplayer Games

This paper presents a theoretical framework for analyzing the social interactions in multiplayer games, within the context of community of practice, connectivism, self-organization and activity theory.

4.1 Community of Practices in MMOGs

In situated learning theory, Lave and Wenger (1991) argue that learning, thinking and knowing emerge from a world that is socially constructed. Lave and Wenger were the first to introduce the concept of a Community-of-Practice (CoP), based on socio-cultural learning theory of Bandura (1962). The basic concept of the theory is the term "legitimate regional participation", through which people learn in loosely-organised groups through a "gradual acquisition of knowledge and skills as novices learn from experts in the context of everyday activities".

In such communities, learning is not usually deliberate and happens naturally as learners become members of a community of practice, adopting the culture of the community and taking on the role of an experienced member. The key concept of learning in communities of practice is the intrinsic interest for participation in the community, which requires newcomers to move towards full participation in the community (Galarneau, 2005). Thus, the newcomers are inevitably involved in the community and the acquisition of knowledge and skills is a result of their full participation in the sociocultural practices of the community (Lave & Wenger, 1991).

Since its appearance, communities of practices have been applied in virtual communities since they demonstrate a vital boost in participation through the physical meeting of members (Kimble, Hildreth & Wright, 2001) noted that these communities. MMOGs are considered to be complex learning systems with a full range of social and material practices (Steinkuehler, 2004). In MMOGs, players are part of communities within which they work together to kill enemies, exchange goods and develop their status and solidarity (Lau, 2005). Just as in a real world community, when newcomers enter the game, they are gradually introduced to a complex social framework through the tutelage of other community member (Delwiche, 2006). They learn to "make sense of new areas, especially by engaging with others, discussing, reflecting, and sharing" (Egenfeldt-Nielsen, 2006, p.201).

These communities are formed spontaneously, and the learning processes occur naturally and continuously in the game (Steinkuehler, 2004). Like a virtual community of practices, MMOGs are characterized by "loose cooperation", since players collaborate in order to enhance their performance. Moreover, in MMOGs players seek the help of others to survive in the game, gaining "mutual commitment" to a "joint venture".

4.2 Activity Theory

Activity Theory extended the relationship between the individual and the community to the much more complex idea of "the dialectical relations between human agents (subjects) and that which they act upon (objects) as they are mediated by tools, language, and socio-cultural contexts." (Squire, 2002; Engeström, 1993). According to Activity theory, "the minimal meaningful context is the dialectical relations between human agents (subjects) and that which they act upon (objects) as they are mediated by tools, language, and socio-cultural contexts" (Squire, 2002). It describes the world (physical and virtual) as a constitution of Subjects –the people or groups-, Objects, Tools -which mediate a subject's interactions with an object-, the community of a system, Rules and Division of Labor (Figure 1). Communities mediate activity through division of labor and shared norms and expectations (Squire, 2002).
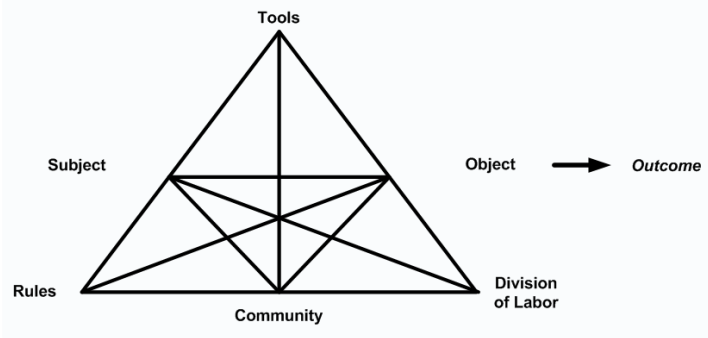
Figure 1: Activity System

This framework is used to explore the relationships between variables, events, and complex patterns (Egenfeldt-Nielsen, 2006). In a multiplayer game, the activity theory system would represent the interactions among the Subjects, the Objects, the Tools, the Rules, the Community and the Division of Labor as they appear in a game.

Furthermore, MMOGs can be played at anytime, anywhere and by anyone, upgrading the complexity of human interactions and forming large communities in an expanded and more complex socio-cultural context. Thus, Activity theory could be an interesting theoretical framework for analyzing these communities of practices, where numerous players interact with others (subject), using the tools of the game (object), under specified rules and create communities, in order to win (outcome) through certain game activities (division of labor).

4.3   Connectivism

Connectivism is a theoretical framework for analyzing learning in communities, where a learner is exchanging information with the member he/she is connected to. In connectivism, a community is thought as "the clustering of similar areas of interest that allows for interaction, sharing, dialoguing, and thinking together" (Siemens, 2004).

The starting point of connectivism is the individual, and while a person has its personal knowledge, this is shared through nodes - a learning community is described as a node - into a larger and ever extending network of peers, colleagues and why not players. Nodes can vary in size and strength, depending on the concentration of information and the number of individuals "who are navigating through a particular node" (Downes, 2006). In this sense "learning is no longer an internal, individualistic activity" (Siemens, 2005). As Siemens (2006) has suggested, "the learning is the network."

In MMOGs, players self-organize into communities of practice around a game activity, yet "this self-organisation results in the development of a range of capabilities towards which the players are not directly striving, but are fundamental to mastery within the environment" (Galarneau, 2005).

This social and constantly changing collaborative world of MMOGs seem to be a good example of connectivism in full practice and an interesting field of research concerning the distribution of knowledge across the network of players. As Galarneau (2005) states "only by examining social learning in an environment where it occurs naturally through spontaneous self-organisation of participants into learning ecosystems will we gain insight into its true possibilities within an educational framework".

4.4   Self-Organization

The theory of self-organization stems from the fields of biology, where the living organism spends much of its life as thousands of distinct units, each of which moves separately from the others, but then, under the right conditions, those thousands cells will be merged into a single larger organization (Wheatley, 1999).

The term Self-organizing Systems refers to the systems that are able to change their internal structure

and their function in response to external circumstances. Self-organizing systems have been discovered in nature, in the non-living (e.g. stars) and living world (e.g. organisms). However, Self-organization theory has been applied to other systems such as economics (Krugman, 1996) and computer-supported collaborative work, examining the ways in which "groupware" systems support self-organization (Eriksson & Wulf, 1999).

This analysis of living systems and cognition was the base for the development of Autopoietic theory, which provides a theoretical framework for analysing the social systems in which we, as living organisms, participate. Taking the example of autopoiesis is a cell, Maturana and Varela viewed autopoietic systems as unities, "as network of productions of components, which through their interactions generate and realize the network that produces them and constitute, in the space in which they exist, the boundaries of the network as components that participate in the realization of the network" (Maturana, 1981, p. 21).

In an attempt to analyse social systems as autopoietic systems, Luhmann (1886) studied the autopoiesis of social systems, defining "communications as the basic elements of social systems". He viewed communications as the essential elements for any social system, "recursively produced and reproduced by a network of communications and which cannot exist outside of such network" (Luhmann, 1986, p.174). Later, Teubner (1988) attempted to describe law and the legal system as an autopoietic system, while Robb (1989) described the field of accounting and Zeleny and Hufford (1992) cite the family as autopoietic social systems. These studied aimed to extend the applications of Autopoietic theory, which seem to provide an interesting theoretical basis for addressing our everyday social interactions, constituting a very complex social system in which we all live and strive to survive.

In multiplayer games the concept of self-organization occurs as players form social networks. At the start of the game any player is not part of a group by a central mechanism. In addition, there are no rules about how they should fit the players into groups. However, the clustering in a multiplayer game is totally spontaneous and self-organized, through a process of negotiation between players, based on based on emergent norms and relationships (Galarneau, 2005). Gibson, Aldrich and Prensky (2006) state that it is remarkable how well the diverse groups of people of different age groups, gender and culture, manage to play together and self-manage conflicts when they arise.

In multiplayer games, players are self-organized into social groups (clans, guilds). When groups are initially formed, "they are often chaotic and disorganized; but over a period of time, a spontaneous order emerges as players learn to sync their behaviours to the behaviours of other players" (Gibson, Aldrich & Prensky, 2006, p.76). The numerous groups of players, including individuals from around the world, "emerge in an entirely decentralised and self-organised way, engaging in group pursuits and assisting each other to learn how the game world functions, or even co-producing the game world in a negotiated dance with developers. This group emergence follows the classic rules of emergence in biological systems" (Galarneau, 2005).

5 Methodology

This paper outlines the theoretical rationale behind a doctoral research project currently in progress, which examines the leadership skills that can be developed in a self-organized community in MMOGs.

The main questions that this project attempts to address are:
- What characteristics, related to the social nature of MMOGs, activate leadership skills?
- Do these leadership skills activate teamwork and sense of community?
- What MMOGs can teach us about the design of successful online social spaces and activities for teaching leadership skills?

Moreover, it is noted that "researchers interested in pursuing leadership in games would be well served to start by seeing if the foundation is strong, as there are evidences that leading a virtual team has many differences that using leadership techniques when leading a traditional team" (Lisk, Kaplancali & Riggio, 2011, p.12).
Thus, the first stage of this research approach is an in depth exploration of the basic leadership theory models, in order to assess their suitability for analyzing the virtual teams of MMOG players. This project aims at highlighting the characteristics of these social massively gaming communities that

foster leadership skills and activate team work, offering design principles and educational activities for teaching leadership skills to virtual teams.

Online gaming environments offer an opportunity to gather data remotely and anonymously (Wood, Griffiths, & Eatough, 2004), either by the environments itself, or using self-reports from the players. And while ethnographic research has the benefit of understanding true depth and context, this can never be fully captured by survey or experimental methods (Ducheneaut, Yee, Nickell, Moore, 2006). In this project a multi-method approach will be used to take advantage of ethnographic work (depth) and combining it with the advantages of most survey-based work (breadth and representativeness) (Ducheneaut, Yee, Nickell, Moore, 2006) in order to bring together the strengths of both forms of research to validate results.

In social sciences, mixed methods research is considered a legitimate, stand-alone research design (Creswell, 2003). A mixed methods study is a "collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research" (Creswell, Plano Clark, Gutmann, & Hanson, 2003, p. 212). By including both quantitative and qualitative data in a study, the results may be enriched in ways that one form of data does not allow (Hanson et al., 2005). This mixed methods design will be used to combine different but complementary data to "uncover some unique variance which otherwise may have been neglected by a single method" (Jick, 1979, p. 603).

The unit of analysis for this PhD project will be the individual leader of a guild in a MMOG. The individual analysis was chosen since this project aims at focusing on the leaders' skills (Subject) and their affect to the guild's teamwork and sense of community (Community), according to Activity Theory, which will be the main framework of this study.

6 Preliminary Findings

In order to investigate the relationship of MMOGs' players, a preliminary study was conducted in a population of 64 guild members, playing a MMOG called World of Warcraft (WoW). The research focused on this MMOG, due to its popularity across the globe with more than 12 million subscribers worldwide (Blizzard Entertainment, 2010). The sample of the research were 64 WoW players, who were chosen from a wider sample of 100 MMOG players, due to their participation in WoW's groups (guilds) (response rate =64%).

The preliminary work of this thesis focused more on the investigation of the relationship between physiological factors in MMOGs, such as sense of belonging in a group and intrinsic motivation. The research hypotheses where:

Ho1: Is there a relationship between the sense of community and performance in the game?

Ho2: Is there a relationship between the sense of community and intrinsic motivation in playing the game?

The theoretical framework of intrinsic motivation in games by Malone and Lepper (1987) was used to create a 7-item closed-response questionnaire, with which subjects were asked to rate each item (challenge, fantasy, control, curiosity, cooperation, competition and recognition on a 5-point Likert scale. In order to examine the sense of community in WoW, the questionnaire of McMillan and Chavis (1986) was used, which is broadly validated and widely utilized questionnaire concerning sense of community in the psychological literature. Subjects were asked to rate their feelings concerning their sense of belonging in the gaming community (in a game's guild) for each of the questionnaire's items (feelings of membership, feelings of influence, integration and fulfilment of needs, and shared emotional connection), on a 5-point Likert scale. Finally, a questionnaire was used for the collection of self-reported data concerning players' performance, including the frequency of game play (hours per week), their current level in the game and the level completion time (amount of time required for a level to be completed) on a 5-point Likert scale.

The reliability of the instrument used in this research (Cronbach's Alpha) was α=0,736. Pearson correlation analysis indicated a strong positive relationship between sense of community and intrinsic motivation (r=0.479**) and between sense of community and game performance (0.298*) (Mysirlaki & Paraskeva, 2010).

We conclude that there seem to be a relationship between the sense of belonging in a games' community (strong feelings of membership, influence, integration, fulfilment of needs and shared emotional connection) and the players' intrinsic motivation (high levels of challenge, fantasy, control, curiosity, cooperation, competition and recognition in the game). Moreover, there seems to be a strong positive relationship between the feeling of belonging in a community (strong feelings of membership, influence, integration, fulfilment of needs and shared emotional connection), and high performance (higher frequency of game play, higher level in the game and higher level completion time) in MMOGs.

Thus, the ability to create groups and develop a strong sense of community in a game can be motivating for the players and can be positively related to high game performance. This means that the performance of a player can be enhanced when the sense of community in a game is strong. The findings of the research imply that the development of communities in a game is possible to increase intrinsic motivation to players and enhance their performance in the game.

In these preliminary findings, the activity theory system was highlighted by some important psychosocial issues (Figure 2). This system is considered as a complex social network, where subjects interact with numerous factors of the games to lead themselves to the desired outcome.
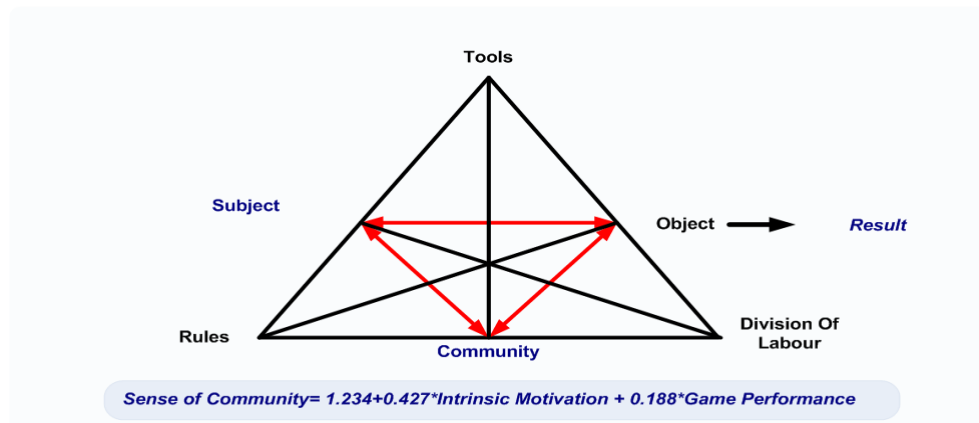
Figure 2. The Findings of the Preliminary Study under the light of the Activity Theory

For the purposes of this PhD thesis, the activity system theory will be used to analyze MMOGs (such as the game WoW) not as just games, but as complex systems that have characteristics that can be useful for other domains, such as enterprise and training settings, by exploring players' leadership skills and their effect on their team.

In a multiplayer game, an activity theory system would represent the interactions among the Subjects, the Objects, the Tools, the Rules, the Community and the Division of Labor as they appear in a game, forming large communities in an expanded and more complex socio-cultural context. Thus, Activity theory could be an interesting theoretical framework for analyzing these communities of practices, where numerous players interact with others (subject), using the tools of the game (object), under specified rules and create communities, in order to win (outcome) through certain game activities (division of labor).

This framework aims at examining the creation of communities and the development of leadership skills in MMOGs, in order to explore and validate factors that could strengthen or undermine the relationships between players in Multiplayer Games. The study of the social structures of a group and the leadership skills that can be developed in a MMOG should result to specific design principles that could be used as design methods for developing effective collaborative environments for virtual teams.

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234