Spontaneous Communities of Learning: Learning Ecosystems in Massively Multiplayer Online Gaming Environments

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ABSTRACT
This paper outlines the theoretical rationale behind a doctoral research project currently in progress. Through a multi-method approach, the project examines spontaneously-emerging communities of learning in and around massively multiplayer online games (MMOGs) within the context of social learning theory, social networks, self-organisation, online communities and emergence.

Keywords
learning, knowledge, MMOG, MMORPG, networks, communities, emergence, self-organisation

INTRODUCTION
This research project is comprised primarily of an ethnography and social analysis that seeks to illuminate the informal learning ecosystems that emerge around the relatively recent phenomenon of massively multiplayer online games. While these games can be played individually to greater or lesser degrees depending on the game, the gameplay mechanics are generally such that true mastery of the game can often only be achieved by working collaboratively with other players. As a result, groups of players comprised of 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.

In particular, this project looks at how otherwise unconnected individuals coalesce into a complex learning ecosystem around one game, *City of Heroes*, as players engage in symbiotic learning relationships, assisting each other towards greater mastery of the game. Individuals also interact with one another outside the game, using it as the cornerstone of a rich web of 'meta-game' social and learning interactions, extending the web of community into different virtual spaces and even real life, then back again. Not only do individual players benefit from these

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interactions; both play groups and the larger community of the game itself gain a greater intelligence that results in increased sophistication of the game environment.

There are obvious analogues between this phenomenon and social learning patterns in other physical and virtual spaces. But massively multiplayer online games (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, socio-cultural participation, and collaborative problem-solving can be leveraged into other contexts. Constance Steinkuehler of the University of Wisconsin-Madison stresses the importance of this type of research in the larger context of educational and learning research:

> "As Lave and Wenger argue, understanding the shape of learning in naturally occurring contexts, and not just formal ones (e.g. classrooms) is crucial if we are to forward educational theory and practice beyond the contexts we ourselves contrive. We ought to investigate more naturally occurring, self-sustaining indigenous virtual cultures so that out theory might be a more accurate reflection of them and our practice a better reflection on them in days to come." [19]

BACKGROUND

In the 1990s, artificial intelligence expert Etienne Wenger and social anthropologist Jean Lave built on Bandura's observational theory of learning, outlining a process they dubbed 'legitimate peripheral 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'. The key to legitimate peripheral participation is not an explicit transfer of skills, but rather an intrinsic capability and evolved understanding of socio-cultural nuances resulting from involvement in a community of skilled practitioners: "Learners inevitably participate in communities of practitioners and that mastery of knowledge and skill requires newcomers to move towards full participation in the socio-cultural practices of a community." [13]

Lave and Wenger coined the term 'community of practice' to describe this loose collaboration. As Wenger has since elaborated, communities of practice are characterised by 'joint enterprise', 'mutual engagement' and a 'shared repertoire' of community resources. The key differentiator between communities of practice and other types of organisations is that 'membership is based on participation rather than on official status' and 'these communities are not bound by organizational affiliations; they can span institutional structures and hierarchies'. In addition, learners must have 'broad access to arenas of mature practice' and be engaged not only in learning activity, but in 'productive activity', in order to participate in a legitimately peripheral way. [21]

In educational circles, communities of practice are often referred to as 'communities of learning', as a way of acknowledging the socio-cultural significance of learning activity, without going so far as to say that learners are engaged in 'practice' in the occupational sense. [3] However, it is clear that a tension lies between the ideas of legitimate peripheral participation as a mechanism for learning and the didactic methods of learning employed in school settings. Lave and Wenger

contend that 'the way to maximize learning is to perform, not to talk about it' and their studies clearly indicate a preference for traditional occupational settings rather than classrooms or training. They explain this perspective through the observation that 'locating learning in classroom interaction is not an adequate substitute for a theory about what schooling as an activity system has to do with learning". Rather, they believe that 'other kinds of communities and the forms of legitimate peripheral participation therein' hold the key to understanding learning. [13] As a result of this inherent tension, the problem of studying social learning phenomena in engineered environments, like schools, is huge, if not an empirical impossibility.

George Siemens, a tertiary educator and theorist, has also acknowledged this problem, suggesting that earlier learning theories developed before the advent of modern communications technologies and rooted in the traditional schooling metaphor may only be pieces of the learning puzzle. Siemens' ideas are quite Vygotskian in their inspiration, acknowledging that "learning needs and theories that describe learning principles and processes should be reflective of underlying social environments' in a process that recognises that 'technology has reorganized how we live, how we communicate, and how we learn'. In accordance with constructivist and social constructivist approaches, he believes that learning itself is a 'lasting, changed state (emotional, mental, physiological, i.e. skills) brought about as a result of experiences and interactions with content or other people'. But he finds constructivism and social constructivism both lacking as a result of their emphasis on the individual (in the case of social constructivism, on 'the principality of the individual in learning', despite the array of socio-cultural influences that come into play) and the collective oversight of the fundamental principle that both 'the organization and the individual are learning organisms' The crux of Siemens' proposal, leading to his newly-coined term 'connectivism', is that learning is a process of forging connections between disparate bits of information stored both in our brains and elsewhere (e.g. databases or indeed, other people's brains), signaling the 'integration of principles explored by chaos, network and self-organization theories'.

> "The starting point of connectivism is the individual. Personal knowledge is comprised of a network, which feeds into organizations and institutions, which in turn feed back into the network and then continue to provide learning to the individual. This cycle of knowledge development (personal to network to organization) allows learners to remain current in their field through the connections they have formed. [18]

In the connectivist sense, then, 'learning is no longer an internal, individualistic activity'. [18] And as much as an individual's learning cannot be separated from its context, in an interconnected world, individual learning is the context for learning at a group or organizational level. The relationship between teaching and learning is neither didactic nor hierarchical, but continuously symbiotic, as each effort builds on the other. Teaching and learning are practices within a learning ecosystem, but in terms of overall knowledge acquired by a group or organisation, the distinction between the two is often indiscernible. Furthermore, these activities contribute to a community's greater intelligence, or in other words, the knowledge resident in the network, available to be accessed by those who, through fluency in socio-cultural practice, can find the path to the resource. Pierre Levy describes this phenomenon as one in which 'mutual recognition and the enrichment of individuals' leads to 'universally distributed intelligence, constantly enhanced, coordinated in real time, and resulting in the effective mobilization of

skills', all activities that take place every second in both the physical and virtual worlds. [14]

MASSIVELY MULTIPLAYER ONLINE GAMES

This study seeks to understand how self-organised and spontaneous teaching and learning contribute to mastery of a game environment, the pinnacle of achievement that denotes a holistic set of capabilities, or a player's 'ability to improvise' and 'time actions relative to changing circumstances'. [7] Mastery, in this sense, is both an individual, group and community-level achievement. Individual mastery leads to greater play/work group mastery, which in turn leads to greater organisational or community mastery. The epitome of mastery in a massively multiplayer game environment is evolution, when the game has been sufficiently mastered such that its continued existence hinges on its increasing sophistication and allure, often satisfied as a result of player intervention and contribution.

While most MMOGs can be played individually to greater or lesser degrees depending on the game, the gameplay mechanics are generally such that true mastery of the game can only be achieved by working collaboratively with other players. In fact, some of the games are designed specifically to require interdependence between players:

> "The game [Everquest] is designed in a way that makes grouping essential for achieving success, a concept that has been central in role-playing games since the days they were played with rulebooks, pen and paper… It is only through working with other players that individual gamers achieve maximum results". [8]

All of these interactions contribute to a substantial sense of community, deliberately designed by the game developers. Brad McQuaid of Sony Online Entertainment explains:

> "Community is relationships between players, whether it be friendly or adversarial, symbiotic or competitive. It's also a form of persistence, which is key to massively multiplayer games. Without community, you simply have a bunch of independent players running around the same environment. Players won't be drawn in and there won't be anything there to bind them. The key to creating community, therefore, is interdependence. In EverQuest, we forced interdependence in several ways and although we've been criticized for it, I think it's one of a couple of reasons behind our success and current lead. By creating a class-based system, players NEED each other. By creating an environment often too challenging for a solo player, people are compelled to group and even to form large guilds and alliances. All of this builds community, and it all keeps players coming back for more and more." [11]

These types of game/play-based virtual communities are not really new. In many respects, MMOGs are a graphical extension of the text-based Multi-User Dungeons (MUDs, MOOs, etc.) that peaked in popularity in the 1980s and 1990s. The MUDs led to a variety of new paradigms in social interaction that are now flourishing and evolving in massively multiplayer environments. Intriguingly, these social interactions are given myriad, shifting dimensions through explicit role-play or an implicit, evolving attitude towards the sense of self, as participants learn that they can 'approach one's story in several ways and with fluid access to one's different aspects' [20]

In massively multiplayer games there tends to be less emphasis on explicit role-playing, yet groups, in either transient or permanent form, become fundamental to identity. Group identities evolve through the contributions of their individual participants, much as they do in the real world. However the possibilities for play afforded by these virtual environments are quite unimaginable in the real world. As Sherry Turkle has observed of virtual identities, 'we are encouraged to think of ourselves as fluid, emergent, decentralized, mulitplicitous, flexible and ever in process'. [20] Likewise, group identities in massively multiplayer games embody the same ephemeral, shifting characteristics. Players can join groups and leave groups freely, with little hindrance and few barriers to participation. They can play a range of characters who influence their groups in a variety of ways and give them many possible avenues for participation, as fighters, crafters, healers and supporters. Players may seek 'collective and communal identities' [4], but they do so in a fluid way.

The manner in which social groupings occur in massively multiplayer games magnifies this effect. No one is assigned to groups by a central authority. There are no rules, other than party size, for how groups must be structured. Instead groups emerge in an entirely decentralised and self-organised way, through a process of negotiation between players, based on some loose norms and even looser relationships. This emergence follows the classic rules of emergence in biological systems, like an organism that 'spends much of its life as thousands of distinct single-celled units, each moving separately from its other comrades, but then under the right conditions, those myriad cells will coalesce into a single, larger organism' and 'it becomes a they'. In these game universes, players, like other living organisms, 'think locally and act locally, but their collective action produces global behavior'. [9] Larger groups, often referred to as guilds or clans, typically span multiple sessions of gameplay and rely on somewhat deeper relationships between members. Guilds, with a much less ephemeral nature than killing/questing groups, have an even greater effect on the culture surrounding the game and the game's overall identity:

> '…guilds actually contribute to the broader collective knowledge of the game… Guilds themselves come to act as unique agents – entities made up of more than the sum of their members – in the broader game community." [8]

The lifecycle of a group is immensely fluid as groups form, break apart and reform. Some interactions last only a few seconds, whilst others are long-lived interactions that span many game sessions and may extend outside the game, both virtually into the 'meta-game' and outside the virtual world entirely, into the real world. Some relationships even begin in the real world, then find alternate manifestation in the game world. [19] This way in which individuals interact with one another outside the game, using the game as the cornerstone of a rich web of 'meta-game' social and learning interactions, extends the web of community into different virtual spaces and even real life, then back again.

> "MMOGaming is participation in a discourse space, one with fuzzy boundaries that expand with continued play: What is at first confined to the game alone soon spills over

> into the virtual world beyond it (e.g. websites, chatrooms, e-mail) and even life off-screen (e.g. telephone calls, face-to-face meetings). The discourse communities these practices serve likewise expand from collections of in-character playmates to real-life affinity groups. Understanding the forms of participation in complex communities and environments such as MMOGs where learning is the precursor to playing – if not the very same thing – is crucial" [19]

Even non-game researchers like John Seely Brown recognise that this sphere of activities around MMOGs represents an entirely new kind of social learning experience:

> "Understanding the social practices and constructivist ecologies being created around open source and massively multiplayer games will provide a glimpse into new kinds of innovation ecologies and some of the ways that meaning is created for these kids -- ages 10 to 40. Perhaps our generation focused on information, but these kids focus on meaning —-- how does information take on meaning??" [17]

Perhaps Seely-Brown is alluding to the idea that meaning is expected to be implicit in the process of constructing one's knowledge via these experiences. Videogames, like television, film and books, are media that consumers often approach as if no explanation is necessary for how to interact with them. However, like software, videogames do have a considerable learning curve. But interestingly, there is an important distinction between how players learn to play games and how they tend to learn to use other tools, a process that is often learned using didactic techniques, modelling activities, or 'learning-by-doing' [15] paradigms accompanied by explicit instruction.

Videogames, on the other hand, are often designed as 'learning machines' [5] that rely on intuitive, convention-based game design to scaffold a player's learning of the mechanics of gameplay and the game environment as player 'curiosity takes the form of explorative coping' [6] But in the dynamic, sophisticated and collaboration-based MMOG environments there also emerges a rich culture of learning support. Not only is interdependence designed into the games, but the flexible parameters specified by game designers involve creating an interactive world where environments are in constant flux: rules change, documentation is scarce, and the mastery of the game relies on a host of skills well-beyond the game's manual. Indeed, these games and the strategies for playing them are exercises in co-creation where players, as co-producers, can influence the rules, affect the outcome, and create a rich universe of social interactions and culture that ultimately form the core of gameplay, rather than the periphery.

The learning support mechanisms are underpinned by flexible and ever-changing social networks of senior and junior players who engage in symbiotic relationships, exchanging game tips and artefacts, scaffolding the learning of less experienced players and allowing more senior players to make their knowledge explicit and impactful. Further, there is an ongoing process of behaviour modelling that allows players to continue to evolve their social approaches within the game and understand the shifting nuances of an emerging culture. This aspect also allows for legitimate peripheral participation where players learn from proximity to learning in the game, often in a very explicit manner as they observe conversations between players. And even beyond

the necessary interactions wired into games through designing interdependence, there are a variety of socio-cultural mechanisms at work for helping people through the game, 'as people's intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in socio-cultural practice'. [13]

Of key importance is the idea that individuals learn within this environment, but so too do their contributions and learning impact the learning of the groups and in-game communities to which they belong. The players take it upon themselves to devise and share strategies that help them master the game. Sometimes these strategies include the discovery of game 'loopholes', exploited by players contrary to the intent of the game designers. As such, there is no documentation about these opportunities, yet players pass the knowledge from one player to another, until a 'tipping point' is reached and a majority of players begin engaging in the activity.

This sort of self-initiated learning activity, resourcefulness, team-work, and innovation is precisely what a chorus of voices have called the fundamentals of 21st century knowledge-worker capabilities. [1] Visionaries like John Seely-Brown have repeatedly called our attention to the changing needs of a digital world, acknowledging a 'shift between using technology to support the individual to using technology to support relationships between individuals'. [16] This web of interactions is what he calls a 'learning ecology', an 'open, complex, adaptive system comprising elements that are dynamic and interdependent'. Yet most educational research tends to ignore the study of these phenomena in deference to accepted content and cognitive skills, or a focus on structured and individualistic educational settings in an effort to understand what is working according to current modes of accountability. Unfortunately, these approaches will not provide the wake-up call needed to shift our educational structures away from an emphasis on content in individual heads to a focus on developing skills that highlight identifying and scrutinising resources across the network and developing fluency in the socio-cultural practices that allow individuals to access the greater collective intelligence

Learning theorists like Vygotsky, Bandura, Lave, Wenger and Siemens have all understood that learning cannot be separated from its context. Likewise, the study of learning cannot be separated from its context. Studying learning in artificially-structured environments like schools or training establishments will yield artificial results. 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. It is also the only way we can understand what the important skills and capabilities really are in a networked, complex and fast-moving world, in absence of specific content agendas and 'what learners need to know' attitudes based on centuries of tradition. We may in fact find that traditional content approaches to learning may take a back-seat to the sorts of 'collateral learning' [10] taking place in massively multiplayer game environments, in which players are routinely 'given hundreds of chances to work together in a structured setting' [2]. The game is merely the productive activity around which other skills and capabilities flourish.

One way to look at it is that players self-organise into communities of practice united around the activity of gameplay, 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:

> ‘Players acquire knowledge in context and in pursuit of immediate goals. Learning is done in the service of game goals… players have to figure out everything they need to know to feed themselves, stay safe, rise in experience, acquire the items they covet, and navigate the world around them. But, in this game, they do it by picking up some knowledge that actually has some use in the real world. The game’s design is not meant to trick people into learning. It’s meant to give players the tools they need to succeed in the *virtual* world, but tools that might be useful in the real world, as well. [12]

The ethnographer seeks out natural habitats in order to study phenomena in their natural setting. And the process of participant observation allows the researcher greater understanding through his or her role as a member of the community in question. Previous ethnographers studied native peoples in their natural habitats. This study seeks to understand emerging cultures that demonstrate new needs, capacities and motivations made explicit via the affordances of new technologies and the communication, interaction and cognitive strategies that evolve from them.

REFERENCES