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"There's no fixed course": Rhizomatic learning communities in adolescent videogaming

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Abstract

The following paper examines how adolescent gamers' experiences reveal the complex learning systems in which they contribute, create, and participate, troubling the idea of what "gamer" means altogether. We begin by situating ourselves in a complexity science framework, then move to the ways in which Deleuze and Guattari's (1987) rhizome metaphor supplements our thinking about complex systems, providing a more comprehensive stance from which to understand gaming and learning communities. Drawing from the first four years of our qualitative research, we argue that there is "no fixed course" in gaming, and that our participants actively blur the boundaries of the following traditional identity categories: producer/consumer, teacher/learner, and individual/collective.

Author Keywords

Videogames; education; learning; complexity

Introduction

Video games have, in the past twenty years, taken up a prominent place in the lives of children and adolescents, often to the dismay of parents and teachers. Video games have been blamed for many of the societal problems we see manifested in video game play – violence, competition, individualism, sexist and racist attitudes. However, recognizing that video games are not going to disappear from the lives of youth, we need to find alternative ways to address our concerns and questions, other than ignoring the issue, blaming video games for societal ills, and banning them from our homes. We need to gain more insight into video games and the youth who play them in order to make informed decisions about potential issues and possible benefits. As Jenkins (2006) comments, we cannot critique what we do not understand. We need to seek theoretical frameworks that help us to understand the complexities of our 21st century lives, the media and technologies that are increasingly becoming indispensible parts of the ways we work, play, and share knowledge.

This study supports Jenkins' research in that it identifies the complexities gamers experience and create in this participatory culture. This paper examines how adolescent gamers' experiences

reveal the complex learning systems in which they contribute, create, and participate in their gaming communities, complicating the stereotype of what "gamer" means. This study differs from Jenkins' research in that the researchers involved in this project were not directly involved in the participatory culture of the gamer participants. Instead, this research offers a possibility for educators, who are often not gamers themselves, to gain insight and understanding of adolescent gamers' sophisticated learning and community connections. This paper offers examples of gamers' complex and interconnected learning and draws on learning theories to reveal the ways educators can and should value what is organically emerging in sites beyond schools.

We begin by situating the study in a complexity science framework, then move to the ways in which Deleuze and Guattari's (1987) rhizome metaphor supplements our thinking about complex systems, providing a more comprehensive stance from which to understand gaming and learning communities. We then provide examples that there is "no fixed course" in gaming, and that our participants actively blur the boundaries of the following traditional identity categories: producer/consumer, teacher/learner, and individual/collective.

Background: Gamers' learning understood over time

Over the past four years we have developed relationships with eleven adolescent participants that allow us, as educational researchers, to build in-depth understandings of the learning situated within videogaming contexts and communities (Sanford & Madill, 2007; Sanford & Hopper, 2009; Merkel & Sanford, in press). These multiple media tools, online sites, and cyber and off-line communities enable our participants to immerse themselves in worlds that are often unknown to those of us for whom multi-platform online worlds are relatively uncharted[1]. Our original questions regarding video games, literacy and the gender implications and issues with/in gaming required that we probe into what youth are *actually learning and doing* in relation to video games.

However, through monthly gaming sessions and observations, individual interviews and group discussions, we have, over time and by providing supported conversational spaces with our participants, shifted our interview questions to acknowledge the complexity of the gamers' uses and knowledge of video games, which is integrally intertwined with their knowledge of internet sites, blogs, Facebook, YouTube, music, graphics, Machinima, and various other recent technologies. Jenson, Taylor, and de Castell (2011) acknowledge this shift when they wrote about their experiences having created an educational video game and they describe how they shifted their focus from content and production as evidence of learning, to process and engagement as learning: "we are shifting the focus here from 'figuring out what people know' (e.g. assessment) and asking something more like, 'what did you experience'" (p. 30). The challenge for educators is to acknowledge the value in these intertwined, gradually emerging sites of knowing, and to shift from the focus on evidence and proof of learning—to notice and observe the process of learning. As the cultural importance of interactive media grows, it becomes more important for those working in the field of education to learn about these powerful interactive and immersive worlds. This research paper suggests ways that educators can value the postmodern learners' process of consuming and producing simultaneously.

Theoretical Framework: Complexity as Rhizomatic

In a recent editorial, de Castell (2011) argues that, "games studies, specifically studies of game-based learning, can help to *contest* commonly-received notions of what counts as 'knowledge,' 'truth,' 'facts' and 'evidence.' More and more, social practices at work, home, play and school, that have enjoyed relative stability and 'certainty' until just decades ago, are being re-mediated by technologies, which fundamentally displace the (deceptively) monological authority of text" (p. 19-20).

To unfamiliar eyes, video game playing may appear random, obsessive, and solitary; however, close examination reveals planning, problem solving, ingenuity, time commitment, engagement, and social collaboration and networking. Video gaming and its connected cultures birth sophisticated systems and consequently, powerful and meaningful learning. In the first issue of *Complicity: An International Journal of Complexity and Education,* editors Davis, Phelps and Wells (2004) comment:

> "In brief, complexity is concerned with non-linear dynamics, emergence and self-organization. It might be defined as a formal attempt to explore how simple and sometimes non-purposive components in a system can self-organize, emerge or evolve into coherent, purposive and complex wholes"
>
> Davis, Phelps & Wells, p. 1 (2004)

Both computer science and games have been integral models for complexity thinking in the past (Holland, 1998; Kauffman, 1992; Waldrop, 1992), and now this mode of thinking about the world is currently being explored in the fields of education and curriculum. Davis & Simmt (2003) purport that complexity is "the science of learning systems" (p. 137), so it seems like a natural fit for theorists to explain learning communities using elements of complexity, but also to try to grasp elements of complexity by observing the learning communities in which we all are situated/engaged/immersed (Sanford & Hopper, 2009; Johnson, 2001; Salen, 2008; Salen & Zimmerman, 2004; Merkel & Sanford, in press).

The study of complex systems is increasingly being taken up as a lens through which to understand learning in an integrative, ecological and interdisciplinary way (e.g., Barab, et al. 1999; Collins & Clarke 2008; Davis & Simmt, 2003; Davis & Sumara 2006; Doll 1993; Doll, 2008; Davis, Sumara & Luce-Kapler, 2008). Working with our participants and observing the ways in which they learn with/in video game communities has demanded that we consider new theoretical frameworks with which to consider the emergent and often unpredictable learning observed. Complexity thinking as an "*inter-theory"* invites a kaleidoscopic look at phenomena; that is, a looking, a reflecting, a shifting and a looking again many times over.

Davis & Simmt (2003) further developed the definition of complexity by explaining that "*learning* is understood in terms of the adaptive behaviors of phenomena that arise in the interactions of multiple agents" (p. 137, italics in original). Both adaption and emergence are

integral to such learning. Adaption indicates that a complex system continuously assesses and shifts its own structure to fit the needs of the whole and in response to new stimuli (e.g., more or different agents, different environment, etc.). Though a loose definition for the purposes of this paper, emergence involves the interaction and dynamics between "players" in the system that creates a new, different and often unpredicted system, "much coming from little" (Holland, 1998, p. 1). In other (and more familiar) words, the whole is greater than the sum of the parts. The "whole" is entirely contingent on not only the agents within the system, but also the relationship between the agents: it is "the difference that makes the difference", as Bateson (1972) would say. As the system, through its processes and its products, is created and maintained by the non-linear relationships of its agents, there seems to be a significant lack of hierarchal stress and influence. Eco-pedagogist David Jardine (1998) suggests that at any time a new "centre" can manifest and the other agents in the system will re-arrange according to this, albeit temporary, centre. Thus, in a complex system the locus of control is ever shifting and being negotiated according to the system at present. Davis & Sumara (2005) explain that a complex adaptive system operates in a state of decentralized control. The concept of decentralized control troubles the taken-for-granted hierarchal dynamics of learning in school, wherein the teacher governs the class and often hopes to replicate knowledge in the conventional transmission model. In emergent learning systems, "the phenomenon at the cent[re] of each collective is not a teacher or a student, but the collective phenomena of shared insight" (Davis & Simmt, 2003, p. 153).

Further, and in regards to videogames, Sanford & Hopper (2009) explain the ways in which players adapt the commercial game *Halo* in order to facilitate a multi-player game with an online feel in an offline environment:

> "The emergent decentralized control allowed for local understandings and interpretations to be generated in the specific context, therefore the game outcomes cannot be completely predetermined by the game developers, but come to be increasingly controlled by the players themselves"
>
> Sanford & Hopper, p. 5 (2009)

The participants transform the purposes and rules set by game designers, but also by the other players as they self-organize, changing the context and environment within which they play.

The young people we have observed in videogame play are active participants in their learning, exploring and taking on of multiple roles as fits the context. *Participatory culture* (Jenkins, 2006) represents the 'active and circular' shifting of roles individuals take in the consumption and creation of media content in this flow. Furthermore, as Jenkins argues, the rules that once dominated the media relationship, namely the top down transmission from producer to consumer, from game developer to game player, and from teacher to student are no longer entirely valid. Consumers are now having significant influence on media content itself through their simultaneous participation and consumption among the diverse technological landscape of media platforms.

'Rhizomatic' as a Metaphor for Learning

As educators and researchers who have been formally schooled in Eurocentric traditional contexts, we have learned through this research to anticipate one strong theme to arise when interviewing the adolescents with whom we work: "There is no fixed course" (Darren, study participant). As we have tried to make sense of the complex ways in which these players learn/teach/play in videogame worlds, we ask questions that might help us to understand how they identify in these worlds. The answer is often the same: it depends on the person and context. What has become very apparent is that these young people are participating in convergence culture, as defined by Henry Jenkins (2006):

> "Convergence does not depend on any specific delivery mechanism. Rather, convergence represents a paradigm shift – a move from medium-specific content toward content that flows across multiple media channels, toward the increased interdependence of communication systems, toward multiple ways of accessing media content, and toward ever more complex relations between top-down corporate media and bottom-up participatory culture."
>
> Jenkins, p. 243 (2006)

We propose that a rhizomatic understanding of learning and knowing is an extension/incorporation of complexity science and as such helps to flesh out understandings of emergent decentralized control, an element integral to complex systems.

The rhizomatic model of learning is held in sharp contrast to arboreal conceptions of knowledge that posit teachers as experts drawing on a unified canon that they have defined and controlled:

> "In the case of the child, gestural, mimetic, ludic, and other semiotic systems regain their freedom and extricate themselves from the "tracing", that is, from the dominant competence of the teacher's language - a microscopic event upsets the local balance of power (p.16)….Unlike the tree, the rhizome is not the object of reproduction (p. 23) […] rather, a rhizome ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances….A semiotic chain is like a tuber agglomerating very diverse acts, not only linguistic, but also perceptive, mimetic, gestural, and cognitive."
>
> Deleuze and Guattari, p. 8 (1987)

The metaphor of a rhizome with "multiple points of entry" stretching in multiple directions with multiple points of both affinity and separation fits well with our observations of our participants: some choose to be active on forum sites, on youtube.com, or online with people across the globe; some choose puzzle games, some first person shooters, some long project-style games with an involved back story; some create machinima, some video themselves playing as a reflective tool, some create their own videogames. We observe students working individually or in smaller groups in diverse acts, taking up a variety of media within communities that come together with an interest in video games that is broad and diverse in scope. In these "underground"

communities (underground, not unlike rhizomes) participants experience the "freedom [to] extricate themselves from the 'tracing'" and explore without risk a variety of mediums in order to become more capable in the community. They therefore begin to try on different "roles", moving fluidly in relationships, challenging pre-conceived notions of the wider community regarding the identities of the individuals in these gaming worlds (e.g., adolescent as student, consumer, isolated individual).

When we, as researchers, ask for a definitive answer to explain the identity of "gamers," we cease to recognize the complex and non-linear dynamics of the group with which we work. When we, as teachers, ask for the reproduction of our knowing and for students to be students only, we cease to recognize the multiplicity of expertise and identities explored outside the classroom: "The tree imposes the verb 'to be' but the fabric of the rhizome is the conjunction, 'and…and…and…' This conjunction carries enough force to shake and uproot the verb 'to be'"(Deleuze & Guattari, 1987, p. 27). Now, we wish to call into question the verb "to be" and demonstrate how the participants we work with engage in not only a multiplicity of media connected to video games, but also a multiplicity of "being": that is, how their active participation blurs the lines of producer and consumer, teacher and student, individual and collective.

The rhizomatic metaphor helps examine the process of how these youth belong to a digital culture that creates knowledge layered with a range of meaning-making tools and experiences, enabling postmodern relationships between ideas and concepts, and critical and creative thinking to develop. As one gamer participant, Darren, articulates in the following blog communication, "*there is no fixed course"*; rather, there are multiple ways of entering, participating and identifying with/in gaming and digital media. Since this blog communication between Darren and one of our researchers we have developed greater awareness of the extensive rhizomatic (Delueze & Guattari, 1980) worlds inhabited by our participants, where knowledge is negotiated and the learning experience is a social as well as personal knowledge creation process with shifting goals and constantly negotiated parameters. In this particular communication the researcher asked Darren questions about gender and gaming and his preferences of gaming partners.

> *January 9, 2009 11:11 PM*
> *Darren said...*
>
> *Most of the games I find they play are RPG type games like Fable, FTLC, Kingdom Hearts, etc. I think it can't really be defined by sex as to what the extent of a person's gaming [sic] can go to.*
>
> *Some guys (such as myself) are gaming [sic] freaks as in I spend an entire weekend playing them. While others can barely play any games! The same can be said for women. Ex: There is a woman who is the leader of my Guild in Guild Wars and she played the game for the entire time I was (A whole 13 hours)!*
>
> *I can't really say exactly how the reactions differ exactly between men and women. The exact amount of my female friends that play video games is a mystery to me; I can list only 5 off the top of my head.*

> *January 11, 2009 3:49 PM*
> *Darren said...*
>
> *I really don't have a preference as to playing games online or with someone, there are advantages to both! Advantage to playing with someone would be you could show them exactly how things are done and it can give your gaming experience a different meaning.*
>
> *To play online also has it advantages such as if you play online there is no limit as to how many people you are playing with! Such as in Guild Wars were you play with hundreds of thousands of people all at once!*
>
> *January 20, 2009 3:17 PM*
> *Darren said...*
>
> *That's hard to answer, it all depends on who its with, if I like them or not, the mood we are both in, etc...* ***There is no fixed course.*** *(italics for emphasis).*

Darren begins his post by categorizing games girls he knows play, likely because the question asked him to consider how males and females play differently, but he is quick to disrupt that notion, draws on his experience and articulates that males and females should not be considered binary when viewed as gamers. Through the lens of gamers, males and females can both be successful and context is critical to consider. Darren's experiences and knowledge about gaming allow him a critical perspective of the rhizomatic culture of gender and gaming that is rarely considered by researchers or educators. Darren also acknowledges the ebb and flow of social possibilities when gaming and explains that one answer to who he prefers to game with and how in plays in a given game is impossible: there are so many rhizomatic root systems to gaming that to simplify his gaming preferences or others' would undermine the complexity of his experiences.

Rhizomatic Learning: Producer/Consumer as Fluid and Negotiated

Some preconceptions about video gamers are of isolated, addicted males who are drawn to or passively consume violent images through the low-culture of video games. Yet, even the less simplistic acknowledgement that gamers are not all passive consumers does not do justice to the complex realities of gamers and the multi-media communities in which they participate.

The rhizomatic phenomena that we have observed in gaming are manifested in ways that make it difficult to see who the consumers and producers are, as the gamers we work with are constantly creating, distributing and modifying their own games and game-related literacies. Several participants host their own blog and forum sites, video-capture their game play and distribute it

via youtube.com as models for others to critique and/or mimic, as Darren demonstrates in the following blog thread:

> *January 9, 2009 9:13 AM*
> *Darren said...*
>
> *Actually when I shot that video it just...happened! We were playing the game and I said, "Hey, you got a digital camera?" she said yes so I went and grabbed it and then just shot the video. No planning or anything. She actually isn't the friend I want to bring [to our video game research session] but she said she would come if she was free.*
>
> *Thanks about the blog, I've actually been working on it since the first gaming group but alas, no one ever posts on it. I've been advertising it on forum websites I'm on... Hopefully I can get some other people to start posting! I'm going to make the blog public so that anyone can post even if they don't have a blogger account.*

Some of the gamer participants create their own games for others to play either locally or online (see Sanford & Madill, 2007; Merkel & Sanford, in press). Many are involved as members of guilds and clans in MMORPG (massively multiplayer online role-playing games), the most popular being *Guild Wars* and *World of Warcraft.*

One of the most demonstrative examples of this blurring between producer and consumer, however, is the participation in machinima. Machinima refers to "the making of animated movies in real time through the use of computer game technology" (Lowood, 2005, p. 10)(see machinima.com for examples). We, the researchers, learned about machinima when three of our participants were setting up a meeting at one of their houses in order to work on their collaborative machinima movie. Scott, Mike and Nolan were writing a script for a plot that would match the action portrayed in a previously recorded game of Halo (recorded via screen capture). After they finish the script, they act out/speak and record the scripts to lay over the videos of *Halo* play, producing new storylines for the public to consume. These new movies are uploaded onto youtube.com, machinima.com, or other social online platforms. This fluid shift between gamer, artist, producer, and consumer emerges from their knowledge, creativity, and a freedom of contributing to cultures, such as machinima, Youtube, or more specific cultures of family and friends. This rhizomatic learning is challenging to observe and makes identifying 'truth(s)' intangible.

"The history of machinima illustrates a number of themes in the appropriation of game technology to create a new narrative, even artistic medium […such] as technologies of modification, subversion, and community-developed content" (Lowood, 2005, p. 15). The art of machinima is not a novel endeavor in game studies and gaming culture; however, for educators and educational researchers it challenges preconceived notions of gamers as lacking creativity, social etiquette, and insight into societal or cultural reality. Lowood (2005), in his article *Real time performance: Machinima and game studies,* introduces the concept of "player as performer", highlighting the act(ing) of machinima, producing new narratives that are available for and dependent on online consumers. He uses the term "extroverted play" in his description of

this act(ing), which turns the stereotype of insular and introverted gamer on its head. Of our participants there are very few an outsider would call "introverted", except perhaps Mike, one of the machinimartists[2] in our group, who is a seemingly private individual and yet is a frequent producer and performer in online public spheres.

Our participants who engage in machinima disrupt traditional definitions of literacies, such as reading and writing, and stereotypes of adolescent video game players as passive consumers. Katie Salen and Eric Zimmerman (2004) write about "player-as-producer" to illustrate the subversive and "transformative" play that occurs in these "open spaces". It has become apparent how machinima as a medium exemplifies this kind of manipulative play, taking a screen capture of play and writing over it a new plot, script, narrative and character, then publishing it for re-consumption. We also see how game developers are continuously finding innovative ways to encourage the "player-as-producer" to engage within game worlds. These games might be defined as "open systems":

> "When game designers frame games as open systems and take into account the potential for emergent cultural effects, games can be specifically crafted to produce unexpected forms of play…Designs for open system games include conditions that let players affect the games *as producers*- of new game worlds, stories, and characters. Open system games, in other words, are designed to be manipulated and modified by the people who purchase and play them."
>
> Salen and Zimmerman, p. 539 (2004)

Below Scott explains some of the ways players-as-producers engage in open systems, beginning with role-playing games wherein the player's choices affect the narrative and consequently the game play with other online players:

> *Some games that are out now-a-days, especially [game producers] like Bioware - they are a developer of video games, they have video games, they are role playing games that have the responsibility of taking care of your character, and saving the world and making all sorts of dialogue choices that would affect the kind of character that you evolve as, so you have characters that, they show a meter, that shows how evil you are, how good you are and what kind of behaviour you have*.
>
> (Scott, participant)

He then goes on to explain how players modify the game worlds in which they play, altering the game completely. These new worlds and contents can be published and shared with other players locally and globally:

> *Yes, well, … some people refer to them as mods as well; it depends on what game you are using, one example of that would be the game Oblivion by Bayside Studios. You could, on the PC version, you could actually download a game editor where you could create your own quests and create your own content, you could actually build the models for your own weapons and then put them into the*

> *game and use them and lots of people spend a lot of time working on those and it was actually...it was really good....To some it's expressing their own creativity like what I was talking about before with being able to create your own mods and some games now there are map editors, which is neat and you can create your own levels to be able to show to other people, sometimes that is how people are being creative.*

As Scott explains this process, it becomes very clear why Squire (2008) might describe these open game systems as "possibility spaces":

> "Players learn the rules of the system, using them as a backdrop to play off of, a context to perform within, rather than as a stable system of meaning that they're "inculcated" with. The specific meanings of any play experience are negotiated within interpretive communities"
>
> Squire, p. 178 (2008)

These open spaces, backdrops, allow for creativity, artistry, and empowerment; They demand an active participation and decision making, and in the course of playing the participants take up roles of both producer and consumer with fluidity that is both emergent and negotiated.

Rhizomatic Learning: Teacher/Student, No Beginning, Mutable goals

Although video gamers are often assumed to be simple consumers of an ever-growing business industry, a closer examination of video gamers' cultures reveals a much more active and productive participation and co-creation as described above. In order to engage as producers there needs to be a collective or community with whom they can share. The collective provides a space that "acknowledges learning and doing as part of all activity, naturally arising through participation as part of the lived-in world" (Barab, Cherkes-Julkowski, Swenson, Garrett, Shaw, & Young, 1999). These participants, individuals belonging to a collective, contribute to others' knowing and skills while they continue to develop their own in order to continually engage in the gaming community and re-form their negotiated and contextual identity. In other words, sometimes they are experts and sometimes they are novices -- these roles continually converge and intersect as collectives shape and reshape their community. `

Barab et al. (1999) describe the intertwining of expert and novice roles as

> "establishing the appropriate field conditions or connecting the learner into a system (a set of relations) through participation (e.g. as part of a community of practice) in the service of an intention. The type of learning that we are advocating cannot be handed to the learner wholecloth but develops itself through dynamic activity (participation) as part of a system as a whole"
>
> Barab, p. 350 (1999)

In our videogame research we have observed numerous occasions where the participants' novice personas overlap with that of their expert persona. Much like our earlier observations of gamers teaching younger gamers how to create a video game (Sanford & Madill, 2007), in which we note how the adolescents negotiated their role of expert with their peers, the following scenario describes the convergence of 'expert' and 'novice' roles between the adolescent participants.

> *The scene in the computer lab is, upon first sight, one of chaos: loud blaring music and sounds overlapping each other; one large screen, numerous computer screens, and three other televisions face toward the centre of the room; the lighting is dimmed, food is strewn over the centre table, and adolescents are scattered around the room, some sitting, some standing, and some exhibiting their skills on the Dance Dance Revolution (DDR) mats or Wii remotes. On closer examination, a group of three gamers sit beside each other at separate computers and the middle gamer leans back and forth from their screens to his own. He points to his peer's screen and his peer then reacts by touching the keyboard. There appears to be random dialogue, short sentences, talking toward the monitors, and some pointing. The middle gamer, Scott, is teaching the other two how to play EVE Online (http://www.eveonline.com/). It is the first time playing this particular game for the other two players who sit on either side of Scott, 'the expert'. Scott is obviously an experienced EVE player and he spends over an hour instructing and playing this online game with the two novices.*
>
> (Field notes, 2009)

Gee (2007) used the term 'authentic professional' to describe how gamers draw upon their in-game expertise:

> "Authentic professionals are people who have special knowledge and distinctive values tied to specific skills gained through a good deal of effort and experience. They do what they do because they are committed to an identity in which their skills and the knowledge that generates them are seen as valuable and significant."
>
> Gee, p. 67 (2007)

This particular game (EVE) has a complicated back-story and structure (i.e. races, organizations, alliances, scientific articles, and various short stories, never mind a player's guide) that one must understand in order to play. As an 'authentic professional', Scott had special knowledge gained from effort and experience with the game, and his expertise was valued by the other two gamers who were keen to learn. As the session progressed, the shifts between novice and expert or 'authentic professional' became blurred and fluid as the novices gained skill during the gaming tutorial experience. Through other gaming sessions these players negotiated novice and expert roles as they shared learning and experiences from the game play.

Another example of the fluidity of teacher/student or novice/expert was demonstrated when a participant invited one of the researchers to play the online game *Guild Wars* (http://www.guildwars.com/). Two adolescent gamers and the researcher logged in and both gamers began instructing the researcher how to create a character and what kind of settings to choose for game play. The researcher who was already in a position of searching for 'ways of knowing' by observing the gamers, was placed in a further position of 'not knowing' but viewed as having the potential of becoming 'knowing' alongside the guidance of two gamers. The welcoming nature of this experience reveals how possible 'knowing' is as part of this gaming culture: the point is not to keep novices isolated or powerless, but to engage 'knowers with interest or willingness' and participate with them in collaboration. Which was further evidenced in their invitation to the novice gamer/researcher to be sure to locate them within the online game so that further game play together could be experienced.

One of the ways the teacher/student roles were blurred and negotiated was when one of the gamers sincerely suggested to the researcher that she might want to put on the 'language controls', therefore protecting her from bad language used by online players. In the same way, this teacher-as-protector role was not evident in the unspoken gendered appearances of the avatars in suggestive clothing and one of the gamers acknowledged that he liked playing as a female character because he liked watching the avatar. The positioning of power and ways of knowing were negotiated and shared.

Rhizomatic Learning: Individual/Community--Individual in collective as collection of individuals

Complexity theory enables a closer examination of the shifts, overlaps, and transitions between individuals and the collectives in which they come together. We are never only an individual or a member of a collective. Influenced by each other, individuals and communities are created, interact, shape and reshape. Video gamers' cultures can be understood as a "collective of dynamic systems" (Davis, Sumara, & Luce-Kapler, 2008, p. 77) in which each individual is involved but the culture cannot be reduced to one person, nor can the individual be dismissed as s/he is involved with other systems; they can, however, "comprise and surpass collectives of others and the systems change again" (Davis, Sumara, & Luce-Kapler, 2008, p. 77) just as a generation of adolescents can become more technologically savvy than their parent generation and positions of power and knowing shift. As Barab et al (1999) comment:

> "Although individuals have input into their surrounding communities of practice, the community of practice itself comes with the drawing force of a macrostructure…However, no community of practice commands full or final authority. Individuals will find themselves in a variety of communities. Some learners will extend themselves beyond the usual constraints to create innovative dynamics within different systems of a broader and perhaps less widely acknowledge context"
>
> Barab, et al,p. 370 (1999)

Our ongoing research community has been, over the past four years, comprised of a group of eleven adolescents (usually between eight and ten are present at each research session), a researcher, two project managers, and, at various times, eight research assistants – these roles become increasingly fluid as the research project progresses. At each video game session with the participants, there are focus group sessions, gameplay time, individual interviews, and informal tutorials (given by the participants to the researchers). Every session includes snacks. In the beginning of the research project, several of the participants were dropped off by their parents, but as the youth have grown up, they generally arrive on their own.

What was once the campus computer lab has been transformed by research assistants into a gameplay space (bringing in TV monitors; LCD projectors; consoles, including PS3, Xbox 360, Wii; uploading online games, such as *Guild Wars*, *EVE Online*; moving furniture; laying out veggie platters, chips, and juice), participants begin to arrive.

> *Hey, Darren, great to see you again, how are you doing? Are you still working at the same place? How was your youth ambassador meeting last month?*
>
> *Darren pauses on his way to check out a game, chatting about his experiences, talking about his plans after graduation, asking if we have managed to get the latest game he requested for this session. Shortly after, two others arrive and after a brief greeting, head for the stack of games to see what we've brought this time.*
>
> *Is Mike coming this time?*
> *I don't think so, he worked all night and slept in.*
> *How about Michelle?*
> *Yea, she's on the bus now, she just texted me to say she'll be late.*
>
> *By this time eight participants have shown up and selected a game they want to play.*
> *As we watch them come in, greet them, ask questions about their gaming, school, etc., we see them casually head into the room and find playing partners, most often different from the people they came with. On this particular day, some choose Halo 3/Call of Duty 4, others continue to be drawn to Rock Band, and one participant wants to show us his latest video game creation. They play for a while and then drift over to another game, invite someone who was watching to take up the controllers, move from a three- to four-participant game or back again. They sometimes negotiate spaces verbally but at other times the changes are made wordlessly. And although the group came together at the request of the researcher, drawn from different schools and communities across the city, there has never been a conflict or disrespectful interaction amongst any of the youth.*
>
> *After a while, we invite the participants to join us at the round table (where the snacks are located) to talk with us. In early sessions, we had lists of questions ready to ask the participants, but we soon found that rarely were these questions useful. Although the participants were patient and willing to try to answer our*

> *questions, they seemed to limit rather than support the conversation. We then began to ask more general questions such as,*
>
> *'What have you been doing in the past month' 'What games are you playing?' 'How do you like them?' We have noted that these questions are considerably more open-ended and inviting of responses than earlier questions we posed, such as 'What literacy learning have you noticed as you played that game?' 'Do you read the instructions before you play the game?'*

From these open-ended questions arise conversations that could not be anticipated; participants take turns opening up the chat, mentioning a game they have tried out, read about, or talked with friends about. There are often responses that open up other ideas and conversation continues. Although we have requested that they take turns in the conversation so we can transcribe it later, there is often considerable overlapping and enthusiastic talk happening at the same time. These conversations lead to the sharing of blog sites, YouTube posts, demonstrations of games, and calling up previews of upcoming games on the internet. They ask each other questions as often as we ask questions, wanting to get others' opinions, advice about a game or how to proceed in a game, asking about new developments and terminology they haven't heard before. In this way they are accessing collective knowledge and broadening their own individual understandings and creating social capital for use in other communities to which they belong. As John comments, *I never get to play … I never have time, so that's why I come here, wanna hear what you guys are talking about, and other than with Mike, he plays Xbox games, the only time I get to play is here*. It is through this shared knowledge that community is created and sustained over time and changing membership. The rhizomatic nature of the sharing and learning draws from other spaces and places of learning and continually shapes and reshapes this one, recognizing that 'there is no fixed course'.

The recognition given to the individual members of the community, by the researchers and other youth, is empowering for them. They come to see that others listen to and value their knowledge, and recognize that they have an important place in the community. There is no 'leader' in this community, but space and attention is given to whoever is speaking at the moment. Intent listening signals interest, respect, and learning – facilitated by the research team but enabled by the collective knowledge of the group as they bring it to the round table. Just as a rhizomatic plant does not have boundaries or a centered beginning, but individual nodes that evolve as is possible in its surroundings, so too did this video game group evolve as a node, bringing together multiple personalities, experiences, and perspectives and evolved into a community that outlived the initial goal of simple observations and interviews. The group has become its own evolved node that continues to connect and overlap with many of the multi-faceted, fluid developments and experiences in which the gamers engage.

Following the focus group session, which concludes when conversation lulls, or when there are too many longing looks at the games, they all disperse to play further and to show us some of the game dimensions they referred to earlier. This aspect of the research session is also important for both our growing understanding and for the ongoing success of the collective. Individually, the participants can demonstrate their knowledge, skills, and accomplishments. Long conversations ensue between individuals and researchers as they share their latest knowledge and interest –

watching a YouTube clip they have recently found that makes them laugh, describing a new dimension to the game they have discovered, sharing a game they have created at home or in their Instructional Technology class at school. Often other participants listen in, either because they are in close proximity or because they are curious and move to hear better.

The conversation below exemplifies the individual and collective knowledge that develops and morphs:

> *Nolan: Yeah. The person who plays the main character, not exactly the best voice actor out there…*
> *Scott: I was more expecting it to have more of a voice like the guy from Star Wars Force Unleashed.*
> *Andrew: I don't know, have any of you ever played Castle Mania: Symphony of the Night?*
> *Some: Yes*
> *Andrew: They've got the best voice actor EVER.*
> *Mike: I know. It's like the best game ever.*
> *Andrew: People love their voice actors.*
> *Nolan: One of my favourite voice actors, Nolan Nord, he's done God knows how many games, he did a couple movies, some anime movies, he's an actor also, but he played Nathan Drake in Uncharted, he played the new Prince of Persia, and he played, um, I can't remember, but he's in a lot of games. You can look him up on Wikipedia.*

These video game research sessions are aptly described by complexity theory as characterized by emergent decentralized control, where leadership, knowledge, and direction are shared throughout the group rhizomatically. Shared and individual goals of sharing knowledge, performing skills, and learning more, are achieved through the individual-collective nature of the sessions. Even as the researchers engage in the discussion their curiosity and interest merge with the group and the knowing and sharing continue and the dialogue ebbs and flows because of the individuals.

> *Researcher A: What movies was he in?*
> *Nolan: Uh, the Hulk versus Wolverine? In the anime movie, he played Deadpool.*
> *Researcher B: How do you know that?*
> *Nolan: I looked it up in the credits.*
> *Researcher B: Can you recognize the voice from film to film?*
> *Nolan: Yeah, he's got a pretty unique voice.*
> *Researcher C: How does that ever start? Did you hear his voice, like, I know Jake, it's a great voice, but I'm not gonna go look up whose voice. So did you hear him in another one?*
> *Nolan: Yeah, when I was watching, I had heard about it that he played the new Prince of Persia and I like the voice actor it was really well done and uh, Mischa and one of my other friends told me to watch Hulk vs. Wolverine and he played Deadpool one of my favourite characters, and so…*

Mike: Does he do the same voice acting in Jake 2?
Nolan: Yeah.
Mike: Cool.

The gamers share their individual knowledge about voice acting and about particular games as a way of maintaining community. Even the positive feedback in the group is provided by another gamer and not researcher. The decentralized control and fluid questioning and sharing is distributed among the group. The natural ability of these gamers to participate comfortably in this type of community suggests that they are able to transfer this same ways of knowing from their other rhizomatic communities. As Jenkins (2006) suggests,

> "New forms of community are emerging, however, these new communities are defined through voluntary, temporary, and tactical affiliations, reaffirmed through common intellectual enterprises and emotional investments. Members may shift from one group to another as their interests and needs change, and they may belong to more than one community at the same time. These communities, however, are held together through the mutual production and reciprocal exchange of knowledge."
>
> Jenkins, p. 27 (2006)

As has been described, these gamer participants are involved in many communities of knowing and their membership within this particular research group also shifted over time with some members becoming co-presenters, and now asking to be co-researchers and writers.

Although communities are not necessarily located in close physical space, they are as important as they ever were to our success, survival, and happiness. We rely on community for support, recognition, and meaning in our lives. As Barab et al (1999) comment, "Being a community member entails being involved in a fundamental way within this dynamic, complexly ordered system, which is continually constituted and redefined by the actions of its members. The individual and the community constitute nested interactive systems, with individuals transforming, maintaining, and being co-opted by the community as they appropriate its practices" (p. 370).

Conclusion

When asked about how he defines himself, Scott responds: *Being a gamer is a way of expressing the way that I am, its not a part of me, playing video games is something that I enjoy, its not my life, it doesn't define me its just, it's a hobby*. The participants themselves trouble the broad stereotype and label of gamer, and through our conversations and relationships with them, we have begun to realize that there is no easy definition of what "gamers" do. In fact, it is a dangerous assumption wherein the multiple, often creative and innovative, ways in which young people are participating in games are neglected in the search to make sense of convergence culture.

Just as we need to examine our assumptions and beliefs about youth, different ways of engaging in the world, and possibilities afforded by new technologies, we also need to examine our discourse in relation to ideas and possibilities that did not exist a decade ago. While we have been accepting of discrete roles of 'producer' and 'consumer', for example, we need to continue to problematize what these terms mean to postmodern learners and poststructural notions. Through our research conversations with our participants, we have been made aware that these are not concepts that can be easily separated; indeed, our participants have shown repeatedly how they are both producers and consumers simultaneously. They live in-between the two, creating hybrid activities and understandings through engaging with the video game world. Similarly, they are both learners and teachers at the same time, and their discussions with each other and with us (the researchers) offer new and more complex ways to conceptualize learning. As our participants have engaged, individually and collectively, in sharing, shaping, and creating new knowledge, we have recognized the social nature of their learning that informs their individual activities that then reshapes their future collective encounters.

The interactivity of new and technologically sophisticated media such as video games allows participation in learning in very different and significantly powerful ways, encouraging and enabling a focus on process as well as product, and on production both as, and as well as, consumption. Our approach to research in these contexts allows for "the analysis of how learning such strategies takes place in different contexts and with different players; learning is not understood to flow unproblematically from the game as a text to the player, but to emerge from the interaction between various elements in the socio-cultural system" (Pelletier and Oliver, 2006, p. 339). It is important to think of 'educational applications' in new ways, ways that enable new types of learning situations to emerge. Educators need to avoid trying to squeeze new ways into old frameworks and to limit new learning because of traditional arboreal thinking and instead embrace rhizomatic ways of sharing knowledge and understandings, to encourage critiques, creations, and questions to emerge.

Clearly the need to learn how youth are engaging with interactive media/technology such as video games is paramount to being able to meet them in their places of learning and interest. As we have discovered over the past four years, those that are not immersed in the gaming culture need to learn how to ask better questions, make connections to the rich and powerful worlds of video games that engage our youth, draw upon new understandings to guide them forward in their learning, and create educational experiences that emulate the complex learning that happens through video games. We offer our developing research approach as one possibility for researchers and educators to consider as a way to further understandings of the changing ways of knowing that are purposefully and meaningfully being adopted and adapted by today's digital learners. As educators, and adults guiding the next generations as they immerse in and emerge from multiple, complex, digital communities, we have an opportunity to examine this cultural fluidity, engage in critical discussions about digital media and content, and to build relationships with young people who are involved in a multiplicity of ways in gaming. As we continue our work with young producers and consumers, teachers and learners in and of video games, we recognize and close with the thinking that each "gamer" identifies and participates in unique ways: *there is no fixed course*.

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[1]Prensky's (2001) metaphor of 'digital immigrant' versus 'digital native' has been taken up by many scholars to describe the idea of digital worlds uncharted by those who are generally a part of older generations. However, we purposefully steer clear of using these binary descriptions, cautious to use such loaded terms. Bayne and Ross (2007) set an excellent argument for the 'dangerous opposition' of Prensky's metaphor.

[2] Picard (2006) reports that in machinima communities those who produce are often called "machinimartists", a term which gives insight into the artistic and sophisticated possibility of this medium.