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Activity Theory: Consciousness and Virtual Identity

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The purpose of this paper is to revisit my own journey for identity in a virtual space. When I first wrote this paper, it was with the intention of using Cultural Historical Activity Theory (CHAT) as a framework to help explain my own experience. My goal was to apply CHAT principles to explain how identity is formed in virtual spaces during the International Society for Cultural and Activity Research (ISCAR) conference, where I presented my paper. Instead, my gracious discussant suggested the possibility that CHAT might not be the best framework for me to use. I left the conference somewhat discouraged; while my subject matter had been well received, the idea that something as seemingly simple as CHAT couldn't be applied to my research was disappointing. It just seemed to make the most sense to my work. In the weeks that followed, I read more about Situated Action and Legitimate Peripheral Participation but wasn't satisfied that they might influence the formation of identity in a virtual world.

It was only after I returned to *Context and Consciousness* (Nardi, 1996), that I realized the problem wasn't CHAT as a framework – it was my own poor explanation of my virtual world search for identity. The more I read what Nardi had to say about activity theory and consciousness, the more I realized I needed to revisit this paper through a different lens. As in my earlier writing, the first part of this paper will examine identity theory and how identity is formed, how community affiliations and activities impact our identity, and what happens to our identity (even if we remain anonymous) once we enter virtual spaces. This conversation will give way to an introduction of Cultural Historical Activity Theory (CHAT) and a conceptual framework for analyzing identity theory and activity, particularly in virtual environments.

Finally, implications for future research about how identity formation, visualization in virtual spaces, and our sense of self can impact our real-life identities will be discussed.

Activity and Identity in Virtual Worlds

In this section of the paper I will define the concepts of identity and activity, which serve as the conceptual framework for this exploration of how participation in activities where the user has an active interest affects identity in a virtual world. Identity development is primal factor in our human experience. Activity is where we either accept or decline our role within a community, developing our identity in the process. This acceptance or denial is based on our own cognition, our perceptions of self, and our identity within the community.

The Role of Identity

Identity is a means through which people care about and care for what is going on around them (Holland, Lachicotte, Skinner & Cain, 1998). For the purposes of this paper, identity theory is separated into two aspects: Self-identity and Social identity. Self-identity is how we perceive ourselves and social identity is how we see ourselves in the presence of others.

When we self-identify, we organize personality traits and behavioral tendencies that originate from either genetic features (traits) or as a result of the learning process (roles). Even these experiences are filtered through social constructs such as family dynamics, creating a sense of self that is based on personal choices over time. Identity is a self-cognition based on the acceptance of a role that is either self-determined, assigned by others, or more often a combination of both. These accepted roles determine behavior across a variety of situations (Stryker, 2007).

In contrast, social identity looks at how social constructs impact behavior. These norms are seen as an external pressure inducing the individual to behave in a certain way. If an

individual perceives that the community he identifies with supports him, he is more likely to have a greater affiliation because it benefits him. Someone who only marginally identifies with a particular community usually participates more from personal factors and isn't subject to the same group pressure. In either case, community identity is stronger when the affiliation is necessary or desirable to achieve a particular goal. Accountability to a community is also directly related to perceived benefit. These aspects of affiliation level, accountability and goals are particularly influential on behavior in anonymous settings, where behavior is viewed as more diagnostic of inner tendencies and can result in experimental behaviors (Smith, Terry & Hogg, 2007). Theoretically, if someone forms a deviant identity in an anonymous setting, it stands to reason that the identity (self-cognition) was already established but there was no suitable social construct to attach to it in order for a role to be established.

The Role of Activity

Identity theory suggests our sense of self and social purpose is a dynamic process enhanced by our participation in activities with others. It is this participation in community activity and the environment that activity occurs in, along with the tools and tasks associated with the activity, that cause our own cognition and self perception to develop and transition over time. The following sections detail the role activity, or participation in the shared actions within a community, plays in virtual worlds.

Identity, and Activity in a Virtual Space

As someone who worked as a curriculum designer for the online division of a university, I was used to working with interactive material on the Internet. When a colleague mentioned Second Life and its use in education, I was hesitant to take the time to learn yet another platform just to examine how effective it might be for our purposes. Rational by nature, the idea of

dressing like a fairy with wizards and dragons just didn't appeal to my common sense. My colleague assured me that Second Life was different. It was a role-play game designed by the residents, didn't have a medieval theme unless the inhabitants chose to make it that way, and I didn't have to become a wizard or reptile to participate. Unlike other virtual games where there is a clear objective, path to advanced standing and award attainment, Second Life is a world created by members. As such, it reflects the collective culture and value system of its inhabitants – good or bad. Boasting millions of members (with 50 to 70 thousand logged in at any one time), Second Life has become a model of social networking, allowing any number of activities (including education) to be conducted within its boundaries.

After weeks of nagging by my colleague, I finally decided to try Second Life over a three-day weekend. Just as described in Anderson (2004), I was completely immersed in this new environment. To say I didn't sleep or eat for three days is an understatement. The learning curve was short (as someone who was already technically savvy) and two years later, I am not only an experienced user, but also an entrepreneur and something of a subject-matter expert in Second Life usage.

The Nature of Virtual Worlds

When we mention the term “virtual world,” we can be describing any group action that occurs over the Internet. This can be anything from an anonymous special interest chat room to a three-dimensional virtual environment where a university uses the space for student interaction. Entry into a virtual space only requires a common interest and the ability to navigate the tools necessary to be able to contribute to the activity (Adler & Adler, 2008). There is a base understanding of technology that is a requirement to entry, which enables members to have a common foundation of interest from the beginning of their participation. This enables members

to view the environment through a similar lens, no matter what other interests they might share. In text-only environments such as chat rooms, identity is created through shared real-life experiences, as opposed to communal experiences within the environment.

Avatar Identity

The most significant event in my experience with Second Life was the process of choosing an identity. In order to enter Second Life, one must first choose a name and the basic appearance for an avatar (that member's three-dimensional digital representation). With a drop down list of surnames to choose from, the goal is to be able to find a first name-last name combination that creates the identity someone wants to be associated with long-term. Once an avatar is created, there is a "birth date" associated with the avatar and unless the account is cancelled, the name and the date are etched in stone. Since my goal was to go in and explore the environment, I chose a name combination that reflected how I wanted to be seen in this new world: Flameheart Sol.

Flameheart was assigned (by me) a "girl next door" avatar body. Having grown up on the East Coast in an Italian family with more than enough pasta on the dinner table, I had never come close to having a "girl next door" body. Flameheart became the embodiment of everything I wasn't in the physical world (my own measure of self-identity): She was tall, with green eyes and auburn hair. And she had a body to die for...I could buy clothes for her that I never could have worn in real life. I was in Heaven... until my colleague gently reminded me that Flameheart did not look like an educator. She suggested that I might want to "tone Flame down" a bit in order to be better accepted in the educational community (the reason I was in Second Life to begin with). At the same time, Flame was finding a social identity in activities that had little to do with education, forming an attachment to the activities that were defining her as something

other than an educator, such as involvement in live music promotion and building a boutique shopping mall. The only solution was to create another avatar.

As luck would have it, when I went to create a second avatar my real life last name was one of the choices available. Since I have a unique spelling for my first name, I was actually able to create an avatar with my real-life name (which negates the idea of being anonymous in a virtual space). This new avatar, Debe Wise, would be designated the account I hoped to log in with if I was going to engage in educational activities. I chose the same avatar body as I did for Flameheart, with more subdued features and wider hips. I also chose clothes that were more educator-acceptable. Standing next to each other, the two avatars looked related but clearly had different identities, both individually and socially (see figure 1).



Figure 1. Flameheart Sol and Debe Wise

We Are Who We Associate With

Debe the avatar was an educator; she attended the meetings that educators should attend to understand virtual world learning. She joined the communities an educator would be expected to join: The New Media Consortium, Real Life Education in Second Life, and other groups embracing constructivist learning in cyberspace (Beldarrain, 2006). Debe rarely logs in except to attend conferences and education meetings as an eager group participant, as opposed to a competitive researcher (Barreto & Ellemers, 2002). She hasn't been caught dancing at the clubs, doesn't belong to any groups with questionable charters (rules defining the interest, behaviors, and purpose of the group) and doesn't own anything that Sports Illustrated would consider a swimsuit. She was created to be the "real" me but in actuality, she isn't really me at all.

At the other extreme, Flameheart is a rock star. As the representation of someone who could remain completely anonymous, Flameheart was free to experiment with her identity. She was able to experiment socially, sexually and with her appearance in ways that Debe the avatar never could (Stryker, 2007). Just as Debe became firmly ensconced in the academic community, Flameheart became a prominent member of the live music community, ultimately owning enough land to build a successful virtual business as a live music promotions company called the House of Flames. Her affiliations included other musicians' communities, live performance groups and some crossover into education.

While Debe the avatar and Flameheart were both initially created by the same individual with a singular value system, moral compass and set of social conventions, over time each of these avatars developed a distinct "identity" based on the activities and communities they chose to affiliate with. In essence, they were the focus of their own activity worlds or systems, leading to a discussion of Cultural Historical Activity Theory.

Using CHAT as an Analytic Framework for Exploring Identity Formation

Cultural Historical Activity Theory has its roots in Russian psychological research, particularly the work of Lev Vygotsky (1896-1934) in the 1920's and 1930's. Vygotsky and his colleagues Luria and Leont'ev were proponents of the idea that humans didn't react directly with their environment. Rather, there was a three-part relationship where humans interacted with their environment through mediating artifacts or tools, such as language (Vygotsky, 1978). Through the continued work of Luria, Leont'ev and later Cole and Engeström, the activity model developed into more of a collective activity system based on three levels of motive, goals, and the conditions and tools at hand (Engeström, 2000). The theory proposes that it is through activity that identity is developed and constantly amended, depending on the tools, the community and the responses of others during the activity. This has a significant application in a virtual space, where everything is activity-based. In a virtual world, it is almost impossible to exist in a vacuum – interaction with others is a primary reason someone enters the environment. It is this very interaction with others within a group, how those participants respond to our contributions and how we are able to use those responses to move toward an outcome, that influences our identity and continuing membership in the community.

In this section of the paper, I will use CHAT to explore how both Debe the avatar and Flamehearts identities are enhanced and reinforced by their communities and the role those communities play in the objectives and goal attainment of each.

A Primer

Using Vygotsky's model, an individual activity system revolves around three components: the Subject, the Object, and the mediating Tools (see figure 2). There is also a process of Transformation that produces an Outcome.

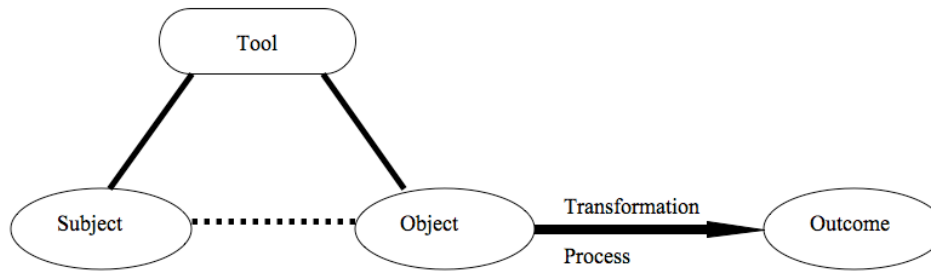


Figure 2. Vygotsky's Activity System (from Nardi, 1996)

In an activity system, there is a *subject* – the individual or sub-group whose agency is chosen as the point of view. Debe the curriculum designer, Debe the avatar and Flameheart are all subjects. The *object* refers to the problem space (or objective) each subject must direct their activity toward on the way to an *outcome* – the goal of the activity. For example, in the beginning Debe the curriculum designer (the real life person) acted as a Subject, with an Object (objective, problem space) of exploring a virtual environment with the intended Outcome of using Synthetic (virtual) worlds as a learning space. What enabled that process was the tool: Second Life. As a mediating environment (represented by the solid line, as opposed to the dashed line of human action), Second Life allowed Debe the curriculum designer to become Debe the avatar in order to complete the activity.

This seemed simple enough until I came across Engeström's model, which made things decidedly more complex (see figure 3). With this model, an activity begins with the same nucleus: Subject, Object, and Tool, but now takes into account the mediation of rules, community and the division of labor. In essence, we can see Vygotsky's model as the activity system of an individual who is personally developing an identity, and Engeström's model as the development of identity through the interaction with others.

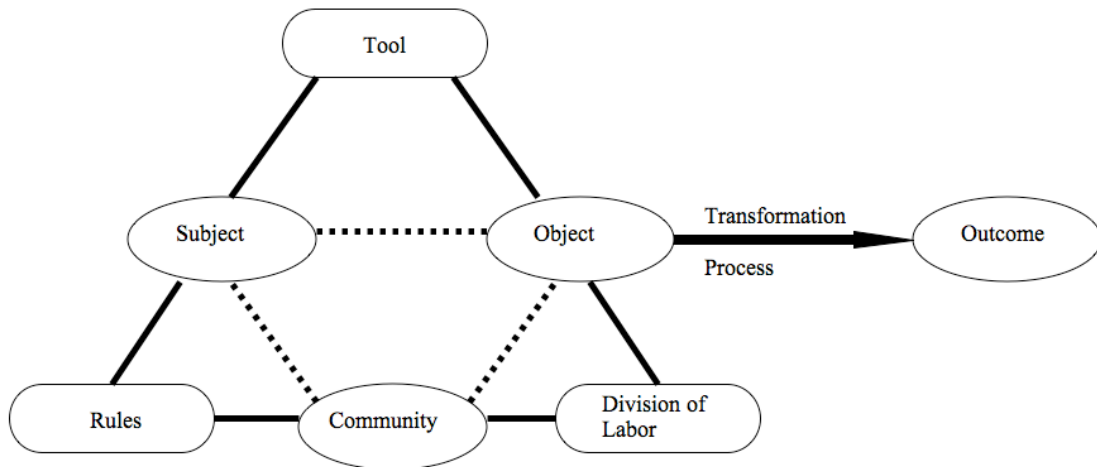


Figure 3. Engeström's Model of an Activity System

Using our earlier example of Debe the curriculum designer, we now have added the activities of others and additional mediation. Debe doesn't act alone in this activity system on her way to exploring virtual words as an educational space. She now has the Rules of the University and of Second Life mediating her activity. She also has joined the hundreds of other educators who have chosen the same outcome she has in creating an educator community. This community is where social interaction will take place, lectures will be attended, and professional courtesies will be extended. It is part of developing a social identity with other people (represented by the dashed lines). The division of labor represents who does what in moving the community toward the intended objective (in this case, exploring a virtual environment).

It makes sense then, if Engeström's model describes what happens when Debe the curriculum designer interacts within a community, that those interactions are also dynamic, changing constantly in response to the actions of other members of that group. This is where Debe's social identity is being constantly affirmed or disputed (just as in the physical world),

depending on feedback from other members of the community (discussed in more depth in a later section).

An Shared Model of Activity Systems

Vygotsky wasn't difficult to understand. Engeström took a little more time to grasp but seemed to make sense. But what happens when there are three subjects that are all interrelated? Each of the subjects introduced in this discussion – Debe the curriculum designer, Debe the Avatar and Flameheart the Second Life promoter have their own activity systems of identity formation (see figure 4). They are interrelated in that they all share aspects of a common identity (the primary identity at any one time can change depending on the activity). Each subject has it's own object, with an intended outcome. Each system can function independently of the others yet there have been times they have converged, when both avatars have been logged in at the same time (using multiple computers), with movements and conversations of both avatars happening simultaneously with people who didn't realize they were really the same person.

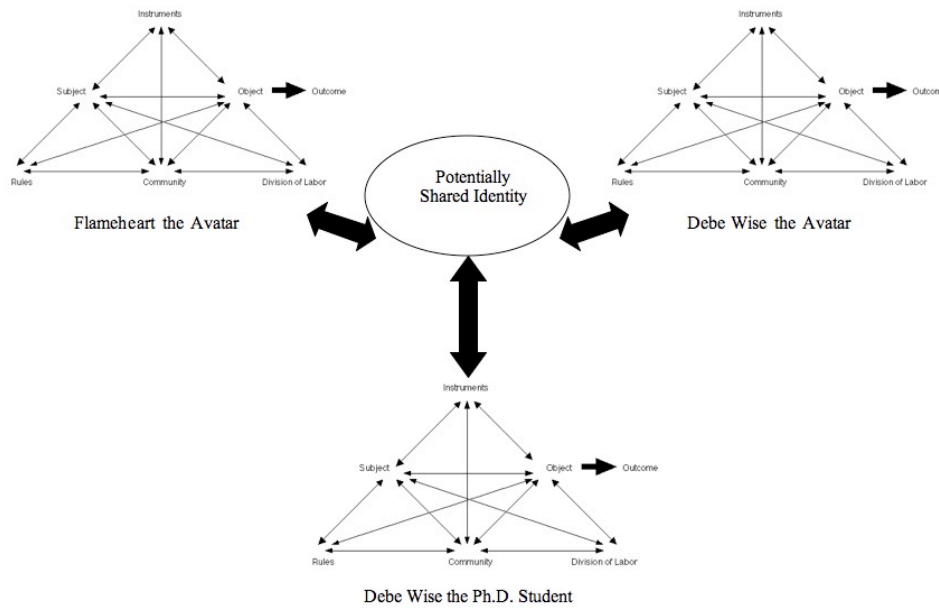


Figure 4. Shared Identity using Interrelated Activity Systems

As complicated as it seems, it is important to remember that each Subject has its own Objective and its own Outcome. What makes this all interesting is that the mediating tools are largely the same...it is the *meaning* that each subject attaches to the mediators that enables a different identity to be developed.

Analysis of Virtual Identity Using CHAT

While it might be easy to understand the activity system of Debe the curriculum developer, understanding the activity systems of two virtual Subjects, Debe the Educator/Avatar and Flameheart the Promoter/Avatar might be more abstract, as they are virtual...or are they?

Identity As An Outcome of Community

The very act of joining a group begins the process of identity formation. When an avatar joins a group, there is a group tag assigned to each group role and as soon as an avatar joins a group the appropriate tag appears above the avatar's head. The text on the tag is established by the group creator but can be anything from the name of the group to another descriptive term. For example, Debe started a group for University of Colorado Ph.D. students and identifies herself with "UColorado Ph.D. 2B" above her head as a group association tag. Unless an avatar changes their active group (which will change the tag), the tag will remain above their head as a banner of group identity.

Both Debe the avatar and Flameheart have an object: participation in the virtual world communities where they have formed and affiliation. They each have a distinct outcome – Debe wants to be a respected virtual world researcher and subject matter expert in virtual world identity formation and Flameheart wants to be a prominent virtual worlds events promoter with cross-over into real-life internet streaming. These identities were formed by how each subject viewed herself as well as the roles that were given to them by the communities they affiliated with.

Community Influence on Identity

As a member of a particular group, one has access to other members who might be more experienced not only in that group but also the virtual environment in general. With a similar community interest established, it is often easy to find others who are influential to newer members of the group, prompting interactions that enable newcomers to become old-timers in a short span of time (Cole, 1995). These "mentors" can often help in guiding behavior, group tools, and other aids for identity creation. The research of Barreto & Ellemers (2002) has shown

that people who highly identify with group membership are more motivated to favor their group and adhere to group norms, whatever the norm is for that group.

My colleague at the university acted as a mentor during Flameheart's early days in the virtual world. This professor had been participating in Second Life for six months when I joined and had accumulated the knowledge I needed in order to know where to find clothes, replacement skin (that looked more realistic than the default "girl next door" look) and also where to go to attend lessons on how to build, make jewelry and live a productive virtual life. My colleague also had a mastery of the "language" of virtual worlds: Acronyms such as LOL (laughing out loud), ROTFL (rolling on the floor laughing), how the use of upper case letters intimates yelling, etc. These text "tools" enable emotions to be communicated according to the norms of the group and give the impression the user is a mature member of the community (Roth, 2007). My apprenticeship with my mentor greatly influenced my choices and caused Flameheart to make many of the same choices she had made with her avatar (Rogoff, 1995). In a virtual world where all players can remain anonymous, this establishment of trust was based on a more personal shared situational interest. Flameheart, in turn, was the mentor for Debe the avatar, where many of Debe's choices in her desire to create an identity were based on the choices Flameheart had made.

How Tools Influence Virtual World Identity

What separates a virtual world such as Second Life from a text-based chat room is the ability to see and experience tools in three dimensions (discussed more in detail later). Debe the Second Life educator can attend any number of conferences on any number of virtual campuses by one click of a teleport button. In a pedagogical sense, Dickey (2003) considers the ability to teleport an "affordance;" a method by which a learning is delivered. In the world of activity

theory, these affordances are considered tools – aspects of the material world that are taken up into human action as modes of coordinating with the environment (Cole, 1995). The costs of attendance are no more than the expense of membership and an Internet connection. Flameheart is able to test her business model for a fraction of the cost of a real-world business because her land, her venues, media screens and everything else she needs to conduct a virtual life are just that – virtual. If Flame doesn't like the way a wall in a venue looks, she can change the color, texture, or even delete the wall entirely and start over because the ability to create, change, duplicate and delete is an affordance (tool) of the virtual environment (Dickey, 2005). According to Nardi (1995), these tools are mediators of the activity that enable Flameheart (the subject) to participate in a virtual live music community (the object) with the intention of becoming a virtual world events promoter (the outcome). The House of Flames has become something of a virtual world start-up because it is a legal entity in the real world while conducting all its business in the virtual world.

Division of Labor

Even in a virtual world, there is a division of labor as part of the activity system. Debe not only participates in educational conferences, she interacts with colleagues in Second Life and has acted as an assistant in the projects of other researchers. Debe has also been an instructor in a virtual environment. Flameheart, on the other hand, has collaborated extensively with performing musicians, builders and designers and has acted as the project manager for not only the House of Flames, but also the creation of an accredited university campus in Second Life.

Rules

Both Debe and Flameheart have affiliations with communities they identify with. In these communities, there is a group charter that describes the rules of behavior for participation in that

group. Second Life also has rules for membership, such as a code of conduct to respect the property and rights of others and to respect another's right to remain anonymous. Debe also has to agree to research guidelines for human subjects in virtual spaces and Flameheart chooses to run her business by the same code of ethics she holds for her real-life transactions. Because they both highly affiliate with their respective communities, they have adhered to group norms and have accepted the roles the groups have given them.

Visualization and a Sense of Self

As much as identity seems to be tied to environment and the roles external influences cause us to accept or decline, the "self" appears to be tied to a very private, internal consciousness where the awareness of processes and impulses deep within us create a personal perception relative to our active interests. How we see ourselves depends on our cognition of the pleasurable and painful, imagery and imagination, and the activities of the individual (Mead, 1925).

Self vs. Identity: Which comes first?

Identity creation in a virtual world is a psychological process encompassing three aspects: Tools, activity, and associations. Each of these has some basis in my own real-life experiences and has been either reinforced or contradicted by my virtual world experiences (Cole, 1995). As described earlier, my avatars' appearances were chosen based on what I envisioned as perfection, given the tools available to me. Interestingly enough, there are very few avatars of color in Second Life and very few people who deliberately create their avatars as overweight, handicapped or otherwise challenged. In the cases of my avatars, Debe looks more like me externally but Flameheart is the embodiment of who I am internally. Both Flameheart and Debe

have objectives to become notable in the circles in which they dwell. Debe initiates actions to participate (and be accepted) as part of the education community.

Flameheart however, can travel anonymously and while she has my own moral compass as a foundation for her actions, her experimentation with social activities in Second Life has been more risky than Debe's. As someone who was raised in an Italian Catholic household, there is only so far my own moral compass will allow Flameheart to stray but I have been able to bend some of my established social conventions in order to cultivate more accurate and enlightened opinions about the world around me in real life. I find that as a result of Flameheart's activities, I am less judgmental about the activities of others and more accepting of those whose personal moral compasses differ significantly from mine.

Is It Real or Is It Virtual?

Each activity system is a “virtual disturbance and innovation-producing machine” due to the contradictions that occur as influences from each identity work against the others. This creates a dynamic environment where activity and identity are often fluid, an intersection of individual, environment and activity over time, depending on which identity is the primary actor (Barab, Hay, & Yamagata-Lynch, 2001). On a concert night, there is no Debe the curriculum designer or Debe the avatar. It is Flameheart who is sitting at my home media studio directing the actions of security (US-based), the master of ceremonies (Australia), and the musicians (any number of countries). Flameheart has a global identity, which recently contradicted with real life. One Second Life musician who plays a guitar as the avatar Andy Glasgow is a German who works for Audi in real-life. Andy (both his Second Life and real life name) travels to the Denver area on occasion as part of a team that tests car endurance under different conditions (there are test centers all over the world). Andy has performed at the House of Flames for Flameheart but

here was the real-life Andy coming to Denver and was interested in meeting the real life Debe. Flameheart and Andy the guitar player had an established relationship in Second Life but Andy the Audi electrician and Debe the curriculum developer student had no such association.

Thankfully, the meeting was just as expected. Each of us had portrayed ourselves in the virtual space as an accurate representation of our real-life selves and we had a wonderful visit, attending two live music events while Andy was here. In a world where true personalities can be masked under the cloak of anonymity such is not always the case. In their research, Adler & Adler (2008) describe examples of misrepresentation and even robbery in real-life meetings between self-injuring participants from virtual chat rooms. Debe, Debe and Flameheart have resolved the contradictions of social conventions and moral choices after two years in a shared activity system, to the point where most of the people who work with Flameheart in Second Life know my real-life identity.

Initially, it was Debe the curriculum designer who exercised influence on the two Second Life avatars. Over time however, the activities of Flameheart have influenced the activities over the other two subjects. Debe in Second Life is a more confident educator, both because Flameheart was in the virtual world first and made most of the mistakes (like losing her clothes in public by clicking the wrong button), and because Flameheart's more liberal viewpoint was more accepting of those who were different than Debe's (Flameheart had to deal with musicians who chose to perform as vampires and space aliens). Flameheart also influenced my real-life personality. The ability to remove what I saw as a physical barrier enabled Flameheart to be the embodiment of my own personality, experimenting anonymously with the conservative social compass I was raised with. In some sense, this process has been similar to the resolution of a complex problem, where the solution had social, cultural and intellectual value for me (Jonassen,

2000). The result was a more enlightened world-view, which I have now adopted in real-life as a result (O'Toole, 1993). I have also changed physically in real life in response to the new confidence I have found as Flameheart. My hair color is closer to Flame's, my manner of dress is more similar and I have lost 35 pounds since becoming Flameheart. People who know about Flameheart call me Flame in real life; my license plates even say FLMEHRT. The identities that once were so separated by values and convention have now moved toward one, ubiquitous identity shared by all.

What has made this interrelated activity and shared identity possible is the ability to *visualize* myself as each of the subjects. My ability to participate in activities in social networks, interact with the tools that are afforded by a virtual world, and conduct myself as an individual in three dimensions is what separates the transformational experience I have had from someone who participates in a text-based chat room (Cole, 1995). Being able to visualize myself as a thinner, more assertive Flameheart has impacted my life personally by changing my own internal perceptions, and professionally by creating an area of interest and acceptance within communities that share that interest. Reflectively, my sense of self has changed and if it is able to change for me, then this situated activity might be consistent and repeatable and able to make positive changes in others (Nardi, 1996). As the work of Jonassen (2000) might suggest the cognitive processes that are at work in a 3D virtual world could be effective in solving complex social issues. Avatar-based Internet browsing is in its infancy; in three to five years we will launch our web browser and our avatar will be waiting for us. How we will change our self perspectives as a result of a "dual-identity" is an important area for future study.

Discussion and Conclusion

This paper examined identity formation using Cultural Historical Activity Theory to analyze how identity is mediated through the participation of activities within a community, as

the subject works toward a particular goal (outcome). The first part of this paper looked at identity, both self and social, and how our participation in group activities is a dynamic method for feedback. We can accept or reject our roles within this community depending on how consistent this feedback is with our own perception. In the case of virtual worlds, group feedback can be based on factors that we are not able to explore in other environments, due to the ability to remain anonymous if we choose.

This paper looked specifically at the identity formation of three individual subjects, two who have been created entirely in a virtual space by the same real-life person. Each of the three subjects was viewed as the view-point perspective of their own activity system, with the communities, rules, tools and outcomes that motivated each. These interrelated systems created a common, shared identity that was greatly influenced by the values, social conventions and moral compass of a common creator. As a result, each subject has developed an identity that can function independently of the others and the dominant identity at any one time depends on the activity.

An essential element of identity and activity includes the subject's sense of self – the cognition of those things that privately motivate us, based on our internal processes, beliefs and imagery in how we see ourselves as part of a greater universe. In my own journey, what has made this interrelated activity and shared identity possible is the ability to visualize myself as each of the subjects. My ability to participate in activities in social networks, interact with the tools that are afforded by a virtual world, and conduct myself as an individual in three dimensions is what separates the transformational experience I have had from someone who participates in a text-based chat room (Cole, 1995). Being able to visualize myself as a thinner, more assertive Flameheart has impacted my life personally by changing my own internal

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