# Why Virtual Worlds Can Matter

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**Douglas Thomas**
Associate Professor
Annenberg School for Communication
University of Southern California
douglast@usc.edu

**John Seely Brown**
Visiting Scholar
University of Southern California
jsb@johnseelybrown.com

Virtual worlds are persistent, avatar-based social spaces that provide players or participants with the ability to engage in long-term, coordinated conjoined action. In these spaces, cultures and meanings emerge from a complex set of interactions among the participants, rather than as part of a predefined story or narrative arc. At least in part, it is the players themselves who shape and to a large extent create the world they inhabit. While many virtual worlds provide the opportunity for that kind of world to emerge, game-based environments such as *World of Warcraft* or *Eve Online* illustrate it best because of the intense degree of coordinated action and co-presence among players.[1]

This sense of "being with others" and being able to share space, see physical representations of each other, and communicat e and act in that shared space provides a very specific set of affordances for players. This article is an effort to trace out and understand those affordances. Or, put differently, it is an effort to understand why virtual worlds, and the avatars that exist inside them, can matter.

In that sense, virtual worlds are very similar to other distributed systems, where the whole ends up being greater than the sum of its parts. The World Wide Web, for example, is more than a collection of websites. It is also what emerges out of the collection of and interconnections among the sites that constitute it, producing software or websites that re-imagine what is possible technologically as well as socially. Sites such as MySpace or YouTube are more than just collections of pages or videos, they are communities of interest and in some cases are networks of practice. Shared interests provide a reason for people to come together, while networks of practice provide the technological means to share and create practices.

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The virtual worlds we want to focus on operate in much the same way as other digital environments, with one important difference. While the architecture of these worlds is distributed across the Internet, the activities within these virtual worlds create a sense of shared space and co-presence that make real-time coordination and interaction not only possible, but a necessary part of the world. In particular, we contend that massively multiplayer online games (MMOGs) may provide a new way of understanding both how play is constitutive of virtual worlds and the nature of institutions that are produced in these spaces.[2] It is the significance of "being there" with others that gives rise to an interesting set of properties and motivations that represent the next generation of thinking about life online.[3]

The visual component of virtual worlds has redefined the landscape of online interaction away from text and toward a more complex visual medium that provides a sense of place, space, and physiological embodiment. The embodiment of the player in the form of an avatar has the ability to transform the space of a virtual world into a sense of *place*. In doing so, it grounds the experience of the player in a sense of presence with others, allowing for, as we have argued earlier, an opportunity to truly engage in the "play of imagination" (Thomas and Brown 2007, p. 147). The element of imagination that most significantly distinguishes virtual worlds from other online media and communities is our ability to step into them, bringing many of our physical world attitudes, dispositions, and beliefs into the virtual space, while leaving others behind. There is something both strange and familiar about the acts of embodiment and immersion that characterize the experience of being in a virtual world. The fact that it is a space inhabited by others, who are themselves both distributed (in the sense that their physical bodies are spread out all over the world) and co-present (in the sense that their avatars are in the same space), provides the basis for constructing the world they each inhabit.

These 3D spaces become places which, to a large degree, are culturally imagined; the practices of the participants, their actions, conversations, movements, and exchanges come to define the world and continually infuse it with new meanings. At its best, we might describe engagement in a virtual world as a group of players "living in a shared practice." This is especially true for large-scale MMOGs and participants deeply immersed in virtual worlds such as *Second Life*. We are interested in the ways that virtual worlds allow participants to evolve practices that draw both from the experiences of everyday life and the experiences of being immersed in the virtual.

Transition into a virtual world is profoundly liberating in the sense that it allows for a new class of affordances to emerge. Those affordances directly result from being able to transform and apply old practices to a new situation and the ability to create and develop new practices that apply only to the virtual world one inhabits. Each of these acts is, first and foremost, an act of imagination. Equally as important, however, is that when taken together and viewed as a shared set of practices, they begin to play out as a network of imagination.

The idea of a network of imagination ties together notions of community, technologically mediated collective action, and imagination, when players begin to act through joint investment in the pursuit of common ground. This kind of collective action is more than networked work or distributed problem solving. It requires that problems be thought of as group problems and that the goals of all actions and practices are to move the group forward. It is also more than an online community, where common interests unite people at a distance. Our goal is to understand the shift in thinking that occurs in the transition to virtual worlds, particularly in cases where participants need to engage in highly collaborative group work.

To that end, we believe that these games are, at base, learning environments. This kind of learning, which we explore throughout this article, is radically different from what we traditionally think of as learning: the accumulation of facts or acquisition of knowledge. Virtual worlds require us to think about knowing rather than knowledge—what Cook and Brown (1999, p. 383) have called "knowledge in action." The problems players face inside virtual worlds, the things that require players to put knowledge into action, are not simply game design problems. While games like *World of Warcraft* do present real challenges that need to be solved, much like puzzles, the real challenge that these games present is the problem of a special kind of collective action. They involve the experience of acting together to overcome obstacles, managing skills, talents and relationships, and they create contexts in which social awareness, reflection, and conjoined coordinated action become an essential part of the game experience. Most importantly,

they provide a space where players act both inside the game and outside the game, and it is the combination of those two aspects that provide the basis for a networked imagination.

This article is an effort to outline some of the things happening in and around virtual worlds that make them more than "just games," and which may in fact point us in the direction of new forms of knowing and acting in virtual spaces and give us insight into what new, technologically mediated worlds may look like in the coming decades.

### The Life around the Game

The games we are referring to throughout this article are large-scale massively multiplayer online games (such as *World of Warcraft*, *EVE Online*, *Star Wars Galaxies*, etc.). While all games provide players with a context for experiential learning, only a few create a context for learning that is primarily social in nature. Of those that do create this social context, only a handful have the special property of allowing the players who engage in the space to actually *create* and *change* and *evolve* the world they inhabit. That change and evolution does not happen solely within the space of the game. Between message forums, databases, player-created add-on modules, and wikis, MMOGs produce a social space around the game that has a profound impact on the game's evolution.

The games we are interested in are the ones that produce those types of interactive experiences, and as games become increasingly sophisticated and increasingly social in nature, those experiences not only affect the player, they also change the game itself. Because the world in which the game happens is constantly in a state of flux, players are forced to continually adapt to changes, whether they be player-created (for example, the creation of a new game in *Second Life* that has potential social and economic implications) or changes by developers (such as adding new areas to explore or changing overpowered character skills). As a result, these virtual worlds are spaces that embody a presumption of change and, with that, a sense that innovation is a constant requirement. As players progress through the game's content, the challenges the world presents redefine the nature of the game itself.[4] Within a period of three to six months an MMOG may have changed so substantially in terms of game play and experience that it will be almost unrecognizable to a returning player. This is partly a result of player progression and changes by developers, but mainly that evolution is the result of the social constructions created by players in and around the game.

When we consider MMOGs, it is more apt to consider them as virtual worlds than games. Players in *World of Warcraft*, for example, are able to buy, sell, and trade items and by doing so actually create an economy within that virtual world, following laws of supply and demand, inflation, scarcity, and even complex strategies for arbitrage, new definitions of "fairness," understanding connections between markets and reputations, and even elaborate scams.[5] Guilds, which are formed to tackle complex challenges, often evolve into social groups that hold physical world meetings and engage in social activities outside of the game.[6]

The space around the game, particularly the edge, is not trivial. From the most basic social dynamics, such as how groups and parties form, the networks of external sites and forums that support guilds, databases, and wikis, or the technological infrastructure that makes a game like *World of Warcraft* possible extend well beyond the boundaries of the gamespace itself.[7] What we began to understand is that *the game* and *what emerges from the game* are not the same thing. Most importantly, we have found that the dispositions that work well in the spaces of virtual worlds tend to be those that work well in networked publics (such as the spaces characterized by online civic engagement or collective action), providing not only insight into how they function, but also a sophisticated sense of agency and familiarity with Internet public spaces as well.

Understanding participation in these game worlds requires us to think past simple binaries of inside and outside. Playing an MMOG is more akin to playing the role of Hamlet in a play, where we can acknowledge both the actor and character, as well as the seamless blend between the two when performing on stage. But for players, like actors, the performance is always caught between the inside and the outside—what the actor brings to role as well as what the role itself affords the actor. Unlike the spectator of a play, who only receives information, the player in an MMOG, like an actor, is creating the role and world he or she inhabits.

### The Learning Inversion

Research on situated learning provides some insight into the power of "learning to be" (Brown and Duguid

1996; 2000, p. 219) and does an excellent job of explaining what happens inside the game space. For example, in *World of Warcraft*, situated learning can tell us a lot about how players learn to become their characters and how they develop particular skill sets and deploy them in useful ways; what it fails to tell us is how those practices and even dispositions move from the virtual to the physical. The focus on the "situated-ness" of the learning doesn't necessarily allow us to focus on the transition that players make from one realm to another. The power of this situated approach is in its ability to help shape notions of identity in relation to the institutions or infrastructures of the game space (Gee 2003).[8] Our goal is to think beyond the game and look to the ways in which virtual worlds combine the power of play (and situated learning) and the depth of experience that results from the game's connection to everyday life.

The idea of the game as an institution can help us understand how it functions in a broader social context. Institutions provide structure and meaning to the game world and set the parameters for what is possible in the space. To that end institutions include things like the rules of the game (both structured by the game dynamics and mechanics and created and enforced normatively by players) and the challenges, quests, and spaces provided by developers, such as instances, nonplayer characters (NPCs), raid dungeons, and game lore.

What situated learning provides is a framework for understanding how players come to develop a sense of identity and belonging in the world. Knowledge within this context is not simply about what one knows or even how one knows, but is a level of being situated where one learns what the right things to know are. They do so by negotiating their in-game sense of agency with the game-based institutions that are provided for them by the developers. The situation is determinative insofar as one's identity is defined and constrained by the "rules of the game" or the structure of the world. As such, situated learning can provide some insight into how games can be used as powerful teaching tools providing a strong institutional grounding to define a player's sense of agency and identity. This is true, to varying degrees, for most games that are created. The more social the game is and the more opportunity for agency the player has, the more likely it is that they will begin to create their own practices, which come to define the social and cultural parameters of the worlds they inhabit. Games that provide experiences can help determine and define identity, but games that change as a result of those experiences (such as MMOGs) become rich learning systems where something more is happening.

Understanding how learning functions in MMOGs and why we might need to think past the situated approach requires us to think about the underlying processes of engagement with these worlds and why they might be different from other types of games and simulations.

The idea that practices tell us something about culture is not a new insight. It remains, however, a critical one. In particular, when one considers the way in which participants enter virtual worlds, it is important to note the need to amass a large number of practices very early on to both make sense of the world and be an active participant in it. Those practices, however, are rarely explicit and must be understood within the context of the world itself. In that sense, virtual worlds constitute an entirely new learning environment, one that challenges many of the basic assumptions about a more simplistic form of learning and the simplistic models of transfer of culture and ideas.

Most traditional models of learning suggest a two-step process in the movement from *learning about* to *learning to be*. Initially, people learn the basics or fundamentals about a topic or context through "scaffolding," or acquiring enough information to make sense of the languages, ideas, and practices that constitute a specific domain of knowledge. As one becomes immersed within the culture or sets of practices one starts down the path of "learning to be," engaging in the practices and absorbing the tacit knowledge that forms the cultural and social underpinnings for a community.

Virtual worlds invert that process. Instead of "learning about," participants in virtual worlds engage with the world by learning to be. The experience and immersion of entering a virtual world is oftentimes so radically distinct from the physical world that the practices one needs for simple behavior such as movement and communication are untranslatable. They are, however, easily picked up through experiential engagement. The first few "newbie" levels of *World of Warcraft*, for example, provide players with introductory quests that lead them through a series of tasks or missions, each requiring an additional skill or activity. By the time players get to level 10 (two to

three hours of game play) they have learned everything they will need to know about combat movement, inventory management, quests, and communication. In the traditional sense they have been *taught* nothing. They have engaged in an initial process of learning to be (learning to be their characters in this case) and have been shown mechanisms for getting assistance should they need help in learning about a particular task or ability.

The experience of playing or otherwise engaging with the world, literally, learning to be a participant in the world, is both the most productive way to learn and the easiest in games. As participants engage more fully with the world, it is only then that they are likely to turn to "learning about" to fill in gaps in knowledge or further their understanding about very specific topics.

The experiences players have are not individual or solipsistic; they are social in nature, with many quests in the game requiring group participation to complete. The choices players make will have an impact, then, not only on their own characters, but also on other characters in the game. These learning practices are not just things characters do in the world; they are constitutive of the world itself. As groups of players progress, they gain new affordances through gear, skills, and tools provided within the game. Play is literally a progression where, as you advance, you are able to do entirely new things, visit new areas, and overcome new, complex challenges.

In one sense, situated learning helps us get past the immediate problem of direct transfer by opening up a useful explanation for how learning to be could be understood within the context of games and game worlds. It leaves the underlying assumption of direct transfer intact, however, by maintaining the distinction between the physical and virtual. Even though situated learning is able to explore the virtual in its own right as a valid and important learning environment, it still begs the inevitable question, "How does any of this transfer to the 'real world'"? As we have argued above, that question still misses what we feel are the crucial insights that these virtual worlds provide.

From our point of view, one of the most central insights to emerge from the application of situated learning to virtual worlds was what we have called a "learning inversion." In the traditional model of "learning to be," the acquisition of tacit knowledge and cultural practices emerge following a basic period of "scaffolding." In that progression, learners, it is assumed, first learn about something and then evolve into learning to be. What we see in games inverts that process, making learning to be central to the process of education in games. An inversion suggests that there is a following phase of learning about.

As a model for understanding the kind of learning that occurs in *World of Warcraft*, situated learning provides a good start to thinking through the basics of learning as learning to be, rather than learning about, but we still need a better sense of how to navigate the boundaries between the physical and virtual worlds. Part of the solution to that problem rests with the idea of how imagination is transformed within the context of games. In what follows we put forth a model for describing and understanding the different components of virtual worlds and how they interact.

When we no longer see transfer between the virtual and physical worlds as the primary question, then we need to ask: What is the mechanism that bridges these two worlds? Situated learning, while a powerful tool for understanding what happens within the boundaries of the game, still relies on a model that presumes one learns *about* the physical world *through* the game.

### The Networked Imagination

When someone enters a virtual world, they enter a space that is more supplemental than binary in nature. In other words, virtual worlds provide the opportunity for participants to be *both/and*: both inside and outside, both player and avatar, both character and person.

Thinking beyond such constructions, however, forces us to examine the mechanism by which these worlds function. Because they are persistent (the worlds continue even after a player logs off) and because they are logically consistent (every world has its own rules to follow), these worlds take on a character of their own. The primary motor that drives virtual worlds, however, is not the rules, code, or graphics, or even the players themselves. It is the imagined reality, which is partially shared and partially unique, that is constructed among the players that gives the space its power.

What participants construct is based on the principle of a networked imagination: The rules, structures, and persistence of a network, which forms the stability of the connections among people and the freedom and agency of imagination, allows not only

invention, identity play, and experimentation, but also the shared sense of co-presence required to engage with the virtual world as a shared cultural and social space.[9]

The most basic example in *World of Warcraft* is the notion of a guild. While there are two basic mechanisms within the game to support the existence of guilds—the guild tag (which identifies which guild you are in) and guild chat (an in-game chat channel for guild members)—the bulk of what allows guilds to function as effective organizations is created outside the boundaries of the game itself. Programs such as *ventrillo* or *teamspeak*, which provide voiceover IP communication channels, are required by most guilds and nearly all guilds have their own websites, complete with forums, wikis, and specifically designed software to measure raid attendance, division of loot, and event scheduling. Guilds can range in size from a few dozen people to more than a hundred and are often required to experience any of the endgame content that Blizzard Entertainment (*World of Warcraft*'s developer/publisher) has designed.

Most important, however, is the ways in which guilds manage the experiences of the groups of players who form them. The structure of a guild depends almost entirely on the needs, desires, and dispositions of the players that compose it. Some guilds may be small in size and primarily social in nature, while others are large and may require players to commit as much as 40 hours a week to the guild for high-end raiding. Most guilds are somewhere between these two extremes, requiring some basic commitment of time, particularly for scheduled raids, which may require up to 40 people to complete and can take as long as eight to ten hours, oftentimes spread over several days.

For our purposes, guilds also represent a new kind of institution that has emerged in the context of managing large networks of imagination. Our thinking here both mirrors and goes beyond Benedict Anderson's notion of an "imagined community." Anderson's exploration of nationalism and community provides a basic understanding of how communities/nations may form through acts of imagination (Anderson 1991). We are interested in how smaller microcosms may also develop in the context of groups and guilds of people who may similarly share an *imagined* connection that is ultimately grounded in a world, and an identity that is grounded in a set of shared experiences, actions, and interactions.

We can see the guild as a bridge between two poles: the institution of the game itself (the rules, structures, and mechanisms that allow for play), which has particular goals, challenges, or rewards, and the agency of the players who have individual needs, desires, and constraints that have to be balanced with the other players in the guild. While there are rules and clear game mechanics that make things both possible and impossible in virtual worlds, MMOGs present players with an unprecedented degree of agency within virtual spaces. Games like *World of Warcraft* not only allow players to develop different characters and play styles, they also evolve based on the collective actions that players take. As a result, the game world changes from day to day, continually responding to player actions that may be as trivial as the price of raw materials on the auction house or as significant as the opening of gates revealing a new part of the game for players to explore.[10]

Unlike multi-user dungeons (MUDs), which preceded MMOGs and virtual worlds and were purely text-based and therefore almost completely unconstrained, these games have a heightened sense of agency precisely because players are forced to negotiate the institutions of the game itself. In a MUD you could be whatever you could type, but within the space of virtual worlds, you must work within the limitations of a visual and mediated space, which requires players to use their imaginations, not only to create their places within a fictional universe (much as MUD players need to do), but by finding creative and alternative solutions to the problems that the game itself presents.

Successful guilds require what Sherry Turkle (1997, p. 255) called a "culture of flexibility"—the ability to reshape themselves into whatever best negotiates the tension between the players (agency) and the game's rules (institution). But guilds are more than just cultures of flexibility; they are sites of productive tension, where the continual flux of both agency (players' needs and constraints constantly changing) and the institution of the game (also continually changing, both as a result of developer changes, patches, and expansions, as well as the impact that the players themselves have in shaping and defining the world—some of which is in response to unintended consequences of designer changes) produce the need to constantly reinvent the structure and management of the guild itself.

Guilds give us a glimpse into why games provide a new and powerful way of understanding flexibility in organizations (and management) as well as a

system for thinking about how the productive tensions between institutions and agency constitute the grounding for a new theory of learning. The tensions between the constraints of the world and the freedom of the player motivate players to see problems and solutions in new and oftentimes unexpected ways. When learning is seen as the means to identify and manage productive tensions among institutions and agency, it begins to take a whole new shape and begins to point to a new set of values for what constitutes effective learning.

What guilds (and a number of other practices common to MMOGs) reveal is the ways in which these moments of productive tension afford the abilities to respond to institutions and create new *forms* of institutions as well. In some cases, for example, guilds are forced to create new rule sets to decide who participates in raids and who does not, usually in response to game changes or the development of new strategies.

One of the new institutional structures that has emerged, and that perfectly describes the way guilds function, is the idea of the "networked imagination," in which the idea of the network (and the virtual connections among its members) provides a flexible yet powerful, persistent structure, while the imagination taps into the wellspring of agency that virtual and digital spaces present. The concept of a networked imagination is more than communication or shared practices or values, it is the ability of people who are physically disconnected from one another to invent and share in a mutually constituted reality.

For example, there is a guild tradition that the first time a boss monster is killed in a raid instance, the group that successfully brought the monster down gathers around its slain body and poses for a group photograph (see figure 1).

Guilds in *World of Warcraft* or other MMOGs have such a strong presence in players' lives that they frequently talk about their guilds as homes or families, even though most of the players may never have met one another face to face and could not recognize each other in person. Understanding the richness of the experience of play and the complexity of problem solving that occurs in guilds and around games leads us to what we feel may be one of the most pressing issues for the 21st century. How do people learn how to create and participate in networks of imagination, and how can our theories of learning adjust to account for this rich and powerful phenomenon? We cannot answer this question adequately by looking solely at game mechanics, player culture, or discourse communities. We need to look at virtual worlds as spaces that embody both the physical and virtual simultaneously, as spaces that allow for, and even demand, an *imaginative* bridge between the two.

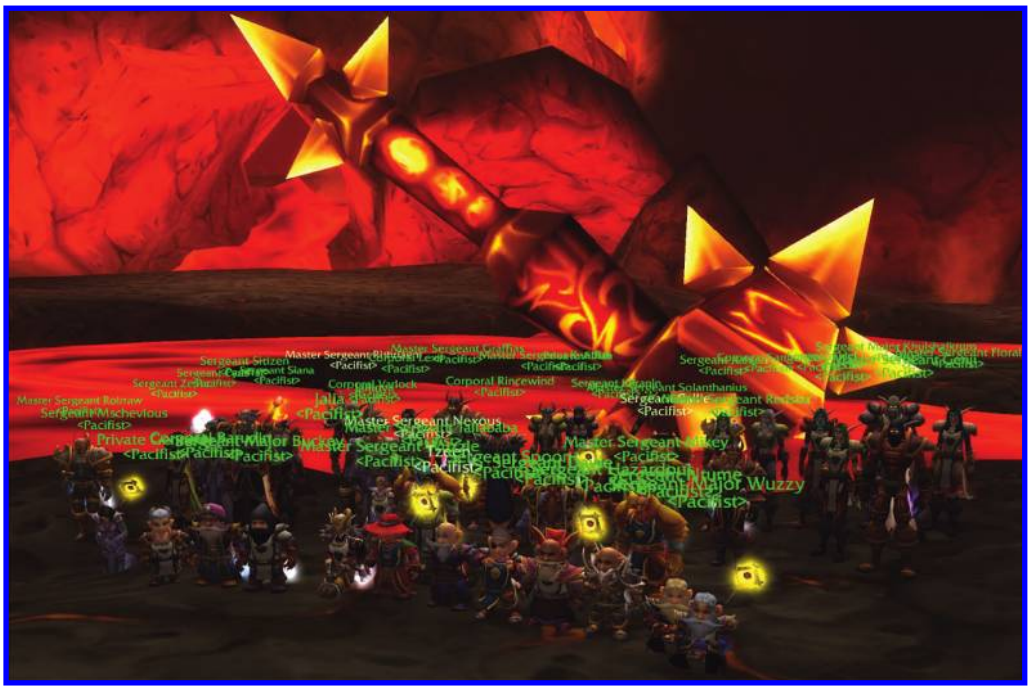

**Figure 1** Screenshot of the guild Pacifist defeating Ragnaros in *World of Warcraft*. http://pacifistguild.org (accessed December 12, 2004).

What is essential is understanding the process that gives rise to solutions and practices and determining the networks that provide the means for imagination to take root, to grow, and to flourish.

The primary function of the network is institutional, to provide and pass on certain pieces of knowledge that are essential for the functioning of the group. In guilds, for example, websites and event calendars can provide the means to organize a raiding party. But once a group of players sets foot in Gruul's Lair (an endgame raid in *World of Warcraft*), the imagination takes over. Defeating the bosses and claiming the reward is a function of certain institutions (character classes and rolls, weapons and armor, game mechanics and combat) that gives form to a set of practices, which in turn harness the collective imagination of that group of players, who, for the moment, believe they are co-present in Gruul's Lair participating in an event.

It is not only the narrow sense of imagination (such as finding imaginative solutions to problems), but the general and broader sense of imagination that allows players to participate in the game, the guild, and the coordinated collective action that make success (overcoming the obstacles the game presents) possible.

It is the belief that the virtual and the physical share in a certain set of qualities, grounded in a sense of co-presence and "being with," that provides the grounding for a networked imagination to form. Out of that imaginative act, players begin to create a social reality that carries forth qualities of both the physical and the virtual.

Every instance of raiding is an exercise in learning how to be an effective member of this networked imagination: what it means to coordinate in an imagined space with others; how to read social and contextual cues; and how to make decisions and deploy particular practices as the situation demands.

This kind of learning is born out of a tension between the agency of the individual player and the demands of the institutional structures that the player engages with as part of the experience of play. These institutions are neither fixed nor external. They are game elements, communities of practice spawned from groups of players themselves, and social and cultural institutions that imbue actions with meaning.

Communities such as guilds or external websites structure the meaning of activity within the game world. They also serve as the primary conduit of information between and among players, determining what has value and providing contexts for puzzle solving, organization, and social and task interaction.

Games with low degrees of agency (e.g., games in which players are expected to do certain things or act in certain ways) require a strong game-based institutional structure. For example, most games that are structured around learning objectives have strong institutional ties. A game that intends to teach students about disease, for example, would be grounded in the institutions of medicine or public health. In order to learn particular content, players must follow predesigned paths (even if they are complex, they usually follow prescribed pathways). In general, such games will privilege a narrative structure to convey certain information. That narrative serves as an institutional structure, determining what the player must do to progress. While this provides a sense of interactivity, it restricts the player's agency. As a learning environment, it also provides a very clear set of learning objectives. You must learn X to accomplish task Y. In the most basic sense, such games are teaching systems, designed to teach rules or information; the experience of play is a mechanism or activity to teach.

Allowing players agency means you reduce the role of the game-based institutional structure, recreating it as a set of affordances for players to adapt, create, or evolve their own institutional structures. Players then adopt as much or as little of the game-based institutions as they deem necessary to create and develop their own institutions to manage their agency. In short, the difference is that games that have strong institutional purposes are necessarily limited in terms of player agency, while games that provide a strong sense of agency for players cede control of their institutions to the player communities that engage with their content.

For education, this provides a dilemma. Creating games with clear content-based learning objectives (i.e., games that are tied to discourses with strong institutional content and an underlying pedagogy, which presumes a model of direct transfer) achieves their goals at the expense of player agency. Making games useful and employing what is unique, new, and powerful about them requires us to change our thinking about what games afford. If we are to see a new set of possibilities for games as learning environments, we need to shift our thinking away from content-specific learning objectives toward thinking about games as systems that afford new types of

agency and new ways of looking at the world. These games are fundamentally social systems, in which people learn how to become part of new, often rapidly shifting institutions and to organize socially and solve problems quickly on a short-term basis. They learn to build institutions, which are necessary to deal with and manage agency (at the level of the group), while being the product of that agency itself (at the level of the individual).

The games we focus on are ones that provide a high degree of player agency and have a significant network of emergent institutions that define the nature and scope of the game experience.

### The Play of Imagination: A New Epistemological Frame

While direct transfer, situated knowledge, and collateral learning provided pieces of the puzzle, it is the work of Mark Turner on the notion of conceptual blending that can help us understand the means by which dispositions can be understood not as moving from the virtual to the physical, but as a simultaneous product of both spaces at once (the way starring in *Hamlet* is bound to change the dispositions of *both* the actor *and* the character).

Our notion of conceptual blending extends Turner's notion to demonstrate that the dispositions don't really move (in the sense of transfer) at all, but the spaces in which we create them collapse, forging dispositions that are meaningful in both the virtual and physical worlds at the same time.[11] *World of Warcraft*, for instance, is what Turner defines as a "blended space," a space where conceptual transformations occur as we take nonconflicting frames and put them together to create meaning.[12] Conceptual blending provides an extremely powerful tool for understanding how meaning is generated in virtual worlds for two reasons: First, the frames that define the virtual and physical are so completely distinct that there is almost no point at which they conflict with one another. Second, because these frames don't conflict, our minds have no difficulty in fusing them (often unconsciously), deploying the richness and vividness of each in complete detail. The entire point of a conceptual blend is to *remove* the barrier between inside and outside, to blur figure and ground so that one is no longer forced to choose between them, but can see and imagine both at once.

In many ways, such conceptual blends can be defined by a sense of fit. Take, for example, the case of guild mates who know one another outside of the game in a professional or personal context. The players know enough about each other to have a sense of the person independent of the game. At the same time, they play the game together often enough to know and recognize each other's characters as well. The process of blending occurs when I start to think of my friend as *both* the person I know outside the game *and* as a Tauren druid. There may be a certain absurdity to it, but there is no fundamental conflict, because she can be both at the same time.

Rather than asking how dispositions might be transferred from the game to the world, conceptual blending defines the spaces as both virtual and physical simultaneously. There is no transfer to speak of, because the player is neither situated only in the game or only in the world—she coexists in both.

The dispositions developed in *World of Warcraft* are not created in the virtual and later moved to the physical; they are being created in both equally. Just as the decisions made in the game world affect the player's disposition in the physical world, the player's disposition in the physical world influences his or her game play and style. The two are mutually reinforcing.

What the game world opens up that the physical world does not is the opportunity for experimentation and exploration. Because one is able to maintain the vividness of each domain, within the mental construct of the blend the possibilities for learning and engagement are magnified. Coupled with the radical contingency of the game space, *World of Warcraft* is also a social and cultural space where players are able to examine and explore a variety of subject positions, identities, and cultures. Virtual worlds are spaces that are capable of giving voice to dispositions, not in an isolated context, but in a way that touches on both the virtual and the physical.

Conceptual blending provides for us further insight into the role of imagination as well. The most direct is the ways in which conceptual blending ties into the idea of the networked imagination. One of Turner's most surprising findings is that there are blends of enormous complexity and incongruity (but not contradiction) that our mind has absolutely no trouble producing, accepting, embracing, and treating as completely natural. The classic example is a talking animal. No one has any difficulty accepting the premise of a talking donkey in *Shrek*, of Bugs Bunny quipping "What's up, Doc?" or of Babe the pig chatting

with barnmates, even though we know such things never happen in reality. It is an easy conceptual blend for us because there is no fundamental contradiction. It is not that animals can't talk; they just don't talk.

Entering into a virtual world, then, is quite different from a typical game. Where traditional games have clear (even if complicated) narratives, the ability to stop, pause, and restart, and a set of rules that guide narrative progression, virtual worlds are persistent and ongoing. They cannot be paused or repeated. What happens in virtual worlds has persistent consequences and effects.

Traditionally, as Caillois (2001) argues, the function of games has always been to separate play from "ordinary life." In essence, games are constructed to avoid the creation of blended spaces by removing the worldliness from the space of play. Virtual worlds are blended spaces precisely because they refuse that distinction. They are spaces of play, but they are also spaces that have many qualities of the physical world: economies, social institutions, reputation and social capital, and governance.[13]

The same is true for the networked imagination of a guild or raid group. Players have no problem accepting that they are both sitting at home playing a game and killing a boss monster in a dungeon in Azeroth. Why? Because there is no fundamental contradiction between these two ideas. Our minds, that is, our imaginations, not only don't have difficulty processing this idea; our minds are particularly good at it. Moreover, the richness of these blends is only fully understood once one reflects on them. The preconscious processing required to create a conceptual blend is actually rather extensive.

What is critical to understand about this conceptual blend is that the activities of a raid are not just taking place inside the game, and the social values constructed around the raid are not just happening outside the game. They are happening congruently and each is informing the other. There is a deep and familiar worldliness to the virtual, just as the relationships among the players outside the game are transformed by the events that take place in the game.

So in the first sense, playing in virtual worlds is already a kind of conceptual blend, as are all acts of a networked imagination. They embrace the idea of a both/and, rather than an either/or perspective, and embrace the ideas of simultaneity and co-creation, rather than transfer.

But there is a second sense in which these blends are incredibly powerful tools for reflection. There are moments when institutions and agency bump up against each other and the blending reveals not only a co-creation, but also a set of affordances opened up by a moment of critical reflection. There are rare moments where the acceptance of a particular conceptual blend produces a trigger, which invites or even demands a player to reflect on how things fit together.

When trying to complete a difficult task, players may fail repeatedly and then, much to their astonishment, find that on their next attempt things go smoothly and they finish the task with little or no difficulty. What changed? Were they doing something differently? Had the situation changed? Had they unwittingly stood in a special place or cast their spells in just the right order?

At these moments, players engage in a kind of reverse projection or reflecting backward to try to understand either how things have fit together or what blending has appeared so natural that it has obscured some crucial piece of information or data. That reflection calls forth the player's agency, engaging their imagination in order to have them do something with it. This is frequently the moment when this exercise of imagination leads to the possibilities for new practices, which themselves can become institutionalized or become part of the network.

One can very easily imagine a chain of events in which a player discovers that a trinket that only occasionally fires has certain powerful effects. Through experimentation, or even accidentally, the player triggers it in combination with a spell, which then produces greater damage. After the fight the player checks the combat logs and realizes the effect the trinket has had and immediately tries it in combination with other spells. Ultimately, he or she writes a macro to automate its use, timing it to fire only with the spells that produce the maximum benefit. The player posts that macro to his or her guild message forums and soon all of the guild's mages work to loot that same trinket and use the macro.

In this case, the conceptual blending of the player and avatar, engaged in routine combat, requires an act of agency and imagination to establish a new practice, which becomes part of the networked imagination of the guild.

Perhaps the most important aspect of the networked imagination is the ways in which the practices of conjoined coordinated action and work

reveal a new structure for interaction and engagement with others. What we witness in games like *World of Warcraft* is almost a phase transition, in which groups are transformed from behaving as a collection of individuals to acting as an entity. At the end of a successful raid, it is impossible to credit any individual or even group of individuals for the success. Progressing through high-end raid dungeons is a truly collaborative or melding effort, in which one must fully embrace the blended nature of the space. Players and avatars are both inside and outside, both player and character, and both present and distant.

Because of the necessity for deep coordinated action, we believe that MMOGs have the potential to illustrate not only how people work together, engage in discourse, and even invent new practices. What we see happening is something deeper, literally: the emergence of a new epistemological frame that underwrites and in many ways defines the activities that emerge in and around the space of the game.

## Conclusions: Learning in the 21st Century

Games such as *World of Warcraft* and other virtual worlds are illustrating a shift in the way learning is happening. The goal of this article is not to suggest that it is the only way in which learning occurs, or even that is the best way to meet pedagogical needs at present. Instead, we believe that this new mode of learning is indicative of something else.

The kinds of deep engagement that players have not only with the game, but with the social life around the game, suggest that the relationship players may have with these new learning environments may be much deeper and much richer than current learning theories that rely on a notion of transfer may be able to explain. Our goal is to move beyond situated learning toward an understanding of these game spaces that focuses on the ways in which players construct not only a shared discourse and culture, but actually engage in the a feeling of co-presence: what we call a "networked imagination." That sense of "being with" begins to reveal a new epistemological framework for understanding the cultural and linguistic formations we see emerging from these worlds. Further, it gives us a powerful tool for examining and understanding issues of joint coordinated action, shared experience, and the process of tacit understanding that emerges from a deeply embodied, immersive experience of play. This sense of coordinated interaction with others produces much more than just social interaction or conversation. It allows for a deep sense of presence that is akin to what Michael Polanyi (1967, pp. 17–18) called "indwelling," a tacit understanding and construction of the world, people, and practices that define experience and embodiment.

Accordingly, a learning theory that focuses on dispositions, conceptual blends, and networked imagination may be the best way to understand this new and emergent phenomenon. As networked culture creates new challenges, the networked imagination is able to respond by reformulating and reimagining new ways of engaging with the world and with others.

Participants in virtual worlds are learning to give voice to new dispositions within networked worlds and environments that are well suited to effective communication, problem solving, and social interaction. Accordingly, the things they are learning, as well as the ways they are learning them, can tell us a lot about the future of digital learning environments, what they may look like as well as how they may be used. The possibilities for the network of imagination extend beyond distributed work and embody a basic and fundamental principle of collective action for a civic or group good. This focus on the group overcoming a shared challenge makes the search for common ground the overriding concern. Moreover, the coupling of networks of imagination to the idea of conceptual blending gives us new ways to think about how to conceptualize "knowledge in action" in a virtual space.

What is happening in the games of today is, we believe, a fair predictor of what will be happening in the workplaces and societies of tomorrow.

### Notes

1. These properties, which exist in all virtual worlds, but which are particularly pronounced in massively multiplayer online games (MMOGs), may point out ways of crafting virtual worlds as learning environments, either by creating spaces for communities of practice or by joining them through legitimate peripheral participation (Lave and Wenger 1991).
2. Virtual worlds both extend and problematize the notion of play put forward by Huizinga in *Homo Ludens* (1971) and extended by Caillois in *Man, Play and Games* (2001). Huizinga's insight, that culture is a manifestation of play (rather than the reverse), finds expression in virtual worlds in a number of ways. Chief among them is the idea that these worlds are truly generative spaces where the actions of the participants

actually constitute the world they inhabit. Accordingly, we find the emergence of a new form of institution, structured by agency and grounded in the contingency of play, rather than the permanence of the physical world.

3. Virtual worlds represent a step forward in thinking about what Turkle (1997) called "life on the screen." The work of Turkle and others, notably Dibbell's *My Tiny Life* (1999), explored the ways in which multi-user dungeons create virtual societies and what the implications of these worlds are for things like identity. Here we are talking about the affordances these worlds create for participants, which may or may not be utilized to a significant degree. At this point in time, game-based environments produce a particularly strong motivation for players to build and create teams, groups, and guilds. While environments with a strong social attraction (such as *Second Life* and *There.com*) provide the affordances for similar qualities to emerge, they may not provide the motivation for conjoined work for many or even most of the player base. This distinction also mirrors the difference between game-based multi-user dungeons (MUDs) and the more social-based MUDs, object-oriented (MOOs) in earlier textual environments.
4. This is not merely the process of "leveling up" or advancing your character. The challenges the game presents and the players' responses to them actually change the game itself, not just the players' roles or positions in it (Malaby 2007, p. 98).
5. For an extensive analysis of the economic aspects of virtual worlds, see Castronova (2006).
6. See, for example, Taylor's analysis of *Everquest* in *Play between Worlds* (2006).
7. Games such as *World of Warcraft* have created enormous infrastructures around the game, such as sites like *WowWiki.com* or *Thottbot*, an effort to catalog and allow users to comment on every item, skill, and geography available in the world. The sites have become so central to the game that designers now account for them in updates and future game design and rely on them for the dissemination of crucial information and strategies, allowing much more complex and sophisticated design.
8. For other examples of research that employ a situated learning approach, see Steinkuehler (2006) and Squire and Steinkuehler (2006).
9. This provides an interesting twist on the traditional tension between structure and agency examined in the work of Pierre Bourdieu and his notion of the habitus, and Anthony Giddens's work on structuration as the interaction between practice and material structure. Virtual worlds complicate both of these ideas by replacing a material structure with a more abstract, continually shifting, set of rules that are radically contingent. In many ways, the breakdown of the subject/object binary in both Giddens's (1986) and Bourdieu's (1977) work is a useful precursor for thinking about the problem of transfer and boundaries in virtual worlds, as well as the issue of affordances in relation to materiality.
10. While these two cases are polar extremes, something as trivial as a monster dropping a particular item or the discovery of a new combat technique can cause widespread and near immediate changes in the game, including places people visit, how and where they spend their time, and what goods and items can be crafted or created.
11. This section extends our earlier work (Thomas and Brown 2007).
12. Turner's work examines how our minds are easily able to process and combine radically different ideas (such as speech and animals, to produce a talking rabbit, such as Bugs Bunny), as long as there is no direct conflict between the ideas. He calls this ability "conceptual blending," which turns out to be an enormously complex, often preconscious and effortless activity that in many ways defines how imagination functions. See Turner (1996, p. 11).
13. For an analysis of the particularly complex notion of value in virtual worlds, see Malaby (2006).

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Virtual reality poses to be a useful technology for the world at large; Take a look at a few ways in which this new technology will change the world.Â  Virtual reality poses to be one of the foremost future technologies. While it may still seem like a niche product today, as it comes into prominence in the technology space, more and more developers will tackle integrating VR into their apps and devices. VR is currently nearing the cusp of global adoption. It's been on an upward climb for viability over the last decade and it's finally reaching the point that highly practical â€“ and profitable â€“ applications are arising. From healthcare to technology to education, virtual reality will have a lasting impact on how life is done. The potential for VR. Virtual worlds are, in essence, meeting places. They aren't video games, they aren't chat rooms, and they aren't social networks. They've been around for some time now, and chances are that you have stumbled upon one yourself. The premise of a virtual world is quite simple - users carry on social activities using their avatars in an open virtual environment. While not a video game, users may play games within the world. But if Virtual Worlds are so great, why did Second Life fail? It is certainly true that the experiments with Virtual Worlds into the above-mentioned applications, which were most often conducted in Second Life, starting in 2005/06 were not too successful. This does not invalidate the concept in itself, IMHO.Â  When a user is navigating the web today, it does not matter much, which browser is utilized. The server software behind the websites is irrelevant, too - at least for the user. Until a similar level of interoperability, stability and ease of use is achieved with virtual worlds software A virtual world (also called a virtual space) is a computer-simulated environment which may be populated by many users who can create a personal avatar, and simultaneously and independently explore the virtual world, participate in its activities and communicate with others. These avatars can be textual, graphical representations, or live video avatars with auditory and touch sensations.