Virtual Worlds:
A Performative Perspective on Globally-Distributed, Immersive Work

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Abstract

Virtual worlds are immersive, simulated, persistent and dynamic environments that include rich graphical 3-D spaces, high fidelity audio, motion, viewpoint, and interactivity. Initially dismissed as environments of play, virtual worlds have gained legitimacy in business and educational settings for their application in globally-distributed work, project management, online learning, and real-time simulation. Understanding the emergent aspects of these virtual worlds and their implications for organizations will require both new theories and new methods. We propose that a performative perspective may be particularly useful as it challenges the existence of independent objects with fixed or given properties and boundaries, and focuses instead on situated and relational practices that enact entangled and contingent boundaries, entities, identities, and effects.

On April 1, 2008, the US House Committee on Energy and Commerce (Subcommittee on Telecommunications and the Internet) held a Congressional Hearing on Virtual Worlds. And no, this was not an April Fools' joke. The committee was interested in learning more about the nature and impact of a phenomenon that many believe is poised to become a significant feature of the contemporary social and corporate landscape. Virtual worlds are "computer-based, simulated, persistent environments that support synchronous interaction between users personified as avatars" (Parris 2008). They include rich graphical 3-D spaces, high fidelity audio, motion, viewpoint, and interactivity (Driver and Driver 2009). Virtual worlds range from narratively-scripted games such as World of Warcraft to communication platforms such as Second Life that rely largely on user-created content (Schultze and Rennecker 2007).

Initially dismissed as environments of play, virtual worlds have gained legitimacy in business and educational settings for their application to organizational endeavors such as distributed collaboration, virtual teamwork, multi-media meetings and training, as well as real-time simulation. Participation in virtual worlds is on the rise (Castronova 2005; Malaby 2006). In the consumer sector, for example, involvement in virtual worlds such as Second Life and World of Warcraft is estimated in the tens of millions (Hof 2006; Nardi and Harris 2006), while in organizations such as hospitals, universities, and the military, virtual worlds are being used for action learning and immersive training (through simulations and rehearsals). Virtual worlds are also emerging as interesting sites of innovation and experimentation among scientists, educators, and software teams (Bainbridge 2007; Schultze et al. 2008).

In the business and government sectors, virtual worlds have been implemented for the purposes of supporting virtual work, project management, recruitment, and learning. For example, Ernst & Young deployed a simulation of a cookie manufacturer's warehouse to enhance the inventory-count training of entry-level auditors (Rosenthal 2009), and cosmetics giant, L'Oreal leveraged a virtual world platform to develop an online game called Reveal to support its hiring efforts (Tims 2010). Many firms are developing "intraverses" (private virtual worlds implemented on corporate infrastructure) to support globally-distributed work and communication (Jennings 2008). For instance, IBM is utilizing private instances of Second Life for world-wide conferences, collaboration, and training (Cefkin et al. 2009;

LeGoes 2010), while BP's Chief Technology Office has deployed private virtual world environments within ProtoSphere for the purposes of strategy planning, global working, and mentoring (Riley 2007). In the public sector, the Obama administration's healthcare team used Second Life to solicit input on healthcare reform from people with medical problems and disabilities (Despres 2009), while NASA developed an island in Second Life in order to enable "open innovation" on issues concerning the space program with communities inside and outside of NASA (http://colab.arc.nasa.gov/virtual).

Industry commentators such as McKinsey (Richards 2008) and Gartner (2009) have classified virtual worlds as transformational technologies that will become mainstream within the next five years. These expectations may seem overly confident in the light of earlier predictions that by 2011, 80% of active Internet users (and Fortune 500 enterprises) would be engaged in some form of virtual world activity (Gartner 2007). However, numerous signals indicate that virtual worlds are likely to become more relevant and productive in the near future, including: globalizing trends that require virtual work and distributed collaboration; green initiatives that seek to cut the carbon emissions generated by travel, including commutes to offices; cost-cutting measures in economically challenging times, motivating organizations to reduce real estate and the need for physical co-location; efforts to prevent the spread of communicable diseases (e.g., H1N1) without disrupting normal operations of governments, universities and corporations; and the increasing availability of enterprise-ready, behind-the-firewall, private virtual worlds.

Why is this Phenomenon Interesting and Important for Information Systems Research?

There is a growing interest in virtual worlds within the information systems (IS) community. Researchers have highlighted the opportunities that virtual worlds provide for novel ways of interacting and working (e.g., Bray and Konsynski 2007; Hansen et al. 2009; Ives and Junglas 2008), while others have developed research agendas for exploring the new capabilities of virtual worlds (e.g., Davis et al. 2009; Mennecke et al. 2008; Messinger et al. 2009). Additionally, a number of IS journals have recently published calls for special issues dedicated to the topic of virtual worlds (e.g., *MIS Quarterly* and the *Information Systems Journal)*.

While some of the technologies of virtual worlds include familiar capabilities, such as chat and internal messaging, others differ substantially from existing communication technologies in key ways that affect attention, perception, and interaction (Boellstorff 2008). In our research commentary, we focus on embodiment and graphical 3-D space as two aspects of virtual worlds that distinguish them from many of the technologies typically studied by IS researchers. In virtual worlds, users — who had been largely disembodied by such electronic media as online forums, email, and text messaging — now assume a virtual body (not necessarily human) to interact with others and the environment. Having a virtual body in a graphical 3-D space establishes presence and enables non-discursive action. As Taylor (2002: 41) puts it "bodies root us and make us present, to ourselves and others." Such visually-rendered 3-D spaces, in turn, afford the construction of sharable places ranging from rooms and buildings to various geographies such as islands, campuses, and regions. Such places were largely absent from prior forms of electronic interaction and engagement. In virtual worlds, spaces situate action, enable and constrain certain activities, and convey a sense of aesthetics, meaning, and history (Nardi 2010).

Together, embodiment and graphical 3-D space create a visual environment that introduces placement, perspective, and practices of the body into virtual interactions (Taylor 2002). Being able to place oneself in physical proximity (or distance) to certain objects or avatars, and to observe the placement of others not only communicates something about one's relationship to objects and others, but also affords perspective. Participants can move into place to achieve a shared perspective or, by observing others' placement, can appreciate their relative points of view. Participants can also see themselves the way that others see them, creating opportunities for self-conscious observation and reflexiveness. The presence of virtual bodies in a shared space allow for the construction of shared experiences, and a collective sense of "being there" and "being with others" (Thomas and Brown 2009). Embodiment and graphical 3-D space also render the experience of virtual worlds as potentially more immersive than other media, as they enable bodily practices such as sitting, gesturing, smiling and dressing for a given situation. Generally associated with physical worlds, these practices of the body expand the modes of

expression available to virtual world users beyond explicit, textual communication and make possible the sharing of more tacit and kinetic content.

To the extent that such novel forms of interaction are becoming more mainstream in organizational and educational contexts, it would seem particularly relevant that IS researchers be able to offer some useful and valuable insights into the implications of virtual worlds for organizational life. The distinctive characteristics of virtual worlds, however, pose a number of significant theoretical and methodological challenges for the field. On the theoretical side, it is unclear whether existing theories are able to effectively explain the complex and dynamic interactions and events that unfold in real time within the persistent environments that are virtual worlds. On the methodological side, established techniques of social science research such as interviews, observations and surveys may not effectively capture the novel practices that constitute virtual worlds. We believe that both new theories and new methods will need to be developed to seriously engage the emerging phenomenon of virtual worlds. Such innovation should be productive both for examining virtual worlds, but also for understanding other IS phenomena that similarly entail multiple, complex, sociomaterial configurations.

Perspectives for Studying Virtual Worlds

Orlikowski (2010) argues that the dominant theoretical perspectives on information technology are ill-equipped to study the immersive, dynamic, multiple, and distributed phenomena that are virtual worlds. These dominant perspectives tend to draw *a priori* and fixed distinctions between the technology and human actors. This is apparent when we consider some of the key themes evident in the existing research on virtual worlds: identity, boundary, and presence.[1]

One of the key distinguishing features of virtual worlds is that users have to create an ***identity*** in the form of an avatar with which they identify themselves in the virtual space. Researchers have argued that virtual worlds thus require users to engage in identity work by defining who they are online and how

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[1] Given the wide scope of virtual worlds that reaches back to Multi-User Dungeons or Domains (MUDs) and virtual reality (VR) and that ranges from fantasy role-playing games to corporate virtual environments, we cannot present a comprehensive discussion of the research literature on these technologies, but see Schultze (forthcoming) for a review. We have focused on three aspects of virtual worlds that are particularly related to issues of embodiment and graphical 3-D spaces.

this relates to who they are off-line (Kafai et al. 2010). This is particularly salient in virtual worlds such as Second Life where the wide latitude associated with identity construction increases ambiguity for participants. While some of the early work on MUDs adopted a view of the self as multiple and highly fragmented (e.g., Turkle 1995), more recent research on virtual worlds has treated the self in more essentialist ways, conceptualizing it in terms of a true, actual, ideal, or virtual version of the self (e.g., Jin 2009; McKenna 2007). Studies have explored the discrepancy between users' virtual selves and their actual or ideal selves (Bessiere et al. 2007), and the extent to which these discrepancies vary across different virtual world contexts (Lawson 2000).

By virtue of their name, virtual worlds are contrasted to the "real" world. They are computer-mediated environments entered by launching a software program and logging on as an avatar. In much research on virtual worlds, the ***boundary*** between the virtual and "real" is defined in technological terms, and taken to be largely fixed and unproblematic. Laboratory studies have sought to demonstrate that results generated in virtual worlds replicate human behavior in "real" settings (Yee et al. 2007). Such experimental research is concerned with the correspondence of social norms and individual behaviors between the two worlds, and the extent to which virtual worlds mirror the "real" world. Related research focuses on the effect of virtual experiences on individual behavior in "real" contexts (for review, see Bailenson and Segovia 2010). This research examines the transfer of attitudes, skills and knowledge from the virtual to the "real" world and the extent to which behavior displayed in virtual worlds is imitated in the "real" world (Yee et al. 2009).

A defining feature of virtual worlds is the avatar, which re-embodies the communicator whose body has been largely invisible in prior forms of electronic media. As such, virtual worlds restore some of the taken-for-granted attributes of embodiment, especially ***presence***, defined as the user's sense of being in a given setting and co-present with others, that is, accessible, available and subject to them (Goffman 1963: 22). Research on presence in virtual worlds has tended to adopt either technological or cognitive perspectives. From a technological standpoint, presence is a human response to immersion, defined as a technology's ability to create a convincing, engaging environment with which the user can interact (Slater

and Wilbur 1997). Thus presence is enhanced by reducing lag in the display and improving the fidelity of the projected scenes. From a cognitive standpoint, the sense of presence in virtual worlds is a matter of where and how to allocate attentional resources. The more users attend to the public, shared world of virtual experience (rather than the private, imagined world of the mind or the physical experience of the "real" world), and are consciously (rather than unconsciously) aroused by events in the virtual world, the greater their sense of presence in the virtual world (Waterworth and Waterworth 2001).

While much has been learned about virtual worlds in existing research, we believe that these studies have also overlooked important aspects and entailments of this technology. In particular, the assumptions of fixity and stability of identities, boundaries, and presence evident in these studies have limited attention to the fluid and contingent intermingling of humans and technologies in virtual worlds, and the ways in which identities, boundaries, and presence are dynamic and enacted. For example, the boundaries between virtual and actual worlds, and between avatars and humans often appear blurred and shifting in practice, as apparent in the sorts of questions that frequently arise about these phenomena: Are interactions in the virtual world "real"? And if so, to what extent? Where are agencies located in virtual worlds? For example, when scripted objects (e.g., a sword in a gaming world such as World of Warcraft) animate avatars to take an action (e.g., swing their arms in a slaying motion), does agency lie in the objects, the scripts, the avatars, the users, or some combination of all of these?

We believe that alternative perspectives on virtual worlds may be useful in addressing these questions, and are particularly drawn to work on technological performativity by scholars such as Callon (1998), Latour (2005), Pickering (1995), and Suchman (2007) who posit materiality, meanings and practices as temporally emergent and constitutively entangled. A *performative* perspective understands virtual worlds not as fixed, determining, or mediating platforms through which people interact and collaborate with relatively stable identities and boundaries, but as dynamic and entangled assemblages of the social and the technical, continually produced in practice. We believe that such a performative perspective has the potential to offer significant analytical advantages to research on virtual worlds.

What is a Performative Perspective?

A performative perspective is associated with a focus on action and enactment, with the "mundane, everyday practices that shape the conduct of human beings towards others and themselves in particular sites" (Thrift 1997, cited in Nash 2000: 655). The concept of performativity may be traced to linguistics, where Austin (1962) defined "performative utterances" as certain types of statements whose meanings and effects are dependent on the act of their utterance in particular contexts. For example, the statements "I pronounce you man and wife" or "I name this ship …" are classic examples of performative statements. Uttering such a statement does not just describe the action, but actually performs it, thus contributing to the constitution of the reality being described (Callon 1998).

More generally, a performative perspective views reality as "a doing," as enacted in ongoing practice (Barad 2003). Such a perspective has been gaining currency recently in a wide range of social science studies to explore, for example, identity, geography, medicine, and economics (Butler 1997; Callon 1998; MacKenzie 2006; Nash 2000; Thrift 2003). As these scholars have argued, a performative lens offers considerable analytical traction in being able to view reality not as composed of fixed and independent entities, but as constituted by fluid, dynamic, multiple, and emergent phenomena.

Latour (1986) offers a powerful distinction between what he called "ostensive" and "performative" definitions of reality. Ostensive definitions of reality are those premised on essential properties that are deemed to exist independently of human action or interaction. These fundamental factors are posited to be abstract and generalizable and thus predictive of social reality. In contrast, performative definitions propose that practices — everyday doings and sayings — are constitutive of social life. Of interest here is the set of activities and interactions engaged in by various actors and how these are related and mobilized to produce certain effects. Such actions and interactions are not independent or abstract, but deeply connected and grounded, only attaining meaning and significance in the situations at hand. Performative definitions thus shift the focus away from presuming the existence of independent objects with fixed or given properties and boundaries, to a focus on practices that enact particular relational and situated boundaries, entities, identities, trajectories, and effects.

A number of scholars within management studies have usefully drawn on Latour's (1986) ostensive and performative distinctions to provide valuable insights into organizational life. For example, Feldman and Pentland (2003: 101) argue that organizational routines have both ostensive and performative aspects. The former may be understood as "the ideal or schematic form of a routine. It is the abstract, generalized idea of the routine, or the routine in principle." The latter "consists of specific actions, by specific people, in specific places and times. It is the routine in practice." Feldman and Pentland (2003) argue that these ostensive and performative aspects are critical for the existence of organizational routines, and that the ongoing relationship between them "allows routines to generate a wide range of outcomes, from apparent stability to considerable change" (p. 94).

In another example, Mouritsen (2006) compares ostensive and performative definitions of "intellectual capital," arguing that different forms of inquiry and thus insights are made possible by each definition. While an ostensive view of intellectual capital (IC) focuses on "how IC is a stable resource that can be associated with predictable effects," a performative view is "concerned with how IC elements are mobilized and related to effects that themselves are invented in the network where IC is given meaning" (Mouritsen 2006: 823). Where the former is concerned with developing "a generalised model of IC that leaves aside particulars, contingencies and circumstance to get to the essence of IC," the latter is concerned with developing "a situated model of IC that includes all manner of localities, circumstances and contingencies that cannot be generalized" beyond the specific elements and inscriptions that are configured as intellectual capital in a given situation (p. 836).

In the context of studying information technologies, a performative perspective would focus less on whether or how humans use technologies to produce certain outcomes, and more on how humans and technologies are interrelated in practice to produce (more or less) stable outcomes with certain effects in the world (Pickering 1995). As Law and Singleton (2000: 774) note,

> The classic way of thinking of performance is to say that people perform surrounded by material props. The new performative approach tries to understand the role of everything in a performance, people and objects alike. … It suggests that technologies, knowledges, and working may be understood as the effects of materially, socially, and conceptually hybrid performances. In these

performances different elements assemble together and act in certain ways to produce specific consequences.

While all technologies can be understood as shifting, contingent, and constructed in practice, we believe this is especially evident in the case of virtual worlds technologies. Where traditional technologies are often easily black-boxed, and assumed to be given and fixed, any experience of virtual worlds quickly and unmistakably highlights their dynamic and emergent aspects. These worlds are plainly neither fixed nor static, nor are they independent of the ongoing actions of developers and users who continually (re)construct the virtual worlds as they act in them. A performative perspective with its focus on action, movement, fluidity and enactment may thus offer particularly valuable insights to investigations of virtual worlds.

Why adopt a Performative Perspective to study Virtual Worlds?

Virtual worlds are technological platforms constructed by developers to support certain kinds of actions and interactions (Bardzell and Bardzell, 2008). But developers of virtual worlds alone cannot realize the kind of worlds they envisage; they rely on users to real-ize these open-ended environments by entering the worlds and engaging with the available places, objects and others (both user-driven avatars and computer-driven bots). A performative understanding posits virtual worlds as enacted by developers and users who perform the worlds through their actions (e.g., constructing avatars, objects, spaces, etc.), movements and interactions.

The places, objects, and avatars that make up virtual worlds are stored as bits and bytes on servers, and only come into being when they are rendered on users' computers. Furthermore, the immersiveness of the virtual world (its graphical 3-Dness) is only actualized when users' avatars perform physically and narratively. It is the performance of bodily practices such as walking, sitting, talking, etc., that gives places, objects and avatars substance. Virtual worlds are thus constitutively produced by developers, users, technologies, knowledge, activities, etc., and this production is both ongoing and contingent (Bardzell and Bardzell, 2008; Malaby, 2009). For example, users of some virtual worlds may modify their avatar characteristics "on the fly." As Bardzell and Bardzell (2008, p. 14) note, in Second Life, gender "is simply

specified with an always editable radio button." In another instance, a chair in a virtual world may have a

script produced by a developer that, once activated by an avatar, animates the avatar to sit in a certain way.

Users, however, may have their avatars "override" the animations encoded in objects and in this way, alter

what and how they perform the virtual world. Slippage of actions and scripts is also possible, as for

example, when "newbies" (novice users) forget to clothe their avatars, or allow their avatars to gesture

inappropriately, or maneuver their avatars into walls or tables (Malaby 2009). Actions and interactions in

virtual worlds are both scripted and improvisional, affording continuity and change over time.

A performative perspective shifts attention from understanding virtual worlds primarily through

the intentions, interpretations, and interactions of human developers and users, towards understanding

them as dynamic and contingent sociomaterial configurations, entailing the ongoing performance of

multiple, distributed, and diverse agencies (e.g., users, developers, computers, networks, algorithms, data,

avatars, etc.) in many places and times.

Research Possibilities for Studying Virtual Worlds

In this final section, we discuss some research possibilities for studying virtual worlds

performatively. In particular, we sketch out some ways in which performative conceptualizations of

research questions may be developed and studied in practice. In discussing these research possibilities, we

are not suggesting that existing or other approaches to conceptualizing and studying virtual worlds may

not be valuable. On the contrary, we believe multiple perspectives and methodologies can offer distinctive

and useful analytic benefits. What we are suggesting is that a performative take on virtual worlds may

offer us a number of additional and complementary analytic advantages by allowing us to challenge and

reconsider some of the taken-for-granted assumptions underlying the existing literature on identity,

boundaries, and presence. We believe that such a reframing offers interesting and generative implications

for how we study virtual worlds. In suggesting some of these possibilities below, we draw on our current

empirical research that explores life, work, and collaboration experiences within Second Life as well as in

private corporate virtual worlds.

Research Concepts for Studying Virtual Worlds

With respect to **producing identities**, a performative perspective conceptualizes the self as a practical everyday accomplishment (Alvesson and Willmott 2002: 625). Identity here is not seen to be fixed, core, or essential, but rather as "a fluid, contingent matter — it is something we accomplish practically through our ongoing interactions and negotiations with other people" (Buckingham 2008: 6). Such accomplishments will be situated and contingent, allowing for multiple selves to be enacted by individuals in different situations, whether such identities are enacted as more stable or more shifting over time. On this view, identity is understood as "constructed in and through conduct rather than as pre-existing conduct" (Hodgson 2005: 54).

In the context of virtual worlds, a reframing of identity allows us to ask what identities do users produce as they craft their avatars, with what practices, and with what effects for themselves, their work, and their organizations. Bardzell and Bardzell (2008: 12) argue that rather than understanding avatars as "online representations," we should conceive of them as "online subjectivities":

> A representation is a static signifier, a word or a picture that refers to the real thing. It is always separate from what it signifies … A subjectivity, in contrast, is a living force, an agent that both acts in the world and is constituted in the world through action.

Shifting the focus from the representation of online identities to the performance of online subjectivities moves beyond *a priori* assumptions about the stability of identities and the correspondence (or lack thereof) between users' on- and off-line identities. Rather, the production of identities in virtual worlds is understood as "an ongoing practice of multi-media authoring" (Bardzell and Bardzell 2008: 14), accomplished through actions and interactions that occur in particular local situations.

For example, consider the following quotes taken from an interview with a female Second Life user (Rene),[2] who describes different relations with her avatar (Angelina) depending on how she was positioning herself in the virtual world, and what she was trying to accomplish at a given time:

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[2] All names are pseudonyms.

> I'm playing me, you know. I'm my personality. … It's just me. It's my feelings, my thoughts, my choices. It's not like I'm saying things and making choices based on how I think a character should behave. I'm just being me.

> She's [Angelina's] a lot tougher than I am. [laughs] That's for sure. … Oh, because I'm a wimp. … When I role play her, she pretty much stands her ground. Whereas me in real life, I don't always have that in me, you know. I can be somewhat of the push-over and I'm starting to learn more and more based on standing up for myself as Angelina, and how people respond to that and respect that.

Rene's understandings of her/her avatar's identities ranged from seeing Angelina as closely related to herself ("I'm playing me") to being other than herself in certain ways ("She's a lot tougher than me") that allow her to try on and learn new capabilities and skills.

The performed and contingent nature of users' identities suggests that lessons learned during certain enactments may be carried over into other identity performances. For instance, Rene noted that one of the consequences of being more assertive as Angelina was that she became less concerned about potentially negative consequence of being assertive in real life situations:

> [Being assertive as Angelina is] letting me stand up a little bit more for myself in real life and not be so afraid of negative consequences. Because in the business world, I've seen that it's not always the nice person that gets ahead, no matter what people say. It's the person that speaks up for themselves.

One of the implications of the ability to perform multiple identities and switch among them in quick succession in virtual worlds is the fostering of generative ambiguity. For instance, by enacting different avatar-self relationships, users may develop the capacity to engage in novel and more risky actions. If these actions fail or users feel uncomfortable with the outcomes, they have the option of disassociating themselves from these actions. However, if the action succeeds, the users might acknowledge the avatars' capabilities as their own. As Rene noted about her experiments with her avatar: "I can crash and burn with Angelina [laughs] and learn from it, whereas, I don't want to crash and burn in real life."

This cycle of association and disassociation with avatars may be useful for work-related role-play and rehearsal in virtual worlds (Thomas and Brown, 2009). By being able to disown or downplay behaviors or identities with negative implications, users may be more willing to experiment with different and risky identities and roles, for example, constructing avatars of different genders, ages, and race, or even non-human avatars. These experiments can have both positive and negative consequences. One user of a virtual

world developed in ProtoSphere for globally-distributed teams chose an avatar of the opposite sex, noting that he thought this would allow him to be "more playful in interactions." After a few excursions with this alternative identity in the corporate virtual world, he was compelled to switch the gender of his avatar by his colleagues (other users of the virtual world) who were not comfortable with his attempted enactment of a differently gendered identity, and found it disruptive to team dynamics. That identities in this corporate world were not anonymous may have contributed to this team's insistence that participants perform their identities in familiar and consistent ways. In a different example of gender-shifting, The FutureWork Institute (www.FutureworkInstitute.com) conducts diversity training in Second Life, where participants select avatars of a different gender, race, ethnicity and/or generation than their own, thus giving them the opportunity to "walk in someone else's shoes" and gain a deeper understanding of others' "reality."

In addition to performing different identities with the same avatar, virtual worlds often allow users to create multiple avatars or "alts." For example, many Second Life users have at least one alt that is used primarily to test objects built by their "main" avatar, to spend time in-world undisturbed (because the "alt" will not show up as "online" on friends' lists), and to keep the "main" avatar's identity consistent for a given audience thus allowing the alternative avatars to engage in activities that would not be condoned by the set of people constituting the "main" avatar's network. However, to the extent that corporate identities become enacted within virtual worlds, we can anticipate that organizations may create avatar identities to represent roles such as technical support or HR specialists and customer service representatives, which would be played by different individuals at different times. Such enactments of the "same" avatar by multiple users would further problematize notions of identity in virtual worlds, highlighting the value of adopting a performative and contingent perspective to make sense of such roles, relations and outcomes.

The notion of performativity also draws attention to how ***boundaries are drawn*** in practice. That is, rather than assuming that boundaries and relations are given or fixed, boundaries and relations are seen to be continually produced in practice. On this view, boundaries such as those between the real and the virtual, humans and technologies, work and play, etc., are no longer seen to be stable or self-evident, but

as variable, multiple, and enacted in practice. The interesting empirical questions thus become what boundaries do users routinely enact in virtual worlds, how, why, and with what implications for themselves and others, as well as the communities and organizations of which they are a part.

Returning to Rene for example, her performance of boundaries departed from the conventional attempts to separate the "real," physical world from the virtual world. In particular, she seemed mainly concerned with distinguishing between which of her interactions felt "real" (i.e., authentic) and which didn't. That is, she was most interested in whether interactions were meaningful to her, irrespective of whether they were occurring in a virtual world or not. Since she had found it easier to develop deep friendships with people she had met in virtual worlds, these relations became more salient to her: "It just doesn't feel as shallow, meeting people in Second Life as it does like in real life."

Even though Rene resented people who treated Second Life as "a game" and failed to be considerate of the "real people" and their "real feelings" in this "fake" environment, she nevertheless wanted to preserve the virtual world as a place that she could occasionally escape to and play in. For instance, when she found that her interactions with her online friends dealt predominantly with "real life" issues that made her feel "depressed" and "worried," she sought ways of bounding these interactions, at least temporarily. In these instances, she enacted new boundaries for her virtual world activities, engaging in diversionary role-playing or exploring new regions in Second Life. In this way, she restored for herself the generative ambiguity and liminality of virtuality.

Similarly, users of a private corporate virtual world that was intended to promote distributed collaboration, enacted boundaries around what was appropriate professional interaction that departed from what they would have enacted face to face or in media such as video-conferencing. In particular, they experimented with the various gestures and movements available to their avatars, often using these as ice-breakers and tension relievers to keep the team process from becoming stalled or unproductive. As one user noted:

> So sometimes we did use the funny tricks that the avatars could do to release a little bit of the pressure, to have a little laugh before getting back to work. … [For example, we found that] this was the only place where you could walk on a table during a meeting.

Adopting a performative perspective on the ***constitution of presence*** would seek to explore the multiple kinds of presence that users enact in virtual worlds and with what effects. Relevant questions would include, under what conditions and with what consequences do users enact ways of being present that generate experiences of immersiveness, shared space, and connection to others. Rather than assuming that such experiences are intrinsic to virtual worlds, or necessarily afforded by the technology, a performative perspective would explore whether, how, and when experiences of being accessible, available and subject to one another are accomplished in virtual worlds.

When users of Second Life are asked why it is important to see the avatar of the person they are interacting with, most of them explain that they believe they have the other's attention when their avatars are co-located. Not only can they see what the other person is doing, but they are also both able to attend to the same things in their immediate environment. However, the mere proximity of others in avatar form does not necessarily mean they are present. One user, a schoolteacher who also had a job as a hostess in Second Life, indicated that she used her avatar as a placeholder to live up to her commitment to cover a shift in the virtual world while doing her actual "real"-world work:

> I had this screen shrunken down so it was only half of my monitor and the other half I was working on the test [for school] and I'd go back periodically and interject things in open chat [in Second Life] so that they would know – or think – that I was really paying attention.

Many virtual world users report multi-tasking while participating in-world. Given that such multi-tasking requires continuous shifting of attention among different places and audiences, both in the actual and the virtual world, these users relied on several practices to enact presence. Some described changing their avatars' clothes to fit more appropriately into the virtual situations they were part of. For instance, to feel more "on the beach" where her avatar was situated, one user changed her avatar's outfit to appropriate beach attire to connect more fully with the scene. Others found that "going into mouse-lock" — a visual mode that allows users to see the scene unfolding in front of their avatar's eyes as it moves — helped them feel more engaged in the virtual space. For instance, a user walked her avatar through a virtual labyrinth in mouse-lock to immerse herself in the meditative space and experience the calming effect evoked by this (virtual) walking practice.

One corporate user, who had experiences with both Second Life and OpenSim (an open source version of Second Life that can be installed behind a corporate firewall), pointed out that enacting presence is highly dependent on how much one identifies with one's avatars. For example, she felt uncomfortable with humanoid avatars, in part because these were inherently gendered. Believing that gender should be a "slider" rather than a discrete category, she "wore" avatars that had non-human forms such as plants (e.g., cactus), animals (e.g., dragon), or things (e.g., robot). While the main version of Second Life offered her multiple different avatar forms to choose from, the corporate OpenSim version only offered humanoid avatars. As a female avatar in this latter world, she reported feeling "not present," noting that she found it difficult to pay attention during virtual world meetings, with important implications for her own, her team's, and the organization's effectiveness.

In this necessarily brief research outline, we have tried to suggest some possible ways in which virtual worlds might be studied as enacted phenomena, where identities, boundaries, and presence are understood as contingently produced in everyday sociomaterial practices. Adopting such a performative perspective offers a number of conceptual advantages with respect to understanding the phenomena of virtual worlds. It also has implications for research methods.

Research Methods for Studying Virtual Worlds

Studying virtual worlds empirically raises a number of methodological challenges and opportunities. The fact that participants in virtual worlds are in multiple places at once, namely in front of their computers and in the virtual world, means that obtaining first-hand observations of the range of participant experiences is extremely difficult. Following a performative perspective, data that draws on participants' and their avatars' situated experiences in different situations is desirable. Virtual ethnographies and in-world interviews (Boellstorff 2008; Nardi 2010) would focus on virtual worlds as coherent cultures, generating rich and in-depth, first-hand accounts of life lived "in world" over time. Auto-ethnographies (Sliva and Mousavidin 2009) and offline interviews (Schultze and Leahy 2009)

would gain insights into the grounded and dynamic interplay between participants' engagements in the virtual and the actual worlds.

Interviewing methods that rely on participants' recounting of experienced events, including critical incident techniques (Flanagan 1954) and diary interviews (Zimmerman and Wieder 1977), may also be useful, particularly as these can be enhanced by the capture of onscreen images of experiences and events in the virtual worlds. Such images can make different aspects of the situation accessible to both researchers and participants, overcoming some of the limitations of text as a way of articulating and communicating knowledge (Bagnoli 2009). Thus, methods such as photo-diaries, which have been used in fields such as social geography (Latham 2003), may become increasingly relevant to research on virtual worlds.

One example of how the photo-diary method can be used for virtual worlds research comes from Schultze and Leahy's (2009) research on Second Life. After an initial two-hour face-to-face interview, virtual world users were asked to keep an ongoing photo-diary of particularly meaningful or significant incidents in-world. Participants were given a photo-diary template into which they pasted screenshots of virtual world incidents and asked to annotate each image in terms of six questions (i.e., when, where, who, why, what, and how). During follow-up phone interviews, the incidents documented in the photo-diaries served as the basis for exploring participants' grounded engagement in the virtual world. Focusing attention on these situated details made evident users' performative constitution of themselves, their avatars, virtual places, objects and other participants, thus generating valuable insights into users' lived experiences within Second Life.

Conclusion

In this commentary, we have argued for the value of studying virtual worlds as a novel and critical phenomenon that is likely to powerfully shape individual and organizational interactions across time and space. We believe IS scholars have much to learn and much to offer in researching this phenomenon. We have also argued for the adoption of a performative perspective on virtual worlds, as we believe that such a lens is particularly well-suited to investigating the dynamic, constructed, and emergent nature of virtual

worlds. As we have tried to show, a performative perspective would allow researchers to recognize and explore the shifting and multiple identities, boundaries, and presence relations that are being enacted in practice in different virtual worlds, and further allow researchers to examine the individual, group, and organizational consequences that these performances may have for identities, activities, team dynamics, work-life boundaries, social networking, and organizational effectiveness.

A performative practice on virtual worlds also has implications for their design. Technologies that are premised on user-generated content and construction — such as virtual worlds and social media— raise important challenges to our conventional understandings of information systems and systems development in organizations. Such technologies (e.g., ERP systems, logistics) are often assumed to be relatively fixed and discrete, their developers and users to have (more or less) clearly demarcated roles and jurisdictions, and boundaries between development and use to be largely given. Such assumptions, roles, and boundaries break down in the context of virtual worlds. Thus, identifying appropriate design activities and responsibilities for the development and support of virtual worlds is an important topic for future IS research. As Bardzell and Bardzell (2008) note, the way that designers conceive of avatars (whether as static representations or as performed subjectivities) has profound implications for whether and how the systems they build regulate or encourage ongoing authoring by users.

As Mouritsen (2006: 835) has argued, a performative perspective is committed to "asking questions about all things that we have come to take for granted," and proposes studying organizational reality (including, we would add, virtual organizational reality) "not only as finite and stable wholes" but as practices that enact fragile boundaries, relations, entities, and identities that are always "in the making" (Latour 2005). While we have suggested that a performative perspective may be particularly useful for engaging the emerging phenomenon of virtual worlds, we believe it can also offer powerful insights for understanding related phenomena of interest to IS researchers — such as social media and cloud computing — that similarly involve multiple, complex, and emergent sociomaterial configurations in practice.

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