Rethinking Language Learning: Virtual Worlds as a Catalyst for Change

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Abstract

Research on educationally designed game-based virtual learning environments and virtual worlds has begun to explore the affordances of 3D meta-verses for engaging learners in ways that contrast with formal schooling. Applying constructs from ecological psychology, distributed cognition, and sociocultural perspectives, design-based longitudinal studies have shown the quality of learning taking place in technology-supported collaborative environments. But what are the affordances of virtual environments for second language learning? How can we design for a nonlinear experience of action and interaction that exploits these affordances? We explored current language teaching practices in *Second Life* and found that many educators simply apply their classroom approaches in the virtual space, treating the environment merely as input. Designing for optimal learning opportunities in virtual worlds requires that we rethink second language acquisition by grounding it in the ecological psychology concepts of perception-action, values-realizing, coaction, and languaging. We call for a rethinking of pedagogies based on input/output models that imply a linear progression from an initial to a goal state. Instead cognition is embodied and distributed, and avatars in 3D worlds allow us to experience virtual environments in embodied, dialogical ways. Language learning in virtual worlds calls for design that prioritizes opportunities for distributed meaning-making and coaction in values-realizing activities that go beyond task-based learning, autonomy, and construction of a second language identity.

Introduction

Multi-user virtual environments (MUVEs) and massively multiplayer online games (MMOGs) can provide a set of affordances for language learning and teaching, such as opportunities for repeated practice, interaction, feedback, scaffolding, and socialization in situ (Gee 2003, 2007; Piirainen-Marsh and Tainio 2009; Zheng et al. 2009). These are not only crucial factors for language development but are the main factors that sustain a community of practice, which in turn cultivates language use by engaging a community Discourse (Lave and Wenger 1991; Gee 1999/2003). However, as we explored current teaching practices in *Second Life* (*SL*), one of the most popular virtual worlds among educators, we found that activities and approaches—for example, task-based activities, role-play, vocabulary and grammar games—resemble those used in real world second language (L2) classrooms. We also noted the use of innovative techniques, including the creation of virtual world presentations, podcasts, and project-based learning. We respect the efforts of teachers who are early adopters of virtual worlds, but we feel that some of the most powerful affordances of these environments remain untapped.

By examining *SL* teachers' blogs, websites, and presentations, we found that instructional design and methods are largely rooted in the information-processing paradigm of cognition, which is at the core of predominating views of second language acquisition (SLA) that tend to view language as code. Our concern here is not with the larger argument for rethinking learning theories grounded in information processing but with the probable failure of long-held views in SLA to generate virtual world pedagogies that capitalize on embodied, dynamic learning within the diverse discourse communities that exist in online worlds. The value of virtual worlds for language learning may not be realized without a rethinking not only of SLA but of language as a complex adaptive system with an integral role in individual and social cognition and of learning as an ecological agent/environment achievement. To rethink language and learning in a dynamic nonlinear fashion, we ground our discussion in ecological psychology and sociocultural, dialogical, and distributed perspectives. Together, these views provide a basis for crafting a new framework for understanding virtual worlds as powerful technologies that afford co-presence, coaction, distributed meaning-making, values-realizing, and coagency.

Key Concepts

Central to our argument are several concepts linked to the distributed view of language. Our understanding of these concepts has been enriched greatly by our contact with members of the Distributed Language Group. The distributed view recognizes language not as a form of knowledge represented by symbols in the minds of individuals but as a social institution (Port 2010) that is similar to other social institutions (e.g., education or religion) that arise to support the coordination of behavior of a community and exist across members of a community, as well as across time and space. Language in service of real time coordination of behavior, or *first-order* language, is distinguished from orientation to linguistic structures and verbal patterns, which are sociocultural constructs considered to be *second-order* language (Kravchenko 2007). First-order and second-order language belong to different consensual domains, yet they are related. In first-order *languaging*, meanings are constructed on the fly as we realize values contingent upon the sociocultural environment. On the other hand, making sense of written marks draws on accumulated experience of world, speech, and writing (Kravchenko 2007).

Theorization of language in terms of first-order and second-order allows us to look at language as a perception, action, and caring system (Hodges 2007a, 2007b, 2009) without neglecting the fact that written language and other social artifacts have an important role in sense-making. The first and second order are mutually entailing for languaging in real time and space and for literacy development.[1] The essential properties of language are that it is physically grounded, as well as a biologically, socially, and culturally determined joint activity of human beings (Kravchenko 2007).

Embodiment

We take cognition to be embodied activity, as strongly evidenced by findings on mirror neurons, a type of neuron that activates similarly whether we perform actions or perceive others performing similar actions (Barsalou 2008). Other research on language embodiment (as summarized by Atkinson 2010) reveals activation of language areas of the brain

during sensorimotor action and, conversely, activation of motor areas during speech; relationships between comprehension speed and spatially oriented descriptions; and faster recognition of words rated as high for body-object interaction. Distributed approaches show that functional aspects of cognition draw on external resources; results depend on processes that are distributed among *neural structures*, *ecosocial processes*, and *bodily activity* (Thibault 2005). These ecosocial processes and bodily activities are difficult to achieve in classroom settings where sociomaterial artifacts (for engaging meaningful conversations and augmented interactions) and a terrestrial environment (for locomotive exploration) are missing (Reed 1996). Classrooms provide a set of instructional and interactional opportunities that center learners in institutional knowledge and/or imagined behavioral action and interaction with the world. However, in terms of affordances for engaging students in embodied, socioculturally diverse, and embedded activities with others using the L2, or in real time interaction with native speakers of the L2, many 3D avatar-based multiplayer virtual worlds have more to offer.

To realize the full language learning potential of virtual worlds, we must first acknowledge the embodied state of the avatar, which does not merely represent but is one with the person in control. When we participate in the life of a 3D virtual world, we are immersed and present. The boundaries of our bodies and physical environment are extended. Embodied in avatars, we have the ability to move, to change our visual perspective, and to interact with objects and others in our surroundings. We control our perceiving and acting in order to accomplish specific goals. The affordances for embodiment that allow for agency and movement in a multi-user virtual world such as *SL* (or certain multiplayer online games) distinguish these environments from other social media that support co-presence in a less physical sense (e.g., being present synchronously as when we text chat using an instant message tool).

The ability to *be*—our embodiment—in a virtual space is the feature that differentiates experiences of virtual worlds from those of other digital environments. The ability to be with others, as one would have coffee with another, and to do things with others, such as designing and building a house with another, are the complementary features that make virtual worlds potentially ideal spaces for language learning. The affordances for co-presence and coac-

tion are relevant and important when we consider language as a mode of action rather than a code (Love 2004, 2007; Kravchenko 2009).

The Code View of Language

Love (2004, 2007) and Kravchenko (2007, 2009) draw clear connections between the code view of language and what have become the dominant practices in language teaching. Kravchenko describes how the code view developed:

> For a long time the true nature of linguistic signs was obscured by strong beliefs that signs were artificial, conventional, and arbitrary entities intentionally produced by human beings for the purpose of communication understood as exchange of encoded meanings. These encoded meanings (or "mental content," "thoughts," "abstract knowledge," "complex propositions," etc.) were assigned to special entities known as "sign vehicles." Allegedly, these were then conveyed from the speaker's head into the listener's head via the medium of oral speech—hence the so-called "code-model" of communication based on the "conduit" metaphor. (Kravchenko 2007, p. 651)

The code view has led to instructional approaches that treat language as denotational rather than connotational (Kravchenko 2009) and that emphasize the learning of rules and conventionalized routines; it has also led linguists and other language researchers to conflate written language forms and structures with language in real-time communication and coaction (languaging). This is referred to in the distributed language community as the *written language bias* (Linell 2005). According to Linell, the language sciences contain 101 points of bias, particularly in linguistics, which is deeply influenced by a long tradition of analyzing only written language. Modern linguistic theories, including psycholinguistics and sociolinguistics, have a tendency to treat processing activities in terms of object-like, static, autonomous, and permanent structures. Instead, Linell (1998, 2005, 2009) proposes a more integrated and eclectic approach in which structure and action are seen as two interpenetrating perspectives.

Languaging and DEEDS

Many of the teachers we observed viewed *SL* as an environment that provides a rich source of input, a view we trace to a narrow and individualistic view of language as code. The pedagogies that grew from the input-output model do not account for the multiple timescales across which learning occurs or the dynamic, distributed, multimodal nature of meaning-making (Lemke 2002; Baldry and Thibault 2005; Jewitt 2006). Because students are increasingly invited to participate in virtual worlds—whose semiotically rich, interactive, domain-based contexts allow for multiple trajectories of learning—we ought to adopt the alternative concept of languaging (Maturana 1988, 2008; Linell 2009): "a mode of action," as Cowley notes in a personal communication, "that integrates patterns that function in different time scales: we integrate how we move and feel, with what we hear 'us'—me and you—saying." In Cowley's description we recognize the integration of language and cognition—specifically, the role of language in "co-ordinating cognitive processes among and within individuals" (Language as Social Coordination Conference 2010).

We have adopted the acronym DEEDS (Walmsley 2008) to emphasize that cognition is dynamic, embodied, embedded, distributed, and situated. Applied to educational settings, this framework calls for a rethinking of teaching goals, practices, and learning outcomes as a dialogical achievement rather than as a monological effort (Linell 2009).

Languaging as Values-Realizing Behavior

We are most excited about the affordances of virtual environments for action-based, contextualized, personally meaningful learning that involves the construction of the self (Kravchenko 2007) and relating to others dialogically (Bakhtin 1991; Salgado, Ferreira, and Fraccascia 2006; Linell 2009). Gee (1999/2003) points out that not only language-in-use makes us who we are but also habits of communication; for example, the kind of food a Chinese international student in an American graduate school eats, the type of courses she or he is interested in, the community she or he participates in, and routines such as when she or he calls family in China.

We concur with Hodges that "the play in values is what allows actions to function intentionally and adaptively" (Hodges 2007b, p. 591). Hodges (2007a, 2007b) asks us to consider conversing as a values-realizing behavior. In a communicative project, ecological pragmatism is fundamental (Hodges 2009). When interlocutors carefully comfort each other through their language choices—for example, by calling a male cat a "bachelor" in order to emphasize the bond between three (two human and one feline) family members living in a household together after a fourth member of their household has passed on (Hodges 2007b)—they are demonstrating an act of values-realizing rather than adhering to rules of semantics. When a parent says, "I'm sorry Robbie, but we had to let all the servants go last week" (Hodges 2007b, p. 592), he or she is using humor to soften a request to complete the chore of making a bed. In a lighthearted, *caring* way the parent leads the child to take responsibility for the task at hand. Summarizing these examples of social interactions, Hodges notes,

> Conversations depend on action-perception systems operating in dialogical arrays to orient us to the ecosystem and to identify its goods, and the directions in which we might go to realize them. Language, thus rendered, is a values-realizing activity, one that allows us to engage in the moral tasks of caring for others, ourselves, and the ecosystem within which we all live. (Hodges 2007b, p. 602)

This article examines current practices and reflections in and around *SL*. By grounding our analysis in the DEEDS view, we propose that designs for ecological language learning niches in virtual worlds be based on a distributed view of language. Although actions depend on functionally distributed systems (including computers), learners interact as living agents whose embodiment and histories make the resulting language and experience both situated and dialogical (Bakhtin 1991; Linell 2009), context as a dynamic and temporally unfolding process (Goodwin 2000; Stuart 2010) that is necessary to a meaning-making, values-realizing, and identity-constructing activity (Gee 1999/2003; van Lier 2004; Hodges 2007b). Virtual worlds are more than an addition to the list of technologies that support computer-mediated communications or communities. They should push us to rethink human psychology, language, and L2 acquisition.

Exploration of the potential for learning in virtual worlds has just begun. But without a shift from individualistic views of learning, researchers are likely to be constrained by a framework that cannot account

for the embodied, distributed meaning-making that virtual worlds afford. Viewing the virtual world environment as input is likely to lead to instructional design that fails to draw upon the affordances of a learning environment in which learning is "perpetually folding into, unfolding from, enfolding the other and vice versa," and in which the learner, "the living body, in its reciprocally affective co-agential lived experience anticipates, imagines, and enacts how it expects prenoetically its world will continue to be" (Stuart 2010, p. 308). We call for innovation in theory and method as L2 researchers and educators begin to explore virtual environments, and we find support for our perspective in research that has revealed the affordances of virtual worlds for first and second language literacy development (Gee 2003, 2004; Black and Steinkuehler 2009; Zheng et al. 2009), participation in Discourse communities (Steinkuehler 2006), and situationally embodied curricula (Barab, Zuiker et al. 2007).

Rethinking Language with Virtual Worlds

Four concepts prominent in second language acquisition (SLA) and computer-mediated communication (CMC) pedagogies are transfer, input/output, tasks, and learning about. We reconceive these as part of an embodied, action-based array of social and dialogical practices:

1. from *transfer* to *coaction*
2. from *input/output* to *affordances/languaging*
3. from *tasks* to *learning environments*
4. from *learning about* to *learning to be/become*

From Transfer to Coaction

What Is Language For?

Educators who are skeptical of the value of technology commonly ask, "Will the skills learned in the virtual world be transferred to real-life situations?" or "Will text chat skills reflect communicative skills?" These *are* important questions to ask because as educators we feel compelled to ask whether students can apply what they learn in our classes to their future jobs and whether students can use the language they have "learned" from their language classes in real-life situations. However, if we look at language dialogically, these "application" questions lose validity because the skills gained in game play or interaction are the

real life skills embodied in action. As Linell (2009) explains:

> A dialogical theory of language must assign primacy to action, rather than to pure cognition and to transmission of cognitive products; one might classify such a dialogical theory about what is sometimes called "situated language" as "praxeological." It deals with actual performative actions in the world, rather than language as an abstract form or mental object that is "used." (Linell 2009, p. 274)

Language-learning activities that are designed from a situated perspective need not be concerned with transfer issues; that is, with the transfer from "cognition" to "communication." Such activities do not involve distinct steps or stages. Instead they involve learning acts in which learners simultaneously "do" things and communicate in the real world by engaging in languaging (Linell 2009). The question of transfer may be reframed as a question of whether instruction enables learners to move toward their goals of increased participation in the Discourse communities that matter to them, not because they are able to produce appropriate language output based on internalized knowledge of rules or routines but because they have learned to integrate language and action adaptively in novel situations according to social and cultural norms. This learning emerges through experiences of languaging.

This notion of languaging can be traced to Maturana (1988), who says it occurs when organisms recurrently interact with one another in the consensual coordination of actions that are phenomena of the praxis of daily life. Languaging takes places when we need to coordinate our actions repeatedly. Gee's (2003) observations about repeated and recursive practice in video game play draw attention to the affordances of complex games that provide learners with strong motivation to do the same thing again and again. Gee's work makes salient the notion of action and interaction in situated literacy practices.

When modeling and scaffolding Chinese calligraphy for non-Chinese students, a teacher might continually speak Chinese while teaching the students how to hold a calligraphy brush, how to start a stroke, how much ink to dip the brush with, and so on. Meanwhile, students mimic by trial and error, asking questions as they attempt to replicate the process. At the beginning, interactions might look like this: the teacher demonstrates how to hold a brush,

using actions and only a few indicational words such as "*bi yao shuzhi*" (hold brush straight down).[2] At the beginning, students might be able to ask questions only with routine words or with a mix of first and second languages; for example, "*Laoshi, wode moshui* too much" (Teacher, I had too much ink). In the sociocultural practice of "doing" art, students coordinate their actions with language; for example, inviting conversation, sharing their perspectives and excitement, and introducing new ideas (Reed 1996; Linell 2009; Cowley 2011; Zheng forthcoming).[3]

In first language development, babies, as self-regulatory agents, use their caregivers as a resource to discover verbal patterns that later shape their reasoning and identity (Cowley 2007b, 2009b). By the same token, in an L2 or foreign language immersion setting, learners, instead of being passive receivers, can exploit circumstances by using expression to track teachers' or classmates' display while acting to realize values for their partners. L2 learners, especially at the absolute beginner level, can be shaped as agents who self-regulate the expressive dynamics that connect their bodies and "the verbal patterns of a cultural heritage" (Cowley 2007b, p. 98). These circumstances do not exist naturally—as they do in first-language baby-caregiver-object triadic interactions (Reed 1996). Cowley (2007a) calls such coordination of actions "coaction." However, semiotically rich environments can be designed in classrooms or in virtual worlds (Barab, Dodge et al. 2007; Zheng forthcoming) to allow learners to engage in coaction in the L2.[4]

What Are the Affordances of Virtual Worlds?

Two theoretical explanations of the *transfer* of virtual knowledge to real world practices are possible. They are conceptual blending (Thomas and Brown 2009) and coaction (Cowley 2007a; Wegner and Sparrow 2007). Thomas and Brown (2009) use the term *conceptual blending* to talk about "a sense of fit," to emphasize that the space a gamer resides in is both virtual and physical to the extent that outside game resources are drawn upon to empower his or her avatar's actions. The perceptions of other players and self-dispositions are thought to exist in the blended space of virtual and real that is imagined to be in the gamer's head. Dispositions do not *move* from a virtual to a physical domain. Rather, the avatar-embedded, information-rich world and the physically and culturally information-rich world are brought together

within the mental construct as blended resources in service of interactions. No transfer occurs.

This is because it governs (1) our extended body (our physical self with virtual world effectivities) and our avatar; (2) our extended body and the extended bodies of others as avatars in the virtual; and (3) between the living participants. Coaction is always coupled with interactions that are collectivized (Reed 1996) or dependent on social norms. In contrast to interaction, coaction cannot be reduced to negotiations of meaning, action, and identity (Zheng forthcoming); however, coactions are seemingly co-constructed, are always prospective, and involve *alterity* (taking other people's perspectives) (Cowley 2007a; Linell 2007, 2009; Zheng forthcoming). In a virtual space where our avatars can perform actions that physical bodies are not capable of (e.g., flying), the avatar's context offers new affordances on which the physical body/mind can act. Once the physical body/mind is attuned to a new understanding of an environment, we will take our avatars to other, as yet unexplored, contexts. The recursive, entwining perception and action system created by the coaction between our avatars and ourselves does not necessarily involve verbal languaging, although internal dialogue may arise in this coupling (Linell 2009) with invisible third parties (Salgado 2007), and virtual patterns can be discovered to shape future language stances (Cowley 2011).[5]

We agree with Love (2004, 2007) and Kravchenko (2007, 2009) that treating language as a code leads to a view that language development and learning are a matter of decoding the rules that combine "sets and systems" and "abstract objects (linguistic forms or expressions)" (Linell 2009, p. 275). In the code view, Cowley argues in a personal communication, one cannot avoid the cognitive input-output model of learning, and problem solving reduces to a journey between an initial state and a goal state. The code view has had the effect of downplaying our bodies' role in languaging, as well as the recursive perception and action system and the reciprocally affective coagential anticipatory experience.

Clark argues that "the emphasis on language as medium of communication tends to blind us to a subtler but equally potent role: the role of language as a tool that alters the nature of the computational task involved in various kinds of problem solving" (Clark 2001, p. 193). Rejecting internalist views of mind, Cowley summarizes the contributors' view in a special

issue of *Language Science* by stating, "If learning to talk uses cultural ecology, language arises as co-action sets off both individual and social learning" (Cowley 2007a, p. 577). From here we can begin to describe the second aspect of coaction in virtual spaces: the coacting of avatars/bodies. In the distributed view of language, in contrast to form-based approaches—that is, "theories or models that abstract language from behavior" (Cowley 2007a, p. 578)—we trace language to "a domain of recursive consensual co-ordinations of action" (Maturana 1988, p. 47), or languaging as an "activity by co-acting bodies" (Cowley 2007a, p. 577). In coaction, our unified avatars/bodies pursue values that allow us to care to talk to one another (via text chat and/or voice chat) and to use one another's utterances and actions as context to seek good prospects or further opportunities to engage with one another in mutually rewarding ways (Hodges 2007b). In both kinds of coaction—that is, coaction involving (1) a gamer's physical body and his or her avatar; and (2) coacting avatars—we orient toward the other and create new affordances for both. Coaction is prospective, always feeds forward, and in and of itself is transforming. All of this is lost in input-output models that reduce communication to information transfer.

Current technology constrains avatars to preprogrammed gestures (waving, bowing, yawning, etc.). Until technology advances to the extent that an avatar can mimic human body gestures,[6] we cannot investigate language as embodied action that coordinates our actions by guiding the attention and orientation of self and others (Tomasello et al. 2005) in a fully embodied way. However, Fowler and colleagues (2008) found that when speakers engage in a cooperative task requiring them to talk to one another, they entrain their postural sway regardless of whether they can see one another during the task. In the social world, coaction is manifested in the reflexive stance toward other participants, the current talk, and the actions in progress (Goodwin 2000); in physically coupled action; in psychologically coordinated action; in mimicry; and in obedience and conformity (Wegner and Sparrow 2007). Coaction is also attributed to affectively laden, anticipatory dynamics with the felt presence of the other, in so-called enkinaesthesia (Stuart 2010).

What Needs to Be Rethought?

Transfer implies an abstract concept in which previously learned schemas are superimposed on new situations. By contrast, in coaction, authorship is credited to both the physical body and the avatar. The boundaries at which tools (technology, avatar, etc.) end and the body begins are blended. In the perception-action framework, one does not need to learn an abstract language and then apply it. Learning takes place in the moment of perceiving (the structure and meaning of language and other semiotic resources) and moving the body along multiple and heterarchical nonlinear trajectories. The actions of using a keyboard to control an avatar's movement and to say things by typing (or by voice) are coupled with the need to coordinate actions. This activity differs significantly from collaborative text-making.

Collaborative text-making, such as writing together in Google Docs or on a wiki or chatting on Skype or AIM, shapes acts of embodying text in multiple heterarchical trajectories through thoughts and representations but does not necessarily involve embodied sense-making using artifacts embedded in the environment. However, in a 3D space, coaction shapes acts of embodying text in multiple heterarchical trajectories through both text/audio chat and body exploration and action. Avatar-body coupled exploration and coaction illustrates the key difference between 2D and 3D environments. The two types of coaction that occur within the 3D environment are critical features of distributed meaning-making and values-realizing cognition systems. The traditional view of the separation of cognition and communication, mind and body, and body and world falls short in explaining how learning takes place in a 3D space. In virtual worlds, particularly those that center on a multiplayer online game, the coaction of players can be understood as a creative process from which culture and identities emerge (Ricento 2005), values are realized, and cognitive and linguistic effectivities are transformed.

Current Practice. The following entry from an *SL* language teacher illustrates the pervasive view of language as content that is processed and becomes output. The topic is project-based learning (Kilpatrick 1918; Barron et al. 1998; Stoller 2006; van Lier 2006), which inherently involves coaction and languaging. Nonetheless, the author considers it to be merely an intermediate step in the language acquisition process.

> A major goal of project-based instruction is comprehensible output . . ., which generally

occurs both during the project and as the final product of the project. Some ideas for PBL [project-based learning] in SL for language learning:

- Language learning students explore different ways of how SL can be used for learning and/or practicing the target language and present their results in different ways (exhibition, presentation, panel discussion, book+presentation, blog, essay, report, etc.)
- CLIL [Content and Language Integrated Learning]: Biology, Sociology, etc. (visit related places, experiment, explore, interview, etc.—depending on the topic—then create a final product to present their results)
- BE [Business English]: Set up a business, have project meetings, etc, report results
- Event organisation (students take on the different roles necessary in the organisation of an event, plan the steps and execute their plan (e.g. an exhibition, an end-of-course party, a conference, a charitable event, etc.) (Kern 2009a, n.p.)

The activities based on the project-based learning principles this teacher suggests are excellent from the DEEDS point of view. If they are carried out, students may have a fun and engaging experience. However, by saying "a major goal of project-based instruction is comprehensible output," the teacher undermines many of the values of project-based learning—for example, the need for coaction, creativity, emotion, and problem finding. In designing activities from a dialogical languaging perspective, one should not hold to expectations of a fixed outcome. Instead, the focus should be on embedding activities in which learners are supported as they explore and act in the environment, engage in coactions in unanticipated situations, and follow nonlinear trajectories (van Lier 2004; Larsen-Freeman and Cameron 2008; Zheng forthcoming). Therefore "practicing the target language" is only one by-product of a project. Among the many other values occurring and recurring during coaction are opportunities to share perspectives, express emotions, solve problems collaboratively, and develop identities.

We want to provide an alternative to the input-output metaphor, one that reflects the larger context of the omnipresence of learning and thinking dis-

tributed in the globalized world. The dialogical, ecological, and distributed perspective not only brings learners into the world—where attunement takes place reciprocally—but also views learners as dialogical beings (rather than autonomous singular individuals who conquer the "Wild West") whose "personal experience of voice is strictly related to the actual experience of establishing a relationship with multiple addressees, physically present or not" (Salgado 2007, p. 61) and as coagents with "co-affective sensory-kinaesthetic systems which spill out into the world and the lives of others" (Stuart 2010, p. 307).

Best Practice. Design for action-based learning in *SL* is informed by the work of teachers who dove in early and provided reflections on their experiences. As one experienced teacher notes, traditional language learning practices often fail. He suggests, as have many others, that good design for learning in *SL*—design for action-based learning—can be inspired by the learning we associate with good computer games:

Many classroom activities do not work very well in SL. They lead to groups of students standing around in circles reading note cards. . . . The environment is so visually strong that we need to be able to use it, to create large spaces with motivating games. This will take serious groups of people with serious SL skills to be able to do.

One participant mentions the common misconception of people thinking of SL as a game. This is good because it is attractive to students who like games. But it's also bad because teachers generally think of SL as a game and don't take it seriously. . . .

Strong motivations in computer games (mastering tasks, preserving life, evading enemies, etc) are lacking in SL. People will do things over and over again in order to get to the next stage of a game. This is one of the strengths of gaming that could be built into learning. (Stanley 2009, n.p.)

Differentiating an open-ended MUVE context like *SL* from an MMOG, in which problem-solving activities are embedded within the narrative of the game's backstory, literature, and lore, is important. MMOGs, such as *World of Warcraft* (*WoW*), which as of 2011 has a worldwide player community numbering 11.1 million ("World of Warcraft" 2011), may already serve

as rich contexts for languaging and language acquisition by L2 learners. Moreover, games can be co-opted as contexts for designed language learning activities (Zheng and Newgarden forthcoming), capitalizing on the gaming features that require players to coact as they choose, plan, and complete quests; run instances (complete grouped quests in virtual world dungeons such as in *WoW*); compete in battles; or participate in organized raids with guild members.

From Input/Output to Affordances/Languaging

What Is Language For?

A preset battery of needs analysis tests can suffice to provide an initial assessment of a learner's needs and goals but might fail to capture the learner's emergent needs, goals, and values (Reed 1996; Hodges 2007a, 2007b, 2009). The ecological concept of emergence acknowledges learners' agency. Learners actively seek semiotic resources (affordances) to make sense of the worlds in which they interact. In this sense, language is emergent because learners' embodying of new semiotic resources enables them to detect affordances that they could not previously detect. Thus, their needs, goals, and values-realizing dynamics change as they move forward. The cycles of perception and action enable the learner to detect increasingly subtle and increasingly specific information in the environment.

Dialogical and ecological theories provide an alternative view of sense-making, one that is relevant to understanding learning in virtual worlds. "In the dialogist perspective, thinking or (cognition) is concerned with sense-making in and of the world, in relation to the world and with the help of communication, language and the use of artifacts" (Linell 2009, p. 41). However, when we visit university sites in *SL*, we often see beautiful buildings and well-displayed Power-Point presentations. When we visit language learning islands, we sometimes see authentic-looking architecture. And when we visit classrooms in *SL*, we may even see traditional desks and whiteboards. However, we see few places that directly invite visitors to engage in actions and interactions. NASA's *SL* site, the British Council Island, *SL* English, and *SL* Chinese School are exceptions, to name a few, all of which are embedded with quests. Although we are aware of other islands built with game engines and infused with quest-like activities, our experience with *SL* has led us to conclude that many educators conceptualize the virtual world as a real world classroom; that is, as a space in which a teacher must be present to direct, control, or scaffold the learning as if it were content from a textbook. Engagement with the environment is intensified by the presence of others. Being in a virtual space, no matter how spectacular the scenery, may not be much fun if it is lacking life. The experience can be compared to that of a child discovering a new but empty playground: she is initially excited by the cool slides and climbing areas but then realizes that, without other kids with whom to play or without a built-in mechanism to invite interaction, the playground will not remain fun for long.

But the presence of others—for example, native speakers of the language or other peers—cannot always be counted upon when needed for language learning. Virtual worlds offer a solution. We can create environments for learning that are community oriented and learner activated and that, at the same time, lead to personally meaningful experiences without necessarily requiring the synchronous presence of a teacher or other "real" people. The capstone of learning that can be counted as dialogical is engagement in a project in which "*self (or selves) and others are involved in the plural*" (Linell 2009, p. 89; emphasis in original). In the communicative project, rather than individuals performing autonomous speech acts, "parties take mutually complementary contributions" (Linell 2009, p. 193).

What Are the Affordances of Virtual Worlds?

Virtual worlds contrast dramatically with traditional classrooms. In a typical language classroom, four walls enclose a space filled with chairs, tables or desks, a whiteboard, and perhaps some audiovisual equipment and some learning materials posted on the walls. A more high-tech classroom might have a projector, a computer, or a Smart Board. For some L2 learners, particularly those who are not living in a country where the target language is spoken, the classroom is where most language practice takes place. That teachers confined to classrooms and to the limited resources therein have focused their *SL* efforts on bringing in authentic language content (i.e., input) is easy to understand. In terms of its affordances for learning, the traditional classroom may have a limited "semiotic budget" (van Lier 2004). The L2 teacher faces the challenge of providing not input but contextualized opportunities for language practice that approximate what the learner will experience in a real life situation.

The dialogical view of language learning implies an additional challenge for teachers: In the absence of native speakers of the L2, a teacher must convince learners that they can learn from their interactions with one another. Finally, because language teachers may work from a set curriculum or text, learners may have very low sense of authorship. This is not ideal for learning, because experiences of authorship, whether actual or perceived, are embodied and emotional and, therefore, more memorable (Wegner and Sparrow 2007).

In contrast, virtual worlds offer the opportunity to experience language by whole body/avatar immersion and coaction. The learner enters an incredibly complex environment with rich meaning potentials, full of museums, shops, restaurants, national parks, and so on. Diverse "others" are co-present in a virtual social space. In a highly populated world like *SL*, L2 learners are likely to find entire communities of others using the target language while engaged in some kind of learning, hobby, or other activity that interests them. Furthermore, because of the potential for creation in *SL*, any context can be built. Taken together, these two affordances suggest opportunities for situated learning (participation in communities of practice) and the potential for coaction in contexts that are relevant to students' language learning goals.

What Needs to Be Rethought?

Rather than building lecture halls, classrooms, or classroom-bound activities, instructors ought to create affordances in the making of museums, shops, and restaurants and ought to invite the learners' active participation rather than focusing on the "input" or "comprehensible input" that learners will receive. The dual concepts of affordances and the zone of proximal development (ZPD) can help us recognize how the virtual world can expand our current view of learning. As a result, more language learners and educators will more adequately embrace the power of virtual worlds (Thorne, Black, and Sykes 2009; Zheng et al. 2009). Van Lier expresses the defining features of affordances in linguistic terms:

a) an affordance expresses a relationship between a person and a linguistic expression; it is action potential; it is a relation of possibility;

b) linguistic affordances are specified in the linguistic expression, and available to the active interlocutor (or addressee) who may pick up one or more of those affordances as they are relevant at the moment;

c) the affordances picked up serve the agent—depending on his or her abilities—to promote further action and lead to higher and more successful levels of interaction. (van Lier 2004, p. 95)

We need to bear in mind the importance of designing learning environments in which learners can pick up affordances both in and outside the ZPD. Gibson's (1979) definition of affordances emphasizes that the concept has neither objective nor subjective properties. Affordances should always be dynamically coupled with effectivities, which are the agent's aptitude, abilities, or needs. Affordances can become an action possibility only when agents are ready or have the capacity to attend to them. Having the goal of designing learning environments rather than orienting and sequencing learning through task design can help us pay more attention to learners' needs dynamically as they perceive and act in the environment, because learners come with extensive knowledge, coacting tendencies, and histories of seeking good prospects (i.e., values). The designer/instructor's job is to scaffold participation in the semiotically rich environment, allowing learners to actively pick up affordances and, to use Brown and Duguid's (1996) description, to steal the knowledge they need when they need it. We can become aware of the learner's need for support only when we allow the learner to participate and engage in meaningful practice. "Scaffolding occurs when planned pedagogical action stops" (van Lier 2004, p. 162). By revisiting Gibson's original definition of affordances, we confirm the inadequacy of the dualism of objectivity and subjectivity and of the separation of mind and body and body and world, as well as the consequent perception of learning as an internal activity in the brain.

Current Practice. One example of the mediation of learning in *SL* is the use of holodecks by many L2 teachers. A holodeck is an *SL* construction or build of a particular context or scene (a restaurant, a hospital room, a child's bedroom, etc.) that can be brought into existence (or "rezzed") on demand. Holodecks can allow for language activity and interactions within a specific context.

In June 2009, language teachers in the *SL* Experiments group held a contest to create and share holodecks and associated learning activities. The created scenes included several kinds of gardens, an Italian market, a Venezuelan market, a flea market, and a maze (Kern 2009b). The recommended activities included identification of object names and locating or moving objects; discussions about the activities that would take place in a particular scene in real life; role-plays; and information-gap activities. With the exception of one suggestion to include tasks that would require students to find, interact with, and copy objects (this was in connection with the maze scene), teachers focused on facilitating learners' exploration of content rather than designing for coaction and values-realization with and within the environments. We can imagine alternative uses of holodecks in which dynamic assessments of where participants' conversations are leading result in participants being "moved" on the spur of the moment from, say, a kitchen to an Italian market. Unexpected moments like this in which learners have to quickly assemble resources either at their disposal or from a historical time contingent upon certain situations would encourage participants to exploit circumstances and improvise by using expressions and actions to make sense with the "other" in coaction.

Best Practice. To support embodied learning, activities should be designed so learners are invited to take actions to explore and detect affordances in the existing builds. Nik Peachey, an active blogger, freelance learning technology consultant, and English as a second language (ESL) teacher recommends that teachers design outside of the classroom box and into the computer game-box. One of his ideas is to have students in *SL* create photographic stories. Students work together using their avatars to create a sequence of images of the virtual world that tell a photo story. Students can enhance the images by using a word processor to add dialogue bubbles. This encourages students to collaborate both in class and while they are in *SL*. Peachey's idea is a good example of an authentic language-use activity, one that takes advantage of the unique affordances of the virtual world (freedom to move and collaborate, built-in camera, imaginative scenes, etc.) and also allows learners a great deal of agency and authorship. Examples of other best practices include the artful embedding of content, images, slides, text files, and so on into objects, artifacts, and holodecks

in the virtual environment so learners can actively seek and pick up information by unpacking this content. Grounded in theories of ecological psychology and distributed cognition, the unpacking would also involve the distribution of tasks among community members, changing the group's cognition and leading toward a goal state that is dynamic and nonlinear (Hutchins 1995) and involves way-finding (Hodges 2007b).

The Dogme Language Teaching movement, gaining popularity among many ESL and *SL* educators, posits that learning should proceed from student-generated ideas, interests, and needs rather than be mediated through language learning materials. "Dogme classes are classes that are: 1. conversation driven [languaging] 2. materials light and where 3. there is a focus on emergent language" ("Dogme theory" [n.d.]).[7] Multiple learning trajectories are acknowledged and validated. This approach is more holistic because it can take into account the changing dynamics of learner intentions and the learner-environment interaction, as well as the experiences of the learner in different timescales and contexts that impact the *here* and *now*.

From Tasks to Learning Environments

What Is Language For?

Linell (2009) summarizes two ways of looking at the nature of language: (1) language as abstract objects and rules; and (2) language as action. The first assumes that language use can start out as linguistic expressions, typically sentences. Once their students are equipped with some key expressions, teachers situate the learners in contrived contexts to produce conversations that require the use of those expressions. However, Linell cautions, "many aspects of the detailed order of interactions cannot be imagined by armchair reflections; they are discoverable in actual data, but not imaginable" (Linell 2009, p. 273). That is, when our brain and body are actually coordinated to take action and reciprocally interact with the environment, language is embodied, it is "in the flesh" (Linell 2009, p. 148), in the living body, and it is dynamic. "Changes in the physical context result in changes in the nature and number of a particular word's relationships with other phenomena constitutive of its environment" (Kravchenko 2007, p. 657).

The specific affordances in the environment that arise from learners' interactions cannot be imagined.

Furthermore, actions that change the environment and respond to changes must be enacted. Task-based research on learning activities, designed to produce a specific set of linguistic or pragmatic outcomes, often overlooks opportunities for learners to attune (1) to unexpected but relevant cues and (2) to affordances for adapting to unanticipated responses and events.

The notion of "language use" suggests that we first have language(s) at our disposal and then we start to "use" them (Linell 2009). The traditional notion misleads educators, especially language teachers, to think that language use is "something peripheral and possibly epiphenomenal, the secondary use of a pre-given language system" (Linell 2009, p. 274). Kravchenko (2009) argues that cognitive linguistics involves structural dynamics instead of a "code." In this dynamic view of cognition, speech is a first-order construct, and written language, which is infused with cultural values, is a second-order construct. Speech and writing exist in different consensual cognitive domains that regulate the functioning of human society as a third-order living system. Cowley conceptualizes the relationship between first- and second-order language in a dynamic living system in which wordings only partially make up human modes of thinking and action (2011):

> Like art or photography, language links feeling with shared forms. Social actors integrate affect and self-expression with wordings that display both judgments and modes of thinking. We draw on second-order cultural constructs or the naïve realist's "words." Our sensitivity to wordings develops as we learn from engaging with the world. We need rely neither on knowledge of a language system nor of the things depicted. As with pictures, dialogue rests on perceptual skills that develop in the service of action. Thus, whereas linguistic forms serve to describe language, bodily dynamics sustain coordination with people, objects, and events. Human activities depend, only in part, on what we come to utter, hear, see, and imagine as wordings. (p. 188)

What Are the Affordances of Virtual Worlds?

Agents perceive and act in a world imbued with both invariants and variants. In language learning, learners act on and interact with objects and cultural affects,

as well as with meaning potentials. The variants of words, grammar patterns, values, beliefs, tool use, and so on that are embedded in the virtual world environment can be discovered and detected by engaging with text information embodied by nonplayer characters. These changes can also be discovered and detected by engaging in collaborative activities that give rise to coaction, such as coquesting or conversations with other avatars. Coquesting usually involves two people focused on an object or an event as a triadic interaction (Reed 1996). Coquesting carried out by a party of three has different dynamics (Linell 2009). Two types of change—that discovered in text and that detected as a result of locomotion—create a new social dynamic frame that involves dialogical interpretation of the environment. "The reciprocity characteristic of interaction is thus now extended even further and becomes a sharing of the affordances of the environment" (Reed 1996, p. 137).

The central tenet of an action-based curriculum, such as a project-based learning design, is that of agency. When we view learners as agents who act and interact in and with the environment, we do not put primacy on what the learner can say or is provoked to say. Instead we place primacy on perception and action. Language emerges when learners coordinate and cooperate. In a complex environment embedded with artfully designed instructional affordances, learners perceive, think, feel, act, and interact. Additionally, virtual worlds afford agency and access to multiple trajectories of participation. In many virtual worlds, open-endedness creates unpredictability and unexpected situations that push a language learner to attune quickly to patterns (invariants) and important ways of being (i.e., cultural norms) in order to continue on a particular path or accomplish some goal. This kind of learning, which is critical to the development of an L2 learner's adaptivity and flexibility, cannot be scripted.

As Cowley describes in a personal communication, "Playing games in virtual worlds is social and not reducible to program like routines (procedures based on 'content' that you 'code' or 'receive' from a teacher, book or person) . . . by playing, you cope with/exploit so-called 'rules', anticipation, appropriacy and routines (i.e. the things that task-based learning prioritises)." Virtual environments such as *SL* and other popular MMOGs afford agency by requiring players to monitor and modulate actions as affordances in the environment are perceived and acted

upon. This is quite different from task-based learning, which is typically focused, controlled, and routinized.

What Needs to Be Rethought?

Task-based language teaching, a pedagogy that emerged from sociolinguistics and psycholinguistics, has been the dominant approach in L2 teaching since the late 1970s. The problem-solving nature and step-by-step organizational structure develop learners' intrinsic motivation and provide a guide for measuring learning goals.

This can be an effective way to help beginners speak out loud and practice fluency in carrying out a task. However, anyone who has spent years trying to learn a second language would agree that the essential problem for a language learner is not how to perfect their fluency with prefabricated sentences; it is how to confidently and flexibly anticipate in the genre of social languages—for example, in a job interview. An interviewee needs to know how to demonstrate a boastful yet humble attitude. The ability to project an assertive yet caring disposition can be the key to landing a job. For many students, especially students from Asia, being humble and caring is a natural and culturally valued disposition. But for an Asian student or immigrant newly arrived in an English-speaking country to be able to function in a workplace, he or she needs prolonged culturally sensitive guidance, persistent participation, repeated practice, and deep engagement in the community of practice in order to become boastful and assertive while remaining humble.

The debate over social or cognitive perspectives in the SLA field has been building in the last decade. Sociocultural and language socialization theories have enriched our understanding of how people learn an L2 and have taken us beyond the input/output model. Language classroom practice has shifted to student-centered activities; for example, pair work has been researched extensively to discover how joint work can benefit meaning and form acquisition (Ortega 2007) as well as co-construction of conversation (Ohta 1995). Task-based learning and information processing–based practices may provide for a great deal of language practice in the classroom setting. However, we ought to look beyond the theoretical differences and similarities of the psycholinguistic and sociocultural perspectives (Ellis 2000). We need to reconsider what skills a 21st-century learner (or lan-

guage learner) needs to survive, to contribute, and to be creative and productive in a multilingual society. The question at hand may not be about proficiency of target language and L2 identity but about how L2 learners or social group members make meaning and sense through languaging or discursive multilingual translanguaging practices (Garcia 2009).[8] Then language teaching and learning have to incorporate the second-order construct of the sociocultural values of the first language. The tension between values held in the first language and expectations in the L2 environment has to be recognized and addressed.

Needs assessment and goal-directed tasks are crucial for developing rich learning opportunities, but we suggest a dynamic and reciprocal evaluation among community members. We advocate a *community network* where teacher- or student-centeredness is not predefined but where the roles of all members are instead in a constant flux and shifting on different timescales. To realize the dynamic and heterarchical role of each member, the L2 learning community ought to design learning environments in which the need for sequencing of tasks and static pretest needs analysis are distributed among the emerging learning trajectories and heterarchical practices across all community participants, be they experts, students, or teachers. In this kind of learning environment in the virtual world, affordances can be designed and embedded in a variety of activities, artifacts, buildings, and texts imbued with sociocultural meanings and values (Hutchins 1995; Reed 1996; Linell 2009), and affordance networks (Barab and Roth 2006) can provide opportunities for distributed meaning-making and coaction to occur over a spatiotemporal scale. In addition to meaning-making on various learner trajectories, values-realizing and sensory experiences of the body (enkinaesthesia) will play a key role in communication and cognition (Hodges 2009; Stuart 2010).

A decade ago in the learning sciences, Bransford, Brown, and Cocking (1999) advised educators to design learning environments with attention to the alignment of the learner, knowledge, assessment, and community-centeredness. This one-system approach, elaborated by Brown and Campione (1996) to promote coordination of activities among community members inside and outside of the school, can shed light on best practices for L2 learning communities. At the microscale, one-system views of language as coordination of organism-environment (Gibson 1979; Järvilehto 1998) and brain-body-environment

as adaptive biosystem (Cowley 2009a) conform to the notion of alignment and integration. Given the well-researched concepts from both macro- and microlevels of social and biological coordination, those of us within the SLA community are obligated to rethink language teaching based on segmented pedagogies such as task-based, content-based, or even project-based learning. We need to approach the design of learning environments in a way that acknowledges language as a complex system (Larsen-Freeman 2007) and considers both the macro- and microscales of L2 acquisition. The notion of designing learning environments underpins and frames our rethinking of the concepts of coaction, affordances, languaging, co-construction, values-realizing, and enkinaesthesia.

Current Practice. The following describes one way *SL* can be used as a tool to create task-based learning activities:

> What struck me last night, though, sitting on chairs on my verandah, with the trees blowing in the breeze and the light turned to "midday," with a view of Serov's "Girl with Peaches" visible through the windows, was what an ideal learning situation we were in— this really was tasked-based learning and we needed language to ask for help, for confirmation, to request another demonstration or to get help when something had gone wrong. The fairly simple process we were attempting did not have to be described with words alone, it could be demonstrated and a third party could look at one's own attempt and make suggestions if things were going wrong. (Newsom 2008, n.p.)

When learners carry out a role-play activity in the classroom or take part in the kind of "ideal learning situation" in *SL* described above, semiotic resources are often shortchanged and opportunities to discover or detect information available in the environment are often overlooked. Linell writes, "[C]ontexts are often treated as stable environments that are there before or independently of people's actions and discourses" (Linell 2009, p. 36). If we seek only the opportunities for confirmation, comprehension, and clarification during the rich interactions that can be had in *SL*, we are missing some of the important affordances of the virtual world for coaction and values-realizing. Many who are interested in the educational

value of games have already pointed out that a shift from a transmission of knowledge perspective to a transactional learning perspective may be in order. "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" (Thomas and Brown 2009, p. 44).

One of the leading language educators in *SL*, Howard Vickers, extended the WebQuest concept to the combined use of Web 2.0 tools and *SL* virtual locations. Called a "SurReal Quest," it includes a final student product such as a podcast or blog. The idea of quests is not new. Quests are found in the folktales and literature of all cultures. They appear in stories of heroic journeys that are full of difficulty and the overcoming of obstacles. Quests figure prominently in online role-playing games such as *WoW*, *EverQuest*, and *Quest Atlantis* (*QA*, a successful game designed for children ages 9–16), where they are nested in a folklore or backstory or in a larger environment where social values and beliefs are embedded. In role-playing games, carefully designed quests allow heroes to shine and show the qualities that make them heroic. What is missing in task-based SurReal Quests is the folklore, the backstory that constitutes the heart and soul of popular online role-playing games. This fundamental difference may contribute to the underlying focus on task-based learning and the design of the learning environment. The larger social context of the virtual world narrative is key to engagement and participation in a discourse. The narrative can effectively become the curriculum or text for the language learner. This necessarily implies a different role for the language teacher, one that departs from providing a sequenced lesson following the traditional "presentation, practice, use" model that is apparent in the following passage: "The role of the language teacher is to ensure that practice leads to the actual development of the language skills, through guidance and selecting when to take time out, for example, from the podcasting process, to focus on some specific language skills that need strengthening" (Vickers 2007, n.p.). This passage illustrates a view typical of many educators: that focus on language skill development needs to be separated from some other activity in which learners are engaged, whether it is creation of a podcast or a WebQuest in *SL*. Nothing is wrong with

this approach, but the focus is still on the four skills. The fact that the teacher's role is active both in and outside the ZPD and that a podcast is produced as a final product is extraordinary. Nonetheless, we call for a switch in focus from learning about the four skills to *learning to be and become*, and from an individualistic brain-centered mind to the emergent identity development associated with an embodied and social mind. This switch is not intended to negate the importance of the four skills but instead to shift the emphasis to the process of languaging in a community network, whereby language skills will be developed, becoming emergent and embodied in the learner as she or he moves from peripheral to fuller participation in the target language and culture.

Best Practice. When I (Zheng 2009) designed action-based curriculum activities for absolute beginners in *SL*, I designed "scenarios" that scaffolded avatar-based interactions, such as finding your lost bag in a mall's lost-and-found office or being a go-between for two of your friends. I found that although the learners did speak in the target language, sometimes in broken form, they spoke in prefabricated language as if they were in the imagined environment. They were not *in* the lost-and-found office, but they acted as if they were. The interaction was not "live," not in the flesh. Through design-based methods and a new understanding of some of the 10 characteristics of the ecological approach to learning (relations, context, patterns and systems, emergence, quality, value, criticality, variability, diversity, and activity), redesigned quests provided for multiple interaction patterns and problem-solving opportunities that allow questers to realize values of caring, having fun, and translanguaging (Zheng forthcoming).

Van Lier summarizes the ten characteristics of the ecological approach to learning as follows:

1. Language as relationship between people and the world, affordance signals an opportunity for action
2. Context defines language, meaning emerges in a context
3. Patterns, not rules but "patterns that connect"
4. Emergence, not linear accumulation of objects, but transformation, growth and reorganization

5. Quality, not just quantity, quality combines intellect and affect, and yields a higher level of consciousness
6. Value, overtly ethical and moral, embodying visions of self and identity. This concerns not just identity development, but actively constructing such a reality [see also Lemke 2002]
7. Critical, oriented toward understanding and actively improving humanity in a healthy world
8. Variability, seeing variation not as a nuisance to be tied down and reduced, but as an indication of cultural and personal vitality
9. Diversity, the language to be learned (whether [first language] or L2) is presented as one that is not one monolithic standardized code, but a collection of dialects, genres and registers [see also Kravchenko 2007]
10. Activity, not object, but in the world; authorship, emotionally connected to action and speech and to community. (Van Lier 2004, pp. 5–8)

Relatively new constructs used to explain learning in virtual learning environments can provide scientific evidence that language learning requires more than a controlled, rule-governed, well-sequenced curriculum; it requires design of a learning environment where learners can participate, interact, select, and evaluate the effect of language actions. By contrasting the ecological view of language learning with the cognitive view, van Lier (2004) elaborates the concepts of affordances, negotiated action and interaction, scaffolding, and prolepsis, all of which can help us understand how language learning actually happens in instructional contexts that are characterized by the qualities in van Lier's list.

From Learning about to Learning to Be/Become

What Is Language For?

Sociocultural theories emphasize that the development of identity occurs simultaneously with language learning (Ricento 2005). Situated learning and legitimate peripheral participation (LPP) (Lave and Wenger 1991) provide another perspective on the language learner that has relevance for considering how

teaching and learning in virtual worlds can differ from that in a classroom. In LPP, a newcomer gains access to a community and is able to participate, initially on the periphery, but over time more fully as he or she shares the values and goals of the community of practice (CoP), negotiates an identity in relation to the CoP, and learns the shared repertoire of the community's social practices through interaction with other members. Online communities in virtual worlds exemplify this model.

Communities can become insular, however. Language is therefore important for developing bridging relationships, ones that extend our social networks and awareness and prevent us from having a narrow perspective (Baldry and Thibault 2005; Steinkuehler 2006). MMOGs (like *WoW*) serve as social spaces where languaging is the main activity in coactive play that realizes values such as diversity (e.g., in terms of choices related to avatar identity and skills), cooperation (e.g., in activities requiring teamwork and coordination of behavior), and achievement (e.g., in reaching an expert level at some profession, such as herbalism, leatherworking, or inscription). This relates directly to Hodges's ecological perspective on language, in which language serves the three main functions of "seeking good prospects, caring, and wayfinding" (Hodges 2007a, p. 153).

In an MMOG, as in *SL* and other 3D multiplayer worlds, an ever co-present "other" influences our perceiving and acting as we carry out our intentions, realize values, and shape our identity (Hodges 2007a, 2007b; Linell 2009; Cowley and Zheng 2011). Successful play in many MMOGs depends heavily on awareness of alterity and on a player's ability to take the multiple perspectives of the other players in her or his party in order to coact effectively. The notion of "other" also implies that individual human identity "can be realized only within interactions and within the symmetries that reflect the dynamics of the ecosystem as a whole" (Hodges 2007b, p. 601). In this sense, identity development is a reciprocal, reflexive, and distributed meaning-making process in which our effectivities and skills are deeply connected with the affordances of the environment.

Identity shaping and L2 learning are ongoing processes, not static indexical values (Pable, Hass, and Christe 2010). Through languaging (first-order activities), learners align their sociocultural dispositions with the attitudes, beliefs, and values of particular communities (second-order norms). Lemke (2002)

explains how we *become our village* as we learn how to coordinate our behavior with diverse, heterogeneous others. Our complex individual collections of identities (who we are in our many different roles and interactions) are forged across timescales. The essential and persistent features of our identities over time come through the experiences that are most meaningful to us, those that lead us to change our patterns of behavior and allow us to become a person. Regardless of whether the language-learning goals of the L2 learner are short or long term, casual or academic, the process of identity construction needs to take place in a way that allows the learner to develop the dialogical and distributed agency necessary for languaging in the future contexts that matter. For example, if an English learner plans to study in a graduate program in the United States, she or he not only will need to have a certain level of language proficiency as measured by a standardized test but will need to be able to participate in class discussions and do so in a socially appropriate manner; for example, not speaking over someone, making eye contact with other students, and disagreeing without being confrontational. The languaging and ecological pragmatics are reciprocally entrained in the perception and action system of a learner's life, and we should not expect that every L2 learner will reach the stage where they are able to fully embody the L2. Instead, we should consider language development or human beings' sense-making on a continuum where perception becomes increasingly attuned to finer and subtler details (Gibson 1979).

What role can teachers play in helping learners to be members of a community where experiences will lead to changes in behavior and languaging capacities? We need to start by paying more attention to languaging behaviors and allow them to be discovered by students in authentic contexts that extend well beyond one or two class periods. We need to provide opportunities for learners to access communities and social networks that matter to them so that they can engage with the specialized language of domains and attune to their particular social and cultural norms. Furthermore, we need to allow for learner development of an L2 *voice* that will continue to shape the community and be shaped by it. This sense of "becoming" is neverending; it is a processual life event (Ames and Hall 2003). Finally, we need to cultivate a learning environment in which translanguaging between first, second, and even third languages is a

norm. By doing so, we respect distributed meaning-making shaped by coaction.

What Are the Affordances of Virtual Worlds?

SL language learners have access to many existing communities of practice and social networks. Myriad interest groups exist, and activities are ongoing in the world at all times. Teachers can encourage or design for learning that will connect students with CoPs where English is used to coordinate group activities such as building, machinima, discussions of academic topics, and creating a business. We can also consider *SL* itself as a CoP in which the L2 learner can move from newcomer (newbie avatar with no inventory) to full participant (owner of land, builder of new objects, active member of *SL* groups).

Steinkuehler describes how the intermeshed processes we call languaging, constructing understanding, shaping identity, and coaction take place within the discourse community of an MMOG:

> Through participation in a Discourse community, an individual comes to understand the world (and themselves) from the perspective of that community. Thus, semantic interpretation is taken as part of what people do in the lived-in world; it arises through interaction with social and material resources in the context of a community with its own participant structures, values, and goals. (Steinkuehler 2006, p. 40)

When learners engage in languaging practices in the virtual world—creating art, playing a sport, acting in a play, or writing a news story—they have the opportunity to develop not only the dispositions associated with these activities but also the nonordinary, domain-specific languages of people who do these things in the real world. Applying our belief that coaction changes both virtual and real world effectivities, we see virtual worlds affording rich contexts for learners to engage in domain-specific languaging, thereby developing dispositions suited to particular professional, vocational, or academic pursuits. Dispositions developed through coacting in virtual world activities are available in the real world to increase the potential for participation in new situations and across time.

Those without experience in heavily populated virtual worlds might have difficulty fully appreciating the depth and complexity of the cultures that have been co-constructed by active, diverse online communities. Even after nearly a year of playing *WoW*, the second author is still a relative "noob," a newcomer for whom the game seems to offer infinite choices for play and learning. Similarly, the *SL* virtual world is never the same place from one visit to the next; it presents a constantly changing array of opportunities for exploring culture, attending conferences, experiencing new music, playing games, socializing in a variety of contexts, building and creating new places (e.g., islands, schools), and learning languages. These are places shaped by participatory cultures in which agency has free rein.

What Needs to be Rethought?

Those of us who have studied a second language outside of the country or area where it is used have experienced the disconnect between what we know about the language and our ability to use it effectively. This "inert knowledge" problem (Whitehead 1929) can be traced to several factors, not least of which are the decontextualized, linear, segmented approaches to language instruction that still predominate. As we come to view language as a social, dialogical practice, we need to reexamine traditional classroom approaches.

Much of L2 teaching involves teaching about the target language. Language programs teach the skills of reading, writing, listening, and speaking. Teachers commonly teach grammar from textbooks that are based on a linear progression from "beginner" to more "advanced" structures. While most grammar practice prescribed within these texts has a communicative focus, the contexts may not be meaningful to learners, may not afford agency, or may not provide for the just-in-time learning students need in the situations that matter to them most. More recent theories of L2 acquisition affirm that it is a nonlinear, emergent process (Larsen-Freeman 2003; van Lier 2004). A focus on teaching about language in a structured sequence or even in task-based modules is the result of the code view; it directs the learner's attention to rules and verbal forms that seem to exist separately from the contexts in which they are useful.

Recognizing that languaging is something people do together is a critical first step in rethinking language learning in terms of "learning to be/become" rather than "learning about." Mastery of language

occurs as learners participate in a discourse; that is, as they actively engage with communities of practice and social networks.

Current Practice.   The *SL* environment includes affordances that promote development of the learner's identity in relation to use of the target language. In the following passage, Graham Stanley, who has worked for the British Council on the development of the *SL* teen grid, highlights some of the key points mentioned during an interview with Nik Peachey about teaching English in the virtual world.

STRENGTHS

SL is a good social platform

Nik thinks that SL regulars get strangely attached to their avatars. This attachment is something that puts SL on a different level from 2D Web. He also mentioned that if he has met someone in SL, he feels he has met them "on a deeper level" than those he has only talked to on Skype or exchanged emails with. The 3D aspect of SL is very important. SL provides a feeling of sociability.

Space ownership

It is easy to develop an identification of ownership of space. You can't build [the] same kind of attachment/sense of ownership to a Moodle space, for example. The discussion then moved onto [*sic*] using virtual worlds with teens and pre-teens. Nik suggests providing space for students—it will motivate them more if they can take ownership of the space and will provide a stronger pull to keep them interested as "virtual residents."

Extra-curricular activities such as chat groups, drama groups, etc.

There is a great opportunity to do this in SL and work on projects such as machinima/theatre in order to motivate students to use language in a real way. (Stanley 2009, n.p.)

Best Practice.   Thomas and Brown (2009) suggest virtual worlds matter because through our imaginative activities and play within and connected to them we are creating culture. If we look to create a new culture

of language teaching and learning practices through embodying learners in a virtual space, we have to accept that many familiar practices will not be sustainable in virtual worlds. Our goal should be to capitalize on the features of virtual worlds that offer new possibilities for learners to engage in languaging rather than merely to be learning about the L2. We believe virtual environments offer unique and abundant affordances for the negotiation of identity that emerge from embodied avatar-enabled experiences with the L2 (Zheng forthcoming). The following happy passage from Antonella Berriolo's blog illustrates how culture is created through the imagination networks of virtual world participants while also affirming how learning in *SL* can be a form of play. Berriolo (aka Anna Begonia) is an Italian teacher who has been active in *SL* language teaching groups. (Spellings reflect the original blog posting.)

> Lately on Tuesday I'm always happy and smiling. The reason of my happyness and smiliness is that on Monday night I meet with some . . . yes I can call them friend by now, to do activities using the Italian language. I do not like to call it a class because there is no teaching aim in it, but I limit myself to create a situation where people can comunicate in a meaningful way in a foreign language. And it works. It works thanks to the wonderful people who Italianizzano with me and who understand that this is like going back to childhood, when we played together pretending that we were knights and princesses and we built imaginary houses or played with dolls. (Berriolo 2009, n.p.)

An ideal kind of virtual world learning (where learners are interacting with others while engaged in authentic activities) can afford development of a sense of self in relation to the society—the ultimate goal of participation. Barab and Duffy (2000) distinguish this from problem-based learning or learning in practice fields where the task is typically bounded by the classroom context. In most cases, classroom learning will probably not connect the learner to real practitioners, so the identity developed is in relation to the classroom community and not to the larger society. This is the idea of the commodification of learning—learning for "exchange value" instead of learning in order to participate more fully in some real world community. Barab and Duffy call for design that recognizes the

socially, mutually constitutive individual/environment aspect of learning: "This is a considerable shift from the design of practice fields—a shift from a focus on the activity of an individual in a collaborative environment to a focus on the connections one has with the community and the patterns of participation in the community" (Barab and Duffy 2000, p. 26).

Research Agenda

When we view language as situated, embodied, and culturally distributed (Cowley 2011), we must answer a new set of research questions using research methods that address multimodality (Kress and van Leeuwen 2001; Baldry and Thibault 2005; Jewitt 2006). Delineating such methods for conducting research in virtual worlds is beyond the scope of this article. (See Zheng (forthcoming) and Zheng and Newgarden (forthcoming) for how multimodal analysis reveals deep levels and rich diversity of communicative activities in virtual worlds.)

Pursuing the following research questions might help us better understand the affordances of virtual worlds for L2 acquisition and the implications for pedagogy and instruction:

- How do we design learning environments that support beginners' engagement in agentic learning (Zheng et al. 2009)?
- What do design and learning look like when language is conceived of as being for the coordination of action with others?
- How do we care and keep the conversation going in virtual worlds (Zheng forthcoming)?
- How do embodiment and co-presence in a virtual world support language acquisition?
- How can virtual world technologies support LPP and engagement in communities of practice (Lave and Wenger 1991) that are relevant to a language learner's goals?
- To what extent do virtual environments provide resources for identity development and experimentation for L2 learners (Thorne, Black, and Sykes 2009)?
- How does identity experimentation vary based on the type of virtual environment, learning task, visual representation of avatar, and opportunities for user behavior (Thorne, Black and Sykes 2009)?
- How do the affordances of learning with technology affect the role of teachers?

- How does a teacher scaffold or support learning within a semiotic resource system?
- How does a teacher use technologies to create class communities that support learner engagement and leverage the ZPD?
- Are different forms of knowledge, attitudes, behaviors, and skills needed for teaching in virtual worlds? What are these? What should L2 teacher-training programs look like?
- What assessment measures fit with virtual world learning?

Conclusion

Virtual worlds are metaverses where avatars interact with one another and with software agents in a three-dimensional space that exists as a metaphor for the real world. Literal representations of the world we live in can be found or created in a metaverse. *SL*, with its powerful game engine and design grammar of creativity, is one of the online worlds most commonly occupied by educators and researchers and is coinhabited by residents of all sorts. In some respects, their experience compares with that of the Puritans who came to America on the *Mayflower* or that of the pioneers who led the movement to the Wild West. They cleared land, built shelters, and farmed and hunted for food in ways that were familiar. Computer pioneers structured software with the same architecture their familiar physical filing systems used. What did the pioneers of *SL* do? They built based on what they were familiar with in the real world.

But does the virtual world have to duplicate reality? When we treat the virtual world as the real world, what do we gain or miss? One of the evident gains is being able to visit places that time and resources prevent us from physically traveling to in real life. This might be one reason why many real life cities, places, and people have been recreated in SL or why many universities have built their virtual campus to resemble their real campus. However, we should consider what makes our experience of traveling to a campus or a museum impressive, memorable, and rewarding. What is meaningful is, for example, talking to a helpful and friendly registrar who happens to come from the same town and really likes how the small campus operates, likes the small classroom size, the weather, the community, and so on. When we visit a museum for the first time, meaningful connections can make our visit to the new place more memorable.

Technology is not a panacea for language learning, and not all technologies have affordances for learners to perceive, to think, to feel, to care, to act and interact. However, artfully designed virtual worlds can afford situated, embodied, and culturally distributed language learning. In order for this to happen, we need to rethink SLA theories and pedagogies. With this article we hope to partially challenge the centralist individualist view of language and, by providing a meaningful context—the world of *SL* or an MMOG like *WoW*—invite colleagues, designers, researchers, and instructors to take a deeper look at virtual worlds. The virtual can be real. Virtual reality can be emotional and at the same time exist as a semiotic and resource-rich environment with and within which agents can act, coordinate, cooperate, and learn to be.

By examining some of the current practices in *SL* using forward-thinking perspectives of human learning and sense-making theories, we have introduced a new concept, coaction—it challenges "acquisition" views of language because it depends on not the world in the head but a local environment: how a distributed system makes use of parties initially treated as context. By embodying human capacities for coaction in avatars, we connect our body and the world, our physical existence and virtual being, our selves and others, and our mind (thinking) with our heart (feelings). In coaction, we engage in languaging to make meaning and realize values through distributed yet connected multiple beings and the world. Furthermore, we can infer that in the larger sociocultural context of virtual worlds like *SL* or *WoW*, caring is what sustains us as learners, teachers, players, and even lurkers, as we coact dynamically to create the world on the fly and simultaneously create a new identity for ourselves. Long's (1980) three Cs (checking for comprehension, confirming, and requesting clarification) have endured for some time as essential guidance for L2 teaching. In taking a DEEDS view of language, we suggest that the language teacher and learner "guidebook" has room for a second set of Cs: caring, coaction, and community of being/becoming. These reflect the essence of languaging and should be beating strongly at the heart of virtual world instructional design and language learning.

Acknowledgments

Notes

1. This view shares similarities with discursive psychology and constructionism but is different than both. Discursive psychology (DP) emerged to promote discourse analysis as "something more than just method" (Edwards 2004, p. 259). DP uses discourse and conversation analytic techniques to look at "talk's business" or how human beings manage "motive and intent, agency and involvement" in the business of talking (Edwards 2004, p. 262). In contrast, ecological psychology (EP) "puts" human beings back in the ecosystems. The driving force for meaning-making and values-realizing is not possessed by individuals (or located in the human brain) but is interdependent with the ecosystem in which the conversation partners and other affordances function in flux. In such systems, meanings are sought and values are realized. This aligns with a view of language development as emergent and of language as a complex, self-organizing system (Larsen-Freeman and Cameron 2008). Language dynamics—that is, language in embodied real time interaction—is our primary interest. How individuals attend to and manipulate language structures is also important for learning but by itself cannot account for how we become persons. Despite the similarities, including attention to the role of language in social coordination, the goals of DP put it on a different plane of ontology than EP and a dynamic, embodied, embedded, distributed, and situated (DEEDS) view of language. The ecological way of looking at conversing can shed light on the distinctions between constructionism and distributed approaches, as can the Distributed Language Group's stance on timescales. The discursive constructionist talks about the "constructive" sense of discourse, arguing that assemblages of words, grammar, metaphors, repertoires, and so on put together and stabilize versions of the world, of actions and events (Potter and Hepburn 2007). The actions and events in the constructionist's ontological framework are second-order language constructs, however. Researchers and their subjects talk "about" actions rather than treating conversing "on the physical and the pragmatic" (Hodges 2009). The ecological account of ongoing agency is first-order coordination of "unforced actions that activate environmental potentials that constitute a real

physical-social field that constrains and guides the ongoing activity" (Hodges 2009, p. 634). The difference again resides in the first-order versus second-order distinction.

2. In early home literacy practices in China, parents often hold their child's hand to trace characters so the child feels and responds at the same time she or he is learning how to hold a pencil or a brush.

3. In stressing first-order languaging activities, we do not mean to deny that learners intentionally pick up language structures and vocabulary in formally structured classroom teaching. Rather, we prioritize action and interaction that folds, enfolds, and unfolds learning on multiple past, present, and future timescales. We also believe that in kinesthetic-like activities "affective intentional reciprocity" can be achieved among agents, objects, and environments (Stuart 2010).

4. Linell (2009) talks about how different built environments, such as courtrooms, churches, and restaurants, afford different communicative activity types in which the meaning potential of certain words (e.g., testimonials) can take on very different connotational meanings. Depending on curricular goals, teachers can create props and use content-rich texts to help L2 learners develop coacting habits and behaviors.

5. Cowley (2010) traces to Charles Sanders Peirce, James J. Gibson, and Daniel C. Dennett his use of "virtual patterns" to reject language forms. He describes language not as an inner faculty that identifies and represents forms but instead argues that social experiences give us brains that rely on bodily coordination. Verbal descriptions such as picture descriptions specify more than we notice or take for granted; they are on the periphery of being perceived, yet they are not fully perceived. As human beings differentiate invariants (pictured objects) in a depicted surface, we also differentiate virtual patterns from language spoken and heard in the dynamics of coordinating with others.

6. The Virtual Human Interaction Lab (http://vhil .stanford.edu/projects/) has developed avatars whose facial features can bear a striking resemblance to the self. However, the embodiment is controlled by keyboards and is therefore not as direct as for our real human bodies.

7. For more information, see Meddings and Thornbury 2009.

8. Garcia (2009) prefers the term *translanguaging* to *codeswitching* because it includes a range of linguistic features and various modes of autonomous languages.

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