CHAPTER 7

Toward a Theory of Literacy Meaning Making within Virtual Worlds

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Across the globe, the digital breathes literacy into our lives or we breathe life into the digital. Indeed, lives seem more and more tethered to meaning-making portals, as if the digital is a form of life support. Take the global traveler who carries multiple sim cards and other devices to ensure connectivity; or the school cook in a remote area of Botswana who checks her mobile phone for messages as she prepares food for the children at the school; or the young father seeking a moment of reprieve, who responds to his phone and passes an iPad to his 1-year-old; or the student who reconnects with the posts from which she stepped aside overnight; or the professional who starts the day by getting online and begin checking e-mails, text messages, and posted news. It is as if we are constantly consuming, producing, responding, checking, and participating in media exchanges—alone but always with others. The norms of conversing may vary over time and space within and across layers for the individual and collective based on predilections, differences and changes in agencies, embodied identities and shared ethics, and as Pickering (1995) has suggested, these layers are more mangled than neat.

In this chapter, we posit that some radical shifts are needed in theories of literacy meaning making to encompass the reality that our literacies and our meaning making are more mobile than static, more fluid than fixed, and more expansive than refrained. As Doreen Massey (2005) posited, our meaning making involves a form of ongoing intertextual meaning making across space and time through, with, or in multiple-layered and multimodal configurations simultaneously interacting and transacting with other individuals, institutions, and groups in ways that are momentary or ongoing toward fused, complementary, supportive, or conflicted understandings.

Minimally we need to shift our meaning making to address synchronicity, multilayeredness, multifacetedness, and change as a constant. Our goal in this chapter is therefore to explore the features of a new theory of literacy meaning making that addresses how

fleeting, multifaceted, and multilayered the present is. To study literacy meaning making we must recognize that we do so "on the run" across a number of arrays or layers in constant flux. As Burnett and Merchant (2014) noted, we live in:

> A world in which what is "new" rapidly becomes "old" and everything from operating systems to applications is continually updating. Just as hardware and software repeatedly change, so do the routines and practices associated with the latest social media trend, or mobile device. (p. 36)

> The very process of locating literacy or fixity . . . is at odds with the more fluid, hybrid landscapes and timescapes of the digital age. . . . (p. 37)

We are suggesting that we need to shift our view of space and time radically and accept that we exist within virtual spaces, mediated by digital interactions constituting our individual and collective identities. How we position our ongoing experience and ourselves is the raw material for the meanings that we create; our understanding of the world; and transactions with self, others, and the world around us. We become the ongoing meanings that we construct or, at least, that we "imprint," "swagger," or configure with our signature. Various literacies serve as vehicles to name our worlds, interact with others, imagine, test ideas, and change our world. The affordances have become as integral to meaning making as air is associated with breathing.

Contextualizing Participation in Ubiquitous "In the Media" Virtual Worlds

In studying meaning making, researchers face the challenge of determining how their participants are contextualizing their participation related to perceptions of purpose, audience, norms, and affordances operating in virtual space and time. In contrast to reading researchers studying how a student contextualizes a text to infer certain meanings by focusing just on the student's text responses, researchers studying virtual participation are examining how people, as fish in water, are engaged in spaces and time in an array of different and overlapping media worlds. Our daily lives are inseparable from the events and affordances of our handheld devices, Web-based interactions, and participation in various virtual spaces. We are in the media age; our existence as individuals, groups, and societies occurs *in* various media rather than *with* media (Hepp, 2013). We operate in "mediatized worlds" that are "structured fragments of social lifeworlds with a certain binding intersubjective knowledge inventory, with specific social practices and cultural thickenings. Mediatized worlds are the everyday concretization of media cultures and media societies" (Hepp & Krotz, 2014, p. 8).

The focus of research on living in media therefore involves understanding the relationships between changes in digital media communication and changes in society and culture.

We are suggesting that "in the media" has becoming a place of being—producing self as we co-create, react, revise, self-brand, hack, and seek to gain others' attention across various communities and groups. These ubiquitous, multilayered engagements occur across space and time and, at times, the media are our reality. A recent cover of *The New Yorker* magazine titled "Play Date" captured some of these elements (see Figure 7.1).

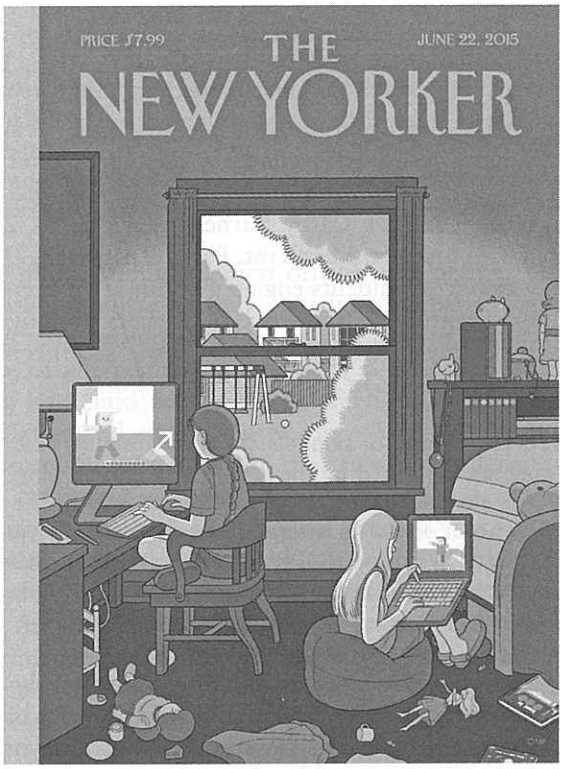

FIGURE 7.1. Cover of *The New Yorker,* June 22, 2015. Cover by Chris Ware. Reprinted with permission from The Cartoon Bank.

As Deuze, Blank, and Speers (2012) suggested in "A Life Lived in the Media,"

> Media become a playground for a search for meaning and belonging—not just by consumption. . . . by producing, co-creating, redacting and remixing . . . we do not see people as hapless victims of this seemingly disjointed worldview. We locate the potential power of people to shape their lives and identities and produce themselves (and therefore each other) in media. (p. 6)

Deuze and colleagues (2012) posit that media activities and practices can only be understood in a broad context that includes both material and spatial considerations, reflecting a nuanced take on how the social arrangements of media that both stretch existing ways of doing things and making sense of the world across cultural and spatial boundaries at the same time function to articulate and demarcate local communities and identities.

As Deuze and colleagues (2012) postulated, voicing a common theme in popular literature, the digital commodification of our worlds necessitates that an individual or a group needs to have the predisposition and skills to hack and thereby resist aligning themselves as consumers or as commodities existing in ecosystems controlled by the state and institutions. An individual or group needs to be able to enlist these digital tools selectively and strategically to meet its needs alone and with others.

Conflicted Contextualizing of Participation in Virtual Spaces and Time

Researchers studying virtual participation often do so "on the run," adopting formative, design-based approaches befitting the changing meaning makers' contextualizations across virtual spaces and times. Drawing on Massey's (2005) theory of space and the work of Leander and Hollett (2013), Cathy Burnett (2013, 2014, 2015) and colleagues (Burnett & Merchant, 2014; Burnett, Merchant, Pahl, & Roswell, 2014) have delved into the meaning-making behavior of students engaged online with peers.

Rather than define contextualizing in terms of learners framing experience based on their individual cognitive frames, we draw on van Oers's (1998) conception of contextualizing derived from activity theory, in which

> a human's actions, objects, tools, or symbols are never absolutely meaningful by themselves. Their meaning is constituted by the role these elements play, as well as by the values that they get in the sociocultural activity, in the eyes of the agent. . . . What counts as a context depends on how a situation is interpreted in terms of activity to be carried out. . . . In the activity theoretical perspective a context emerges into existence in the interaction between people, when it becomes clear what kind of activity is to be accomplished. (p. 480)

Some of these projects have involved researching issues on the Web using a mix of group and whole online interactions; others have involved a mix of engagements in virtual worlds in classrooms (or, as they note, classrooms in virtual worlds). For example, as Burnett and Merchant (2014) illustrated in a study with primary students titled "Points of View: Reconceptualising Literacies through an Exploration of Adult and Child Interactions in a Virtual World," in which they describe their own alternative perspectives on students participation in the virtual world of "Barnsborough," designed to provide a space for active literacy learning:

> "Barnsborough" itself is a three-dimensional simulation of a deserted town, which children can explore, visiting inter-connected locations such as sewers, a park, the town hall, an Internet cafe, military headquarters and an old castle. As they move around the world, they encounter clues hinting at why the town is deserted in the form of dropped notes, Internet sites, graffiti, posters and so on. Children are represented as avatars on-screen and have access to an online chat function through which they can communicate with others. Chat items appear not only above avatars' heads but also on an ongoing scrolling chatlog at the bottom of the screen. They can access other functions, such as teleporting or flying between different locations. (p. 38)

Based on observations of students in this space, they find that meaning makers move between their lived-world and this virtual space so that they "are not completely in either the material or virtual world, and nor do they jump between. Instead, the virtual seems to inflect the material and vice versa" (p. 38). As they noted for one student:

> John could be seen as in a "world of his own" but not in the sense that his exploration of the virtual world sets him apart from the rest. He moves both in the classroom and in Barnsborough; his laptop is both a physical object in the classroom and the portal to the virtual world; he interacts with others both in and out of world. At the same time, the classroom frames not only what he does in physical space but also what he does online.

> The "world of his own" is perhaps the one he helps construct as he operates across both environments and helps sustain a space that allows both movement and stillness, both autonomy and compliance, both material and virtual actions. Importantly then, these are not parallel plural places inhabited by parallel plural identities. Instead, as Law writes, we can understand this in terms of a multiplicity that "implies that different realities overlap and interface with one another. Their relations, partially coordinated, are complex and messy" (Law, 2004, p. 61). (Burnett & Merchant, 2014, p. 43)

In terms of the intersections between offline and online, Burnett and Merchant (2014) stress their inseparability. As they stated: Individuals, objects or places are not completely in either the material or virtual world, nor do they jump between. Burnett notes the importance of not perceiving of spaces as bounded or limited, but rather as continually changing and fluid due to the interactions, relationships, and trajectories between and across online and offline spaces.

As Burnett stresses with John, it is also the case that students draw on frames based on schema or scripts associated with their knowledge of the world, including their familiarity with participation in certain prototypical activity spaces and events as "figured worlds" (Burnett, 2013; Holland, Lachicotte, Skinner, & Caine, 2001). To do so, they draw on experiences from both offline and online experiences to layer their virtual experiences, for example, drawing on popular cultural texts in creating online texts, suggesting the need in studying participation in virtual activity spaces to focus also on students' past offline and online textual and social experiences that provide them with frames and other bases for their online experiences meaning making. This also suggests the need to examine individual differences in students' exposure to different kinds of offline experiences, for example, the extent to which students have access to certain social or cultural capital experiences relative to what is perceived as salient or counting in classroom spaces (Burnett, 2013). For example, as Burnett and Merchant (3014) illustrated, John's online and offline engagements support each other. As they stated:

> [as] John reads and responds to the chatlog in the light of his particular journey through Barnsborough or talks to his friends; he fuses together action and interaction both in-[his] world and in the classroom. We see this as he switches between "doing as he is told" in class and continuing, surreptitiously, with his investigation of Barnsborough. An analysis of his online/offline activity as binary or separate events is insufficient. Instead, we suggest it is helpful to see him as enacting a kind of "layered presence" (Martin et al., 2012), in space that is both online and offline, both schooled and not-schooled. (p. 44)

> In unpacking this, we can begin to identify some of the things that are latent within the experience of John, which we could see as "folded" (Deleuze, 2001) into what he does as he interacts with the text. For example, folded into his interactions in and around Barnsborough is his prior experience of different kinds of texts, his experience of using virtual worlds or online texts, the way he has positioned himself, or has been positioned, in relation to literacy in the classroom and also, of course, his understandings of classrooms, military headquarters, castles, and so on, as well as his relationships with other children and adults. (p. 44)

Movement and Transfer of Experiences across Material and Virtual Spaces

This research suggests the need to focus on participation not just in one digital space or social system, but rather interaction across different spaces or systems, what Jahnke

(2016) defines as "CrossActionSpaces" (p. 4), interaction mediated through use of mobile devices providing access to online information in the "infosphere" (Floridi, 2014) and sharing of digital content/videos. Given that the classroom is then no longer the primary space for learning, then a key consideration becomes how interactions across different spaces serve to foster transfer of learning across these spaces or systems.

John's movement between the material and virtual spaces as a "both . . . and" rather than an "either–or" experience suggests that students transfer their experiences from material contexts to virtual spaces, as well as from virtual to material spaces, while at the same time recognizing the disparities between the two. In participating in online discussions, students may draw on their ability to serve as a facilitator in face-to-face discussions to employ facilitative practices in an online discussion. At the same time, given multiple participants simultaneously sharing posts in an online space, it may be difficult for a participant to facilitate interaction. This intersection between online and offline spaces is also documented in an analysis of college students' uses of texting, e-mails, and online lecture notes that were then used in offline spaces to collaborate with peers for both social interaction and academic work (Pigg et al., 2014). This suggests the need to go beyond the binary of virtual participation as distinct from lived-world participation to a focus on how the practices employed in both spaces intersect and support each other.

A more overt illustration of this transfer occurred in a study in which students employed virtual/augmented reality (AR) apps with mobile devices to acquire information or collect data from virtual spaces to then apply to material spaces. In an "ecomobile" project, students used EcoMUVE ecosystems to collect environmental data using mobile devices from a virtual pond (*http://ecolearn.gse.harvard.edu/ecomuve/video.php*) to then analyze an actual pond's water quality, an experience that resulted in superior understanding of water quality analysis and more positive attitudes compared to previous analyses without the mobile learning experiences (Kamarainen et al., 2013). Students who engaged in learning from the EcoMUVE prior to uses of the mobile devices were more likely to transfer their knowledge from the EcoMUVE experience to their actual experience than students who employ the EcoMUVE experience after the mobile experience (Grotzer et al., 2015). The virtual experience that provided cued understanding of features of the pond could then transfer to understanding similar features in the actual pond.

Transfer between lived and virtual spaces may occur spontaneously or may need to be spurred. As Perkins and Salomon (1988) suggested, transfer between lived and virtual spaces may be more likely to occur when students are motivated by some reason to engage in transfer. In his theory of transfer, King Beach (2003) posits the need for *consequential transition,* defined as

> the concept we use to understand how knowledge is generalized, or propagated, across social space and time. A transition is *consequential* when it is consciously reflected on, struggled with, and shifts the individual's sense of self or social position. Thus, consequential transitions link identity with knowledge propagation. (p. 42, original emphasis)

Consequential transition is therefore driven by some social incentive for drawing on lived-world experiences to engage in virtual spaces. In Beach's research on teachers' responses to resource wikis to which, as wikis, they can contribute their own content, the teachers indicated that they were not willing to contribute unless, drawing on their

experience with sharing content with colleagues in their school or district, they have some social incentive to share their content on the wikis, incentives such as being perceived as a contributing member of the space (Isaacson & Beach, 2016).

Navigating meaning across lived and virtual spaces is not without challenges. For example, in contextualizing participation in different virtual spaces relates to what danah boyd (2014) defines as *context collapse,*

> a context collapse occurs when people are forced to grapple simultaneously with otherwise unrelated social contexts that are rooted in different norms and seemingly demand different social responses. For example, some people might find it quite awkward to run into their former high school teacher while drinking with their friends at a bar. These context collapses happen much more frequently in networked publics. . . . In choosing how to present themselves before disconnected and invisible audiences, people must attempt to resolve context collapses or actively define the context in which they're operating. (pp. 540–541, Kindle)

In communicating face-to-face or even in writing with others, users are relatively familiar with components of their rhetorical context, particularly their audience(s). In communicating in virtual spaces, such as on social media sites, users often have limited knowledge as to the nature of their local or global audiences, so they may not know how to contextualize or frame their postings to achieve certain potential uptakes.

Users also need to contextualize differences between alternative virtual sites or spaces, differences constituted by shared perceptions of the nature and purpose of those sites or spaces. One adolescent male who recognized, given the popularity of Facebook in his peer group, that when he posted content to Facebook, he perceived it as a highly public site, whereas given the lack of popularity of Twitter in his peer group, he perceived Twitter as a forum for sharing more intimate specific content (boyd, 2014). As he noted, "I guess Facebook is like yelling it out to a crowd, and then Twitter is just like talking in a room" (p. 3317, Kindle). To boyd, this suggests that "the technical architecture of the system matters less than how users understand their relationship to it and how the public perceives any particular site" (p. 205).

Laura Ewing (2013) noted how her students in an online college composition course varied their persona or ethos across participation on a class Tumblr blog more than on Facebook, Flickr, and Twitter given their awareness of their audiences' potential reactions:

> They were much more personal and afforded them more freedom to post pictures, comments, and videos that may be considered unsuitable in other contexts. I was comforted by the fact that despite my own expectation that first-year college students would post inappropriate material to these social networks, the majority were highly cognizant of parents, relatives, and potential employers seeing their pages, and so they took due diligence in selecting what was posted and, perhaps more important, what was not posted. (p. 559)

Teachers and students also face the challenge in using sites such as Facebook of distinguishing between their own personal, informal use of Facebook and any academic, formal uses of Facebook in the classroom. As Allen (2012) notes, *any* use of Facebook will necessarily confront both teachers and students with the fact

> that, in an online environment which is so closely entwined with real identities, real places and persistent communication, they are always explicitly negotiating the boundaries between formal and informal. In other words, Facebook does not allow us to separate formal and informal uses in education. Its design and social affordances are all about confusion and overlap, while its computer mediated format also trumps the traditional use of time and place as a means of enforcing the separations between people based on role and function. (p. 224)

Analyzing Participation in Virtual Spaces

Analysis of contextualizing experiences in the virtual raises the question as to what factors influence contextualizing of experiences of virtual spaces. Drawing on rhizomatic theory (Deleuze & Guattari, 1987), researchers have identified the importance of affective, embodied aspects shaping participants' experience of unfolding, unpredictable virtual spaces (Masny & Cole, 2012). As Boldt, Lewis, and Leander (2015) note:

> From a post-human perspective on affect and emergence, humans are not merely "using" materials in mediated activity; rather, humans and materials enter into affective relationships and intensities, the nature of which is often not prescribed. Foldings of the human and non-human are constant and complicated; people "use" things and things "use" people, and these movements and relations can be rife with affective movements (e.g., Ehret & Hollett, 2013). (p. 436)

In their critique of "A Pedagogy of Multiliteracies: Designing Social Futures" (New London Group, 1996), Leander and Boldt (2013) posit that the document values production and design of texts as the desired outcome to achieve predetermined goals as determined primarily by a teacher. Based on analysis of two boys responding to and enacting a graphic novel, they document how, in contrast to predetermined scripted activities, their activities were highly spontaneous and improvised experiences shaped by affective, embodied aspects (Deleuze & Guattari, 1987). In responding to the novel, the boys engage in embodied actions:

> Lee and Hunter jump off the porch swing and have a sword fight. They leave their books behind in ways that makes text-centric literacy researchers nervous. There are leaps going on all right, but not from one predetermined signification to the next. What are those boys up to now? Should we interpret their embodied practices relative to the images, words, and subject positions presented in the manga text? Are their bodies the new text or a new resource for meaning making, for redefining identities or futures? How can we record and represent this activity? From a text-quickest way out of this dilemma of moving bodies and representation is to let the bodies fall to the cutting room floor, or, more aptly, back into their seats of textual practice. (Leander & Boldt, 2013, p. 32)

Understanding these two boys' activity involves focusing on the unfolding, moment-by-moment activity of relatively unpredictable actions. Leander and Boldt (2013) posit that a discourse or "text-centric" positioning of subjective identity construction fails to examine the role of embodied actions and sensations central to the boys' responses to the novel. They argue that understanding these boys' actions revolves around the concept of difference associated with enactment of alternative possibilities or unfoldings as opposed to conforming to predetermined outcomes.

Users' emotions defined as forms of action or doing (Boler, 2008; Micciche, 2007) influence these online interactions in ways that impact online relationships and identity construction. Sharing a common interest or passion, particularly with "weak-tie" others within "affinity spaces" (Gee, 2013), can serve to motivate participation in a virtual space. One characteristic of "affinity spaces" is that they allow participants the freedom to contribute in ways consistent with their needs, passions, and interests. The fact that participants in "affinity spaces" are recognized for making positive contributions enhances their sense of agency and social capital as valued members of these spaces. Their motivation may also be based on contributing to achieving a collective, shared object or purpose driving an activity (Engeström, 1987/2014), for example, that their participation in an online local political organization will lead to change in their community.

At the same time, emotions of anger, alienation, disconnection, and disinterest influence levels of participation, which in turn influence self-perceptions of anonymity and lack of connection to an online community (Delahunty, Verenikina, & Jones, 2014). Students who perceive themselves as excluded in virtual interactions may experience a sense of not being recognized or acknowledged, leading to a sense of alienation (Hughes, 2007). Users experiencing a shared sense of empathy and being valued by peers and instructors in virtual settings are more likely to engage in collaborative, shared participation (Ke, Chavez, Causarano, & Causarano, 2011). In one study, playing video games that involved cooperative learning led to increased enactment of empathy with other's emotions in lived-world contexts (Prot et al., 2014).

Embodied Participation in Virtual Spaces

Social and cultural attitudes and values shape participation in virtual spaces, for better or worse (Carr, 2011; Rushkoff, 2013; Terkel, 2012).

Loss of Face-to-Face Interactions

A major critique of virtual participation has to do with the loss of face-to-face interactions, as reflected in the previous *New Yorker* cartoon in which people in the same lived space are interacting through their mobile devices, leading to concerns about people's inability to interact face-to-face (Carr, 2011; Rushkoff, 2013; Terkel, 2012).

On the other hand, while adolescents' "Internet addiction" is often attributed to the ubiquitous use of the Internet to interact virtually with peers, danah boyd (2014) argues that technology is an outlet or "relief valve" for adolescents who have such extensive homework, test preparation, and scheduled activities that they have little free time for face-to-face interactions with peers: "This is why many of our youth turn to technology. They aren't addicted to the computer; they're addicted to interaction, and being around their friends." Use of online networking serves to strengthen the quality of relationships with friends by providing increased opportunities to interact with those friends (Davis, 2013; Sosik & Bazarova, 2014). For example, the boundaries between schoolwork and online play or between formal and informal learning activities are not always clear, so students sometimes have difficulty in knowing how and when to enact different identities (Arnseth & Silseth, 2012).

Virtual interactions between students in classes can enhance student learning and build social relationships. While it may be the case that spending more time online displaces face-to-face relationships—as portrayed in *The New Yorker* cartoon in Figure

7.1, in other cases, use of online social networking serves to strengthen the quality of relationships with friends by providing increased opportunities to interact with those friends (Davis, 2013; Sosik & Bazarova, 2014). Users can readily move across boundaries between home, school, peer group, and workplace contexts to establish relationships that transcend these boundaries (Vasudevan, Schultz, & Bateman, 2010) in the pursuit of joint projects or for interpersonal reasons or community goals.

An analysis of college students' use of Facebook for online interactions versus familiar classroom face-to-face interactions indicated that students preferred the ease of communication, exposure to peer progress, and archiving and backtracking content fostered through use of Facebook compared to face-to-face interactions (Güler, 2015). On the other hand, such participation may vary considerably, with a relatively high percentage of members engaging only infrequently on virtual spaces (Parks, 2010). Analysis of college students' use of Twitter indicated that although use of Twitter correlated positively with engagement in social interactions and sharing information, it was not related to building interpersonal relationships with the instructor (Evans, 2014). Another study comparing teacher candidates' participation in a Twitter-online group, a Twitter face-to-face group, and a microblog-online group found that the Twitter-online group's interactions were the most affable; students in that group had greater interest in what their peers were sharing than did students in the other two groups. However, members of the Twitter-online group were the least satisfied with Twitter as means of interaction and felt less connected to their peers than did the members of the other groups (Munoz, Pellegrini-Lafont, & Cramer, 2014).

Sharing of Private Information in Public Virtual Spaces in an Age of Globalization

Analysis of attitudes toward participation in virtual spaces points to a key concern about sharing of private and/or confidential information in what are largely public virtual spaces (Carr, 2011), leading to contentions regarding definitions of "private" versus "public." In contrast to notions of privacy as defined and determined by individuals, Marwick and boyd (2014) posit the notion of networked privacy as constituted by "a combination of audience, technical mechanisms, and social norms" (p. 1063) operating in social contexts, requiring an understanding of and control over how these contexts operate through sharing information about the norms operating in these context. For example, when college students were asked to share photos of themselves as middle schools students, they rejected doing so because they perceived publicly sharing these photos to be a violation of norms operating in their own social contexts. They argued that privacy needs to be understood in terms of shared information mediated by networked publics or relationships between people, as opposed to placing the onus on individuals or the technology.

In the age of rapid globalization, the advancement of a World Wide Web, the propagation of global networks and open access largely rooted in Western interests, the issue of public and private extends to communities that may lack the leverage to ensure that their cultural norms and practices are respected, and that due consideration is given to matters of privacy and intellectual property, as well as internal developments. Oftentimes, matters of public and private, as well as local, developments have the potential to be overridden (especially in non-Western cultures) within the realm of global digital developments, as we are seeing with the advent of global aspirations arising from international comparisons tied to Western indices and growing commodification of and appropriation of different communities' cultural goods.

Negative Virtual Interactions

As many researchers have noted, virtual environments may unite and empower individuals and groups or marginalize them. For instance, sometimes young gay people first come out in the supportive communities these sites offer, prior to coming out in face-to-face communities associated with the home, peer group, or school worlds (Avance, 2014). Mary Bryson (2007; Bryson, MacIntosh, Jordan, & Lin, 2007), studying digital spaces for lesbian and gay communities, found that aspiring members found some digital spaces to be welcoming and accommodating, and others to be displacing and dismissive. As they suggested, prospective participants may experience a sense of belonging or dislodgement—a haven or a prison.

Indeed, a major issue in virtual interactions is the increased instances of cyberbulling or sexting that have negative lived-world psychological consequences (Rosin, 2014). In her research on adolescents' perceptions of online interactions, Carrie James (2014) found that 45% of participants reported instances of negative or problematic statements in online contexts, with most expressing concerns about these statements. James identified three different mindsets shaping adolescents' moral and ethical concerns about online participation: "Play nice" and "It's a community" stances that reflect attention to moral and ethical concerns, versus an "It's just the Internet" stance that dismisses moral and ethical concerns.

The "Play nice" mindset reflects the need to interact with peers in online spaces in a manner similar to that in lived-world spaces, despite differences in these spaces. If students are concerned about voicing insulting comments in face-to-face contexts, they would then also be concerned about posting insulting comments in online spaces. However, the "Play nice" mindset does not necessarily lead to support for operating in ethical communities.

The "It's a community" stance reflects a concern about how negative or problematic statements can undermine the quality of a community by adversely affecting the norms constituting a community. Adopting this mindset focuses on how individual participants' online actions serve to support development of a shared sense of community, so that they express concerns about hate speech as having detrimental effects on a community. As one participant noted, "If you're writing something kind of really mean and hurtful and someone else reads it, then that could hurt them and then rumors start, and then people start hating people for no good reason, like a bad snowball effect starts happening" (p. 2287, Kindle).

About half of the adolescents in the study adopted an "It's just the Internet" mindset and assumed that online actions didn't have adverse effects, noting that these actions "didn't matter" or were not harmful because the Internet "isn't real," reflecting what James perceives as a disconnect between virtual and live-world contexts.

Adolescents who were more actively engaged in online content creation or gaming were more likely to adopt an "It's a community" mindset, whereas adolescents who were less actively involved online were more likely to adopt an "It's just the Internet" mindset. This raises the question as to how schools can instill certain attitudes or values associated with healthy, productive virtual participation. While schools or governments may seek to foster adherence to statements of attitudes or values such as that of the Australian Commonwealth Government: " 'care and compassion'; 'a fair go'; 'honesty and trustworthiness'; 'integrity'; 'respect'; 'responsibility'; 'understanding, tolerance and inclusion'; 'doing your best'; 'freedom' " (Baxter & Simpson, 2008, p. 310), there are institutional forces that foster alternative attitudes or values.

However, norms operating in certain social or cultural contexts may or not be consistent with prescribed attitudes or value, for example, the need to consider public sharing of private information as a reflection of how adolescents' power is limited or constrained in schools or political contexts (Alvermann, 2015).

Ideologies and Commodification of Virtual Participation

A number of researchers have suggested that these virtual spaces may have certain ideological leanings that may perpetuate individuals' and groups' various forms of purposeful constructions, including their commodification. For example, the commodification of individual virtual spaces can involve socializing users' dispositions and habitus as uncritical, potential customers constituted by the discourses of an "attention-transaction" information economy (Freishtat & Sandlin, 2010; Pangrazio, 2013). Acquiring use of a "public pedagogy" of social networking sites results in users being " 'lured into a sense of empowerment through consumption, and democratic voice is diminished, further re-territorializing individuals to the point of cultural myopia and consumer conformity' (Luke, 2005, p. 10)" (Freishtat & Sandlin, 2010, p. 507).

Rather than being "public," most virtual spaces are owned and operated by corporations that frame participation in ways that serve their commercial interests. For example, Facebook, as opposed to its users, includes terms of service that define how deceased members' content will be deleted or archived (Varis & Spotti, 2011). This commodification of interactions can serve to foster construction of an extraverted, outgoing, and even sometimes narcissistic identity, "one that would be approved by their peer group. The pursuit of such an identity made it difficult for the participants to critically engage with the site, as they become immersed in the social reality of Facebook" (Pangrazio, 2013, p. 39). Given that students may conform to these expectations, they may be reluctant to critique Facebook because doing so would entail critiquing their own adherence to use of Facebook to construct their identities. Facebook's appeal to its users is that it is protecting them from the threats of loss of privacy by establishing certain means of protecting their users, while at the same time collecting data that are useful for the market (Freishtat & Sandlin, 2010). Facebook users may share "sponsored stories" about real-life events that include a commercial message associated with that event, a form of advertising that other Facebook users are more likely to trust and value, given that it is associated with a peer than if they were responding to a banner ad (Fisher, 2015).

Living in Virtual Time

Meaning making within virtual spaces is also located in time, but in ways that are more dynamic, ongoing, and restless than set or fixed. Users ongoing engagement appears driven by the need or desire to be continually connected with or in touch with peers or current events. The Pew Research Center reports that 24% of adolescents are online "almost constantly," and 92% are online daily using their mobile devices (Lenhart, 2015). Mimicking Kenneth Burke's (1973) parlor room description of arriving late to a party and participating in the face-to-face conversations, Walsh and MacDonald (2014) cite the example of Tonja Mackey's (2012) description of being continually connected in a virtual space:

> You arrive home late from work one evening and log onto FB. You find your wall (messages from friends) full of new posts. Many of your other friends, as well as some of

> their friends, have made comments on said posts, some emotional (or heated), some not so much. You read and you think for a while before you decide if there is anything you'd like to add to anyone's comments, or, perhaps, you read something that prompts you to post a hasty response that, later, you wish that you had dwelled on for a while first. You grow tired, so you post a "status" (often a discussion starter) of your own, knowing that you'll log back on tomorrow to see who has responded to you. And so it continues, day after day. (para. 9)

Anna Holmes (2015) posits that there is also a compulsive need to be in touch with the current, with what is happening in the present. She notes:

> Implicit in our obsession with newness is, of course, an element of FOMO, or "fear of missing out"; the anxiety that the conversations and experiences of the here-and-now, the trendy, the innovative, the fashionable and fresh, are imperative to our survival. Young people seem to be particularly susceptible to this fear, and no wonder: With the rise of social media and advertising imprinted on every coffee cup they hold or online video they watch, their formative years have been marked by the expectation that they navigate their way through hundreds, if not thousands, of demands for their attention (and their dollars) on any given day. (p. BR27)

Meaning making is tied to experiences with time that might be termed as eventful based on an event being perceived as having a certain significance in one's life constituting an event's "eventness" (Bakhtin, 1981). An essential component of "eventness" is the degree to which the experience of an event has unknown or potentially problematic contingencies or consequences—that anything can happen in an event, resulting in heightened emotions associated with the experience of an event. As Morson (2010) notes:

> Not all events have eventness. An event has "eventness" if and only if presentness matters, only if the present moment is something more than the automatic result of prior moments. Only then can the present moment have real weight, can it actually constitute a force of its own. If the present has presentness, the event has eventness. In that case, suspense results not from our ignorance of what is already determined, but from a genuine uncertainty. (p. 94)

Living *in* the media may have resulted in a shift toward what constitutes "eventness," associated more with being connected in time to the virtual, providing an endless flow of interaction and information regarding what's happening in present time both with peers and in global spaces. Rushkoff (2013) critiques this connectivity as "presentism" (p. 86), associated with the need to be continually connected to and participating in present time. He posits that "presentism" has led to a loss of narrative story lines associated with interpreting how the past is related to the future, engagement with a focus on the now, resulting in the loss of narrative or story line frames to determine change from past to the future over time (Alvermann, 2015). Alvermann (2015) notes that she experiences a greater shift in her perceptions of time relative to use of more truncated interactions associated with digital communication than was the case with face-to-face interactions:

> In a digital world where virtual connections and interactions are increasingly the norm, I am finding it takes concentrated effort on my part to fit in personal, face-to-face time with individuals who prefer to live their busy lives at a comfortable distance and in a time frame that accommodates their schedules. Virtual interactions (e.g., those conducted through social media, listservs, and wikis) save time in the sense that multiple audiences

> are the recipients of my communications, which are often in a briefer form than would be acceptable in a face-to-face encounter. With this brevity comes an acknowledgement that I can get my message across in less time. (p. 626)

At the same time, Alvermann (2015) challenges Rushkoff's (2013) critique regarding the loss of narrative understanding by noting that the use of video games still provides alternative ways of learning related to narrative ways of framing experience (Gee, 2011). She also notes that it is not necessarily the digital technology itself that is driving change as much as a shift toward a "participatory culture" (Jenkins, Ford, & Green, 2013) mediated by uses of technology to provide students with ways to collaboratively communicate and foster change.

Acquiring Social Affordances through Participation in Virtual Space and Time

All of this raises the question as to how students acquire social literacy practices through participation in virtual space and time. Consistent with social literacy learning as ultimately grounded in historical and cultural contexts, the valuing of certain social literacies (Barton, Hamilton, & Ivanic, 2005; Moje & Luke, 2009), suggests the need to examine how lived-world cultural contexts intersect with experiences in virtual space and time.

Literacy learning has as its antecedents a relationship to historical and cultural roots that inextricably define literacy as social and cultural practice interwoven with societal developments around issues of exchange. Literacies, including digital literacies, may offer ways of knowing and communicating, but they occur within a social fabric, which involves the pragmatics of communication (who is doing what to whom and why) and matters of identity (construction of self, community and others—especially tied to cultural, as well as sociopolitical, positioning). Whether we are operating with digital literacies or traditional print literacies, matters of identity, emerging status, and various forms of participation of a sociopolitical nature occur.

Participation in virtual space and time is mediated by social affordances as "possibilities for action that are called forth by a social technology" (Parks, 2010, p. 109), for participating in virtual communities includes ease and durability of membership, personal expression through sharing information and images by customizing one's profile pages, and making connections with others through uses of "friends" or "followers" connections and lists.

As we contemplate the social dimensions arising from digital engagements, we posit that participation in virtual space and time fosters use of a number of different social affordances mediated by not only use of digital tools but also the social construction of events involving the practices that follow.

Creating Social Relationships

One social affordance of participation in virtual spaces has to with the creating online social relationships. In virtual spaces, users who traditionally constructed their identities through connections and interactions based on allegiances to institutions or organizations such as family, neighborhood, school, workplace, community, or organization are now more likely to construct themselves as "networked individuals" based on connections and interactions with virtual individuals (Rainie & Wellman, 2012). The

ubiquitous use of mobile phones serves to maintain these "strong-tie" relationships by providing continuous contact with others, but it may be less relevant for maintaining "weak-tie" relationships (Chan, 2015). Users may be more willing to share intimate feelings in "strong-tie" relationships on their mobile phones than in face-to-face interactions (Valkenburg & Peter, 2009, as cited in Chan, 2015).

Central to the quality of online interaction on pedagogical sites to build relationships is the degree to which students have opportunities to interact in ways that help them establish a sense of social presence and relationships with others. A comparison of on-campus versus online student interactions indicated that almost all of the on-campus students interacted with each other, whereas only one-fourth of online students engaged in interactions (Exter, Korkmaz, Harlin, & Bichelmeyer, 2009, as cited in Delahunty et al., 2014).

While users in face-to-face contexts can draw on both physical and verbal markers for building social presence, in online interactions, users rely primarily on written interactions, unless they are employing video interactions using Google Hangouts or Skype Video. Users construct a "discoursal self" to convey a certain identity constituted by adoption of certain discourses (Burgess & Ivanič, 2010, p. 237). The "discoursal self" is constructed by the text characteristics of the particular text, but it is closely related to the values, beliefs, and power relations embedded in the discourses that are present in the social context of the writers as distinct from their "authorial self," constructed through uses of certain writing techniques or content, or "autobiographical self," evoked by sharing autobiographical events through their writing, resulting in others constructing their identities as "perceived writers" (p. 241).

This requires that users draw on their knowledge of both language and discourses as ways of knowing and thinking (Gee, 2013) to infer the meaning of posted material, for example, that a user is adopting a libertarian political discourse to formulate his or her arguments on the role of government in society.

Participating in virtual communities requires a sense of trust in and respect for others' expertise, credibility, beliefs, or agendas. In contrast to engaging in face-to-face interactions or responding to familiar media brands or outlets, users in virtual communities are creating relationships with a virtual author about whom they have no knowledge related to expertise, credibility, beliefs, or agendas, requiring them to construct "the imagined author" to determine if they can trust or identify with the author (Das & Pavlíčková, 2014, p. 386). Users therefore employ filters or gates to determine and assess online producers, for example, accessing their profiles and affiliations, or determining their level of participation (Das & Pavlíčková, 2014).

In building relationships, users also need to be perceived by others as being a consistent, congruent versus incongruent self, perceptions that can influence the extent to which users achieve a sense of credibility or sociocultural capital within a community (Delahunty et al., 2014; Hughes, 2007). Users achieve a sense of perceived congruency across different sites by sharing of information and texts that serve to contextualize knowledge about their identity related to certain affiliations or contexts (Das & Pavlíčková, 2014).

Users are also building social relationships across different global contexts given that one-third of users in the United States create blogs; 51% of users in Brazil, 51% of users in India, and 81% of users in China create blog posts; and 29% of U.S. users, 68% of users in the Philippines, and 58% of users in India upload videos (Brake, 2014; Universal McCann, 2009). At the same time, large digital divides exist between developed and developing countries, where, in 2010, 66% of households in developed countries and

15% in developing countries had access (International Telecommunication Union, 2011, p. 3), which is particularly important for uploading images or videos.

This lack of access is due to countries or schools blocking access, and factors such as the perception that virtual participation does not serve to meet people's needs or interests, lack of awareness of the availability and uses of certain tools, limited fluency in English, and lack of informational search strategies. Brake (2014) notes that users from developing countries may be less likely to use the Web because its content is more relevant to wealthier, educated users, suggesting the need to provide content relevant to the needs of people in developing countries.

There are also challenges associated with lack of access to high-speed broadband even within certain spaces (Moores, 2003). Despite "net neutrality" policies, access to high-speed broadband is often shaped by economic factors, so that, for example, people in lower-income or rural places often have less access than do people in higher-income or urban places.

Users engaged in cross-global interactions also experience being blocked from access. A Chinese student in Melbourne found that she lacked access to sites because she was no longer located in China (Martin & Rizvi, 2014). A student from India in Melbourne was frustrated about his inability to interact with family members in India given the latter's lack of access. At the same time, Martin and Rizvi posit the need to challenge the "back home"/"out here" binary associated with international students' experiences based on the complexities associated with the heterogeneity of place within and across different geographic and imagined places, within and across countries versus simply between countries. They note that

> place-identifications tend to be made across a wide range of scales, from the immediate environment to the city to the nation to worldwide diasporas, suggesting a complexly gradated model rather than the cleanly binary model of homeland/hostland. Moreover, we have argued that the "out here" of such migrants' experience can no longer—if indeed it ever could—be conceived as experientially distinct from "back home." (p. 1028)

Receiving and Creating Multimodal Content

Another affordance of participation in virtual communities is the collaborative reception and creation of content—for example, videos for distribution on YouTube that can be readily promoted and pushed out across different platforms and contexts associated with "spreadability" (Jenkins et al., 2013)—as evident in how videos become viral or tweets are "retweeted" in ways that enhance social virtual participation and expressions, as well as explorations of self.

Much of the content being shared consists of multimodal texts—videos, slideshows, interactive presentations, graphic novels, and so forth. Doing so entails acquiring an understanding of design and aesthetic features that transfers to multimodal productions (Beach, Castek, & Scott, in press). Through studying the use of speech bubbles panels, gutters, and visual effects in the graphic novel, *Around the World* (Phelan, 2014), students transferred understanding of the use of these visual features to their own graphic novel productions (Napoli & Sychterz, 2015). For example, the picture book *Flotsam* (Wiesner, 2006), portrays images of a boy who finds a camera containing pictures of underwater life on the shore, and uses a magnifying glass and microscope to study these pictures, portrayed as illustrations in a series of zoom shots (Unsworth, 2011). In creating

a book trailer video (*http://tinyw.in/t72p*) about the book, students used similar zoom shots to portray similar visual meanings.

Learning to transfer knowledge from experiences with multimodal texts to creation of multimodal texts entails use of a metalanguage based on "transmedia navigation" across different multimodal media (Jenkins, 2006). In drawing on clips from the film *Romeo and Juliet* (Luhrman, 1996) to create their own version of a scene from the film, eighth graders employed camera angles and types of shots to portray conflicts between characters (Burn & Durran, 2006, as cited in Unsworth, 2011).

Such transfer can be enhanced through the development of artistic understandings. For example, drawing on the work of Callow (2003, 2008) on the visual literacy of high school students, Gillenwater (2014) explored the effects of teaching in the arts on 12th-grade advanced placement English language arts students' engagement with graphic novels. Gillenwater found that students are more likely to transfer their experience of reading traditional print texts to reading graphic novels when they receive visual literacy instruction in how to employ intertextual transfer from print to visual texts to process the visual aspects of images, panels, captions, and speech balloons related to understanding the graphic novel story development given their need to focus attention on the semiotic meanings of the graphic novel features.

Perhaps simply the opportunity to mix and remix modal texts affords new understandings or expressions. Based on his analysis of the digital literacies over time and space of a youth hip-hop group of Filipino background in London, Domingo (2014) suggests that youth employ multimodal texts to reorganize, recontextualize, or remix multimodal material "modularity" to create new texts critiquing the meanings of original texts and constructing self. As Domingo concluded:

> Text for the urban youth in this study functioned beyond making meaning using written words. They shaped multimodal ensembles using digitally enabled text making to express their new mixed sense of belonging across discourse communities. Their social relations were materialized through purposeful design of modal configurations. Another feature of text and text making that demonstrates the cultural significance of modal affordances is how such practices enabled migrating literacies across discourse communities. Rather than having to shift their discourses to fit the specific linguistic and social communities in which they participated, the Pinoys were able to shape texts that could attend to their transnational notions of belonging. (p. 277)

A case-study analysis of 17-year-old Ben's use of Snapchat found that he engaged in digital storytelling to represent his identity through images portraying his experiences of daily everyday events (Wargo, 2015). Use of his mobile phone and Snapchat serves as

> an extension of self. Technology, echoing Ahmed (2006), "does not simply refer to objects that we use to extend capacities for action" (p. 45) but instead becomes "the process of 'bringing forth' or . . . to make something appear, within what is present" (p. 46).

The chronotopes of time and intensity that influence use of a tool such as Snapchat involve what Wargo (2015) describes as malleable, creative "elastic literacies . . . that emerge from relational social ties and interactions with human and nonhuman actors across an array of environments" (p. 51) that involve novel visual improvisation for social sharing, particularly since the Snapchat productions are deleted after a 24-hour period. In describing his composing with Snapchat, Ben notes:

> "It is like being with someone for that day. It is very intimate. When you see that snap, only a small group can see that snap. I get to feel like I am with them, even when I am not. People who I don't care about, or who I don't want to share that moment with, they don't get to know. It's a memory for a small collective, an experience we have together." (p. 56)

In constructing multimodal digital texts, students can then reflect on how they remediate print texts through uses of digital social affordances (DePalma, 2015). One student reflected on how, as a musical composer and writer, she employs certain literacies to create dramatic tension in her stories through withholding information, juxtaposing segments, manipulating time, and so forth. She described the use of a delay in time for the display of images, along with music juxtaposed to build tension. She also used certain music to match her voice-over to convey shifts in her voice-over and writing about experiences, representing her ability to mesh multimodal literacies across music and print text.

Students also noted the difficulty of adopting print-based composing using multimodal resources, leading them to recognize the limitations of reliance primarily on print. To foster his students' reflection on the uses of rhetorical moves mediated by use of digital tools, DePalma (2015) had his students identify shifts in their purposes for different text segments—illustrating concepts, creating tensions, and so forth, to then determine use of certain resources that best achieve these purposes—use of sound, video, voice-over, page design, and so forth (e.g., "using voiceover narration to provide viewers with insight into the main character's psychological state" [p. 636]). Doing so served to foster a meta-awareness of their decision-making processes.

Fostering Pedagogical and Societal Transformation

Use of technology is often touted as transforming teaching and learning in schools as well as social structures. However, if technology is only a tool, its effective use to transform schools and society depends on the motivation and ability of people to use that tool in ways that enhance their learning or to change society. Use of technology per se, as illustrated by projects such as "one laptop per child," don't necessarily result in a transformation of larger economic status of students that itself impacts learning, and, can actually contribute to economic inequality (Toyama, 2015). For example, it is often assumed that the availability of massive open online courses (MOOCs) will transform postsecondary learning, particularly for low-income students. Toyama cites research on MOOC completion rates that finds it is primarily well-educated, currently employed users who are most likely to complete MOOCs, whereas low-income young adults do not enroll or they have low completion rates (Christensen et al., 2013), a reflection of the importance of not only motivation but also socioeconomic status differences influencing technology use.

Given the importance of motivational aspects of the use of technology, this suggests the need to identify those features of technology use that serve to motivate students' engagement. With the advent of multimodal expressions and the proliferation of mobile digital tools with video or other forms of visual effects, we have experienced a rise in various forms of social activism, participation, and outreach as growing numbers have engaged with or witnessed various forms of citizen journalism in social movements spurred by digital connectivity or simply the opportunity to access multisensory experiences dealing with social developments, from poverty to climate change. Of particular noteworthiness, the rise of these developments has been the subject of focused inquiry

and further theoretical advances, especially a mixing together of critical theoretical work with semiotics and transnational thinking.

For example, in conjunction with engaging in a form of design research with high school and homeless youth in Vancouver in the creation of film, drama, and other arts projects, Theresa Rogers and her colleagues (Rogers, Winters, Perry, & LaMonde, 2015) have described how youth enlist new and critical literacies, especially the multimodal possibilities afforded by various digital media, to engage various publics and themselves in speaking out about societal issues, including the public's faulty constructions of youth. Their projects reflected reflective and responsive engagement in ways that spurred a form of cultural criticism and civic engagement by youth. Rogers and colleagues (2015) described the projects "as expressions of resistance to the inheritance of the broken promises of democratic citizenship and their ability to imagine new possibilities of public engagement" (p. 2). The youth did so, as they stated, "through multimodal intertextuality—the mix of genres, forms and modes that functioned as discursive resources for creating counter narratives . . . juxtaposing . . . hybridizing . . . remixing" (p. 102).

Consistent with Appadurai's (1996) discussion of the translocal, their project highlights forms of engagement. While they may be fragile and emergent, they represent the "struggles" of youth, as well as their "resistance and subversions" (p. 112). Rogers and colleagues (2015) suggest that the media resources supported in these ways offered youth the vehicles for participating as citizens resisting and speaking for themselves against the national and global impositions. They suggest that their work is at the intersection of global and local, and befits the convergent space advocated by Jenkins (2006) that the media afford.

Claudia Mitchell and her colleagues (Mitchell, 2011; Mitchell & Murray, 2012) have pursued similar forms of design research on the use of a range of digital resources, as well as other media, to support the engagement of high school youth in South Africa (Rwanda, Ethiopia, Kenya) and in Canadian First Nation communities to address significant social issues, ranging from HIV/AIDS to violence toward women. Their work, which they refer to as "social policy 'from the ground up': youth participation and social change through digital media" encourages youth to enlist images, websites, and other multimodal digital forms to spur dialogue around difficult issues of concern to their everyday lives—especially given the social norms that might exist. Despite these complexities, they have pursued a range of provocative design experiments in which young people have been invited to participate in forms of activism involving public disclosures. Mitchell and Murray (2012) posit that unless young people are given a more significant voice in participating in policy dialogue about their own health and well-being, the programs themselves are destined to fail.

There have been other forms of digital engagements in ways that are more constrained or more tethered to a virtual space. For example, extending simulations, users can engage in game playing to address social issues. In doing so, they employ "systems thinking" about how their avatars' actions are addressing problems in systems (Gee, 2011). In the game Evoke (*www.urgentevoke.com*), players employed crowd-sourcing collaboration to address world issues such as food shortages, power outages, water security, disaster relief, poverty, and pandemics (McGonigal, 2011). Players use the Engagement Game Lab at Emerson College in Boston to address community issues, for example, using the game Community PlanIt (CPI) to address issues of attendance, high school dropouts, or the achievement gap in Boston schools (Gupta, Bouvier, & Gordon, 2011).

Alternatively, users may use social media to plan, organize, and engage in collective actions, for example, participation in a flash mob event. Adolescents' level of self-efficacy regarding their sense of competency in making and maintaining friendships, as well as their time devoted to viewing YouTube videos, was related to their intentions to participate in flash mobs (Seo, Houston, & Taylor, 2014). Students also employ digital media to curate and collect resources for engaging in community collaboration, as documented in research on the Youth Community Inquiry project in Illinois (Bruce, Bishop, & Budhathoki, 2014).

A key factor in fostering civic participation are the relevance and forms of civic engagement associated with effecting change (Chaterdon & Silvester, 2015) and, as Rogers and colleagues (2015) have argued, that art, media and other resources prompt civic engagement due to the transmediating features and the fluid, shifting, and embodied possibilities they provide. And, we posit, the use of various mobile digital resources has undergirded social movements, and enhanced civic engagement and political protest through "resource mobilization, repertoires of contention, opportunity structure, and the framing function of movement messaging" (Epstein, 2015, p. 15).

As an aside, our universities may be aware of and sometimes engage with and be the subject of such developments at the same time as they may thwart recognition of their scholarly merit. For example, within universities, there may still be a reverence for traditional scholarly output with high-impact loadings but minor reach compared with digital outputs. Unfortunately, often much of online academic content, consisting of blog posts and online reports designed to affect change, is devalued based on academic institutions' traditional assessment of the faculty's scholarly production, assessed primarily in terms of publication in refereed journals that precludes posting and sharing material on social media sites (Greenhow & Gleason, 2014). One scholar notes that his work on Twitter and his blog are frequently cited and used by other scholars, but such curation and blogging would not "count" for tenure review because it is often perceived as "service" rather than as a scholarly publication (Bessette, 2015). He considers these perceptions of social media work to be associated with the assumption that the emotion constituting such work is considered problematic based on criteria for scholarly rigor.

Standardization versus Personalization of Learning Space and Time

A key issue related to acquiring social literacy practices through use of these social affordances is the degree to which these virtual spaces are designed to foster standardized versus personalized learning. In his historical review of the development of the Web, David Weinberger (2015) noted that in the 1980s and early 1990s, people built and employed Web tools based on their own unique, personalized practices. He notes that, more recently, use of virtual spaces has become more standardized and commoditized through increased use of corporate tools. For example, virtual classroom spaces have been constructed around uses of walled-garden learning management systems (LMSs) such as Blackboard and Moodle that serve to structure learning in top-down ways (Reich, 2015).

Students in these spaces had little opportunity to employ Web tools based on their own needs and agendas given the assumption that *how* students experience virtual spaces is just as valuable as *what* they learn in these spaces. In contrast, drawing on notions of connected learning, for his course T509-Massive: The Future of Learning at Scale (*http://t509massive.org*) offered at the Harvard Graduate School on the topic of large-scale

learning environments such as MOOCs, Justin Reich (2015) designed the course so that "students own their learning space":

> I asked them to create their own websites, blogs, Twitter accounts and spaces on the open Web. In these spaces, students could curate links and connections and share their evolving ideas. Whatever they create is owned and maintained by them, not by me or by Harvard. They can keep their content for three months, three years, or the rest of their lives, so long as they continue to curate and move their published content as platforms change.

In this course, students were writing for not only their peers, but, because they were using their own platforms, also for audiences beyond the class, writing that continued after the class. Students were also engaged in self-selected events that included live-blogging sessions and notes, hosting webinars, sharing reflections on readings or posting comments on peers' work, and creating summaries on implications for schools or organizations. The course therefore moved away from standardization of space dictated by university or instructor control to personalized space based on students' needs and interests.

Fostering Constructivist Cognitive Learning in Virtual Space and Time

How then does use of these social affordances in virtual space and time serve to foster constructivist cognitive learning associated with transforming content knowledge. Fostering such learning entails creating virtual spaces in which technology tools are no longer being used simply as a substitution or augmentation of status quo learning, for example, use of tools not to reify recall of current information, but rather as a means of modifying or redefining learning (Puentedura, 2011). In his taxonomy of use of different apps to transform learning by exploiting the virtual social affordances, McLain (2014) contrasts "replicant" and "extender" apps (p. 196); the former are used to simply replicate or reify ways of learning that could be employed using analogue tools such as flashcards or calculators, whereas the latter "extend" learning in ways that are only possible through uses of digital apps, for example, use of an astronomy app such as StarWalk for not only observing stars and planets but also to provide data about those stars and planets.

Richard Beach's coauthored study of sixth-grade students' use of apps in studying the topic of climate change in a science class examined how employing these apps served to engage students in collaboratively building relationships, creating multimodal content, and promoting change, affordances fostered by use of apps on Chromebooks constituting a virtual classroom space (Beach & Castek, 2015; Beach & O'Brien, 2015; Castek, Beach, Cotanch, & Scott, 2014). To share their conceptions of the distinction between "weather" and "climate," students worked collaboratively to create digital maps using the Mindmeister app to visually contrast the two concepts using images and text. To share responses to readings on measuring carbon dioxide emissions, students used the sticky-note feature of Diigo to add annotations to these reading, then react to each other's annotations as a virtual discussion.

Analysis of these annotations indicated that students were engaged in metacognitive reflection about these readings, with 34% of the annotations consisting of questioning; 22%, integrating/connecting; 13%, evaluating; 10%, determining important ideas; 9%

inferring; and 6%, monitoring (Castek et al., 2014). Student interviews indicated that they not only considered effective annotations that shared knowledge acquired from the texts, but they also drew on their prior knowledge of science to provide causal explanations of factors related to climate change.

Students also used the VoiceThread app to share audio or written annotation responses to images of photosynthesis and emissions, focusing on descriptions of and doodles on images as a multimodal means of learning. Analysis of the annotations indicated that 77% consisted of inferences about causal relationships—that they were using responses to the images to construct knowledge about causal relationships (Beach & O'Brien, 2015). Students were also engaged in critical analysis of the images, representing a recontextualization the image's meanings, as illustrated by one student's annotation about the image of smoke emitting from a Ford Mustang, a recontextualization of a positive, popular cultural associations of the Mustang with power to critique the car's emissions as contributing to increased carbon dioxide emissions. The teacher also noted the value of social affordances of collaborative multimodal production:

> The multimodal aspect of this [that] helps kids gel their understanding and further their understanding of whatever their particular part of the carbon cycle. . . . What was neat was every kid was processing their leg of the carbon cycle in their own way without being guided by a teacher. (p. 127)

Students then drew on their knowledge of factors influencing climate change to use Google Docs to write letters to President Obama, arguing that he should reject the Keystone Pipeline based on the adverse effects of use of increased oil extraction and production on climate change, in writing that reflected their attempts to make change. The students provided feedback for each other's drafts, resulting in students' engagement in metacognitive reflection and revisions.

Cross-Cultural Interactions or Encroachment

Social affordances, especially those occurring across cultures and under the banner of activism, need to be examined critically. As we suggested earlier, there is a danger that we might cross borders in ways that are tied to our agendas, without regard for local norms and practices. Digital advances and empowerment via social network need to fully unpack the ethics of enterprises that disrupt the local, challenge privacy, or pursue dissemination of individual and group properties as if they were commodities. Those studying these developments should acknowledge their own limitations, and realize that they need to be cognizant of their understandings and the possibility of faulty discernments (Smith, 2005).

To illustrate the complexity of understanding cross-cultural virtual interactions, take the issues confronted by Hull and her colleagues (2010; Hull & Stornaiuolo, 2014), who have been exploring the notion of "cosmopolitanism" and "proper distance" in conjunction with the nature and possibility of dialogue across cultures. They define *cosmopolitanism* in accordance with Silverstone (2007) who states:

> The cosmopolitan individual embodies, in his or her person, a doubling of identity and identification; the cosmopolitan, as an ethic, embodies a commitment, indeed an obligation, to recognize not just the stranger as other, but the other in oneself.

> Cosmopolitanism implies and requires, therefore, both reflexivity and toleration. In political terms it demands justice and liberty. In social terms, hospitality. And in media terms it requires . . . an obligation to listen, an obligation which I will suggest is a version of hospitality. (p. 14)

And, as Silverstone (2007) suggests, "proper distance" is "the capacity to enlarge one's perspective, and the willingness to recognize the other in her sameness and difference" (p. 119).

In accordance with these notions, Hull and Stornaiuolo (2010, 2014) addressed the question: How might young people be positioned to develop effective and ethical responses, in our digital age, to local and global concerns? By analyzing the "conversations and creative artifacts exchanged by groups of youth in New York City and in India" (2014, p. 15), Hull and her colleagues explored the reader–audience relationships within and across cultures, including the various renditions, revisions, and remixes as they unfolded across the various projects (Hull & Stornaiuolo, 2010, 2014; Stornaiuolo, Higgs, & Hull, 2013). These young people appeared to astutely employ and remix content via the digital tools as they wrestled with inserting themselves in ways that befit the demands of global participation. Their engagements reflected

> an increasing awareness of the validity of different cultural practices and values and in turn reconsidered their own values, practices, and beliefs. Surprised and almost affronted by rejections or misunderstandings of artifacts and intended meanings, participants gradually became reflexive, achieving enough distance from themselves to move closer to distant others. (Hull & Stornaiuolo, 2014, p. 39)

However, it was apparent that some complications arose regarding conceptions of "private" versus "public" related to larger, conflicted cultural concerns as the young women explored their lives online. In particular, when the local community members and family members question what the students are sharing online, the young girls are confronted with being positioned amid the oppositional forces of a project's empowerment goals, its digital interface (i.e., text and images akin to Facebook), including global reach *against* the angst of community expectations. Do the ethical complexities need to be unmasked lest the ethics represent a sleight of hand or a failure to accommodate local cultural practices or represent the interests of some, but not all in a fashion that is judicious and respectful?

In particular, should a Western enterprise and construction of empowerment furthered by digital toolkits and global network trump cultural respect for others (individual and groups) and the parameters or principles that might be applicable when working across borders? Is there a failure to interrogate or complicate advocacy research and the confluence of discussions of global knowledge transfer, cosmopolitanism, participatory culture, digitally based social networking, social justice, and empowerment? How might researchers resolve the tensions that arise between local and global, between advancing the individual while dispossessing the community?

The difficulties of working across cultures deserve a fuller consideration, especially as global networks and exchanges of ideas proliferate. Indeed, other research exploring analyses of the degree to which interactions on a wiki between college students in Australia, Chile, and Britain led to the experiences of "outsideness" related to uncertainty and doubt found few instances of active exploration of competing perspectives (Deed,

Edwards, & Gomez, 2015). Analysis of middle and high school students' use of digital storytelling in a school in India and a school in the United States, based on issues of climate change, to communicate across different global contexts served to enhance students awareness of alternative cultural perspectives, leading to reflection on the limitations of their own perspectives (Truong-White & McLean, 2015). Analysis of a student's creation of a video based on negative changes in sanitation and garbage in Dharamsala, India, leading to more pollution due to the increased effects of globalism and consumption in India, represented a understanding of how larger economic forces can impact climate change, leading to advocacy for change to address the problem. In contrast, a Seattle student's video on climate change portrays the issue primarily in terms of the problem of increased emissions that could be addressed by carbon taxes, but without an analysis of the systems causing emissions or how to address change, a reflection of his largely consumerist framing of the issue. While the curriculum proposed that students from the different schools were collaboratively sharing information and texts, such work is prone to framing cultures without regard for differences and a bias toward imposing one's own frame on others or incongruences with regard to ethics, including intellectual property or other considerations.

The Rear Mirror

In the antecedent to this chapter (Tierney, 2009) in the previous edition of the *Handbook of Reading Comprehension,* the review ended with the admission that we were deluding ourselves to think that our notions or theories of meaning making of the time fully grasped the powerful nature of these developments and their dimensions. The goal of that previous chapter was to "braid together" what was emerging about the nature of meaning making afforded by the architecture of various digital spaces, especially with the advent of hypertext and its offshoots (the Web and other affordances, including multimodal environments, social networks, etc.). Across bodies of research and theorizing, the review attempted to piece together a composite of the constituent elements that comprise a theory of meaning. The chapter settled on being more provocative than definitive, offering suggestions of connections and ideas that might serve as future work.

The review ranged from the cognitive to the sociopolitical to embodied agency, and included discussions of affordances, embodiment, identity, and collective meaning making across space and time. The chapter was oriented to issues of agency for individuals and groups across time and space as they navigate for themselves and sometimes "live in" the multilayered, multivocal, labyrinth-like composites of text and images buffeted by local and global crosswinds across space and time.

Our chapter has foreshadowed three key developments: the blurring between reality and unreality as the precursor to the notion of life in the media drawing upon Jean Baudrillard (1981); growing interest in embodied shifts of identities for individuals and groups akin to a form of improvised theater or process drama as people interact with others and their own multiple selves; and a growing concern for the ethics of or possible conflict between global pursuits and consumerism, and local cultural considerations.

Given the rapid infusion of the virtual in our lives, schools, and the workplace, the review ended with the admission that we were not there yet in terms of understanding meaning/sense-making in virtual spaces and time. The major developments and some

of the characteristics of digital engagements were portrayed but in a fashion that was more a still photograph lacking the layers, vicariousness, lived-through experience, and all-encompassing dynamics of literacy that embeds and shapes our lives. Befitting these configurations, semioticians have discussed the notion of transmediation and of psychologists who had drawn on Wittgenstein's notion of crisscrossing a terrain. Nonetheless, it is noteworthy that in the previous chapter, Gunther Kress (2003) is footnoted and referenced offering a similar lament:

> The major task is to imagine the characteristics of a theory which can account for the processes of making meaning in the environments of multimedia representation in multimediated communication, of cultural plurality and economic instability. Such a theory will represent a decisive move away from the assumptions of mainstream theories of the last century about language and learning. (p. 168)

To respond to this call, we attempt a radical shift. In particular, we argue that meaning is "in the media" occurring across multiple layers in complex, potentially transnational virtual spaces. Accordingly, the present review brings to the fore the extent to which meaning making exists between and across lived-through and virtual spaces. The review highlights the uncontrolled, vibrant, and alive "virtual world" of "our being" within space and time, including the social affordances for individuals and groups across locations, communities, and societies. Understanding life in a virtual world requires moving beyond the social-cognitive, semiotic, and embodied underpinnings of meaning making articulated in the previous chapter to a more complex exploration of "living with and across" multiple virtual worlds described in this chapter that posits the need for a shift *from* the metaphors of "ensemble," "jazz," and "crisscrossing" *to* "mangled," "commodified" and "uncontrollable" (Kamberelis, McGinley, & Welker, 2015).

Closing Comments

This chapter ends where we began; we are still not deluded enough to think that we have certainty or any encompassing theory that fully predicts what we see as our changing state of meaning making. Our selection of a subset of research and theory may help with the journey or better our understanding of literacy meaning making, but it should also celebrate the search itself, revel in the power of being lost and having to stay "on the run" amid a-changing times.

Understanding life in a virtual world also requires a radical shift in views of meaning making. We would suggest that the radical nature of this shift is significant as our lives have become increasingly embedded in virtual exchanges. In terms of moving forward, while not abandoning our past understandings of online engagements, we embrace a number of new explorations of meaning making, drawing on alternative analyses of time and space, without discounting the need to confront and unpack the ethical issues of public and private, as well as transnational impositions, of our changing state of "being" or "becoming" amid virtual worlds (Leander & Boldt, 2013; Masny, 2012). In conjunction with these changes, we hope that this chapter has more the feel of moving toward a global bazaar than of being solely underpinned by primarily Western forms of global corporatization or accommodating to a UN treatise.

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