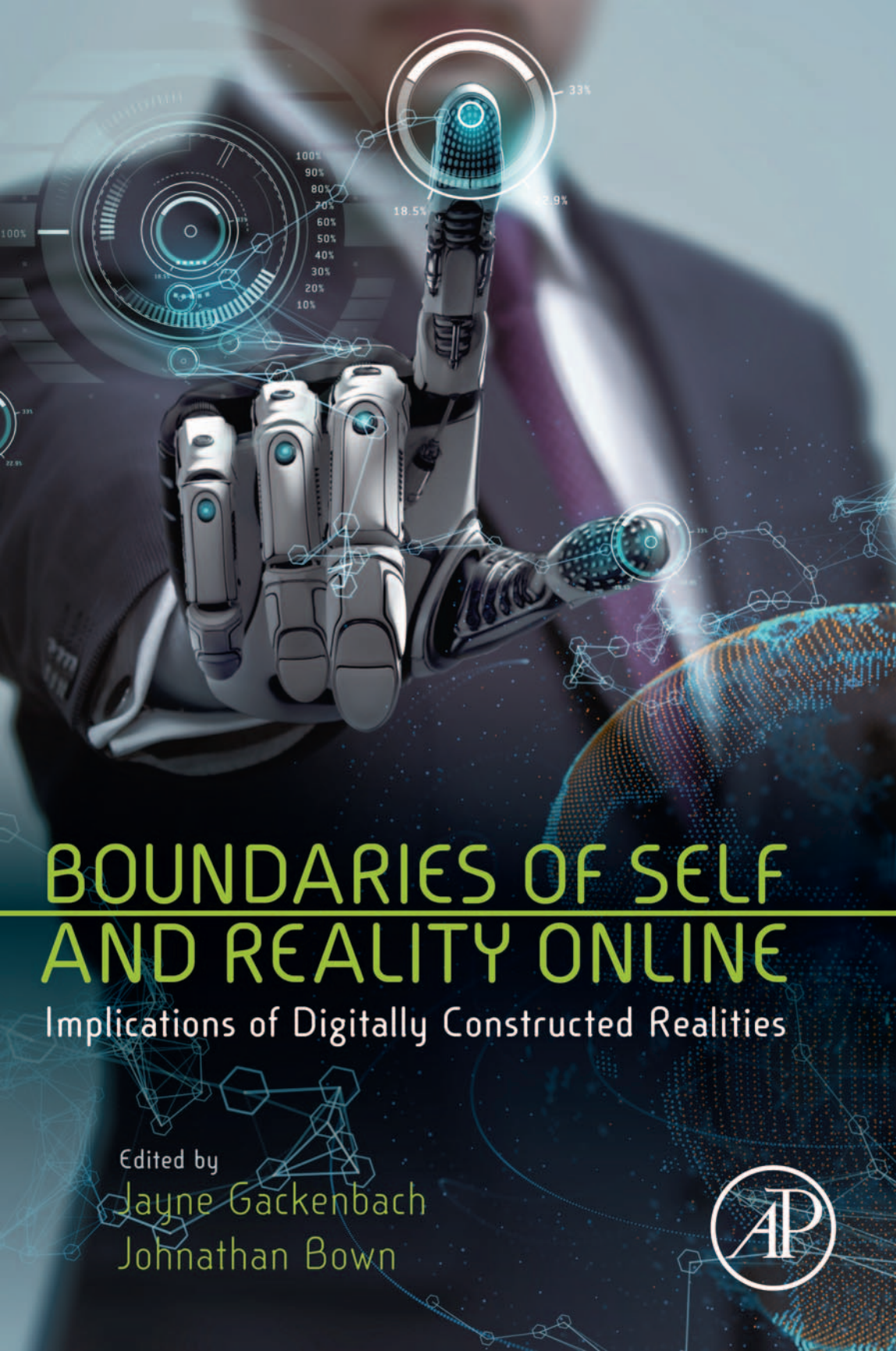

BOUNDARIES OF SELF AND REALITY ONLINE

Implications of Digitally Constructed Realities

Edited by
Jayne Gackenbach
Johnathan Bown

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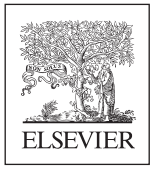
Edited by

JAYNE GACKENBACH
Department of Psychology
MacEwan University
Canada

JOHNATHAN BOWN
Edmonton North Primary Care Network
Canada



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CHAPTER 1

The Dimensions of Cyberpsychology Architecture

John Suler
Rider University, Lawrenceville, NJ, United States

Cyberspace is psychological space, a projection of the individual and collective human mind, which is why the term "cyberspace" itself is valuable. Both consciously and unconsciously we perceive this realm on the other side of our screen portals as an extension of our psyches, a territory that reflects our personalities, beliefs, and lifestyles. Early psychological studies identified how this online world entails a blurring of the boundary between mind-space and machine-space (Suler, 1996; Turkle, 1995). We experience ourselves as existing within an intermediate zone between self and other. From the perspective of traditional psychological theories, this space can be conceptualized as an intersubjective or interpersonal field (Atwood & Stolorow, 1984; Stern, 2015; Sullivan, 1953), a transitional or transformational space (Bollas, 1986; Winnicott, 1971), a territory that is part me, part other, and that provides a venue for self expression, interpersonal discovery, play, creativity, and, unfortunately, the acting out of psychopathology. In the context of such traditional theories, the digital world is a unique psychological space because it is mediated by computers that provide unprecedented speed in the processing of information, resulting in a wide variety of experiences and levels of interactivity not possible in conventional media. The design of different computer-generated spaces shapes the projected manifestation and interaction of self and other, hence determining the psychological impact of those spaces.

Cyberpsychology is then an inherently interdisciplinary or even transdisciplinary field, combining an appreciation of the technical aspects of online environments with an appreciation of the psyche. This holistic understanding of humans in the digital age can be founded on a theory that elucidates the unique features or "architecture" of each online environment (Suler, 2016). This cyberpsychology architecture consists of eight interlocking

Boundaries of Self and Reality Online
ISBN 978-0-12-804157-4
http://dx.doi.org/10.1016/B978-0-12-804157-4.00001-3
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dimensions that regulate our experience of different digital spaces. Each dimension reflects computer-generated aspects of how a particular online environment operates, how the human psyche manifests itself there, as well as how the mind itself works. Different environments—such as social media, video-conferencing, games, avatar worlds, and email—combine the eight dimensions with varying emphasis. The essential questions concerning any particular environment are what dimensions it emphasizes, what dimensions it does not, and in what specific ways. The psychological power of the digital world comes from its versatility in developing, combining, and minimizing or maximizing these eight dimensions for outcomes that are practical, creative, and sometimes unpredictable.

THE IDENTITY DIMENSION: WHO AM I?

Identity, the sense of self, constitutes the first dimension of cyberpsychology architecture, just as it has been a fundamental concept in traditional psychological, sociological, and philosophical discourse. From the perspective of cyberpsychology, all of the other dimensions of the architecture are tributaries that feed into identity.

The identity dimension of an online domain is determined by the options it provides people for establishing who they are, what they express about themselves, what they hide, and how they transform themselves—transformations often based on idealized self-concepts, what Walther (1996) called the *hyperpersonal self*. The digital world allows individuals to narrowly or fully depict aspects of their "real" identities from their in-person lifestyles, to establish their online selves de novo as fantasy creations, or to construct something in between as a mixture of a genuine and imagined self. The many different types of online environments can lead to a decentered, dissociated, and multiplied expression of self (Turkle, 1995), while also offering opportunities for discovering previously unconscious aspects of identity, which can lead to a more individuated, cohesive sense of self. The Internet even offers the possibility of negating identity by adopting varying degrees of anonymity and invisibility. The identity dimension includes all the software vehicles for self-presentation provided by a particular online environment, including how people consciously and unconsciously use or avoid them, as well as the healthy or pathological aspects of their identities that manifest in that environment.

Usernames, biography profiles, photographs of oneself, and avatars are all commonly employed tools for establishing identity when people first enter a new online environment. Once they begin participating in it, they must

grapple with the different alternatives for defining themselves: communicating via long or short text posts; uploading pictures or video that show how they look, sound, and behave, or that reveal their home, work, and social places; reposting other people's content serves the function of *self-expression by proxy* (Suler, 2016). The social norms of an online community might encourage people to portray themselves in a way that accurately reflects their real-world selves, as in traditional social media like Facebook. The norms might encourage them to adopt imaginary identities, as in games. Or the norms might create an identity dimension that mixes reality and fantasy.

Personal identity becomes compromised when people strive to maintain an ongoing symbiotic connection to others online in order to receive constant acknowledgment of their thoughts and feelings, a need that can inadvertently backfire: by forgetting how to self-reflect while being alone, one loses track of the intrapsychic boundaries that define an individuated, separated identity (Turkle, 2012). A related problem is the tendency for people to allow their self-expression in social media to become dictated by the dependency need for attaining affirmation from their online audience. Social tokens such as "likes" serve as a form of applause that selectively reinforces the expression of identity. People post items about themselves that they think others will reward with a "buttonized" reaction. They become what others seem to want them to be.

The identity dimension includes the intersection between one's online and offline selves, how the two parallel each other, differ from each other, and can be unified if there are discrepancies, as suggested by the integration principle that calls for the carry-over of online behaviors into the offline world, and vice versa (Suler, 2016). It is the balance and combination of online and offline identity that maximizes wellbeing. Understanding the dynamics of this unified, balanced sense of self will be a critical tool in the attempts of cyberpsychologists to address what has become a very problematic byproduct of our technological age: the various types of Internet compulsions, including cybersex, gaming, gambling, day trading, shopping, and social media addiction (Greenfield, 1999; Suler, 1999; Young, 1998). For all the different forms of healthy and pathological expressions of identity in cyberspace, the person–situation interaction of character type with the qualities of the online environment plays an important role. People chose a particular environment according to their personality dynamics, but the environment in turn influences their expression and development of self, often in ways unconscious to the person.

THE SOCIAL DIMENSION: WHO ARE WE?

The social dimension pertains to all interpersonal aspects of cyberspace, including relationships that are one-to-one, one-to-many, many-to-one, strong and intimate, and weak or loose ties. It entails the assessment of how many people a person interacts with, who those people are, the purpose of those social activities, and the interpersonal strategies employed. Any tools an online environment provides its members to locate, gather, and communicate publicly or privately with others are features of its social dimension. Although the social dimension intertwines intimately with the identity dimension due to the synergistic interaction between interpersonal relationships and individual identity, cyberspace does provide options for a robust expression of identity with a minimally developed social dimension, as with people in social media who operate in a performing or "expressive" mode by posting regularly but without responding to others who might react to their posts. By contrast, people who operate in a "receptive" mode view other people's online behavior while participating very little themselves (Suler, 2016).

When online, people can communicate with dozens, hundreds, thousands, and even millions of people from all walks of life. They can juggle many relationships in a short period of time or even at the same time, as in text messaging, without other people necessarily being aware of their social multitasking. By posting to social networks they create their own personal audience consisting of people who share even the most esoteric of interests. Using a search engine they can scan the vast online world to focus their attention onto particular types of people. Over time online environments have become increasingly more powerful in their tools for searching, filtering, and contacting almost any kind of person or group, which is an important feature of their social dimension.

People make conscious decisions in selecting others who share similar interests and backgrounds, or whose personalities are compatible with their own. However, the ability to sift through so many possibilities for developing online contacts also opens the door to unconscious influences stemming from past relationships, such as transference reactions and other parataxic distortions. In addition to conscious preferences, people online act on unconscious expectations and needs when selecting colleagues, friends, lovers, and enemies. As an experienced online user once said to me, "Everywhere I go in cyberspace, I keep running into the same kinds of people!" This unconscious filtering process can be sensitive, powerful, and

totally misleading. A common example involves twinship transferences (Kohut, 1977) in which people with shared interests join forces online as they grow convinced of their deeply meaningful bond, only later to witness their relationships dissolve or explode in conflict when they discover their supposed alter-egos have needs that are incompatible with their own. Misunderstandings and conflicts in online relationships and groups, especially when communication entails only typed text, are common due to interpersonal misperceptions arising from transference reactions. When machine intelligence suggests possible contacts to a user based on the user's past choices, an important question is whether these suggestions contribute to an unproductive restriction in the person's interpersonal sphere.

Online romances are a particularly powerful example of how relationships in cyberspace can be enriching or simply turn into an outlet for problematic transference reactions. In online dating sites people often play with love, sexuality, and the presentation of themselves as the quintessential romantic partner (Whitty & Carr, 2006). They might unrealistically glorify themselves or their companions. The degree to which people engage such playing-at-love varies, most likely depending on the person's susceptibility to idealizing and twinship transferences (Kohut, 1977). Understanding how the acceleration and amplification of transference in cyberspace affects communication with lovers, family, friends, colleagues, and strangers is an important tool in assessing the social dimension of a person's online lifestyle.

In this social dimension of cyberpsychology architecture, people who do not establish presence in the environment are as important as the people who do. Self-selected membership and degree of participation will shape the interpersonal culture. People bring their mental sets with them, ways of thinking that are very different from others who cannot enter the environment, have no desire to do so, or who belong but rarely contribute. As long as the digital divide persists, the social dimension of the Internet as a whole will be determined directly by the people who access it, and indirectly by those who do not.

THE INTERACTIVE DIMENSION: HOW DO I DO THIS?

The interactive dimension entails how well people can understand, navigate, control, and modify an online environment. Here enters the discipline of human–computer interaction (HCI), as first described by Card, Moran, and Newell (1983), which involves the design of a computer interface that is

more user-friendly because it parallels how humans intuitively perceive, think, and behave. The more readily people can immerse themselves into an online domain, the more quickly it becomes a transitional space, an extension of their minds. The more customizable it is, the more they can express their identity, shape their experiences, and feel emotionally invested and present in that environment. As the interactive power of a device increases, so does its intrapsychic power as a self-object that sustains one's sense of identity (Kohut, 1977). A purely informational website has minimal interactive qualities. Sophisticated avatar worlds possess high interactivity in the many opportunities people have to create visual representations of themselves, to venture into a variety of locations within the world, to construct their own objects and dwellings, and to form relationships with others. A highly interactive environment tends to be more complicated, requiring a steeper learning curve and greater skill, which becomes a challenging task when people undergo *media transitions* (Suler, 2016). For complicated environments, an effective human–computer interface is critical.

No matter how sophisticated electronic tools become, there will always be moments when they fail, when the machine does not work properly, or when noise intrudes into the experience. Under these conditions interactivity declines, often unexpectedly and precipitously. The exasperation, depression, and even primitive rage people experience in reaction to these technical breakdowns points to the psychological power of the machine in gratifying then frustrating the need for control and symbiotic attachment. An unexplained lack of response from the machine—the *black hole experience*—opens the door for projecting anxieties onto the machine or the people with whom one expects to communicate but cannot (Suler, 2016).

The interactive dimension includes not just how users relate to the machine, but also how the machine relates to them, including such factors as how it prompts people with notifications about their online habitats; how it offers suggestions about what they can do based on its ability to recognize their preferences; and how much machine intelligence forces itself on users as opposed to allowing them to decide what level and type of interaction they desire. The interactive power of an environment increases when it steers people toward higher, more enjoyable, and more easily controlled participation, either because it gave them an uncomplicated opportunity to tell it what they like, or due to its ability to effectively but transparently analyze their past behaviors with the best of intentions for their wellbeing.

As the machine becomes more interactive, people tend to anthropomorphize the device by consciously or unconsciously projecting human

qualities into it. Advances in artificial intelligence that deliberately attempt to build human qualities into the machine will escalate these tendencies to the point where people cannot always distinguish a computer program from a human, as illustrated by the Turing Test (Turing, 1950). Unconscious reactions to computer-generated beings include the curious phenomenon of the *uncanny valley* (Mori, 2012) in which people feel comfortable anthropomorphizing such beings up to the point where the machine comes very close to appearing human, but not quite, resulting in a precipitous drop in the person's comfort level along with feelings of eeriness, anxiety, and fear. This phenomenon points to the strangely ambiguous differentiation between self and other, as well as to the intangible experience of the unconscious that Freud (1919) noted in his paper about the uncanny aspects of automaton creatures in literature. In addition to presenting challenges in the design of artificially intelligent "beings," the uncanny valley might also affect the interactive dimension of virtual environments with ambient intelligence (e.g., Riva, Loreti, Lunghi, Vatalaro, & Davide, 2003), when users imagine an eerie presence operating behind an environment that feels "alive" in its ability to anticipate and respond to the user.

THE TEXT DIMENSION: WHAT IS THE WORD?

In the early days of cyberspace everyone talked via typed text. Although this changed dramatically with the rise of visual and audio features, text still prevails as one of the most important tools for communicating, as it has throughout modern history. It appears in a variety of long and short forms: websites, blogs, email, social media posts, texting, and short messaging systems. Some researchers refer to it as *text speak* or *computer-mediated communication*, while I prefer the term *text talk* because it implies both an individual's attempt to communicate as well as conversation among people.

Drawing on different cognitive skills than speaking and listening, typing one's thoughts and reading those of another is a unique strategy for expressing one's identity, understanding others, and establishing interpersonal relationships. As an internalized, self-reflective dialogue, writing facilitates insight into oneself, while experiencing another person's text facilitates insights into that person as well as oneself as the reader. The verbal systems of the left cerebral cortex tend to involve thinking that is more conceptual, logical, factual, linear, and consciously controlled. For this reason, "putting it into words" during text talk gives people the opportunity to identify, shape, and master otherwise intangible experiences, a fact that gave rise to writing

therapy (Pennebaker, 2004). Individual differences in preference for writing may reflect varying degrees of skill in taming unconscious experience through the power of the word. Some people express themselves better in writing rather than talking, as well as understand others better by reading their text rather than listening to them speak. They enjoy that opportunity for writing as self-reflection, as a way to sort through ideas and emotions, which is one reason why personal blogs became so popular as a modern, much more public version of the traditional diary or journal. Strong advocates of text relationships even claim that it is the most powerful method to intimately merge their minds with their online companions.

Text communication does pose problems, even for people who are skilled at it. Lacking sounds and visuals, it is not a rich sensory encounter. People cannot see others' faces or hear them speak. All the important cues provided by voice, body language, and physical appearance disappear. Without them it is easier to misunderstand the other person, which amplifies interpersonal misperceptions and transference. For some people, the lack of physical presence generated by voice and appearance reduces the sense of intimacy, trust, and commitment in the relationship. Typed text can feel formal, distant, unemotional, and lacking an empathic tone. Without a sensory connection one can never be absolutely certain about the other's identity. This absence of face-to-face cues, which adds a small dose of anonymity and invisibility, encourages other people to regress or act out inappropriately in what has been called *the online disinhibition effect* (Suler, 2004). Even though some people respond to the lack of face-to-face cues in text communication as an opportunity to be intimately expressive, which can be the benign version of the disinhibition effect, that expressiveness sometimes progresses too quickly into self-disclosures that one later regrets or that causes the online companion discomfort.

As social media blossomed, text talk began to dwindle in length, frequency, and richness. People relied more on sharing photographs as a means to communicate. When photo-sharing became ubiquitous via mobile devices, as in the very popular Instagram, text talk fell to the bare minimum. Pictures did most of the talking. The designers of social media offered smaller, harder to access boxes for typing, with fewer tools for formatting text. The domination of text by photos does speak to the power of images, but as a double-edged sword it also contributes to the superficial quality of social media when people do not talk in depth with each other. Although photographs can be powerful condensations of meaning, the development of relationships in cyberspace requires verbal, usually text, communication.

THE SENSORY DIMENSION: HOW AM I AWARE?

The sensory dimension of an online environment entails how much it activates the five senses: hearing, seeing, feeling, smelling, and tasting. The appearance of multimedia gaming and social environments, video conferencing, podcasting, and Internet-mediated phone calls lifted online activities into a more heightened sensory experience than text alone, which dominated cyberspace in its beginnings. Researchers pioneering the development of virtual realities attempt to invent environments that come as close as possible in mimicking the complex sensory experiences of the physical world. Although great progress has been made in the realms of seeing, hearing, and even the transmission of tactile sensations using haptic technology, the senses of smelling, tasting, and feeling with the whole body stand as significant, if not impossible, barriers to cross in the attempt to fabricate robust, integrated sensory experiences in cyberspace. The Matrix, the Star Trek holodeck, or similarly sophisticated virtual environments are still science fiction.

When interacting with other people, the multiple sensory cues of visual appearance, voice dynamics, bodily contact, and in very intimate situations, smell and taste, provide a bountiful encounter with a person, with different cues affirming, supplementing, and at times contradicting each other, as when a person's body language does not match what that person says. In many scenarios, such full sensory experiences generate a heightened sense of presence, stimulate more emotions, enhance the impact of self-objects, and encourage a stronger psychological commitment to the situation. A rich sensory environment provides more immediate clarity about where you are, who you are, what you are doing, and what specific meanings you find in that situation, as compared to the usually more ambiguous text environment. It tends to magnify presence, immersion, and the elusive but powerful sense of truly "being here." Research on the virtual pit, in which subjects attempt to cross a plank stretched across a deep hole, demonstrates how relatively simple sensory situations can trick the instinctual areas of the brain into perceiving danger even when the rational mind knows better (Blascovich & Bailenson, 2012).

The power to generate a specific experience through complex sensory stimulation might prove to be a drawback when the goal is to encourage a subjective interpretation of a scenario, when the expectation is that people will participate in the creation of the experience by projecting meaning into it, rather than having it provided to them in a prepackaged sensory

form. As a reader might about a book without illustrations, "I'm glad there were no pictures. I wanted to see the story for myself."

Even if virtual realities containing complex stimulation are someday possible, we should not overlook the usefulness of cyberspace for isolating, eliminating, and combining the five senses in unique ways for the purpose of better understanding sensation, perception, and such cognitive phenomena as repression, dissociation, sensory deprivation, and sensory overstimulation. Research can examine the psychological aspects of a particular sensory modality isolated from other modalities, as well as unique combinations of the senses. Such research might lead to methods of enhancing particular pathways of perception, or for insights into novel and useful integrations of different senses.

Given their proliferation in cyberspace, images play an especially powerful role in the sensory dimension. Online photo-sharing in particular has become an important feature of social media. Images enable the communication of experiences that are not easily captured by words, or that might be distorted by conscious attempts to verbalize them. As vehicles of primary process thinking, they contain modes of experience—often personal, symbolic, and driven by fantasy—that reveal the unconscious mind. Like dreams, they can be highly creative constructions that condense a wide range of emotions, memories, needs, and wishes, making them an effective method for depicting one's identity. A photograph or any visual creation serves as a concrete external representation of what people are, want to be, or fear. The explosion in the popularity of "selfies" points to this psychological power of the image as a tool for visual rather than simply verbal self-expression—a power evident in the person's ability to create an idealized version of the self, in the enhanced sense of presence generated by the visual self, and in the visual expression of unconscious aspects of identity, such as in body language. To understand how personal photographs might promote psychological growth, as opposed to simply reinforcing shallow narcissism, we can draw on insights into the transformative role of images in psychotherapy, therapeutic photography, and phototherapy (Suler, 1989; Weiser, 1993).

THE TEMPORAL DIMENSION: WHAT TIME IS IT?

The use and experience of time in cyberspace constitutes its temporal dimension. Often it differs significantly from in-person encounters. Each environment tends to have its own particular brand of temporality, which is determined by the technical design of its communication channels as well

as the social norms for their use. The many possibilities for altering the experience of time in cyberspace reflect how the mind interprets temporality. Even though rational conscious thinking entertains a fixed forward march of seconds, the unconscious blends past, present, and future, suspends time, and even transcends it. Elements of the temporal dimension include synchronous versus asynchronous communication, the acceleration of time, frozen time, ephemeral time, and the intersection of cyberspace time into real-world time.

The distinction between synchronous and asynchronous encounters plays an important role in the temporal dimension. The "live" synergy of synchronous communication tends to encourage spontaneity, resulting in more uncensored, ad hoc, quickly paced, and revealing dialogues. By contrast, people tend to be more careful about what they say to each other during asynchronous exchanges, with the interaction feeling composed or even studied. Presence tends to be enhanced during synchronous meetings, in part due to the increased feeling of spontaneity that imitates in-person situations, but also because people sense their mutual coexistence in the moment. The absence of temporal cues in asynchronous communication can prove to be a disadvantage because pauses in the conversation, coming late to a meeting, and no-shows often convey important psychological meanings. On the other hand, asynchronous dialogues have the advantage of slowing down or even freezing the pace of interaction, which provides the convenience of replying whenever one wants, along with a zone for reflection in which people can contemplate, carefully construct, and appropriately censor what they say. It is important to remember that a strict dichotomy does not exist between synchronous and asynchronous communication, but rather a continuum where the sense of mutual presence in the moment can become a subjective and at times uncertain feeling, as during texting when people are not sure another person is continuously "with" them in the same temporal space because the pause before that person replies feels too long.

Time in cyberspace can feel accelerated, in part due to the fact that online environments and their populations change more quickly than in the physical world. Because cyberspace greatly facilitates communication, it can also speed up the cycle of social processes, including the forming and dissolving of work relationships, friendships, romances, and social or political movements. During addictive, highly immersive, and what Voiskounsky (2008) described as *flow* activities, time seems to move so quickly that it feels transcended. Experiences in cyberspace can also be suspended in time,

remaining exactly as they are, similar to memories in the unconscious. In environments mediated by recorded video or animation, events can be paused for as long as desired, while almost everything one does online can be preserved. Whenever people want, they can go back to re-examine those events from the past.

Some forms of social media grew in popularity because they blocked the ability to freeze time by deliberately making communication ephemeral, as exemplified in the phone application Snapchat. By enabling the transmission of text and images to someone that lasted on the screen for only a few seconds, the application became the perfect tool for playful communication in the fleeting moment. It was popular for surreptitious flirting and sexual teasing. Such environments illustrate how exaggerating one dimension of cyberpsychology architecture, in this case the temporal dimension, can dramatically shape the psychological impact of the experience.

Cyberspace time intersects the real time of our everyday schedules. People vary in when they go online: morning, afternoon, or night. They vary in how often they go online: a few times a day, every hour, every few minutes, or almost continuously all day long. They vary in the amount of time they spend in the digital world. The temporal dimension of cyberspace architecture entails when these moments of online time cross over into the flow of everyday living, as well as how that crossover affects the experience of time in both realms.

THE REALITY DIMENSION: IS THIS FOR REAL?

We define reality according to what we consensually experience throughout our lives in the physical world, which some online environments attempt to recreate. A video closely resembles the visual qualities of an actual situation, while a voice transmission sounds like how that person actually talks. As long as text communications seem to be based on reason and rationality, we accept them as valid references to reality. Other online environments intentionally generate much more imaginary scenarios, deviating either slightly or dramatically from the world as we know it. It does not matter whether the environment is created in a virtual reality filled with rich state-of-the-art sensory stimulation, or simply via plain text. Flights of fantasy can be as elaborate in text role-playing games as they are in highly imaginative avatar worlds replete with sights, sounds, and kinesthetic action.

When assessing the reality dimension of an online environment, we ask how much it creates experiences based on fantasy and how much it is grounded in the everyday world. Many games in cyberspace inspire make-believe, while social media usually encourage people to represent themselves as they actually are, without deception. Other environments, such as traditional chat rooms, can be more ambiguous. With no visual references or rules specifically steering people toward reality or fantasy, the location becomes what people make of it. In fact, social norms can modify the reality dimension intentionally built into an environment, as evident by how some people in social media do alter their identity, while people playing online fantasy games try to become acquainted with the players behind the imaginary characters. In all contemporary media, the distinction between reality and fantasy has progressively blurred, as evident in "reality shows" and supposedly real-life videos on YouTube that actually turned out to be contrived in some way. The proliferation of transference reactions in cyberspace also points to this infusion of fantasy into perception. Depending on their developmental history of object relations, their capacity for reality testing, and the qualities of the environment, some people online fare much better than others in distinguishing what is real and what is not. Some researchers might argue that self-delusion exists to a certain extent for everyone online, in part due to the strong social norms in social media to "brand" oneself rather than be oneself.

The potentially creative blurring of reality into fantasy arises from unconscious mental functions, especially the illogical, symbolic, personal, imagistic, loose, and emotional thinking of primary process (Suler, 1980). The intrapsychic world operates along a polarity between reality and fantasy, between primary process and the more reality-oriented, practical thinking of secondary process. We need grounding in the familiar, in what we have always known to be real—and yet, seemingly by its intrinsic nature, the human mind also seeks out imaginative states of perception and self-expression. As evident in dreams, we need these experimentations at the border between reality and fantasy, between reason and instinct, in order to express unconscious forces while also discovering adaptive opportunities for psychological development. Cyberspace as a dream world provides a realm for these experimentations.

In addition to clarifying the powerful impact of the sensory dimension, research on the virtual pit demonstrates how the instinctual human mind cannot tell the difference between reality and virtual reality even when the rational mind knows better. When asked to cross the plank stretched across

a deep and dark hole, some subjects freeze with paralyzing anxiety. The researchers chose well when using the virtual pit as their paradigm. The fear of heights is inborn for many species. In the case of humans, it is also a powerful symbol of the unknown, the helpless fall into sin, and the dark regions of the unconscious. Online and offline, reality is determined not just by our rational perceptions of the everyday world, but also by archetypal patterns and unconscious ideation. As Morpheus said in the movie *The Matrix*, "your mind makes it real"—an idea that the reality dimension of cyberpsychology architecture invites us to explore.

THE PHYSICAL DIMENSION: HOW IS THIS TANGIBLE?

The physical dimension of an online environment entails its impact on the physical world and body, including physical sensations and movement, or the lack thereof. In the early days of the Internet, people sat motionless at their computers while venturing around the online world. Cyberspace was disembodied space. Physical posture and movements served little purpose within this space other than keeping one's attention focused on the screen. One of the biggest errors in the cultural preoccupation with computerized devices is the belief that we can use them for hours on end without their having a detrimental physical effect. At this point in the history of technology it comes as no surprise that our devices lead to health problems, such as excessive sedentariness, computer vision syndrome, and repetitive stress disorders.

The dissociation of the mind-in-cyberspace from the corporeal body can be conceptualized as a type of mind/body duality, a dichotomy that plays out in the many science fiction tales of a human's consciousness being uploaded into cyberspace, as well as among computer scientists who believe that the human mind can be recreated via artificial intelligence. Here evolutionary psychology must intervene with the reminder that humans are intrinsically embodied beings, that mental and physical experiences are two sides of the same coin, inseparably intertwined. Even when we sit passively in our chairs as we pursue a wide variety of online adventures, the psychological energies of those adventures still register in the body.

The physical dimension of cyberpsychology architecture draws a distinction between the dissociated and integrated physicality of online environments (Suler, 2016). The dissociated type, which includes bodily activity that has very little to do with the online activity, can pose significant problems, as evident when people attempt to cross the street while staring into their phones. Physics tells us that two objects cannot occupy the same space

at the same time. Now cyberpsychology shows us how one mind cannot occupy a physical and online space simultaneously, at least not effectively or safely, despite the claims of those who strongly advocate for the power of multitasking. Although dissociated physicality poses problems, this aspect of cyberpsychological experience does provide the opportunity to study ruptures between mind and body, as in dissociative disorders.

In integrated physicality, one's bodily movements and sensations are more connected to the activity in cyberspace. Examples of integrated physicality include games of sport that involve the mimicry of real-world movements; walking around an environment to take photos that are then uploaded; haptic technology that creates tactile stimulation via cyberspace; and any virtual reality scenario that changes in response to head and body motion. In all these cases, physical movements and kinesthetic sensations become an integral part of the online experience, rather than being mostly irrelevant to it.

The physical dimension also entails the psychological impact of how portals into cyberspace appear in the physical world and become part of our physical bodies. While using mobile devices people move through different environments as they interact online. Even if they are not reporting on the changes in their physical locations to their cyberspace companions, the characteristics of their surroundings consciously or unconsciously affect how they are communicating. Texting while in bed or on a crowded subway are different situations. As suggested by the concept of the *Internet of things*, all types of appliances, machinery, cameras, and sensors have become arms of cyberspace that extend into the physical world. At this stage in the evolution of the Internet, we are just beginning to understand what might be called environmental cyberpsychology: the study of how behavior, cognition, and emotion are influenced by physical spaces overtly or covertly infused with cyberspace devices that transmit to and from the environment. With the introduction of mobile devices and wearable computers that people carry with them all day long, humans have taken one step closer to being cyborgs who are part body, part machine, part corporeal individual, part symbiotically merged with cyberspace consciousness.

APPLYING THE DIMENSIONS IN THE ASSESSMENT OF AN INDIVIDUAL

The dimensions of cyberpsychology architecture serve as a useful model in comprehensively assessing an individual's digital lifestyle, analyzing the psychological impact of different digital environments, and exploring critical

concepts in research. These applications reveal the distinct but intertwining aspects of the dimensions.

When examining a person's digital lifestyle, the identity dimension lies at the core of the assessment with all the other dimensions converging on it. Key questions revolve around what they reveal and hide about themselves in their different online environments; how they might create idealized versions of themselves; and how they present themselves online as compared to in-person. Some questions might lead into anxiety-provoking areas, such as inquiring about when someone chooses to be anonymous or invisible, and if the person does things online that he or she does not typically do in the "real" world. Unconscious expressions of identity might be inferred from online behavior as revealed in the assessment of the other seven dimensions.

Because perceptions of self and other affect each other, the social dimension interacts synergistically with the identity dimension. Assessment inquiries would reflect this fact, such as why individuals choose to communicate with some people or participate in some groups, but not others; what roles they play and what statuses they have in these online relationships and groups; and how these relationships and groups affect them. A person might have difficulty verbalizing answers to some questions, such as during inquiries about susceptibilities to misperceiving others online. However, most people can report at least one or two examples of how they failed to accurately interpret someone's emotions or intentions, possibly resulting in interpersonal conflicts that provide a glimpse into unconscious interpersonal distortions.

An assessment of the interactive dimension reveals the effectiveness of the interface design, but more importantly the psychology of the individual. Understanding the person's technical skills and knowledge according to HCI research will help clarify the person's behavior in this dimension, especially cognitive abilities. Other assessment questions provide insight into personality style, including how people customize their devices and react to the challenge of mastering new environments; how much they feel they control their devices and how much their devices seem to control them; and how they react when their applications are not doing what they want. Replies to such inquiries might indicate how a person tends to anthropomorphize the machine, which indicates transference tendencies.

Questions about the text and sensory dimensions can be integrated with each other. The assessment would focus on the types of text communication a person likes or dislikes, including preferences for long and/or short forms.

Here an assessment of reading and writing skills, along with the person's attitudes about these activities, will help clarify behavior in the text dimension. Such inquiries can be juxtaposed with assessments of sensory stimulation, such as how a person reacts to visuals, sounds, and physical/tactile sensations created by devices; when the person prefers to eliminate sensory stimulation, as in deciding to text rather than talk on the phone, talk rather than use video communication, or use video rather than meet in-person; and how the person pays attention to the visual formatting of text, including creative keyboarding techniques and visual supplements to text, such as emojis. Borrowing techniques from phototherapy (Weiser, 1993), one might inquire about the kinds of images the individual likes as an indication of lifestyle and personality, especially the photos and "selfies" typically uploaded by the person. In assessing the text and sensory dimension of the individual's online experience, the difference in cognitive style between people who rely primarily on language (verbalizers) and those who prefer images (visualizers) might be relevant (Richardson, 1969).

For the temporal dimension, inquire about the person's preferences for synchronous versus asynchronous communication, which indicate such traits as spontaneity versus self-control. To pinpoint the kinds of digital experiences that activate intrapsychic hotspots, ask about when time seems to go fast, especially activities that result in "flow." Concerning the person's attempt to freeze or transcend time, inquire into why he or she deliberately saves some content accessed from cyberspace, but not others. Asking about when during the day, how often, and for how long the person enters the digital realm will clarify the temporal intertwining of in-person and online living, as well as addictive tendencies.

Assessing the person's reaction to the reality dimension is particularly helpful in understanding their predilection for practical, rational thinking and/or flights of fantasy. Inquire into how people react to places that are imaginary versus realistic, in addition to how they distinguish fact from fiction while online. Such assessments reveal a person's abilities for reality testing, creativity, and imagination, with preferences for certain types of fantasies indicating unconscious dynamics the person might not be able to verbalize.

Finally, for the physical dimension, the assessment focuses on the interaction between cyberspace and the physicality of the person's body and environment, including occurrences of dissociated and integrated physicality, medical problems stemming from device use, where and how the person uses mobile technology, how the person employs the Internet in navigating

and interpreting the environment, and how portals to and from cyberspace affect the person's habitats, other people who are present there, and the person.

In my course on cyberpsychology, students undertake an exercise in which they use the eight dimensions to assess their digital lifestyles. One consistent outcome of this activity is their discovering how big an impact cyberspace has on their lives—"more than I even realized," as one student commented. The assessment process helps elevate subconscious experience to conscious awareness. This finding was particularly true concerning the identity and physical dimensions. Students had not fully comprehended the ways in which they construct their online identity or how that identity differs from who they are in the real world. Nor did they understand how chronic device use has detrimental effects on their physical health, or the fact that their phones allow them to be tracked in the physical world.

APPLYING THE DIMENSIONS IN THE ANALYSIS OF AN ONLINE ENVIRONMENT

As an example of applying the model in an analysis of an online environment, consider the phone application Yik Yak. At first glance it seems like a traditional chat room that relies primarily on the text rather than sensory dimension for communication, which leads to the unique psychological atmosphere created by text talk, such as the social ambiguity of missing face-to-face cues, the potential for self-reflective expression, and a tendency toward transference reactions along with the online disinhibition effect. In the sensory dimension, users do employ emojis, but they rarely take advantage of the feature for sharing photos. Similar to the social dimension of other online environments, users can rate each other's posts with "up" and "down" votes, which tends to increase the pressure in such buttonized cultures to construct a persona that will increase one's social status, as indicated in Yik Yak by one's overall "Yakarma" rating.

Unlike most chat rooms, instant messaging systems, and discussion boards that have a similar cyberpsychology architecture, Yik Yak only allows users to communicate with people within a few mile radius, a unique design feature in the physical dimension of its architecture. Invented by two college students, the application was intended for students to talk to each other within the vicinity of the campus, which is why the application was quickly adopted by students around the world, filling the void created by Facebook when it no longer catered just to college students. In the social dimension,

students once again had their own territory to cultivate according to their needs in their particular geographical and cultural environment, without the distraction of parents and relatives who had moved into Facebook. Yik Yak did include the ability to "peek" into discussions at other locations, but not the ability to participate. Later, Yik Yak modified its interactive dimension by adding the "my herd" feature that allowed students to continue communicating even when they were not on campus, a change that also affected its temporal dimension by improving the continuity of the group over time, particularly during the summer, visits home, and other off-campus activities. Young people in towns, cities, high school, and middle school also use Yik Yak, but mostly college students consider it their domain. The very distinct physical and social dimensions of campus life fortify the cyberpsychology architecture of Yik Yak as a collegiate experience. The fact that the interactive dimension of the application involved a clean, simple, and easy-to-use interface also made it a popular substitute for the increasingly complex environment of Facebook.

The effects of the unique manipulation of the physical dimension in Yik Yak reverberate throughout its cyberpsychology architecture. In the social dimension, discussions revolve almost entirely around campus events and the concerns of college-age students, with a culture clash sometimes developing between the college group and any high school students from the nearby community who enter the conversation. In the reality dimension, flights of fantasy are rare or grounded in the facts of everyday life on campus. In the temporal dimension, many conversations pertain to events at the college that day or at that moment, including pressing situations such as warning each other that dorm residents are making their rounds. This tendency toward communicating recent news is encouraged by the fact that only posts within the past hour or so are visible in the public discussion. The temporal preservation of the culture via recorded interactions is therefore minimal.

The most intriguing implications of physical proximity in Yik Yak are in its identity and social dimensions. Many people do not create a username, which adds to the invisibility and anonymity of text communication that fuels the hostility of toxic disinhibition as well as the intimate self-disclosures of benign disinhibition. Common posts include sexual humor, emotional confessions about love relationships, and heartfelt sympathy or advice, along with offensively critical, lewd, and hostile comments, which all combined leads to a starkly contrasted emotional climate. Although such phenomena due to the invisibility of identity occur in other forms of text-driven

social media, the Yik Yak experience is infused with the knowledge that everyone in the conversation is a fellow student, within walking distance, perhaps in the room down the hall or at the other table in the library. As a result, the identity dimension becomes an arena for speculating about who others might be, a guessing game that encourages playful fun, frustrating teases, or paranoid anxiety. A nearby secret admirer might flatter the person who is adored, but posting a vitriolic ad hominem attack about loud music in another dorm room can make the music listener speculate with anger about the identity of the irate Yakker. In some middle and high schools, Yik Yak was banned using geofencing technology because cyberbullying turned pernicious when victims knew that the unknown aggressor was nearby and aware of one's actions. The reason why Yakkers rarely take advantage of the sensory dimension option to post photos might be due to the fact that a photo could easily "blow one's cover."

APPLYING THE DIMENSIONS TO EXPLORE RESEARCH CONCEPTS

As an example of how the architecture model can be applied in research, consider the fundamental concept of "presence" in an online environment. A series of valuable exploratory questions emerge from the model, revealing the psychological complexity of presence when examined from the different perspectives of the eight dimensions. In the identity dimension, we would need to inquire about how revealing, hiding, and transforming various characteristics of the user affects that person's psychological experience of "being here" as well as "being here with others." If we speculate that even a simple blinking cursor in a purely text environment is an elemental form of presence, as some theorists do, we might then also speculate that living in an elaborate virtual world with an avatar closely resembling one's psychological self would be a very sophisticated and enhanced form of presence. In the social dimension, we would explore the factors that make other people feel present to the user, including the number of people, the kinds of people, the types of social activities, the culture, the qualities of the environment, and the propensity for transference reactions and other interpersonal distortions that complicate social perceptions.

When considering the interactive dimension, a critical issue is preventing the interface from disrupting the sense of "being here." Software tools that are difficult to master draw attention to themselves rather than to the experience of the digital environment, which is why Steve Jobs always encouraged his Apple designers to simplify, simplify, simplify.

In the sensory dimension we would ask what combinations of visual, auditory, tactile, and olfactory stimulation enhance the type of presence necessary for a particular objective, as well as when reduced sensory stimulation is needed to allow users to project their own unique sense of presence into a digital experience, similar to the person who might say, "I'm glad this book had no pictures because I wanted to see the story for myself." In the text dimension, there will be wide individual differences in reading and writing abilities that determine how well the written word serves as a vehicle for feeling and expressing presence in a digital environment. Long versus short forms, the lack of face-to-face social cues, and the tendency toward transference and online disinhibition are other features of the sensory dimension that will influence presence. Generally speaking, more information and more correctly perceived information about a person's identity make that person more present as a unique individual.

A series of interesting issues emerge concerning the role of the temporal dimension in creating presence. Synchronous communication can enhance the feeling of "being with" others because people share the same real-time spontaneous space. So too the zone for reflecting and composing in asynchronous communication might enhance the feeling of presence by enabling people to better understand and express themselves. Change often adds to the sense of presence, because the actual world is always changing, but if online environments change too quickly over time, that temporal acceleration might facilitate or diminish presence. By contrast, freezing time might create an unnatural state of suspended presence or allow for a close contemplation of experience that enriches it. We might wonder what factors contribute to or detract from "flow" in cyberspace, when people experience a transcending of time because they are intensely immersed in an activity. Researchers might also investigate how the intersection of digital time with real-world time affects presence—for example, the effect of circadian rhythms on presence in digital realms, or how often during the day people immerse themselves into an environment and for how long.

In the reality dimension we might safely assume an environment that realistically mimics the physical world would enhance the sensation of actually being in that place. We also should not overlook how imaginative novelty piques attention, curiosity, the urge to explore, and hence feeling present. Unusual environments that arouse unconscious fantasies and archetypal experiences do generate emotional reactions, even in defiance of realistic thinking, as subjects standing above the virtual pit demonstrate. If the mind intrinsically needs dream states to maintain its healthy functioning,

then dream-like virtual environments might engender an important and unique type of presence, not unlike lucid dreaming.

Finally, in the physical dimension we arrive at the intriguing, perhaps paradoxical conclusion that integrated physicality facilitates presence via kinesthetic engagement, while intense dissociated physicality indicates magnified presence, as when people passively sit transfixed at their computers because they are so immersed in their online experience. This begs the question as to when physicality is needed for presence and when the mind alone suffices, a debate related to the distinction between body-immersion and brain-stimulated virtual realities (Suler, 2016). The presence of cyberspace portals that transmit data to and from the physical world around us during our everyday activities leads us to another important issue. When is augmented reality a valuable type of presence—an intertwined, enhanced existence between cyberspace and physical space that enriches awareness in both realms—and when does the switching back-and-forth multitasking of attention between these spaces simply detract from the feeling of fully "being here" in either of them? Such a divided presence could very well turn into a jack-of-all-trades mode of being, but a master of none.

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