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Cyberpsychology Architecture

Technology is the knack of so arranging the world that we don't have to experience it.

– Max Frisch

Years ago I came across an advertisement from Tidal Wave Communications that introduced a new computer accessory called Orecchio. It was a headset, using the Telepathic Internet Data Exchange (TIDE) protocol, that enhanced email functionality by enabling you to send your most important thoughts directly from their source: your mind. “Imagine no more keyboards and achy hands. No more eye strain from the glare of the screen. Just visualize the message you want to send, followed by your send command, and poof! Your email is transmitted to our network for quick delivery to its destination.” Enticed by the opportunity to connect my brain directly to the machine, I would have adopted Orecchio without hesitation, if not for the fact that the advertisement was, of course, an April Fools’ joke. The telepathic headset was bogus, but not my realization that truth once again comes out in jest: our minds extend into cyberspace. Years later, research into brain-to-computer and brain-to-brain interfaces suggested that we might indeed control computers with just our minds and perhaps even communicate very simple thoughts and feelings directly between each other’s brains via the machine.

CYBERSPACE IS PSYCHOLOGICAL SPACE

True to the literal definition of psychology as the study of the psyche or mind, cyberpsychology is the study of the cyber-psyche, the computer mind “out there” created by the fusion of humans and machines. We experience our online activities as occurring in a psychologically tangible space that mimics the sensation of space in the physical world. When people power up their computers and mobile devices, launch a program, write email, or sign on to their favorite social media, they feel that they are entering a particular place filled with palpable features and agendas. Moving about the Internet, they describe the experience as “going” someplace. Spatial metaphors such as “worlds,” “domains,” and “rooms” are common when describing online environments.

On a deeper psychological level, we perceive that territory on the other side of our device screens as an extension of our psyches, a space that reflects our personalities, beliefs, and lifestyles. In her groundbreaking book *Life on the Screen: Identity in the Age of the Internet*, Turkle (1995) noted how we have come to experience the boundary between our mind and that of the machine as slowly blurring. Applying a concept from Winnicott (1971), we can think of cyberspace as a *transitional space* that blends the individual’s intrapsychic world with the electronic world – a space that is part me, part other – that provides a venue for play, creativity, and imagination. As we interact with other people online, we experience that exchange within an intermediate zone between self and other. Just as reading a book feels like joining the mind of the author, conversing online, especially via text, feels as if our minds have merged with those of online companions.

When we perceive cyberspace as this extension of our minds, as a transitional space between self and other, a door opens for all sorts of personal expectations, fantasies, and desires to be projected into this realm. As we will see throughout this book, some people use this space as an opportunity to better understand themselves. It becomes a creatively playful path for exploring their identity as it engages the identities of others. Unfortunately, other people simply act out their inner frustrations in an online domain they unconsciously created for that very purpose. Whether the outcome is positive or negative, it is impossible to choose, customize, and participate in any online environment, or to interact with anyone online, without that endeavor reflecting one’s own psyche. As an experienced onlineer once told me, “Everywhere I go on the Internet, I keep running into *me*!”

When we expand this realization, we see that cyberspace as a whole mirrors the collective human mind – its functions, knowledge, purposes,

and hopes. How could it be anything other than a manifestation of the human psyches that inhabit it? That question makes us wonder whether cyberspace itself possesses a distinct personality that reflects its population. Old-timers, for example, lament how the character of the Internet changed dramatically once it became commercialized. The traditional philosophy of generously sharing resources gave way to proprietary ownership. As more people went online, the once tightly knit group of collaborating researchers from the early days of cyberspace melted into the much larger population of newcomers with varying and often competing agendas. As with the personality of any individual or group, cyberspace now consists of various subcomponents that merge, separate, collaborate, conflict, and change over time. Psychological concepts about the mind help us understand this dynamic world. Where can we find the id, ego, and superego of cyberspace? Does the Internet, or its subnets, consist of self-actualizing organisms? If cyberspace embodies a complex system of evolving links and associations – much like the human mind – might it attain its own independent personality, consciousness, and will, as predicted by science fiction writers and visionary computer scientists who speak about the “singularity”?

Connected and Distinct Worlds

Now that I have defined cyberspace as the psychological space mediated by computers and their networks, we face a rather interesting dilemma. What do we call the space in which we humans have lived for hundreds of thousands of years before we even invented the very first communication device? Onliners have referred to it as being “face to face” (FTF) or “in real life” (IRL). The problem is that video recreates the face-to-face encounter rather well, while applying the word “real” and “reality” to our traditional evolutionary realm implies that online activities are by comparison imaginary, fake, or somehow lacking substance – an idea to which many people, including researchers, would strongly object. I might choose to refer to this space as being “in-person” or similarly as the “physical world” because such terms imply our bodily presence in a mutually shared physical environment. Although haptic technology continues to flex its muscles in discovering how to transmit tactile sensations via cyberspace, it still cannot replicate all subtle ways we physically sense each other and the world around us. The holodecks of *Star Trek* are a very long ways off. If we wanted to avoid the dilemma of choosing a label that attempts to pinpoint the distinctive nature of our familiar evolutionary environment, we could simply refer to it as the

“offline world” or “nondigital world” – but those expressions do devalue it by giving precedence to the notion of being in cyberspace.

Critics of what Jurgenson (2011) called “digital dualism” claimed that a false dichotomy has been drawn between the online and offline worlds, that what happens in social media in particular has become so enmeshed into the “real” world that it makes no sense to talk about online and offline as if they are separate domains. This is especially true when people interacting through social media tend also to know each other, or have known each other, in person – or when we use computerized devices in the moment to help us perceive, navigate, and understand the environment around us, what has been called *augmented reality*. Over time, life online and offline has become more intermixed, which is the *integration principle* discussed in Chapter 3, “The Dynamic Digital Psyche.” Cyberspace has become deeply engrained into many aspects of our lives. But rather than thinking in terms of a “dualism” between online and offline, we can appreciate the “interactionism” between these two intertwining realms. As the subtitle of this book suggests, humans are becoming electric.

The environments created by computers and their networks have become so intricate, with such unprecedented levels of interactivity among people and those environments, that cyberspace has evolved into a new kind of reality. People do subjectively experience its digital realms as if they are specific, unique places – which is why they often use spatial metaphors when describing what it is like to “go there,” “be there,” or even “be on” a social media site as if one were appearing on a TV program. It is difficult to even talk about the Internet without relying on words suggesting that the digital realm is a place unto itself, even if it intersects the real world on many levels. People online can also act in ways that differ blatantly or subtly from how they act offline. Cutting-edge research about “presence” and “immersion” in virtual realities highlights even more the idea that cyberspace can be subjectively experienced as an environment completely separate and different from what one experiences when the virtual reality (VR) goggles are removed. From a practical perspective, we will see throughout this book that appreciating a distinction between cyberspace and the in-person world serves as a very useful tool in helping people improve their well-being online, offline, and in the intersection of these two worlds.

Despite debates about digital dualism, or about the pros and cons of the different terms that refer to online versus offline, I will rely on this distinction and these terms throughout this book. Whether I refer to this

place where we humans originally evolved as reality, face-to-face, physical, in-person, or offline, people still seem to know what I mean, even if they do not particularly agree with the terms. Intuitively, we all know that this semantic predicament is a byproduct of cyberspace as an elusive extension of our own minds.

THE EIGHT DIMENSIONS OF CYBERPSYCHOLOGY ARCHITECTURE

Given that cyberspace is psychological space, what are the unique features of this realm? What are the building blocks that determine our psychological reactions to the different digital environments we have created? During my many years of participant-observation field research, I looked for answers to these questions, for a framework or model to help me organize and better understand the various elements of our experiences in the digital realm.

Here I will propose eight fundamental dimensions of cyberspace architecture (see Figure 1.1). Each one is a different facet or quality of the digital infrastructure that shapes our psychological experience of an environment. These interlocking dimensions also reflect how the human mind itself works. The essential question concerning any particular online environment then becomes this: what dimensions does it emphasize and in what specific ways? The history of the Internet has taught us that the power of cyberspace is its potential to isolate, minimize, enhance, manipulate, and combine these dimensions in surprisingly unique and useful ways. In different online environments, we see distinctive synergistic integrations of the dimensions, resulting in unique psychological infrastructures that determine what kinds of people will be attracted to a particular place, as well as how they will behave within it. Built on the concept of cyberspace as psychological space, these eight dimensions provide a foundation for a transdisciplinary theory of cyberpsychology, a theory that will guide us throughout this book.

We can also think of this architecture as a useful assessment tool. When examining a particular computer-generated environment, a particular activity in cyberspace, or simply when talking to people about their digital lifestyles, if we ask the key questions coming from each of these dimensions, we can form a very comprehensive picture of that environment, activity, or lifestyle.

In the sections that follow, I will briefly describe these dimensions, while noting how we will more fully explore them in the chapters throughout

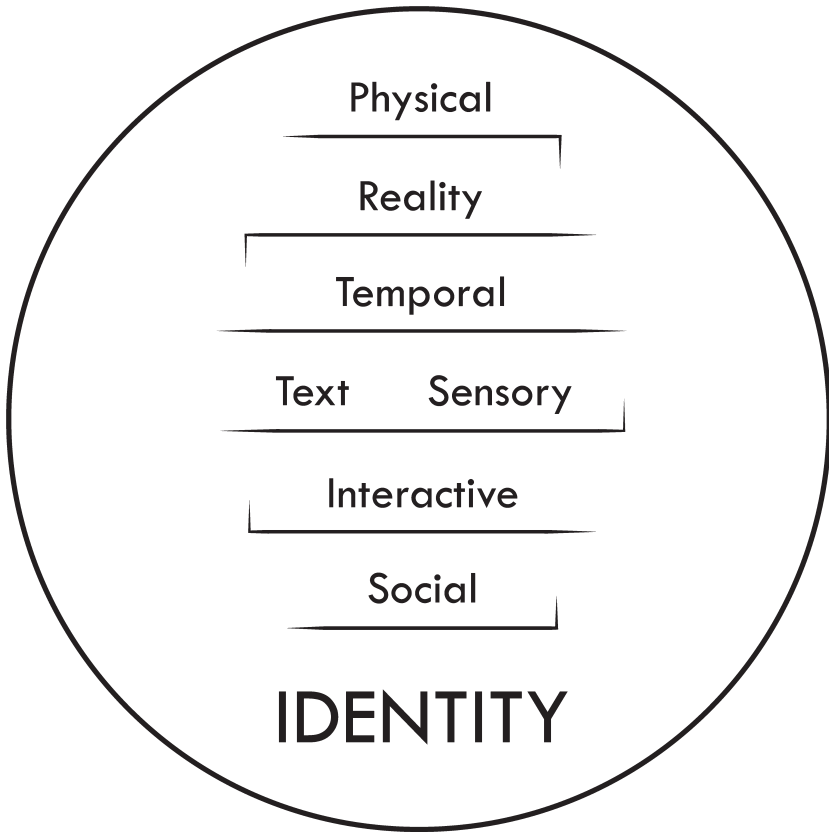


FIGURE 1.1. The eight dimensions of cyberpsychology architecture.

this book. At the end of each section, I include the key questions from that particular dimension, questions you can consider for better understanding your own online lifestyle.

THE IDENTITY DIMENSION: WHO AM I?

Identity, the sense of self, is the first dimension of cyberpsychology architecture, just as it is the foundation of all psychology. All of the other dimensions act as tributaries that feed into it. The identity dimension of an online environment is determined by the tools it provides for expressing who you are. How do people consciously and unconsciously use or avoid those tools? What healthy as well as pathological aspects of themselves do they disclose? The identity dimension also includes the intersection between the

online and offline self – how the two parallel each other, differ from each other, and can be integrated when there are discrepancies. As we will see in Chapter 3, “The Dynamic Digital Psyche,” it is the balance and integration of online and offline living that maximize well-being.

Deciding Who You Are

One of the most psychologically versatile aspects of cyberspace is how it allows every individual to express who he or she truly is, something less than who that person is, something more, or something entirely different. How much can you hide about yourself in a particular environment? How much can you transform yourself, in either a positive or negative way? Without having to reveal anything about their physical appearances or real-world lifestyles, people can start from scratch in establishing their online self. They can present particular facets of themselves but not others, and in an environment of their choice or creation. As one of my students said, “There’s reality, then there’s the cyberworld, where you can be anyone you want to be.” Online realms offer the possibility of an ongoing process of creating, editing, and re-editing the presentation of one’s digital identity (Attrill, 2015c).

The many diverse types of online environments offer pathways toward a decentered, dissociated, and multiplied expression of self, as Turkle (1995) described in *Life on the Screen*. Simply put, in different places people can convey different versions of themselves. Online environments also provide opportunities to reveal previously unrecognized aspects of one’s identity, which can lead to *self-actualization* in the traditional sense of humanistic psychology, as well as to a more individuated, cohesive sense of self as conceptualized in contemporary psychoanalytic theory. “The invention of the computer and the Internet,” another of my students commented, “made me the person I am.”

Even when creating something as deceptively simple as a password, people already begin the process of determining their digital identity. Passwords always reveal how people think, what they find important, and what “secret” means to them. So too we see traces of our identity in where we go online, what we do there, and in the environment we create for ourselves on our communication devices, including the applications, images, sounds, music, and interface designs we select. Determined by what you do with it, your device becomes you. Erik Erikson (1968, p. 38) once said:

In the social jungle of human existence, there is no feeling of being alive without a sense of identity.

Most social media offer wide latitude for creating personal profiles. People usually provide whatever text descriptions or pictures they want, even if it is partly or completely fabricated. They often have the option of picking whatever name they wish, a choice that reflects both conscious and unconscious attempts at image management. The particular set of profile information requested by the environment shapes the initial impression people will form of each other. Gaps in providing profile data, if the environment permits them, indicates people's defenses against revealing something about their identities. Any profile data that link to the real world – such as home addresses and places of occupation – provide a pathway for others to discover more information about someone. They can verify whether that person's online self matches his or her real-world identity or that person's identity as presented in another online locale. When administrators or hackers of an environment have access to the user's computer IP address, they have the power to investigate, use, and possibly exploit that person's identity.

Once people begin participating in an online community, they must grapple with the different alternatives for defining themselves. What are the options for typing text to express who you are? Are lengthy descriptions possible, or are you limited to 140 characters at a time? Can you upload pictures or video that show how you look, sound, and behave or that reveal your home or workplace for others to see? Do the norms of the domain dictate that you portray yourself in a way that accurately reflects your real-world self, as in traditional social media such as Facebook, or do they encourage you to adopt an imaginary identity, as in games? Violating these norms often leads to problems in the management of one's identity.

Being a Nobody or a Somebody

People can venture through some online habitats while remaining anonymous. Armed only with a generic or contrived username, or no name at all, they are free to behave in any way they want without constraints from their real-world identity. This anonymity, as we will see in Chapter 4, "The Disinhibited Self," encourages people to say or do things that they would not in the real world. In some environments, when not participating at all and when no evidence of their presence is displayed for others to see, people can disappear completely. They become invisible lurkers with no identifiable existence, a fly-on-the-wall phenomenon that we rarely experience in the physical world.

In describing the choices people make in creating their online identities, Walther (1996) referred to the *hyperpersonal self* that is strategically managed through selectively optimized disclosures, what psychoanalytic theory calls the *idealized self*. People create a version of their identity that is more socially acceptable, even exemplary. “Social media is a way to showcase your talents and accomplishments,” one student said in a survey. People can materialize within cyberspace the intrinsic human desire for their own perfected individuality, which can then become a goal to motivate true personal growth, or simply turn into a pretence of unrealistic phoniness. People cannot easily tell the difference between the two. “We are not very good at recognizing illusions,” Thomas Merton said, “least of all those we cherish about ourselves.”

The more opportunities for identity expression, the more leeway exists not just for deliberate constructions of who we are or want to be, but also for unconscious disclosures of otherwise hidden feelings and needs that are not always benign. Without realizing it, people tip their hands while they experiment with different communication tools. They unknowingly leak the ingredients of their secret selves. As I will discuss in Chapter 3, “The Dynamic Digital Psyche,” we must also take heed of warnings by such researchers as Turkle (2012), who in her book *Alone Together* described how the compulsion to connect online to others as a way to affirm one’s thoughts and feelings might inadvertently backfire: by forgetting how to self-reflect in solitude, we lose track of who we are.

Chapters 3, “The Dynamic Digital Psyche,” and 4, “The Disinhibited Self,” are devoted to more in-depth discussions of the identity dimension of cyberpsychology architecture.

Key Questions from the Identity Dimension

- What do you reveal and hide about yourself in your different online activities?
- Which communication tools do you use or avoid when expressing yourself?
- How do you create an idealized version of your identity?
- What hidden, perhaps negative aspects of yourself sometimes slip out?
- When do you choose to be anonymous or invisible?
- How do your different online selves compare to the ways you are in-person?

THE SOCIAL DIMENSION: WHO ARE WE?

The social dimension entails the interpersonal aspects of an environment, that is, how it enables you to interact with friends, family, loved ones, peers, colleagues, and strangers. It encompasses one-on-one relationships; groups of all sizes, including the large communities of social media; and the culture that forms within a social environment according to its intended design or despite it. Because we arrive at a deeper understanding of ourselves within our relationships and groups, as psychologists have long known, the identity and social dimensions are intimately intertwined.

Relationships Chosen and Unchosen

In cyberspace, we can easily connect with dozens, hundreds, and even thousands of people from all walks of life. Using a search engine, we scan the vast online universe to zoom our attention onto particular kinds of people. While multitasking, we can juggle many relationships in a short period of time – or even at the same time, as in text messaging – without anyone being aware of our juggling act. By posting messages to a blog, discussion board, or social network, we create our own personal audience consisting of people who share even our most esoteric interests. Cyberspace has become increasingly more powerful in its tools for searching, filtering, and contacting almost any person or group we can imagine.

Why do we consciously choose to communicate with some people online but not others? Of course, we may intentionally select those who share similar interests and backgrounds or whose personality fits well with our own. We are driven by the intrinsic human need to belong to, identify with, and feel supported by relationships and groups. If we deliberately seek out people who are different from us, we have the opportunity to better understand the human condition and, in return, ourselves.

But not all choices are fully conscious. As we will see in Chapter 6, “Other Than You Think: Interpersonal Perceptions,” the ability to sift through so many possibilities for developing online relationships invites transference reactions, which are biased perceptions of other people based on past relationships. We do not have as much mindful control over decisions based on transference. In addition to conscious preferences, people act on unconscious needs when selecting colleagues, friends, lovers, and enemies in cyberspace. Transference focuses them on predetermined social targets to address what their inner self expects. An experienced onlineer once said to

me, “Everywhere I go in cyberspace, I keep finding the same kinds of people!” Once a relationship is under way, transference continues to mold how we think and feel about the online companion, often in skewed ways.

Reading a webpage or playing a game of online solitaire involves a shallow social dimension because no other people are present. When we go to the Internet to get information rather than going to someone we know, we actually sidestep an ancient, practical motive for interacting with people. As compared to *expressive experiences* when we communicate with others online, these kinds of *receptive experiences* in cyberspace are clearly asocial.

In other scenarios, the social dimension is more intriguingly ambiguous. What if other beings are present but not human? Do artificially intelligent entities qualify for social encounters? In Chapter 14, “Synthesized Realities and Synthesized Beings,” I will address this issue in more depth, including how the perception of “human” is complex because people possess a powerful ability to anthropomorphize almost anything. If Tom Hank’s character in the movie *Castaway* plunges into grief over the loss at sea of Wilson, his soccer ball companion, then some people in cyberspace will easily attach interpersonal meaning to artificially intelligent beings, as demonstrated by computer programs that pass the Turing Test (Turing, 1950). As one of the building blocks of cyberspace architecture, the social dimension must take into account how computer-generated entities can and cannot serve as viable human substitutes in particular types of environments, for particular types of people, and for particular purposes.

Groups Are Us

The social dimension of online groups includes the wide range of issues we see in the traditional social psychology of in-person groups. What is the intended purpose of a particular social environment: gaming, socializing, matchmaking, education, professional development, artistic expression, personal growth? Who are the people drawn to it? What are its culture, history, and the different roles and statuses among its people? How does it create well-being or psychological problems?

Other issues in the social dimension are rather unique to cyberspace. Is the communication one-to-one, one-to-many, many-to-one, or many-to-many? What kinds of software tools does the environment provide for finding, gathering, and contacting others by public and private means? Do people realize who they are communicating with, or that a real group does or does not even exist? Are there people who possess more interpersonal power because they have greater technical knowledge and skills? In social

media, people often find themselves in the position of weighing the need to create a large audience for whom they “perform” against the need to establish only a handful of intimate contacts. They might find themselves grappling with a plethora of performances by other people, a marketing mentality of everyone attempting to create their own personal “brand,” competitions for attention, and what social scientists call *weak or loose ties* – all the while struggling to create some genuinely rewarding relationships.

The social dimension of cyberpsychology architecture must take into consideration the discrepancies between who is online and who is not. If the *digital divide* (Warschauer, 2004) persists, social media will be shaped by the privileged people who have access to the Internet. They bring their mental sets with them, ways of thinking very different from people who know nothing about cyberspace. Some people can go online, but have little or no interest in being there, or who eventually decide to abandon it. How does their absence affect the atmosphere of online cultures? The social dimension of a cyberspace environment is determined not just by the people who actively participate in it, but also indirectly by the people there who remain silent and by the people who never show up.

Chapters 5, “Electrified Relationships,” 6, “Other Than You Think: Interpersonal Perceptions,” and 10, “One of Us: Groups and Communities,” are devoted to more in-depth discussions of the social dimension of cyberpsychological architecture.

Key Questions from the Social Dimension

- Why do you choose to communicate with some people online but not others?
- When do you perceive other people accurately or misperceive them?
- Why do you choose to participate in some online groups but not others?
- What roles do you play in your online groups?
- How do your groups affect you and others in positive and negative ways?

THE INTERACTIVE DIMENSION: HOW DO I DO THIS?

How well can you figure out, navigate, control, and modify an online environment? This is the key question concerning its interactive dimension. The more readily you can immerse yourself into an online domain, the more quickly it becomes an extension of your mind. The more customizable it

is, the more you can express your identity, shape your experiences, and feel emotionally invested in that place. A purely informational website page would have little or no interactivity, although even the addition of links between sections of the site enables you to personalize your journey through the information. By contrast, very sophisticated gaming and avatar worlds produce complex interactivity in the many opportunities people have to create visual representations of themselves, to venture through all the lands within the world, and even to construct their own objects and dwellings. The interactive dimension also includes our attitudes toward cyberspace in general: how we feel we can control it, or how it controls us.

Climbing the Learning Curve

A highly interactive environment tends to be more complicated, requiring a steeper learning curve and greater skill. Does it demand particular motor, visual, auditory, reasoning, analytical, math, artistic, verbal, or interpersonal aptitudes? Is writing necessary, or working with images, or computer programming? These are the critical questions that come into play when we move from one type of environment to another, which I will discuss in Chapter 11, “Change and Excess.” For complicated environments, a good “interface” between the person and the machine is critical. Here enters the discipline of *human-computer interaction* (HCI), as first described by Card, Moran, and Newell (1986), which entails the psychology of designing a software environment that is user-friendly because it parallels how humans intuitively perceive, think, and behave. As a very simple example, if you want to increase something, then a lever should go up to do so. If you want to convey the idea of danger or warning, use the color red. Other aspects of an interface simply require *standardization* to eliminate confusing alternatives. As many types of social media proliferate in the 2010s, people appreciate the fact that you can almost always find the log-out button in the upper right-hand corner of the screen.

Although low interactive environments that demand few skills might feel immersive, hypnotic, and even addictive – as in some online games – we humans tend to be curious, ambitious creatures who like an interactive challenge. A steep learning curve often leads to a sense of accomplishment when mastered. If an environment becomes excessively complex, especially when the interface is also complicated, users might become confused or frustrated, eventually abandoning that activity. No one likes to be confronted with a disorganized flurry of buttons, menus, options, and instructions, no matter how promising the environment seems to be. If people

cannot figure out how to interact with something, they won't. Of course, people also vary in their motivation and persistence.

Machines That Betray and Control Us

We expect our devices to interact with us. That's the name of the game. Unfortunately, no matter how sophisticated our electronic tools become, they will sometimes fail to live up to their end of the bargain. There will be moments when software and hardware do not work properly, when noise intrudes into the communication, and when connections falter. There will be moments when our devices give us nothing, not even an error message. There will be moments when we have to fight the machine to get it to do something, or not do something, even something simple, such as not automatically correcting a word we do not want corrected. The frustration, anger, and even outright rage that people feel in reaction to these technical failures say something about our relationship to the machine and cyberspace, something about our dependency on them, as well as our need to control these electronic servants. The lack of response from the machine also opens the door for us to project all sorts of worries and anxieties onto it. Differences in the reliability of online environments are an important feature of the interactive dimension, precisely due to these psychological effects they have on us.

The interactive dimension takes into consideration not just how we approach the machine, but also how it approaches us. How well does it prompt us with notifications about what is happening in our online habitats? How well does it succeed in offering us suggestions about what we might want to do there based on its ability to recognize our preferences? How much does it force itself upon us as opposed to allowing us to decide what level of interaction we desire? What researchers have called *machine intelligence* are the software algorithms operating behind the scenes when we browse webpages or use search engines. A critical question in the interactive dimension is how these subtle forms of subliminal intervention shape what we see, hear, and do – how they benefit us, steer us in certain directions but not others, or even thwart us. The quality of the interactive dimension increases when an environment guides us toward higher, more enjoyable, and more easily controlled participation, either because the environment gave us an uncomplicated chance to tell it what we like or due to its ability to analyze our past behaviors effectively with the best of intentions for our well-being. “I hate technology but I still got sucked into it,” one of my students said in a survey. “Be careful how you use it, or it will use you.”

Chapter 11, “Change and Excess,” explores other issues concerning the interactive dimension of cyberpsychology architecture.

Key Questions from the Interactive Dimension

- How do you feel about the interface of the online environments you use?
- What skills do you have, or lack, when participating in them?
- How do you react when your environments are not doing what you want?
- How do you react to the challenge of mastering a new environment?
- How much do you control your devices, and how much do they control you?
- How do you feel about cyberspace and technology in general?

THE TEXT DIMENSION: WHAT’S THE WORD?

The text dimension of an online environment entails how people communicate with typed language. In the early days of the Internet, everyone talked via text. Although this has changed dramatically with the rise of visual and audio features, text still prevails as one of the most powerful tools for conveying information, expressing oneself, and interacting with others. It surfaces in a wide variety of long and short forms: informational websites, blogs, email, texting, chat, and other short messaging systems as popularized with the appearance of Twitter. Drawing on different cognitive abilities than talking and listening, typing one’s thoughts and reading those of another person in cyberspace is a unique method of presenting one’s identity, perceiving the identity of others, and establishing relationships, which is why I like to give it the special title of *text talk*, while also devoting a whole chapter to it (Chapter 7, “Text Talk”) based on my research into this topic (Suler, 2004b). Some researchers have used the term *computer-mediated communication* when referring to text communication. Chapter 7 explores this phenomenon in more depth.

When Words Fail

As the Internet evolved, many social media began to minimize text. Instead, people were encouraged to rely more on visuals, as in the early photosharing communities such as Flickr, where images dominated writing. Later, when sharing photographs became trendy via mobile devices, as in the very

popular Instagram, text conversations fell to a bare minimum, even disappearing almost completely, leaving images as the primary vehicle for communication. While some people love text communication, others do not, which is often due to the fact that it requires more time, or more aptitude for typing, writing, and reading, skills that are not their forte. Such people feel uncomfortable or unskilled in expressing themselves through written words, an idea reinforced by the writer Elbert Hubbard, who said, “He who does not understand your silence will probably not understand your words.”

The cognitive styles might differ between these people who avoid language and those who love to communicate with written words. The verbal systems of the mind, as in supposed “left-brain” activities, tend to involve thinking that is more conceptual, logical, factual, linear, and consciously controlled. As I will discuss in more depth in Chapter 7, “Text Talk,” it is a unique skill unto itself, overlapping with but not quite the same as writing formal letters, reports, emails, and other traditional types of documents. Even people who love text might at times need a break from it. Visuals do have their appeal as a special form of expression, which we will explore in Chapter 8, “Image Talk.” In that chapter, we will see how the integration of text and images provides a comprehensive, versatile mode of discourse that transcends either one alone.

Text communication does pose problems, even for people who are skilled at it. Lacking sounds and visuals, it is not a rich sensory encounter. You cannot see other people’s faces or hear them speak. All the important interpersonal cues provided by voice, body language, and physical appearance disappear, which can dramatically alter how people relate to each other. Without those cues, it is easier to misunderstand the other person. Your online companion might be sick, drunk, or depressed without your knowing it. For some people, the lack of physical presence generated by the cues of voice and appearance might reduce the sense of intimacy, trust, and commitment in the relationship. Typed text feels formal, distant, unemotional, and lacking a supportive and empathic tone. In fact, without a visual and auditory connection, you can never be absolutely certain about the other person’s identity. This absence of face-to-face cues, which adds a small dose of anonymity, encourages some people to behave inappropriately.

When Words Succeed

On the positive side, other people respond to the lack of face-to-face cues as an opportunity to be unusually honest and expressive. Some people claim

that they naturally express themselves better through writing rather than talking, as well as understand others better by reading their text rather than listening to them speak. They experience writing as an opportunity to be more self-reflective, to more thoroughly sort through their ideas and emotions, as in keeping a journal. For people with social anxieties, not having to interact with others eyeball to eyeball offers disinhibiting relief.

Key Questions from the Text Dimension

- What types of text communication do you like and dislike in cyberspace?
- How do you express yourself with text compared to communicating in person?
- How do you react to other people with text compared to being in person?
- What are your feelings about using text versus photographs?

THE SENSORY DIMENSION: HOW AM I AWARE?

The sensory dimension of an online environment involves how much it activates the five senses: hearing, seeing, feeling, smelling, and tasting. Text by itself does not offer much direct sensory stimulation. During the evolution of cyberspace, the appearance of multimedia gaming, photosharing, video conferencing, podcasting, and Internet-mediated phone calls lifted online activities into a much more heightened sensory experience than text alone. However, cyberspace still pales in its sensory complexity compared to real-world situations. Although video communication comes the closest to an actual face-to-face meeting, the physical, tactile, olfactory, and spatial qualities of online activities – for example, handshakes, pats on the back, dancing, smelling perfume, going for a walk, feeling warmth on your skin, sensing things all around and behind you – are still very limited, or nonexistent, in cyberspace.

Imitating and Defying Reality

In Chapter 14, “Synthesized Realities and Synthesized Beings,” we will see how researchers pioneering the technology of virtual reality are attempting to create environments that come as close as possible to mimicking the robust sensory experiences of the physical world. Great progress has been made in the realms of seeing and hearing, along with the generation

of tactile sensations, the most basic example being a phone that vibrates. By comparison, the senses of smelling, tasting, and feeling the whole body stand as significant, if not impossible, barriers to cross in the attempt to fabricate truly lifelike encounters in cyberspace. Even if such rich virtual realities are someday possible – which is the very stuff of science fiction stories – we should not overlook the power of cyberspace to isolate, eliminate, and mix the five senses in different combinations. Even without my elaborating these scenarios, imagine what would it be like, and what would be the utility, of an online environment in which:

- You can only feel bodily stimulation.
- You can only hear and smell.
- You can feel body stimulation, hear, smell, and taste, but not see.

The advantage of cyberspace is its potential to offer vivid sensory experiences that imitate the physical world, along with its ability to reduce or eliminate some sensory features of how the mind works while including and enhancing others. Cyberspace allows us to dissect and reassemble how we experience, interact with, and mentally construct “reality.” Drawing on traditional research in cognitive psychology, we can examine in new ways how the various senses interact with each other. Similar to classic research on sensory deprivation and sensation seeking (Zubek, 1969; Zuckerman, 2007), extreme sensory experiences in cyberspace can give us unique insights into how the mind works. In its potential to push the limits of our five senses, virtual environments can also teach us about different types of sensory overload, when stimulation overruns the mind, which is an important topic in Chapter 11 “Change and Excess.”

The Perceptual Feast

A rich sensory dimension can lead to rich psychological experiences. When interacting with other people, the multiple cues of visual appearance, body language, vocal expression, physical contact, and, in very intimate situations, smell and taste provide a very bountiful encounter with a person, with different cues affirming, enhancing, and at times contradicting each other, as when a person’s body language does not match what the person says. “Lose your mind and come to your senses,” the famous Gestalt psychologist Fritz Perls once said.

For some people, fuller sensory experiences generate a greater sense of presence, stimulate more emotions, and encourage a stronger psychological

commitment to the situation. A hearty 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. If you read, "You are in a toy store," you must rely on your powers of imagination to make that visit feel realistically alive. But suppose that you find yourself in a virtual toy store, with layers of shelves filled with toys of all shapes, colors, and sizes; laughing children running about the aisles; the sound of talking dolls, whistling locomotives, and music boxes; puffs of air from toy canons; bubbles popping on your skin; and the smell of candy. In the latter case, there is nothing vague about where you are or how you might feel about being there. Even my detailed text description of the toy store might pale in comparison to its virtually synthesized counterpart.

Bountiful sensory environments do have their disadvantages. Because they require more technology, they will cost more, demand more computer processing power, and break down more often. Nothing draws greater attention to how unconvincing a digital environment feels than when it makes dumb mistakes, lags in responding, or just stops working. Generating a specific experience through complex sensory stimulation might also prove to be a drawback when we want to encourage an individual's subjective interpretation of a situation, when we hope people will draw on their own memory and imagination to create an experience rather than provide all of it prepackaged for them. As one reader said about a book without illustrations, "I'm glad there were no pictures. I wanted to see it for myself."

Even though I have drawn a distinction between the text and sensory dimensions, I should point out that there is indeed a sensory component to text conversations – for example, in the visual styles of using smileys, spacing, capital letters, punctuation, and ASCII art, which I will discuss in Chapter 7, "Text Talk." Even the deceptively simple technology of rich text formatting (RTF) offers a wider range for self-expression by enabling us play with text alignment, font type, size, and color.

As any phenomenological psychologist will tell us, it is impossible for humans to experience reality without our senses. A pure text environment is no exception to the rule because we need vision to work with it. The more important question concerning the psychological impact of an online habitat is this: what types of sensory stimulation exist here, and what psychological effects do they have on us? To this we might add, when is more better, and when is less more?

Chapters 8, “Image Talk,” and 9, “I, Avatar,” specifically focus on the visual aspects of the sensory dimension in cyberpsychology architecture.

Key Questions from the Sensory Dimension

- How do you rely on seeing pictures in cyberspace, including photographs?
- How do you rely on hearing sounds and voices?
- How do you rely on tactile stimulation?
- How do you visually format text to express yourself?
- When do you prefer to eliminate visual, auditory, or tactile stimulation?

THE TEMPORAL DIMENSION: WHAT TIME IS IT?

The use and experience of time in cyberspace establish the temporal dimension. Often time in cyberspace differs significantly from in-person encounters. Each environment tends to have its own particular brand of temporality, which is partly determined by the technical design of its communication tools, as well as the social norms for their use. Elements of the temporal dimension include synchronous versus asynchronous communication, the acceleration of time, the suspension of time, and the intersection of cyberspace into real-world time. As we will see, time is far more psychologically complex than the steady march of ticking seconds.

Now or Later: Synchronicity and Asynchronicity

In synchronous communication, people are online at the same time, interacting with each other in the moment, in the “real time” that we associate with in-person conversations. Phone calls and live video are highly synchronous, with chat rooms and text messaging approaching the pace of face-to-face encounters. Even when the back-and-forth exchange of messages is significantly slower than conversations in the real world – as in delays of seconds to minutes – people might still feel that they are “together” in the same time frame. Many online environments can be used in either a synchronous or asynchronous fashion, resulting in shifts along a *synchronous/asynchronous continuum*.

Asynchronous communication does not require people to be with each other in the moment, on their computer or mobile device simultaneously. Email, discussion boards, blogs, and social media posts are usually

asynchronous. Responding to each other whenever they want, people interact outside of real time, with the subjective experience of togetherness continually surfacing and disappearing as their exchanges stretch out over minutes, hours, days, weeks, or even years. During synchronous communication, the person's immersion into the encounter tends to remain continuous and focused, but in asynchronous communication people leave the encounter, temporarily forget about it, then later reimmerge themselves. In some cases, there may be little or no sense of a time boundary at all. The perception of a temporally locked "meeting" disappears. Taking a moment to read a message or view an image may subjectively feel as if one has reentered a fluid temporal space with the other person.

Its flexibility in offering both synchronicity and asynchronicity makes cyberspace unique compared to the offline world. There are pros and cons to both types of communication, with the advantage of one often being the disadvantage of the other. A particular strength might also be a weakness:

Geographic location poses few problems in asynchronous communication, as long as delays between messages do no harm. A person on one side of the planet can conveniently use email to converse with someone on the other side. In synchronous communication, people from distant locations might have more difficulty talking with each other due to their incompatible time zones, or they must contend with the fact that each person speaks from a different place in his or her circadian rhythm. This is one reason why people use live video less often than simply texting. The temporal contexts between you and them do not match.

Spontaneity tends to be enhanced in synchronous communication, resulting in more uncensored, ad hoc, quickly paced, and revealing dialogues. Because the meeting is "live," people must react to each other in the moment, on the spot, which often leads to disclosures that might not happen otherwise. There is a point-by-point connectedness that elevates feelings of intimacy, presence, and "arriving together" at ideas. In asynchronous encounters, people tend to be more careful about composing what they say to each other. The interaction often feels more structured or even studied, as in an email message that mimics the format of the traditional postal letter. Sending images often includes some measure of asynchronous filtering, because only rarely do spontaneously taken photos, especially self-portraits, come out exactly the way the person hoped, ready to be sent on the first try.

Presence tends to be enhanced during synchronous communication, 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, in real time. Encounters tend to feel more immediate and interactive. Making the effort to be with someone for a specific period of time in a synchronous meeting is often interpreted as a sign of commitment. “You are here with me right now!” Even though presence might feel greater in synchronous contacts, we should not underestimate the potential for heightened presence in asynchronous communication, especially when using audio or video, or when writers are skilled in making themselves come alive through text.

The absence of temporal cues in asynchronous communication can prove to be a disadvantage. Pauses in the conversation, coming late to a meeting, and no-shows often mean something. Why did she hesitate when I said that? Why didn’t he show up for the live video chat we scheduled? Even in asynchronous communication, the length of time between exchanged messages, or changes in the pacing of the messages, might provide interpersonal insights. He used to send me an email every day, so why haven’t I heard from him for a week?

The zone for reflecting and composing is much greater in asynchronous communication than in synchronous and in-person encounters. You are not on the spot to reply quickly. Especially in email, discussion boards, social media posts, and image sharing, you can reply whenever you are ready, willing, and able, with time in between to think, evaluate the situation, and thoughtfully construct a response. You have the opportunity to present yourself clearly, in the exact manner you wish. This zone for reflection comes in very handy during awkward or emotional situations. In texting and chat sessions, when people share that in-the-moment experience, the time it takes to type, or lags in delivered messages, might offer some zone for reflection and composing, although it tends to be minimal compared to very asynchronous communication.

Convenience and relevance are often inversely related in asynchronous communication. People find it convenient to send and read messages at the time that is best for them, according to their schedule. On the other hand, if they delay too long in sending a message, it can become irrelevant or out of date, which often poses a problem in rapidly changing situations, as in business or personal emergencies. Under conditions of urgency, asynchronous communication often fails us. When using text, asynchronous methods are usually more effective for conveying complex information. Trying to provide an in-depth description of your vacation via real-time texting on your phone will be tediously difficult, if not impossible.

Communication attitudes determine one’s reliance on synchronous versus asynchronous methods, leaving some possibilities that are never fully

explored. For example, even though asynchronous audio and video conversations are possible, people rarely bother using them. We tend to associate such audio-visual contacts with real-time encounters. Even though researchers draw this distinction between synchronous and asynchronous communication, in reality the differences are subtle. The sense of being in the same time frame can become unclear in supposedly synchronous encounters, as when delays in receiving a text message make you wonder whether your companion is still there. Methods that we would typically consider asynchronous, such as email and discussion boards, can feel synchronous when people exchange messages rapidly: you sense the other person is with you in the moment. Regardless of whether we label a communication tool as synchronous or asynchronous, it is the person's subjective expectation of when someone will respond that shapes the experience of temporality. People who are Internet novices, interpersonally naive, or under emotional stress might feel that it took "too long" if they do not receive a reply from someone when they wanted it. We do live in an age when many people expect instant results.

Accelerated Time

Time in cyberspace can feel accelerated, in part due to the fact that online environments change rapidly. Our subjective sense of time is linked to the rate of change in what happens around us. The more things change, the faster time seems to go. It requires little effort to move around cyberspace, so the people and groups we encounter differ from one moment to the next. If you are a member of an online community for just a year, you might be considered an old-timer. During addictive, highly immersive, and what Voiskounsky (2008) identified as online "flow" experiences, time seems to pass so quickly that it almost disappears. Everyone is familiar with the experience of intending to spend just a few minutes online, then two hours later realizing you far exceeded your limit.

Because cyberspace accelerates communication, it can speed up many types of social processes, including the formation of work relationships, friendships, romances, and social or political movements. Researchers speculate that online groups might progress more swiftly through the well-known stages of development proposed by Tuckman (1965): forming, norming, storming, performing, and adjourning. With the acceleration of many types of social activities comes the question as to whether they are also amplified by cyberspace, and whether such amplification thrives, leads to runaway explosions, or quickly fizzles out as swiftly as it surged.

For example, does rapid self-disclosure lead to a more fulfilling relationship or to embarrassment, regret, and withdrawal? As we will see in Chapter 4, “The Disinhibited Self,” the *online disinhibition effect* fuels this acceleration and amplification, sometimes in healthy ways, and sometimes not.

Frozen Time

Online environments vary widely in how easily you can save whatever happens there, what I call its *recordability and preservability*. Even though the design, activities, and membership of social media might change over time, the content of what people posted usually remains intact. Email, video, audio, and text messages can be saved. When perfect preservation is possible, time has been suspended. Whenever you want, you can go back to reexamine those events from the past. In other situations, permanency slips between our fingers, even challenging our reality testing about whether something existed at all, as when an email that we seem to remember receiving mysteriously disappears from our inbox. The slightest accidental tap of the finger can send an otherwise permanent document into oblivion.

People differ in how and what they save of their online experiences. Some onliners consider texting or email as throwaway items of little significance. Although they might make more of an effort to save images and video, the overwhelming plethora of these items in our media-saturated lives detracts from their perceived worth. In the temporal dimension of an online environment, we take into consideration how people preserve their online lifestyles in an attempt to transcend the passing of time and the fading of memory, as well as the tools an environment provides to accomplish these ends. We also take into consideration what types of things people save, lose, and delete, how this selective preservation evolves over time, and the psychological ramifications of these fragmented archives. Your digital identity that evolves over time, that transcends time, perhaps for the benefit of future generations to witness, is the end product of what you save, delete, and lose.

What does all of cyberspace remember? What is recorded, by whom, and for what purposes? Some people say everything that has ever been uploaded is preserved somewhere in the massive archives of cyberspace memory, including all the information about who you are and what you did online. Your digital self lifts into eternity. More humbly, we might wonder whether some of that information about you will eventually be deleted or will become so lost in the vast ocean of online information that you forever

fade into the background. Only time will tell how much the Internet will transcend time, as well as how cyberspace might allow us to attain some measure of immortality. In the meanwhile, we should consider how people pay attention to or ignore the potential power of cyberspace to preserve our personal information, despite the passing of time. For example, young adults applying for jobs should realize that their online childhood antics will come back to haunt them when employers decide to investigate their digital identities.

Ephemeral Time

Ironically, some forms of social media grew in popularity because they ingeniously reversed the ability to freeze time by deliberately making communication ephemeral, as exemplified so well in the phone application Snapchat. By enabling the transmission of text and images to someone who lasted on the screen for only a few seconds and then permanently disappeared (unless the recipient used a screen capture), the application became the perfect tool for playful communication in the fleeting moment. It was popular for surreptitious flirting and sexual teasing, at times generating romantic jealousy among couples when a partner used it to entice other lovers (Sonja, Nicole, & Cameran, 2015). Such environments illustrate how exaggerating one dimension of cyberpsychological architecture – in this case, the temporal dimension – can dramatically shape the psychological impact of the experience.

Intersected Time

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, or every few minutes. 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. At what age during their history people first entered cyberspace might be considered another aspect of the temporal dimension.

Key Questions from the Temporal Dimension

- How do you use synchronous and asynchronous communication?
- When does time seem to go fast or slow in cyberspace?

- Why do you save or delete some things from cyberspace but not others?
- How do you feel about things that happen briefly, then disappear?
- When and how often do you go online?

THE REALITY DIMENSION: IS THIS FOR REAL?

Situations in the real world look, sound, and feel very ... real. Over the course of our evolution, we humans have learned to define reality based on what we experience every day in the physical, sensory world. Some forms of online communication attempt to recreate these familiar situations. A video appears to be a reasonable representation of reality. A phone message sounds like how that person actually talks. Even though we do not communicate with typed text during face-to-face encounters, we still accept what people say in text messages as a matter-of-fact, realistic manifestation of who they are.

Other online environments deliberately strive to create scenarios that are much more imaginary, sometimes deviating just a little, and sometimes dramatically, from the real world. It does not matter whether the environment is generated in a virtual reality filled with rich state-of-the-art sensory stimulation or simply via plain text. Flights of fantasy can be as high in role-playing games driven only by typed words, such as the classic Dungeons and Dragons, as they are in sophisticated multimedia avatar worlds that gained prominence with Second Life and World of Warcraft.

When evaluating the reality dimension of an online domain, we ask how much it creates experiences based on imagination and how much it is grounded in the familiar everyday world. According to technical design as well as social norms, most games in cyberspace encourage make-believe. By contrast, most social media encourage people to be who they actually are, to convey factual information as best they can; otherwise, they are labeled as deceiving and even outright lying. Other environments, such as traditional Internet chat rooms, navigate the reality dimension in a more flexibly ambiguous fashion. With no visual references, communication tools, or community standards that specifically steer people toward reality or imagination, the place becomes what people make of it. The evolving social norms dictate the reality dimension. Those social norms might even override the reality variable intentionally built into an environment, as evident by the fact that some people in social media deceptively alter their identity, while people in fantasy

role-playing games try to get to know who the other players really are. When evaluating the reality dimension of an online environment, we take into consideration its intentional design as well as how people actually behave there. It is ironic that as communication technology advanced, making it much easier for people to get to know each other and locate valuable information, the distinction between reality and fantasy progressively blurred, most notably in the “reality shows” and supposedly real-life videos on YouTube that actually turned out to be deliberately contrived.

Reality Is Illusive

As we will see in Chapter 14, “Synthesized Realities and Synthesized Beings,” the subtleties of the reality dimension are many. Simply staring into your computer screen or mobile device, allowing the physical world around you to fade away, immediately opens the door to an altered state of consciousness. As we all rationally know but experientially forget, people are not actually living behind that screen. The images or sounds we see and hear are merely representations of the actual thing. They are portrayals of reality.

As an extension of the human mind, cyberspace is a realm in which our inner ideas, emotions, and needs shape what we experience. We interpret the environments we enter, and especially the people we meet, based on our past experiences that can distort our perceptions. Especially under ambiguous conditions, we might perceive others based on our unconscious expectations rather than on their actual identity, which are the *transference reactions* that I mentioned earlier in this chapter. When people filter or radically transform their online self compared to their actual identity, encounters become even more about fantasy than reality. Given their history of healthy relationships, along with their intrinsic psychological ability for reality testing, some people fare much better than others in distinguishing what online is real and what is not.

In their book *Infinite Reality: The Hidden Blueprint of Our Virtual Lives*, Blascovich and Bailenson (2012) described how the instinctual human mind cannot always distinguish reality from virtual reality even when the rational mind knows better. If you are immersed into the classic virtual pit scenario, with just a plank to cross a seemingly bottomless hole, your legs might freeze with anxiety. Your rational mind tells you that it is just a computer-generated simulation, that there is no real danger, but your instinctual brain feels otherwise. As philosophers have long stated, reality is a construction of the human mind, with its different parts sometimes

disagreeing with each other. Drawing on what we have learned, as well as on the biologically determined patterns of human perception, our mind tries to decide whether something is real by comparing it to what the mind knows as real. If necessary, we attempt to alter our perceptions to fit the familiar patterns. By contrast, if we spend enough time in a computer-synthesized reality, no matter how unusual it might be, we can eventually adapt to it. The strangely unreal then becomes something rather recognizable, familiar, and therefore real. The reality dimension of an online environment entails how mind and environment interact to determine what seems realistic and what appears as fantasy.

Our human psyche operates along a polarity between reality and imagination. We need a grounding in the familiar, in what we have always known to be real. We need to know who people truly are. And yet, seemingly by its intrinsic nature, the human mind also seeks out imaginative states of consciousness, including altered perceptions of our own identities. We need these playful experimentations to discover new, more enriching, and adaptive opportunities for ourselves. When considering the reality dimension of an online environment, we recognize these parallel human needs for embracing both normal and altered states of consciousness.

Chapter 14, “Synthesized Realities and Synthesized Beings,” focuses in more depth on these issues concerning the reality dimension of cyberpsychology architecture.

Key Questions from the Reality Dimension

- In what ways do your different online environments feel real to you?
- In what ways do your different environments feel like fantasy?
- How do you tell the difference between reality and fantasy in cyberspace?
- How do you react to places that are real versus imaginary?

THE PHYSICAL DIMENSION: IS THIS TANGIBLE?

In the beginning of cyberspace, people sat motionless at their computers while venturing around the world. Cyberspace felt like disembodied space. Our physical bodies and the real physical space around us seemed to have very little to do with our online endeavors. As technology advanced, we began to realize that cyberspace can, does, and must interact with physicality. Although some online activities are convenient, even powerful, because your physical location places no restrictions on you and even seems

irrelevant, other online experiences deliberately capitalize on your physical location, as in applications that provide information about nearby restaurants or let you communicate specifically with people in your vicinity. As an anonymous text messaging system, Yik Yak became popular for this very reason, especially on college campuses: "I may not be sure about your name or identity, but I am sure that you're nearby." Knowing, perhaps knowing, or not knowing who people are adds fun, mystery, and even drama to the game-like social experience. Students in dormitories have also used Yik Yak as a signaling system, for such purposes as asking rowdy neighbors to quiet down or to alert them about resident assistants making their rounds.

We cannot escape the evolutionary fact that we humans developed in a physical world, are intertwined with it, are intrinsically blood-flesh-and-bones creatures. When evaluating the physical dimension of an online environment, we take into account how it involves the physical world and the corporeal body, including bodily sensations and movement, or the lack thereof.

One of the biggest mistakes in our love affair with the computer is the belief that we can sit at it for hours, accomplishing all sorts of things, without it having a negative physical effect on us. At this point in the history of computing, it comes as no surprise that it leads to health problems stemming from sedentariness, computer vision syndrome, and repetitive stress disorders such as carpal tunnel syndrome and musculoskeletal problems. "My body goes stiff when I'm online too long," one of my students noted, "and I don't even notice it's happening." Good ergonomic practices, although helpful, provide only band-aid solutions to online environments that require no physical activity. The simple truth is that evolution did not design us to sit all day in front of a glowing screen or to stare down into a phone. Mother Nature intended us to be physically active in order to be healthy in both mind and body. No matter how we might wax the poetic about shedding our bodies as we immerse our minds into cyberspace, in the final analysis the body cannot be ignored. Human beings are bodily beings.

Why Not Take All of Me? Dissociated and Integrated Physicality

The physical dimension of cyberspace architecture includes *dissociated and integrated physicality*. The dissociated type, which includes bodily movement that has nothing to do with the online activity, can pose significant problems, as evident to me when I witness students on campus staring into their phones and walking across the road right in front of

my car. Physics tells us that two objects cannot occupy the same space at the same time. Now cyberpsychology shows us how one mind cannot easily occupy a physical and online space at the same time, unless one is very skilled at multitasking or using sophisticated *augmented reality* devices, such as goggles that provide visual overlays of information onto the scene around us. Some types of dissociated physicality present less obvious hazards, as when people walk a treadmill while doing something on their computer that has nothing to do with walking. The bilateral left/right movement of leg movements, in addition to the simple energizing effects of walking as exercise, might even enhance cognitive functions while computing. That mental boost might also apply to texting while walking, if we disregard the inherent dangers of not looking where one is going.

In integrated physicality, one's bodily movements coincide with the activity in cyberspace. Games that require hand skills or the physical mimicry of real-world movements – as first popularized in the sports games of Nintendo's Wii – would be examples of integrated physicality, as would any virtual environment that changes in response to head and body motion; moving around a scene to take photos that are then shared online; and haptic technology that creates tactile stimulation via cyberspace. In all these cases, the bodily movement or sensation connects to the online experience rather than being mostly irrelevant to it.

Mobile devices involve physicality because people are often moving through different physical environments as they communicate. If they are not reporting on the changes in their location to their online companions, then at the very least the physical and psychological demands of their changing locations must in some way affect how they are communicating. Texting alone in your bedroom will not be the same experience as texting on a jostling, crowded subway.

The Things, Portals, and Sensors of Cyberspace

The physical dimension includes the psychological impact of where and how cyberspace enters into our concrete world. Where do the screens and controls for various devices appear in our surroundings and on our bodies? Where are the cameras and other sensors that transmit what we are doing into cyberspace? How do all these incursions of the digital realm into our physical environments affect us? With the introduction of wearable computers or even smart phones that people have with them all day long, how might we be evolving into cyborgs who are part body, part machine,

part corporeal individual, part electronically merged with cyberspace consciousness? What is the psychological impact of any kind of robot that physically moves through our space while its “mind” remains connected to cyberspace? As suggested by Ashton (2009) in his concept of the *Internet of things*, all types of appliances in our physical world – cars, heating units, lighting systems, home security devices, and an endless variety of industrial machinery – will become arms of cyberspace. At this stage in the evolution of the Internet, we are just beginning to understand how cyberspace might manifest itself in the physical world, thereby changing it as well as our bodily selves that dwell there. To understand the physical dimension of cyberspace architecture, the once popular field known as environmental psychology must evolve into an environmental cyberpsychology.

The history of technology is the history of fluid, transcended space. In the age when walking served as the primary means of transportation, we were more acutely aware of the physical things along the way between where we were and where we were headed. With the invention of cars, trains, and especially planes, the spaces between here and there seemed less significant. Now, in the age of the Internet, we experience no physical space between the places we go online. By just clicking a button, we magically pop out of one location and into another. These online spaces then seep into our physical world through a variety of device portals, sometimes in places where we least expect or want them. If people wear eyeglasses with embedded devices, their companions might not know for sure whether this supposedly private encounter in the physical world is being broadcast to social media. Students staring into their phones during a lecture allow the social media space to infiltrate the classroom space. Cameras mounted in public spaces send images of us into cyberspace, often without our even knowing it. This interpenetration of our physical spaces with the elusively malleable spaces of the Internet might change our very perception of what “space” is.

Augmented Reality

The term *augmented reality* is often attributed to Boeing researcher Tom Caudell, who in 1990 used it to describe a digital display used by aircraft electricians who used goggles to blend virtual graphics onto a physical scene. In Zen fashion, we might wonder whether reality needs to be or even can be augmented, so other terms such as *computer-mediated reality* or *computer-interpreted reality* might be more appropriate. On a broad level, the term refers to any use of computer resources to provide additional information about one’s physical environment or even one’s

physical body – such as enhancement of vision, hearing, touch sensations, changes in heart rate and respiration, or any kind of data about your surroundings and your physiological reactions to it (Craig, 2013). The computer assists the human in interpreting the situation based on predetermined criteria. Movies such as *The Terminator* illustrate this phenomenon as we look through the eyes of the cyborg, seeing not only the scene around him but also the computer's overlay display that offers both assessments of the situation along with possible decisions about it. A more mundane example is a global positioning system (GPS) application that tells you where you are and what is around you. In all these cases, cyberspace intersects with physical reality. Under ideal circumstances, it can enhance integrated physicality by using cyberspace to help us navigate the world around us.

The Boundary between the Spaces

Among all the eight dimensions of cyberpsychological architecture, the physical dimension plays a special role. It marks the most definitive, tangible boundary between cyberspace and this world in which we humans lived for so many millennia before the invention of electronics. We might call this world reality, the real world, the face-to-face world, or the in-person world, as I sometimes do in this book. However, the most accurate descriptor might be the “physical world” that embodies corporeal, concrete, and material entities, which cyberspace as psychological space does not. How cyberspace manifests itself in that physical world will be the challenge for future technology. How that infusion into physicality affects us humans – how we think, feel, behave – will be the challenge for cyberpsychology.

Key Questions from the Physical Dimension

- How does your use of a computer or phone negatively affect your body?
- When does your physical activity coincide with what you are doing online?
- When does your physical body disconnect from what you are doing?
- Where do you use your mobile device and how does that affect you?
- How do you use devices to interpret your environment and your reaction to it?
- Where do portals into cyberspace appear in your everyday environments?

APPLYING THE THEORY OF CYBERPSYCHOLOGY ARCHITECTURE

If we apply the eight dimensions of cyberpsychology architecture to everyday face-to-face encounters in the real physical world, we come to appreciate how different they can be compared to online environments. When sitting around a table talking to a group of friends, we do not communicate with each other via text. Stimulation includes the integration of all five senses. Talking is primarily synchronous, not asynchronous. As compared to digital realms, we have much less ability to turn ourselves or the situation into something highly imaginative. But we can get up from the table, hug people, cook, sing, and dance, a flexibility in sensory and physical experience that is much more difficult to achieve in any digital environment other than highly sophisticated virtual ones that have yet to be constructed.

In an attempt to offer a one-size-fits-all solution, many large online communities pack as much of the eight dimensions as they can into their platform. Striving for a big, multifaceted architecture, they offer synchronous as well as asynchronous communication, text discussions, images, video, the ability for varying degrees of real or imaginary identity presentation, possibilities for invisibility as well as presence, and a variety of opportunities for group in addition to one-on-one interactions. This jack-of-all-trades approach will work for some people, while others will find it confusingly complex, offering things they do not want or need. Instead, an environment with a specialized design that emphasizes some of the eight dimensions, but not others, can work more effectively for particular types of people with distinct interests. In my experience, for example, communities that were designed specifically for photography, such as Flickr, fared much better for the photosharing experience than multipurpose social media such as Facebook. The future of cyberpsychology is understanding the impact of the eight dimensions on how people think, feel, and behave so that it can assist in the design of integrated architectures that effectively address particular needs, with the ultimate goal of improving our collective well-being.