

How Do We Make Sense of Digitizing Cultures?

Some Ways of Thinking through the Culture-Technology Matrix

Computers are incredibly fast, accurate, and stupid. Human beings are incredibly slow, inaccurate and brilliant. Together they are powerful beyond imagination.

—(Leo Cherne, Discover America conference, Brussels, June 27, 1968)

The Internet includes an unimaginably vast sea of data that is profoundly changing the range and nature of human communication. Not only has it greatly decreased the cost of communication and enabled heretofore-impossible distances to be crossed instantaneously, but it is also increasingly subsuming all other media into itself. Mail, phoning, film, television, music, photography, radio—all have been translated into digital form and made available in far more accessible ways to the roughly two billion people (now redefined as “users”) around the world. No book can hope to fathom the immensity of the Net and other “new” information communication technologies (or ICTs, as they are known among professionals). But we can examine some of the key patterns

- Does Technology Make Us More than We Make Technology? Technological Determinism vs. Technocultural Analysis
- Components of Digital Culture Analysis
- Is There a Virtual World/Real-World Divide?
- Terminal Confusion?
- What's in a Name? New Media/Cyber/Digital Culture/Etc. Studies

of human social interaction made possible, fostered, or transformed by these “new media.” Note that this is the second time I have put “new” in scare quotes. Why? Because one of the recurring questions in the fields upon which this book draws is: What exactly, if anything, is really new, as opposed to seemingly new, about the world of digital media? This book draws deeply from various academic fields that examine the social impacts of information and communication technologies. The chapters that follow draw ideas from anthropology, sociology, communication, rhetoric, ethnic and women’s studies, cultural studies and half a dozen other disciplines. The interdisciplinary field that most directly addresses the set of issues raised in this book looks at digital cultures—the *social relationships* that occur through immersion in the realm of the Internet, video games, smartphones and other high-tech platforms and devices. Studies of digital culture ask how communication technologies reflect the wider social world, how they create new cultural relations, and how those new online experiences in turn reshape the offline world.

Culture is one of the most complicated words in the English language, but for our purposes we can simplify it to mean the values, beliefs and behaviors that are typical and defining of a group. In this sense, we are all involved in many cultures. We can think of cultures as like the Russian dolls that have smaller and smaller dolls inside. At the broadest level we can talk about global culture, at the next level national cultures, then perhaps ethnic cultures, and so on down the line to the cultures of small groups (clubs, workplaces, etc.) in which we take part. In terms of digital cultures, we can think in terms of Twitter culture, or Facebook culture, digital classroom cultures, smartphone cultures, digital activist cultures, gamer cultures and so on, each of which could be divided into smaller groups (e.g., Grand Theft Auto 5 players or iPhone user cultures).

The analogy breaks down, however, in that Russian dolls are far more clearly demarcated than are cultures. Cultures are fluid, not neatly bounded entities. Recent anthropology theory argues that “cultures” are always fictions, are always artificial constructions of observers. The question of what typifies or is essential to a given cultural group is always subject to debate within that group. The boundaries or key characteristics of any imagined cultural group are always blurry, and often in process and changing. Cultural meanings are in fact never settled; they are always subject to contestation, both among outside observers and internal participants. This simply means that anything claimed about a given cultural group can be challenged, and that is a good thing. It keeps cultures from becoming static and keeps those who

analyze cultures from becoming complacent or arrogantly sure of their interpretations.

At the broadest level, digital communication technologies have played a very significant role in our current international configuration of economics and culture, the period of the last several decades that is generally referred to as neo-liberal or “free market” globalization. Globalization is not a new phenomenon in history. There have been many forms and periods of significant global interaction for hundreds of years. Precisely what is new about our current era is up for debate, but among the new features of this particular phase of globalization is the spread of new digital communication networks. Most scholars agree that our current brand of globalization would be impossible without the rapid movement of money, data, knowledge, and non-material commodities across national borders via the Internet and other digital technologies.

To address some of the human-to-human issues surrounding our digitizing world, we need to get beneath the glossy surface of ever-cooler new tech devices to ask questions about what these devices are doing *to us*, and what we can do *with* them to make our lives and the lives of others better. My aim is to avoid both the pro-tech hype driven by profit-hungry electronics corporations, and the equally dubious tech haters driven more by fear of the new than by clear thinking about some of the downsides of high-tech cultures. Instead this book tries to provide some useful ways to think through the many and varied social impacts of digital cultures, and hopefully provides some tools to help readers play a stronger role in shaping new technologies in ways that improve the world.

Few of the questions this book addresses have simple answers. One reason there are no easy answers about what new technologies are doing to us is that the subject is incredibly vast, and changing at a phenomenal rate. Though no one really knows how to count them with complete accuracy, by the second decade of the twenty-first century there were over 1,750,000,000 (1¾ billion) individual web pages indexed by Google (with several million more unindexed). Moreover, between the time I wrote that sentence and the time you are reading it, several million more were created. If Facebook were a country, it would be the third largest nation in the world. YouTube broadcasts more in a day than all major TV networks have broadcast in their entire history. In the history of the world, counting every language, there have been about a hundred billion printed books; the amount of information contained in that number of volumes is uploaded onto the Web every month. How could anyone claim to know what is going on

across all those sites and in all the other arenas that make up digital cultures? Trying to understand digital cultures is a little like trying to interpret the lyrics to a song that adds new verses every day. Sometimes the new verses seem to continue the song's main themes, but at other times the new verses go off in totally unexpected directions because the song has two billion co-authors.

As a result of the rapidly changing nature of new communication networks, the question of what new technologies are doing to us covers a territory that is riddled with contradictory evidence. Are they helping create a more just world, bringing down dictators and opening up societies, or are they giving hate-mongers a new, safely anonymous space to recruit? Are they giving women and ethnic and sexual minorities new platforms to be heard, or offering new space for dominant cultures (and the English language) to overwhelm everyone else? Are we creating a new "(digital) generation gap," or finding new ways for parents and children to communicate across differences and distances? Is the Web truly world-wide in terms of who can use it, or are we creating a world of digital haves and have-nots? Is the Web a space of free and open public discourse, or one controlled by governments and huge corporations? Is the Web creating new transnational, person-to-person understandings, or amplifying existing cultural misunderstandings? Is the Web a space where physically disabled people can enjoy the freedom of virtual mobility, or a space biased toward the able-bodied, leaving the disabled to struggle for full access? Is online sexual content destroying relationships and degrading morals, or offering liberating knowledge? Are video games turning users into mindless virtual killers, or teaching valuable life skills? Is the Internet making us more knowledgeable, or just drowning us in a sea of trivia? Is the digital world one where we are more "connected," or one that steals our privacy, offers up way Too Much Information, and stunts the face-to-face interactions that alone can carry true human connection?

Clearly, a case can be made for each extreme side of each of these questions. But that doesn't mean that the truth is somewhere in the middle. It means that the "truth" of digital cultures is a set of ongoing processes, and will depend on the thinking and acting users do now, as well as on decisions we make, as citizens and as consumers, about the further development and use of new technologies in the near future. It will depend on the personal decisions we make, on the political work we do to shape social policy about technology, and on the lives we choose to pursue as participants of a rapidly digitizing age that is upon us, whether we like it or not.

So digital cultures are very much in progress, and no one really knows what the almost seven billion of us stranded on the third rock

from the sun we call Earth will eventually make of this still relatively new set of technologies. We are dealing with two ongoing processes, the human development of digitizing technologies, and the human use of those technologies. They are not the same thing because humans do unexpected things with the tools we create. And that is what a technology is, a *tool*. The roots of the word technology are in the Greek name for practical things that extend our human capacities. Some of our more famous technologies, the wheel, the printing press, have changed the world and human identities in unimaginably diverse ways. So too will our digital tools, with an emphasis on the unimaginable part. The tools will only be as good as the imaginations of the people that put them to use.

While we are still learning to make sense of the new media explosion, there is little doubt that it represents a major transformation in human culture, what one scholar has called a "fourth revolution in the means of production of knowledge" (Harnad 1991), following the three prior revolutions of language, writing, and print. As with each of these previous "revolutions," much consternation has been generated by the arrival of the digital age. The Greeks worried that the invention of writing would fundamentally undermine the key human capacity of memory. The arrival of the printing press was viewed by some as a dangerous degradation of human communication. And so too have many lamented that digital media will bring the "end of world as we know it." The end of the world has been predicted since the beginning of *homo sapiens*, and this latest prediction is no doubt as wrong as all the others. But some things in the world certainly are changing. And the "as we know it" part of the phrase is undeniable. New media will not bring an end to the world, but they are deeply changing the way "we know it." New ways of knowing have in the past (like the printing press) not brought an end to the world, but they did bring an end to certain ways of knowing, while adding new ways of knowing, and new identities. And that is surely what is happening now; we are experiencing a (digital) revolution in how we come to know the world and ourselves.

Having raised the issue of knowledge, let me say a word about my approach to knowing about digital cultures. Objectivity is one of the great inventions of the modern world. It is a worthy ideal of the natural sciences and much scholarship in the social and human sciences. But, like all ideals, it is never fully attained. The idea of information and analysis presented without personal, cultural or political bias is a wonderful thing to strive for, because no one benefits from distorted information. Some think the way to achieve objectivity is to pretend to be a person without biases. Instead, I agree with scholars

who argue that such a position just hides biases that all of us have. So my approach will not be to pretend to be neutral on all issues raised in this book (I will not, for example, give white supremacists equal credence with folks fighting racism online). Rather I'll make my own positions (read bias, if you wish) explicit when I have a strong point of view and trust that readers will factor my position into their responses. I believe all knowledge is *situated knowledge*, that it is produced and interpreted by humans always embedded in cultures, always able to see some things better, some things less well, from their particular place in the world (Haraway 2003 [1984]). This is not relativism, but rather a search for a *deeper level of objectivity*, one that acknowledges instead of denying our human fallibility. Having said that this is a book with more questions than answers, I will also share my ambivalences and uncertainties along the way.

Before moving too deeply into this revolutionary world of digitized cultures, it is important to note who is *not* part of those cultures, i.e., most of the people on earth. Of the roughly seven billion people on this planet, between four-and-a-half and five billion, 60 to 70 percent of us, have no access to the digital world at all. And millions of others have severely limited access compared with the taken-for-granted fast broadband access enjoyed by those of us with economic or social privilege. These *digital divides* in turn rest upon growing economic and social inequality in almost every country around the globe, and vast disparities of wealth between countries. In broad statistical terms, there are clearly great digital divides between the Global North, and the Global South, as represented by these percentages across continents: 79 percent of North Americans have access, 63 percent of Europeans, 49 percent of Middle Easterners, 42 percent of Latin Americans, 27 percent of Asians, and only 16 percent of Africans (Internet World Stats; International Telecommunications Union). Access varies by country within continents of course, and by class, since even the poorest countries have economic elites. In the many countries with a dominant ethnic group and other minority ethnicities, minority ethnic groups almost invariably have poorer access, usually due to having lower incomes and fewer cultural benefits compared with the dominant ethnicity.

Why does this matter so much? Consider these statistics:

- 80 percent of people live in countries where the income gap is widening.
- The richest 20 percent of the population controls 75 percent of world wealth.

- 25,000 children die each day from poverty.
- Seven in a hundred people have a college education.
- A billion people in the world are illiterate.
- One in five people on earth has no clean drinking water.
- *One in five owns a digital device.*

(Statistic Brain n.d.; UNESCO Institute for Statistics n.d.)

While statistics at the global level are subject to considerable variation depending on methods of measurement, a general pattern of profound poverty alongside great concentrations of wealth is undeniable. And, with some local exceptions, it is clear that economic and social inequalities in the world are currently being replicated, and often exacerbated, by parallel inequalities in access to the Internet's resources; this in turn means that the economic, political, social and cultural benefits provided by digital access are distributed in extremely unequal ways.

Scholars also recognize that digital divides are about more than access to devices and software. There are also divides centering on language and culture (which languages and traditions are prominently and fairly represented on the Web, and which are not), techno-literacy (who does and who doesn't receive culturally relevant education in using digital devices and resources), and censorship/openness (who does and who does not have their access significantly limited by governmental or corporate forces). All these various digital divides are crucial to keep in mind if we are to approach a realistic appraisal of what is going on in the online (and offline) worlds. (For more on digital divides, see Chapter 9.)

With these issues of huge scale and widely varying contexts in mind, let me be clear that I will not pretend to deal with all aspects of new communications technologies. My focus will be on cultural and social questions, on asking what can be done to make digital communication technologies serve the cause of richer representation for groups currently on the cultural margins, and how digital communication technology can be used to further economic and social justice for all. Thus, the three keywords in my subtitle—*culture*, *power* and *social change*. An emphasis on *digital culture* means focusing less on the gadgets, more on the human interactive dimensions of digital phenomena (though, as we will see, there is no way to fully separate the technical and the cultural). Focusing on *power* means centering

TABLE 1.1 Top 20 Countries with the Most Internet Users (by % of World Users), 2012

Rank	Country	Population (2012 Estimate)	Internet Users	Internet Users (% of Population)	User % of World
1	China	1,343,239,923	538,000,000	40.1	22.4
2	United States	313,847,465	538,000,000	78.1	10.2
3	India	1,205,073,612	137,000,000	11.4	5.7
4	Japan	127,368,088	101,228,736	79.5	4.2
5	Brazil	193,946,886	88,494,756	45.6	3.7
6	Russia	142,517,670	67,982,547	47.7	2.8
7	Germany	81,305,856	67,483,860	83.0	2.8
8	Indonesia	248,645,008	55,000,000	22.1	2.3
9	United Kingdom	63,047,162	52,731,209	83.6	2.2
10	France	65,630,692	52,228,905	79.6	2.2
11	Nigeria	170,123,740	48,366,179	28.4	2.0
12	Mexico	114,975,406	42,000,000	36.5	1.7
13	Iran	78,868,711	42,000,000	53.3	1.7
14	Korea	48,860,500	40,329,660	82.5	1.7
15	Turkey	79,749,461	36,455,000	45.7	1.5
16	Italy	61,261,254	35,800,000	58.4	1.5
17	Philippines	103,775,002	33,600,000	32.4	1.4
18	Spain	47,042,984	31,606,233	67.2	1.3
19	Vietnam	91,519,289	31,034,900	33.9	1.3
20	Egypt	83,688,164	29,809,724	35.6	1.2

Source: Internet World Stats (internetworldstats.com), as of June 30, 2012

questions about who currently benefits from digital cultures and who doesn't. It means asking to what extent and in what ways the digitization of a large chunk of life on planet Earth has helped lessen or has deepened economic, social, political and cultural inequality. Focusing on *social change* means suggesting how these new media could be used to further progressive change. These are issues upon which the very survival of the planet itself may depend. Such a focus, however, does not mean that other issues about the impact of digital cultures will be ignored. Any book on the vast arena of digital cultures must be selective, limited. Focusing especially on issues of social justice is the selectiveness I have chosen, but the series of case studies I highlight can to a great extent be generalized to better understand much of the wider realm of digitally enabled communication.

DOES TECHNOLOGY MAKE US MORE THAN WE MAKE TECHNOLOGY? TECHNOLOGICAL DETERMINISM VS. TECHNOCULTURAL ANALYSIS

The metaphor of Web “surfing” that entered the vocabulary of Internet life during the early days and has stuck around for quite a while provides one way of imagining the power of digital technologies. Apart from the fact that I grew up in California, the surfing metaphor makes sense to me because it is an image of folks struggling to control, and even artfully use, a force much bigger than they are. Surfing is a highly individualized sport, but it can also be done in tandem (on one board) and in groups (though separated along the same wave). A wave is not a bad metaphor for the Web in that it is a massive, moving force beyond the full control of any individual human. Any user has at some point wondered how the wave took them far off the course they had plotted (for example, how did you start looking up information on Albert Einstein and end up surveying the microbrews at a tavern in Toronto; big hint, the tavern is called Ein Stein). (Sometimes the fault is purely with the computer, not the user, of course. As a reminder of how dumb computer algorithms can be, I recently searched “wiki-leaking” in Wikipedia commons and was asked, “Do you mean wife-leaving?” No, I did not.) Despite distractions and the dumb brilliance of algorithms, many individual users and groups of users can surf the waves of the Web with a high degree of precision. Web waves, like those in an ocean, are endless and each one unique. Nevertheless, patterns can be charted, and a certain amount can be predicted. Cyberskeptics will warn that information tsunamis will soon drown us all, while cyberhypers will focus only on the pure joy of those many varied waves each providing a rad ride. Somewhere between these extremes we can make sense of the ever-changing but readable relations that exist between people and technologies.

In less metaphorical terms, one of the most common ways of talking about the relationship between humans and the technical devices they invent is a theory called *technological determinism*. As the name suggests, this approach stresses the technological side of the technology–society relation. In its more extreme form, technological determinism argues that technologies are the single most important force driving human history, and that there is an almost automatic cause-and-effect relationship between the kind of technology a culture has and the essential qualities of that culture. Technological determinism grants technologies themselves independent causal power. Much of early discussion of cyberspace, for example,

suggested that something inherent in the technology would lead inevitably to evil (dystopian) or highly positive (utopian) outcomes. Neither has happened because technology never acts alone. Critics of this deterministic approach argue that it exaggerates the extent to which social meanings and uses arise *automatically* from technological innovations. Most serious scholars now reject the extreme forms of technological determinism. However, much of the work that has been done to understand the impact of technological innovation across thousands of years of human history is immensely important, and makes clear that the society-shaping role of technologies should never be underestimated.

At the same time, it is clear that a central problem with technological determinism is that it largely ignores the fact that technologies emerge from various social and culture groups, and that those groups play a profound role in how the technology is subsequently used. In other words, cultures create technologies, and the extent to which a given technology comes in time to alter culture is never a simple one of technology dictating to society. Technology is not a Frankenstein monster or the Terminator running amok. It is a series of devices and practices in the hands and minds of users. We are all Dr. Frankensteins, we all have Terminator power (aka smartphones) at our command, and it is up to us whether our monsters and cyborgs help us to make a culturally richer, politically more just world, or strangle the life out of us. In relation to how these technologies work in the world, I take a position stated succinctly many decades ago by one of the first thinkers to look closely at what communication media are doing to us and to the world, controversial media critic/prophet Marshall McLuhan who remarked, "We shape our tools, and afterwards our tools shape us" (McLuhan 1994 [1964] xxii).

McLuhan here is trying to avoid two kinds of mistakes in thinking about technologies of communication. On the one hand, he seeks to avoid technological determinism (though he was not always so careful to avoid this trap), and on the other hand, he seeks to acknowledge that each communication tool (from the pencil to the television) has certain likely uses built into it that can shape our actions in ways we may not intend or initially imagine. Keeping with the tool metaphor, think of the expression "to a hammer, the whole world looks like a nail." Hammers were designed to do certain specific things, and they are very good at those things. But they can't do everything because not everything in the world is a nail. And they can be put to ill uses not originally intended. They can, for example, like Maxwell's silver hammer in the Beatles song, be used as a weapon

(so can a pencil, for that matter). So one key trick in thinking about any technology is to ask not only what can it do for us, but also what can it *not* do for us, what are its limits, and what do we *not want* the tool to do. If we don't ask these questions, new technologies might just metaphorically, or should I say virtually, bash our skulls in, or at least hammer away in destructive ways at lots of things that aren't nails.

All technologies have some uses built into them. It is hard to fly a car or float a plane (James Bond and sea planes notwithstanding). But technologies also always have unforeseen consequences. The Internet, to take a pertinent example, was designed with the needs of a small number of military personnel and scientists in mind. Hardly anyone in on the early development of what became the Internet conceived of it as the revolutionary medium of popular communication it has become. On the one hand, the technology had the potential use to which it is now being put built in, and so in some sense the technology has driven the development that became the modern Internet. But on the other hand, that development was a highly uneven, stop-and-start process that, while enabled by technical breakthroughs (especially the invention of the World Wide Web), was a thoroughly social and cultural phenomenon. Complex technological devices might be thought of as like a chessboard. Chess has many rules and restrictions; you cannot do just anything on a chessboard. But the number of particular outcomes that are possible on the platform, that simple board of squares, is virtually infinite. The military-scientific inventors of the Internet had no idea that it would one day be used to share videos of cats playing the piano (if they had, would they have had second thoughts?), but they did build in the possibility of doing so. Fortunately, as it turns out, the Net is big enough to contain *both* scientific brilliance and feline silliness.

What virtually all forms of critical digital culture analysis have in common is a rejection of pure technological determinism in favor of approaches that can be grouped under the rubric *technocultural*. As the term's blending and blurring of the words technology and culture suggests, technocultural approaches argue that technologies and cultures can never be neatly separated, because technical innovations are always created by individuals and groups deeply shaped by cultural assumptions and biases, and technologies are always used in particular cultural contexts which reshape them even as they reshape the cultural contexts.

Choices about which technologies are to be developed are always partly economic, partly political and partly social. In turn, choices

about which technologies become popular are deeply social and cultural, as are the uses to which technologies are ultimately put. Decisions about which technologies get built and disseminated (and which do not) are shaped by economic systems, governmental action, social needs/desires and individual choices. The adoption and use of technologies is always a social process that is only partly predictable (as the makers of hi-tech devices that bombed on the market know all too well). Once created, technologies are subsequently adapted, changed or replaced through further sociocultural processes. None of this can be easily determined in advance. This means that whether we have a technological utopia coming our way, or a technological apocalypse, is not something looking at technologies alone can ever tell us. We must also look at the human contexts that shape and reshape those technologies.

Among the more useful and interesting frameworks for thinking about culture and technology are *actor-network theory*, and a parallel *feminist technoscience* approach. Actor-network theory is associated with figures like French philosopher of science Bruno Latour, and a similar feminist approach developed most fully by Donna Haraway. Actor-network theory views technological devices as actors (agents), with something resembling human agency (power to impact events), but with the caveat that like humans, technological actors are always caught up in larger networks of power and causality (Haraway 1997; Latour 1987). Technologies and humans are both entangled in economic relations, political relations, social relations and cultural relations. To further the metaphor, you could say that a given technical device, say the smartphone, is an actor in the world with a variety of identities (*personalizations* like color, size, shape, ring tones, language, etc.) and behaviors that vary widely, but all act within a set of wider social and technical systems (networks) that shape and limit their nature and uses. Uses of the cellphone are wide but not limitless, and certain uses are far more likely given the specific social contexts and networks of their users (business people are more likely to think of them as work tools, while teens are more likely to think of them as socializing tools, and so on).

Technocultural approaches to digital culture issues avoid the extremes of viewing technologies as running amok, out of human control, and the equally dangerous assumption that technologies have no likely social consequences, including unintended ones, built into them. The good news is that we are still early in the process of collectively determining what we will do with the (relatively) new digital devices and platforms that are the subject of this book. And,

ironically, the devices themselves may provide us with some key tools we need to make good technocultural choices. At least until fully functioning AIs (artificial intelligences) come along that are as complex, subtle, creative and multifaceted as the human brain, it will still be fallible, culture-bound humans who, through individual and collective action, will determine the future path of technology (and culture). The best technocultural approaches offer a more dynamic way of thinking *with* our hi-tech tools, approaches that regard ever-changing cultural, political, economic, and social conditions as integral to, inseparable from, the media that help create those social conditions.

COMPONENTS OF DIGITAL CULTURE ANALYSIS

The complete study of digital cultures can be thought of as addressing four main components: *production analysis*, which looks at the wider political, economic and social contexts shaping a particular digital culture; *textual analysis*, which closely examines the content and form in digital spaces—words, images, sounds, etc.; *audience/user analysis*, which tries to get at precisely what actual users are doing with digital devices and what meanings they are making of digital texts; and *historical analysis*, which measures the unique qualities of digital cultures in relation to previous forms of communication and as they change over time.

Understanding the production process enabling digital cultures means asking who actually makes digital devices, and under what economic and social conditions. Who are the *electronic company executives* and what are their working lives like? Who are the *software designers* and what are their working conditions? Who are the *hardware designers/engineers* and what are their working conditions? Who are the *assembly line workers* and what are their working conditions? These questions matter in regard to issues of just and unjust labor practices, and also because digital devices are never culturally neutral; they always have the particular cultural biases of their makers built in. Production analysis asks what cultural ideas are built into hardware, into software, into Web interfaces or the shapes of smartphones? What cultural ideas are built into various webpage genres, templates and styles? How do dominant cultural ideas influence design, and to what extent can folks from less socially powerful, more marginalized cultural positions influence the design and creation of our digital devices?

Textual analysis in its various forms (rhetorical, semiotic, psychoanalytic, and so forth) examines the verbal (written and spoken

words), visual (colors, layout, still and moving images), and aural (voice, music, and other sounds) elements of websites, games and other digital spaces, as well as these qualities as manifested in digital devices like smartphones, game consoles or tablet computers. Much digital text analysis focuses on what we most often mean by text, the written word, examining the verbiage on a web page or the conversation in a chat room, doing the kind of close reading associated with literary analysis. But because digital cultures generally exist these days in multimedia form, textual analysis often also includes sounds and imagery, as well as words. Whatever its focus, textual analysis has to be extremely sensitive to differing cultural contexts. Color on a website or on an iPhone cover, for example, can convey very different things to people whose culturally derived associations with color symbolism differ. For example, in Brazil the color purple signifies mourning, in Asia luxury, in Britain royalty, and in the US frivolity. Subcultures likewise may offer signifiers that counter dominant ones.

In addition, as with literary textual analysis, textual studies of digital cultures pay attention to the forms and formats in which digitized texts appear. Each genre and platform, from a less-than-140-character microblog, to e-books running to hundreds of pages, from texts experienced on cellphones to ones read on a laptop to ones projected onto huge screens in classrooms or movie theaters, contain different implicit meanings and expectations and create differing experiences. Form deeply shapes content, which in turn shapes consciousness. Major debates in digital culture studies, for example, swirl around the issue of how the rapidly shifting, link-driven reading experience typical in online spaces may be shaping our ability to think linearly, or to pay attention to long narratives, or to follow complex, multilevel logical arguments.

Textual analyses are generally qualitative (involving close interpretive reading), rather than quantitative (based upon statistical data), but one sub-category of textual approaches, *content analysis*, takes a largely quantitative form, doing things like counting the occurrences of female Asian American characters in a particular genre of video games. Content analysis at the numerical level alone is generally not very illuminating, but when combined with cultural analysis these data can give a more solid statistical base to interpretations. Contrary to the adage, “the facts” never “speak for themselves”; even the purest quantitative data are subject to (always debatable) interpretation. However, interpretation is generally more believable when backed by one or another kind of empirical evidence, and much of the best interpretive work in the cultural study of technology remains

grounded in one or another archive of data that combines qualitative and quantitative elements.

Audience or user analyses take a number of different forms and use a number of different methods. These can be ranged in degrees of breadth vis-à-vis depth. The broadest amount of information can be gained through *surveys* or *representative sampling*, which can involve hundreds if not thousands of respondents. The Web itself has contributed immensely to the field of social surveying in general, and it is obviously an even more perfect tool for gathering information about specifically online cultures. A second approach uses *focus groups*, a method long used to study *old media*. Focus groups survey a relatively small number of people, typically fewer than 20, interviewing them in more depth and more interactively than is possible through a poll survey. Finally, the anthropological and sociological approach called *ethnography* is being applied to digital culture (Escobar 1996; Hesse-Biber 2011). Traditional ethnography involves living among while studying a cultural group. *Cyber-ethnography* (aka online or virtual ethnography, netnography, webnography, computer-mediated ethnography, etc.) applies this approach to digital culture groups. Typically cyber-ethnography takes one of two forms. In one mode, scholars act as “lurkers,” observing online activities surreptitiously by visiting cyberspaces (work spaces, play spaces, socializing spaces) unannounced. The second main mode of cyber-ethnography involves researchers engaging in *participant observation* by openly joining an online community (a chat room, or an MMORPG), in order to study the group’s experience from both inside and out. One group of scholars, for example, joined World of Warcraft, the largest online game community (with reportedly over ten million players), playing for several months and then writing up, sharing, and publishing their analyses of the game and game experience from a variety of perspectives (Corneliussen and Rettberg 2008). There is much debate about whether honest disclosure that one is a participant-observer is preferable to lurking, since the presence of a researcher may skew the activity of other users, while lack of candor on this issue can raise charges of privacy invasion. Elaborate rules have been devised to mitigate some of these issues, but no clear consensus on the best approach has emerged.

User analysis tries to understand what *actually happens to people* as they utilize digital spaces and devices, both in the narrow sense of finding out what they are doing and the larger sense of uncovering what is being done to them. By the latter I mean trying to get at the personal and social impact of spending time using particular

digital devices and platforms. How does a person's idea of geography change when they work primarily with mobile devices? What is the impact of digital surveillance on a worker whose every keyboard stroke is being read by the boss? What is the impact on one's sense of self, community and privacy of being in an always-connected state through a smartphone? And so on.

One particularly intense kind of audience, fans, has received a great deal of attention in relationship to digital culture. While fandom has a long history prior to the rise of the Net, the online world has exponentially increased the amount and depth of fan activity. And because much of this activity is publicly visible, researchers have been given a richer look into how audiences interpret a range of popular culture topics (movies, celebrities), as well as providing data on how online practices may be changing the nature of fans in regard to their objects of affection and interest.

Historical approaches in effect surround all these other methods, since without knowing the history of technocultures, the history of cultural texts, and the history of media audiences, it is impossible to really measure the specific impact of any element of new media production. Thinking historically, the alleged newness can be separated out into various degrees or levels across a continuum by addressing questions like these: 1) What does the new technology do that could not be done by earlier forms of communication? Prior to the Web and applications like Skype, visual conversations across great distances were only possible on "Star Trek"; 2) What does the new technology do more easily, more cheaply, or more effectively than earlier mediums? Downloading digitized music greatly increases access to a range of forms, and, even when done legally, generally reduces costs; 3) What does the new technology do that might be done as well or better by older mediums? When you see two friends walking down the street, each with a cellphone talking to other people, you may well ask whether they would be better off actually talking to each other via the ancient medium of face-to-face communication. These three questions certainly do not cover the full range of possible historical meanings and impacts of new media, but when kept in mind they can sort through a lot of hype and clarify a good deal about what is truly important and innovative in new communication technologies.

Few individual studies of digital culture substantially deal with all four elements, though they often combine two or more, but the richest view of the terrain of digital cultures emerges when all these elements are factored into the picture. I have tried to do that with the topics all-too-briefly surveyed in this book, but I urge those of

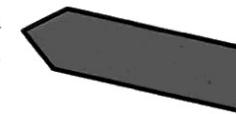
you who wish to dig more deeply into any particular aspect of digital culture, starting perhaps with resources provided on the companion website, to keep this full array of factors in mind as you proceed.

IS THERE A VIRTUAL WORLD/REAL-WORLD DIVIDE?

One of the most enduring terms used to describe the world created by the Internet and related digital domains is the term *cyberspace*. That term came into the English language via a science fiction novel, William Gibson's *Neuromancer* (1984). The book was prophetic in the sense that it described an online world that in some respects resembled the not yet online world we now know (though Gibson had never been on the then nascent Web when he wrote the novel). But more important than the prophetic element was the power of the word. Cyberspace quickly caught on as the name for the place created by electronic communication. It became a ubiquitous term (and therefore perhaps part of a *self-fulfilling* prophecy in some ways), but it has also been misleading in a number of ways. It is, after all, as its origin in a work of fiction should remind us, only a metaphor. In fact, Gibson points us in this direction by defining cyberspace as

[a] consensual hallucination experienced daily by billions of legitimate operators, in every nation . . . A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the non-space of the mind, clusters and constellations of data. Like city lights, receding.

(Gibson 1994 69)



Cyberspace doesn't exist in precisely the same way that Montreal or Melbourne or Mogadishu exist. The Net's physical existence has less visible relation to its imaginary existence. While cities and countries are also in a sense imagined places, we generally imagine their geographic location in a way that is more grounded, literally, than is our imagination of cyberspace. In the broadest sense, the geography of the Internet is three things at once: the place from which the user is accessing it, the user's experiences online in that space, and a largely invisible space of connected servers, data centers, and individual computers that enable the experience. We often forget the first of these spaces (lost in cyberspace), and seldom think much about the third space (because its materiality is also subsumed by

our online experiences). This makes cyberspace a somewhat different kind of place, but it is still a place in the world. Or, better yet, it is many places, all of which are in the world (not the ether). Just as the word San Francisco calls up different images for each of us depending on our knowledge of that real, imagined city, there are as many cyberspaces as there are users of networked electronic communication devices. The difference is that few of us imagine cyberspace's geography in any physical way; its geographic grounding is weirdly dispersed and invisible, with most of us imagining it rather abstractly, if at all. Even a parallel media form, television, tends to evoke more material reality. We think of studios, sets, cameras, etc. that give some physical reality to TV. Cyberspace's base, the Net, on the other hand, is seldom more than an abstract image, often depicted as lines of light brilliantly traveling across the globe; few users who are not engineers know how the physical Internet looks or think of it in material terms.

As Andrew Blum puts it, we misleadingly tend to think more in terms of "ether" than "net" (Blum 2013). The seemingly placeless, ethereal world of the Web is not possible without millions of very earthbound terminals and CPUs, hundreds of thousands of miles of cords and fiber optic cables, thousands of wifi towers, hundreds of huge warehouses full of servers, millions of routers and switches, arrayed as a whole panoply of engineering esoterica like Dense Wavelength Division Multiplexing terminals and regen sites (see Figure 1.1). No matter how lost we may get imaginatively in cyberspaces, those seemingly virtual spaces are possible only because of a massive array of material objects anchored in geographically specific places. But, almost as if it were ashamed of the concrete reality behind the illusion of empty cyberspace, the industry deeply buries and places behind secret closed doors much of this infrastructure; for a glimpse inside, see the short documentary "Bundled, Buried and Behind Closed Doors" (Mendelsohn 2011) and visit Google's rather sanitized and aestheticized Data Centers Gallery (*Google* n.d.).

The concept of cyberspace has fallen out of favor with many scholars of digital culture, along with the prefix "cyber" in general. For a while everything seemed to be a cyber-this or cyber-that—cybercafes, cyberbullying, cyberdogs, etc. More recently, "e-ing" seems to be preferred such that we now have e-books, e-commerce, e-learning, e-waste (see Chapter 2) and so on. But even if the term *cyber* is being superseded among scholars, cyberspace is still widely used in popular discourse and a better alternative has yet to be coined (the most common other candidate, "virtual space," is equally problematic in some ways). A better (perhaps temporary) solution is to

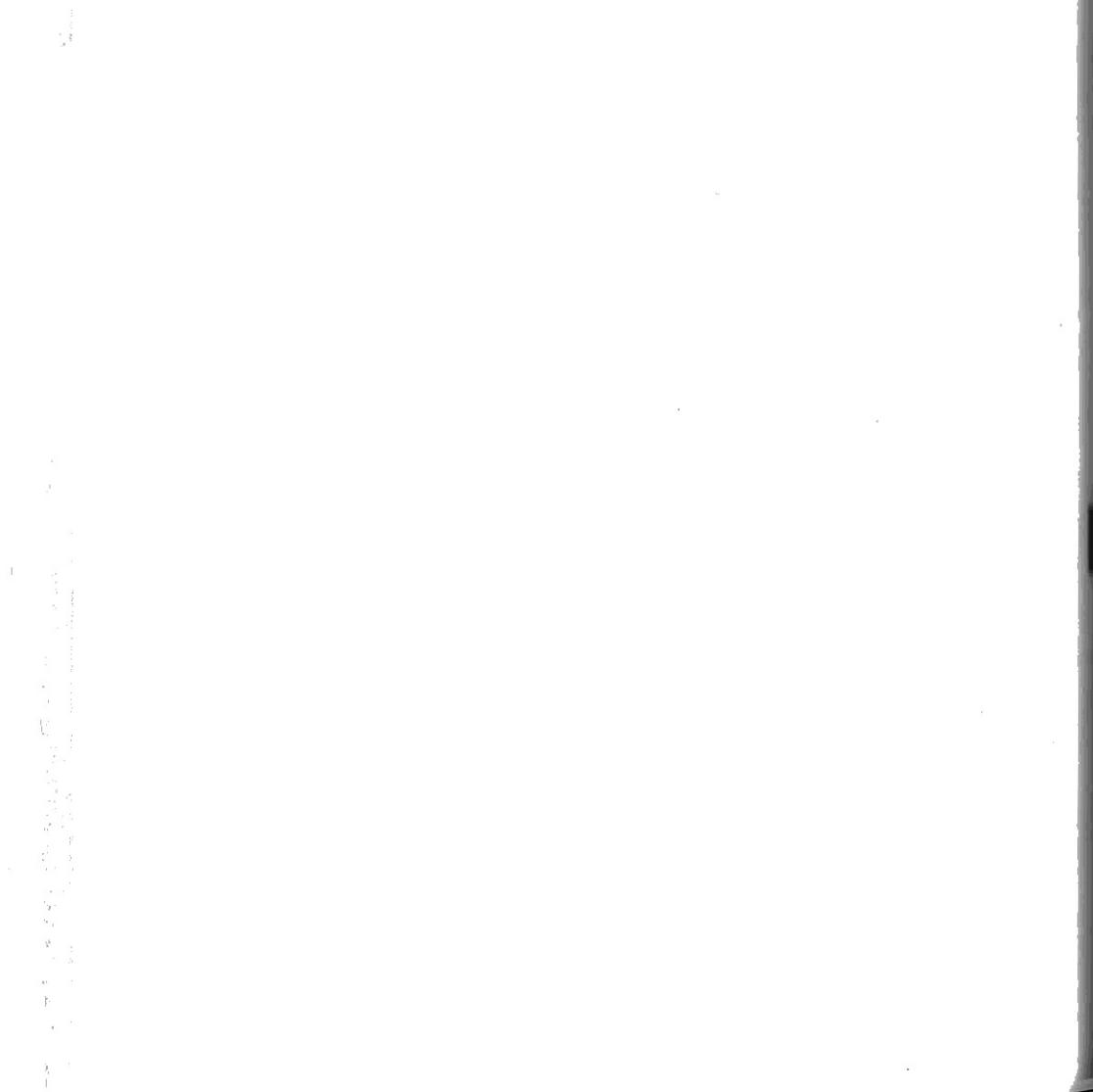


FIGURE 1.1 *A bit of the material internet.* (Courtesy of shutterstock.com.)

pluralize, to speak of many cyberspaces, to remind users to distinguish among various different imagined spaces created by interacting with different devices and media (the Web, console games, smartphones, etc.), for differing purposes (shopping, learning, working, playing, voting, etc.), and through differing cultural lenses. So in the context of this book, I will use the term cyberspaces in the plural, along with other analogous terms, to help assure that we do not too

easily homogenize this complicated, imaginary terrain as one continuous space, place or thing.

As a product of culture-laden people, cyberspace is always very much attached to, indeed woven into, the rest of the world. As a space for the production of culture, it has evolved its own special forms, styles, rules, structures and identities, but these never stray far from offline connections. The line between cybercultures and wider cultures is never absolute or stable; the boundaries are being crossed all the time in both directions. Wider cultures always shape or spill into cyberspaces, and cyberspaces spill out to wider cultural fields in a myriad of ways. Given the ubiquity of posting these days, for many the entire “offline” world is just a text waiting to be tweeted, YouTubed or Facebooked, or Instagrammed (Jurgenson 2012). Not to mention that face-to-face interactions these days often revolve around “online” events. Still, surprisingly to some, most of the world most of the time is offline, and much still happens there that never gets online.

Increasingly, digital cultural contexts include other forms of mass media like television, film, radio, newspapers, magazines and so forth. This is part of the complex process known as *remediation*, taking one media form and transmitting/transforming it through another (e.g., “old media” television programs digitized and broadcast via a tablet or smartphone). This is a two-way process in that incorporating older media reshapes the new (websites that look like TV screens), while the old media adapt to the new (TV news shows that look like websites). In these and many other ways, there is no absolute split between virtual worlds and the so-called real world, new media and old, or between digital spaces and analog spaces. These “worlds” are actually always interwoven in complex ways. This does not mean that virtual, digital or cyberspaces cannot or should not be isolated to some extent for the purposes of cultural analysis, but it does mean that it is crucial to remember that such isolation is always somewhat artificial, always on another level incomplete.

This leads us into another set of commonly used (and abused) terms, the *real world* and the *virtual world*. While this distinction is in certain respects unavoidable, it can also be deeply misleading. It is misleading because no one and no thing ever exists only in the virtual, only in cyberspace. As suggested above, we are always somewhere in the Real World (even if we are moving through it with mobile smartphones in hand), using physical devices networked to other physical devices, whenever we imaginatively experience ourselves to be in a virtual world. Now, depending on the degree of *immersion* we feel, that sense of otherworldliness may be subtle or very strong. And it

is important to take that illusion of virtuality seriously; it is to some degree a new kind of experience. But it is also not wholly new (whenever we read a novel we also enter a virtual world, just not a digitally delivered one). Part of studying virtual worlds should be to remind users that they are never just in a virtual world, but also always in the real one too. The founders of the widely used file-sharing site Pirate Bay (subject, like Napster before them, to a lawsuit regarding the issue of legal vs. illegal downloading) prefer the term “away from keyboard” life, noting that “the Internet is for real” (Klose 2013). For the purposes of this book, I will mostly use the term *online* to name these spaces, because it is the most commonly used term and is a somewhat more neutral term in that it merely designates connection to the Internet without unduly characterizing the nature of that connection. But when you read the word, please imagine “scare quotes” around it, because the notion of two worlds is ultimately a false one.

To a very large degree, the online world is a reflection of the offline world. But reflections are always distorting, whether it be as simple as showing things in reverse to the huge, deeply weird reflections of funhouse mirrors. The reflecting and refracting medium matters a great deal, but it is essentially the same world whether represented via a digital medium or face to face. If you don’t like what you find on the Web, don’t just blame the online world; blame the offline world out of which it came. There are many things unique to digital cultures; if there were not we wouldn’t need this book. But that uniqueness is not otherworldly, it is this-worldly.

Much of the hype, or *cyberbole* (Woolgar 2003), surrounding digital cultures, especially games and virtual reality simulators, is that they are deeply immersive, engaging us in wholly new and deeper ways. The assumption here is that users/players lose themselves in virtual worlds as never before in human history. Yet from ancient story telling around campfires to novels to movies, virtual reality has always been a part of human experience. Might it be as, or perhaps more, immersive to enact scenes from a story where your own imagination fills in the details, rather than having them digitally simulated? Neuroscience may give us the answer to this question, but the research on the topic of immersion is immensely complex. The term turns out to have no stable meaning, and many different dimensions that are hard to measure (Madijan 2010). This again reminds us that claims of newness or uniqueness regarding digitized experiences need to be approached carefully.

As discussed above, when a technology is newly minted it often seems quite strange. In its early years, the Web was experienced as a very weird, almost miraculous space, or place. But over time (and

in the case of new media the amount of time seems to be growing shorter and shorter), the new becomes ordinary, becomes taken for granted as just part of our world. This is part of what scholars call the *domestication of technology*, the process by which things that initially seem new and wild can quickly become familiar. All of us have had that experience, and at this point in the evolution of ICTs domestication has occurred far and wide. So-called *early adopters*, many of whom seek out truly new things to do with new technologies, give way over time to more and more conventional users who subsume the new into older patterns of interaction. Domestication refers in common parlance to the home, and that is a convenient way to think about this process: it is becoming “at home with” the technology. In this case, domestication included the literal movement of digital devices from schools and offices into the home (into domestic space) partly via smaller and smaller devices, from bulky to smaller desktop computers to laptops and smartphones. The ongoing domestication of technology is also very much a gendered process impacting men and women differently, given that home space has long been stereotyped as feminine. Domestication is also an ongoing historical process, one that is repeated whenever a new group of users encounters a new technology, and whenever a group of existing users encounters a newer technology (as in the move from dumbphones to smartphones, where telephone-like communication was augmented by communication with the Web and other features of the Net).

Scholars of all things digital caution also against thinking of a particular device like the cellphone as one thing that has gone through changes and variations (symbolized by physical transformation from devices the size of a cat to ones that now fit into the palm of your hand). Lisa Gitelman, for example, in her book *Always Already New* (2006), argues that we should not think of the telephone or even the cellphone as one “thing” that has changed over time (in size, shape, and features), but rather as something like an evolving process. Much the same can be said about many other forms of digital technology. They make sense more as processes than as things, or at least as a series of things, not one thing. Specificity in time (history) and place (geography) and social context (culture) all matter greatly in talking about ICTs.

☒ TERMINAL CONFUSION?

Whenever a new field is devised to understand new social phenomena, that field generates new words to help define and clarify those phenomena. The nasty name for these new words is “jargon”; the

more positive word is “terminology.” To the uninitiated, these new terms often seem like unnecessary complications, if not downright gibberish. But to those in the field, they are helpful shorthand and absolutely crucial tools. The field of technology, and with it technology studies, is often criticized for generating particularly inscrutable jargons. Some of this criticism is no doubt deserved (the proliferation of acronyms and neologisms surrounding computer culture is truly baffling). But new terms also offer vitally necessary specificity and clarity. Every field has them; your plumber has a vocabulary every bit as esoteric as your computer technician, but we seldom criticize plumbers for a specialist vocabulary that runs from “adjusting links” to “zero soft” water because we know it helps them get the job done. Just as you would probably allow a plumber the right to call not for that shiny metal thing with a kind of c shape on the end, but rather specify a crescent wrench, I hope you will recognize that the specialist vocabulary introduced in this book is not designed to obscure but to clarify, to create a shorthand language that makes it easier to communicate complicated ideas. While mostly defined as used, fuller definitions of many of these keywords appear in the Glossary. I trust you will come to see most of them as useful tools rather than as attempts to colonize your brain.

One key duo of terms that obviously shapes everything discussed in this book is the Internet, and the World Wide Web. Technically speaking, the Internet is the physical basis that makes most cyberspace possible. It is the *network of linked computers* all over the world over which information, from e-mails to documents to websites, travels around the globe. The World Wide Web, on the other hand, is the most popular Internet interface; it is the system of codes (HTML and its variants) that make the information traveling along the Internet visible and accessible to users. Since the Internet is the more common, popular word used to talk about what is online, much of the time I will use it (and its shorthand, the Net) as a synonym for the World Wide Web (and its shorthand, the Web). There has in recent years been an argument made that the word internet should no longer be capitalized, that a small “i” should be used because we do not capitalize seemingly comparable words like television. This change has not yet been popularly adopted, so I will stick to capitalizing, but this trend itself is another sign of domestication of technology as the Internet, or internet, loses its aura of difference, becoming just another medium alongside others.

Another, hipper kind of domestication can be found in the many tongue-in-cheek variations on Internet and Web that have arisen over

the years, including interwebs, Dub Dub Dub, Webternet, the tubes or intertubes, or, for the truly esoteric, 1n73rw3b (in Leet, a code language used by some digerati), and many more. Regardless of the name you prefer, it is helpful to keep in mind that the Internet is actually the material, physical basis that allows the so-called virtual worlds to appear via the Web and other interfaces.

■ WHAT'S IN A NAME? NEW MEDIA/CYBER/DIGITAL CULTURE/ETC. STUDIES

Ironically, the field that has generated so many new terms to make sense of all this high-tech stuff has yet to agree on a term to name itself. Given that the field draws from the sciences (neuroscience, for example), the social sciences (psychology, anthropology and communications, for example), and the humanities (literary and cultural studies, for example), inability to agree on nomenclature is not surprising. Known variously as new media studies, cyberspace studies or digital culture studies, among others, the field that tries to make sense of recent trends in electronic communication is still debating what label best characterizes the field (Silver 2006). Fortunately, thinking about each of the most common names proposed for this area of study actually can be quite useful in revealing something about some key issues involved in thinking about communication technologies.

One major contender is the name new media studies. This particular name immediately takes us back to the problematic question: "new" compared with what? The quick and easy answer is new compared with "old media" like TV, radio, film, photography and print. But exactly when and how does a medium become new? When exactly does a new technology or a new medium cease to be new? The public version of the Internet is now close to three decades old. It is certainly not new to some people. Yet, new people are constantly being added to the user rolls. Does that make the medium new again? Doesn't the experience of newness change depending upon when one encounters the new? For new to be more than a marketing tool, it is crucial to always ask new compared with what, and new in what sense.

Emphasis on the media (the new devices and platforms) implied in the name can also bias study toward the "techno" side, and away from the "cultural" side of technocultural analysis. A related issue with the term new media is its entanglement with commercialism. Under modern consumer capitalism, "new" is always good, always

better. How many ads use the phrase "new and improved," with the latter word hardly needed? So there is a certain prejudice in the term new media that tends automatically to connote progress, rather than leaving open the question of whether the particular newness in question is for better or worse. And overall, as discussed in Chapter 2, the endless search for newness is having devastating ecological consequences (Slade 2007).

Another way to talk about the newness of new media is to speak of their impact on "old media." The rise of the broadband, broadcast dimension of the Web, for example, has been accompanied by the declining popularity of the old medium of television among young (under 25) users. When young people do access TV programming, they increasingly do so via digital devices. The impact of digital music production and digital downloading on the old media of the CD is well known (from the Napster controversy to rise of services like iTunes), and the old medium of radio has been given a new but different life on the Internet. Likewise, digital technology has taken over the old medium of film in a variety of ways, from the digitization of much Hollywood "filmmaking" to digital cameras used increasingly in independent films to video capabilities on smartphones. How does viewing movies on computers, tablets or phones change the experience? (Some studies of digital remediation compare this with earlier issues like how watching movies on TV differs from seeing them in public theaters.) In each of these cases, old media have undergone remediation into new media, have been reworked through a new medium. They have not disappeared (yet), but have in various ways and in varying degrees been transformed by newer, digitally based media. How different is the experience of watching TV programs on your smartphone from watching them on a television set? Scholars debate how much and in what ways transferring content into a new medium changes the experience, but they agree that the medium matters to the message. So, while the term new can be misleading, and overemphasis on media form over the content can be a problem at times, the name new media studies points to a variety of key questions about (relative) newness, and to what is or is not truly new about cultures reshaped by digital media.

A second term, cyberspace studies, was popular for quite a while to name the field, but fell into some disrepute in the 2010s. On the one hand, the term rightly points to one of the key aspects of (much but not all) new media, the fact that it favors cybernetic systems, that is systems in which non-human devices or processes do things previously only done by humans. Robots are an extreme

example of this; search engines like Google are a more mundane, currently common form. The term raises two main problems. First, it tends to call up images of things beyond our control, of technology running on its own. And second, because cyber as a modifier partly arose from and remains associated with speculative/science fiction (cyberspace, cyberpunk, cyborgs, etc.), the prefix cyber often calls up associations with s/f that suggests futurity and strangeness, or suggests that these processes are part of an inevitable future. But cyber is still a popular prefix and continues to shape how people think about all things digital. And public perceptions or fantasies are themselves an important part of digital culture, part of what is sometimes called the technological imaginary (our imagined relations to technologies, as interwoven with what we actually do with them and through them).

The third common term for the field is digital culture studies. It, too, is both useful and somewhat problematic. Making something digital technically refers to a process by which information (verbal, visual, aural) is turned into a particular kind of mathematical code, the binary code of 0s and 1s. The ability to turn information into digital code is the technological breakthrough that enables computers and computer programs, the Internet, the Web, smartphones, video games, e-readers and most other forms of new media to exist. This is crucial to remember because taking a digital form, as often contrasted with an analog one, does entail certain possibilities and certain limitations. One famous example is the debate about the differing sound quality between digitized music and earlier analog forms like vinyl records. Keen listeners may disagree as to preference, but they agree that there is a difference. The down side of the term digital is that in privileging this code language, we may be engaging in a subtle form of technological determinism as we suggest that this coding process is the essence of what we are studying, rather than the cultural processes *shaped by* but not *determined by* the mathematical coding that underlies various uses of digitized cultural phenomena. In other words, that something is digitized inherently tells us only some things; what is made of those digitized things depends on much more than the fact that 0s and 1s underlie it.

A slightly different approach is to talk about new media/digital/cybercultures is to see them as the essence of an information society (or sometimes networked society or, as in my subtitle, the Internet era) (Castells 2000; Fuchs 2008; Webster 2006). This term makes the broadest claim of all, suggesting that these new digital communication technologies and the cultures they help enable have become so important that they have redefined the entire social world. Now, the

good news is that “society” plays a prominent role in that description, in a way that terms just privileging the technology do not. But the modifier “information” largely erases that benefit. First, when was there ever a society where information was not of central importance? Of course, those who use this term intend to indicate something more than what we traditionally mean by information. They especially mean digitized information, and/or information carried on computer networks like the Internet and mobile phones. But beyond this they mean to suggest that somehow the circulation of information has become *more* important than ever before. The phrase also credits (perhaps over-credits) information technology as a key force enabling the current form of neoliberal globalization. While it is true that the movement of ideas, money, products and labor transnationally would not be possible without the Internet and related communication technologies, there is nothing in the technology, for example, that determined it would be used, under revived “free market” ideologies, to increase economic inequality around the globe.

Those using the term “information society” also suggest that information has become a more central economic resource, a commodity, one that accounts for a greater amount of economic activity than ever before (accompanied by a corresponding decline in the importance of manufacturing). They suggest that with the greater importance of information comes greater social and cultural power for those with access to or control over the flow of information. There is certainly truth in this, and battles over the power of information are clearly central today. But at the same time, it is important to realize that material production, including the production of digital devices themselves, is still very much with us and very much part of societies around the globe. As we will see, to forget that the electronics industry is indeed an *industry* is to obscure, among other things, its environmental impact and its impact on workers. It is therefore probably more apt to talk about the significant growth of the information sector of contemporary societies rather than using the term information society to characterize the current world system overall.

While perhaps a bit frustrating, the fact that each of the most common terms used to describe this emerging field is problematic should not cause despair. Rather it indicates a certain healthy openness. Each term keys us into important aspects of the terrain, as do other variants including Internet studies, networked culture studies, computer-mediated communication studies, Web studies, etc. Each of these terms proves partial, in both the sense of incomplete and

biased, in relation to the overall dynamic experience of our digitizing world. "New media" points us to the forms and devices—the Web, video games, smartphones, virtual reality suits, etc. "Digital" points us to the common, underlying and enabling mathematical coding process that animates all these devices. And "cyber" points us toward the way popular culture *imagines* these emergent communication developments.

In this book, it is the *culture surrounding and embedded in these devices and processes* that will be the main focus. But it is impossible to think clearly about these cultural formations without thinking about the devices, processes and encodings that intertwine with them. There is no way to abstract the cultural content from the new digital cybernetic media that enable them, nor should they be separated from the broader historical forces that create and recreate them. One obvious way history matters in all this is, again, highlighted by use of the word new. Much of the hype around new media emphasizes this new side over the media part. But anthropologists of communication point out that the most common uses of "new" technologies may be to do "old" things. That is to say, new devices may most often just reinforce the same old existing patterns of communication and interaction. One of the most comprehensive studies of the impact of the landline telephone, for example, concluded that during the period of its "newness" in the United States, defined as from 1900 to 1940, "the telephone did not radically alter American ways of life; rather, Americans used it to more vigorously pursue their characteristic ways of life" (Fischer 1992 5). Could this be true of our latest batch of ICTs? Are they far less new than we think? Are they merely reinforcing old ways of being, rather than, as so much of the hype suggests, radically changing our way of life? If the answer were simply Yes, this book would probably not be necessary. So, for the sake of my publishers, among others, let me say that the answer is more complicated than a simple Yes or No can offer.

While the field-without-a-name is full of intense debates, not only over what to call itself, but also over many other more substantive issues, most of the best questions and best answers about the social and cultural impact of digitizing our lives do come from this variously named academic discipline (though journalists and other non-academic analysts have also contributed significantly to our understanding). Knowledge in all academic fields is incomplete and imperfect, and all fields worth being called scholarly are rich in debate. There is a growing amount of very useful research that is

crucial to sort through if we care about what digital cultures mean now and are likely to mean in the future. Knowledge starts with information (facts, basic data) but knowledge is something more; it is making sense of the information. It involves finding the right analytic framework to put data into meaningful and useful patterns that can lead to intelligent action. What, for example, do we make of this fact: when I spoke the word "facts" into my dictation program as I was writing/speaking the previous sentence, the program initially wrote, "FAQs"? What does that tell us? That my laptop is trying to take over writing my book? Probably not, though in the not-so-distant future we will have to deal increasingly with artificial intelligences that blur the line between humans and techno-devices (my dictation program was at least smart enough to "choose" FAQs over FAX as closer in relevance). No, the less paranoid knowledge we could take from this incident is the reminder that this book is inside the very thing it is trying to look at from the outside, that these technologies are very deeply embedded in our everyday lives in ways from which we can only partly distance ourselves, even when we try very hard. Is it possible, for example, that my decision to write this book in relatively short chapters was, unconsciously, in part determined by my knowledge that many observers claim our attention spans have been shortened by spending time in the distracting world of hypertext links and microblogged tweets?

Since each of the names for the field of study upon which this book draws is illuminating, but incomplete and somewhat misleading, as well as for the sake of variety, I will use each of these modifiers—new media, digital, cyber—interchangeably when naming the field of cultural study. At other times, I use the terms with their more precise meanings to indicate devices (new media), the technical form underlying the devices (digital), or the human/non-human control elements (cybernetics) of these devices and processes.

Many topics covered in this book are immensely complex, and we will just be scratching the surface of them. This inevitably means simplifying, but I try to avoid oversimplifying by pointing to complicating factors and suggesting through the companion website where readers can go to dig more deeply into each topic. That there are few definitive answers stems partly from the fact that these new media are evolving rapidly, and that means their meanings are still up for grabs. We the users continue to remake these devices just as quickly as designers and workers make them. Devices, apps, platforms come and go. Some ones I mention in this book will already seem quaintly

historical by the time you read this. But these ephemeral devices and apps represent deeper cultural processes. By drawing from the rich existing scholarship on new(er) media using the range of scientific, social scientific and humanities-based approaches sketched above, it is possible to gain insight into these deeper processes that particular digital devices or programs embody (for a time), processes that continue beyond the passing moment of particular pieces of hardware and software.

2

How is the Digital World Made?

The Dreamers/Workers/ Users Production Cycle

Most of the time for most users, the Internet simply magically appears through a click on a smartphone, tablet, or laptop. Most of the time we don't think about how this magic is made possible, do not think about the complex production process behind that pretty little screen and the Internet that seems to hold all the world's knowledge. Before taking up questions about *what* goes on in digital cultures, it is important to think about *how* digital cultures are possible at all, to look at the history and present of the production process that enables an online world to exist in the first place.

- The Internet's Weird History
- From Dreamers to Reality: Producing Digital Stuff
- Producing through Consuming? Prosumers and Interactive Identity
- Clean Rooms or "Dark Satanic Mills"? Toxic Production, E-Waste and Environmental Justice

THE INTERNET'S WEIRD HISTORY

The technocultural history of the Internet is a fascinating one that offers a rich example of the interplay of conscious design, unpredicted consequences and ongoing human adaptations. But first we might ask, is there really only one Internet that has been in existence since the 1970 or '80s, as most histories tell it? Or is it more accurate to think of a series of Internets, because the nature, scope, uses and meaning of the Internet(s) have changed so much over time? The Internet is more like a process than a thing. At the very least the Internet we know today has evolved through several