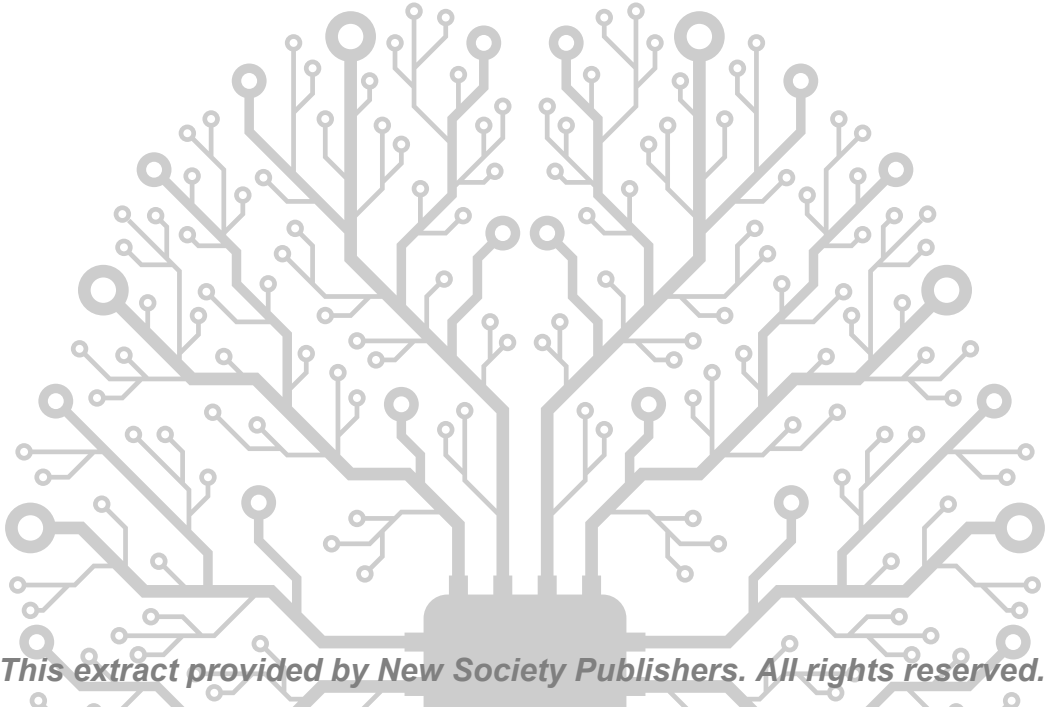
PART 1

How and Why



CHAPTER 1

The Shift

How It All Began—Societal Shifting

Every era has an innovation that changes the face of society: the way we think, the way we act and interact as individuals, as a community, and as a culture. As the innovation is introduced, it tends to be greeted with elation. As the innovation becomes integrated and the first societal shifts become apparent, some start to question the balance of benefit and loss in the equation of change. We are now in such a place with digital media.

For well over 20 years now, cell phones, PCs, and the internet have been completely integrated in global culture, i-culture: welcomed by most, resisted by some, the impact apparent for all. There is great change for the better, but now, a few decades into the assimilation, there is also arguably evidence of an equally negative impact. The darker side of the digital era has emerged.

Be it due to naïveté or denial, feelings of powerlessness or complacency in the face of industry, the negative influences of digital media, i-media, are expanding. First blindly accepted by most—educators, business, parents, and partners, now many of us are now questioning what has gone terribly wrong. We are also wondering how it got this way…and so quickly. This book will explore such changes and hopefully provide food for thought on what we should embrace and accept, what we should unequivocally reject, and what aspects of the digital era we should now be debating.

We are now in a period of question, and I trust reflection, and also debate. The debate, unfortunately, often gets sidetracked into generational arguments—a generational divide wherein the older complain

of the younger becoming progressively stupid, rude, and isolating with screen-based technology or i-tech at the expense of interpersonal or face-to-face relationships. The young, like any generation before, equally find their pre–i-tech elders ignorant of advancement, judgmental, invasive, and abrasive in their views, feeling they should stop pontificating and get with the times. Arguably, now there is also a third generation, one sandwiched in between those that knew the world fully functional pre–i-tech and those who know no other. This generation has now reached maturity and not only thinks differently, but functions differently. Hence potentially three very different world views and perspectives contemplating, and arguing too, on the role technologies should have in our lives.

But by getting trapped in our differences we are all missing the point. By sticking staunchly to our positions, we risk missing the fine print: the subtle and not-so-subtle changes in human behavior and underlying brain function that are unequivocally changing all that we are, and the world that we live in. Here we all owe it to ourselves, and the generations that will follow, to open our eyes, look up, and examine change in action, to arm ourselves with information on who we are, and what we wish to become in this new, and yes, wonderful, i-mediated world.

…And now the dark side.

First Hints of a Problem

In the 1990s and early 2000s, a select group of scholars and healthcare practitioners began to systematically note the emergence of a new set of issues seemingly associated with excessive usage and otherwise unhealthy applications of i-technologies, or what we now call screen-based technologies. Not too much later the effects were confirmed, notably in the realms of sexuality, socialization, education, and failure to launch. For children, adolescents, and youth, excessive usage of digital media is now highly associated with learning disabilities, emotional dysregulation, as well as conduct or behavioral disorders. For adults, it is highly correlated with anxiety, depression, sexual dysfunction and sexual deviation, insomnia, social isolation, disaffected pair bonding, marital conflict, and compromised work performance. In clinical

practice, we are also seeing some rather frightening connections with thwarted emotional and cognitive development in the very young. Attachment is affected at its core, and new forms of anxiety are emerging. There are also rather recent, and as of yet unnamed, personality transformations and disorders directly bound to screen usage; conditions entirely unknown in the pre–i-tech era.

Opening Our Eyes

When I first started looking into this in depth the early 2000s, I wanted to think we were wiser as a global culture, having learned from past mistakes. That we were beyond blindly continuing on paths of innovation without looking up to examine the potential toll. But it seems the push from industry and our mesmerization with so-called advancement is just too strong. Unlike excessive consumption or abuse of other substances such as alcohol, food, or drugs, for many, the effects of excessive usage of i-tech is still rarely perceived as contributing to, never mind as causing, a specific ailment, condition, or conflict.

All this said, i-tech is here to stay and has unquestionably advanced our world. It is not negative by nature. This is not the claim that this book will make; not by far. But what the internet and all digital media give, they can also take away. How we use it, interact with it, and depend on it vis-à-vis our "real" world and real relationships within are key.

The questions we now need to start asking ourselves are not what the technologies are positively contributing, as these contributions are rather evident, but rather what the technologies are replacing or taking away: an older technology, a behavior, a skill, a relationship, our compassion, values, our personalities, intelligence? It is time to widen our focus to the broader effects of i-technology in all the branches of our day-to-day lives. It is time to ask ourselves what i-media is truly facilitating. It is also time to look at the politics.

In This Book

This book is written from a therapist's perspective. As a practicing clinician, I have based *i-Minds 2.0* upon what has passed my clinical floor: how i-media is affecting children, partners, family, learning. The list is long.

Weaving through larger societal shifts, including history, research and hard data, developmental theory, literature on brain function and mental illness, professional reflections, popular literature, popular media, and observations from clinical practice, I will illustrate how the medium is influencing our thinking and our processing—our functioning as a whole.

I will look at microcultures, such as high school and bullying, parenting circles, and dating, as well as shifts in macroculture affecting local and world politics, work, advertising, sexuality, mental health, learning, play, creative process, attachment, and development itself. I will explore the increase in apathy and general hyperarousal in the masses associated with excessive applications of i-tech. I will also explore the extreme: a new and growing phenomenon threatening to become the addiction of the 21st century, originally referred to as internet addiction (IA), digital addiction, i-addiction, and now screen addiction.

This is probably a good time to introduce terminology. Terms in this field change as quickly as a generation of smartphones if not faster. No doubt by the time this book reaches press there may be another. But so far they have all meant the same thing: *digital technology*, *i-technology*, *i-tech*, *i-media*, *screen tech*, *screen-based tech*, and now *wireless tech*. The list goes on. All these terms are interchangeable and reference any interactive technology including all that is wireless and no longer analogue. And that is the second piece. Apple does not own nor did it invent the "i." Depending on context and who you ask, the "i" stands for either interactive or internet (and now Apple products). In IA (internet addiction) the "I" stood for internet. In i-tech "i" stood for interactive. Not particularly relevant—but kind of interesting from a historical point of view. A little later I will introduce the difference between e-screens and i-screens. But that is best done in context.

For now, the i-phenomenon will be explored in tandem from three distinct angles. First, I will explore the big picture of what is affecting us all, regardless of age, gender, culture, or creed. I will also present what appears to be generation specific—not exclusively by chronological age itself, but rather by age as it relates to the rate of the assimilation of the technologies. Lastly, I will discuss the effects of digital media in terms

of level of immersion: the way, or more specifically the "why" and the "how," some of us are using the medium to the inclusion or exclusion of other activities or relationships.

For those of you who are more scientifically or research oriented, supplemental details are presented in sections labeled *Scientific Corner*. For those of you who are not, these sections can be skipped without losing the general flow. Definitions of some potentially unfamiliar terms and key points will also be included within the text. There are also sections called *Did You Know*? These sections present interesting information that complement the main text but are not part of the larger flow of content.

Interspersed throughout, I will sprinkle advice: solutions, options, and actions one can choose to follow if situations and vignettes seem all too familiar. My goal is to educate, to ensure that i-tech remains a solid complement to all that we are, integrated with but not overriding the human element in cognition and development, work, industry, education, socialization, and play: to life!

Life Before i-Tech and Great Beginnings

Subtle Shifts in Behavior

But first, how did this all start?

The World Wide Web, as we first called it, was a scientific innovation that, when it crossed over into civilian life, was embraced as changing the world only for the better. The foundations were military (a cold war experiment) soon taken into US universities and eventually launched by CERN in Switzerland.[1]

Indeed, in its beginnings, it was most positive. First gaining a foothold in academic communities in the early 1990s, the internet was the ideal tool for research and learning.[2] Soon, no more restrictions on library hours, no more trudging across campus only to find someone else had reserved the book or article you needed. It was also the ideal form of international communication. No more fallen landlines, outrageous telephone bills, and one could see, never mind merely talk to, colleagues, friends, and family while travelling or studying away from home. It completely transformed a now rather quickly antiquated form of life (for those over 50).

The Web, as promptly nicknamed, was a most novel and efficient form of communication; it was not location-specific, and was accessible for free with any PC and phone line—yes those old white and then blue cables attached to walls. In the 1990s many of us had, and used, university-funded e-mail and later messaging, as the most efficient form of communication long before we had, or could afford, cell phones.

It soon became apparent, however, that the internet was also changing "local" behavior. In my own graduate school experience, friends started sending diatribes of thought via e-mail. Discussions we would usually have gathered for and debated over a coffee or a beer were now sequential monologues sent via computer. Although initially most entertaining, some of us, including myself, noted the reduction of face-to-face social interaction and felt something was amiss. Although I did not precisely see it for what it was at the time, I was remotely aware of the development of a bit of a void. I, for one, was missing the reward or pleasure of the face-to-face social engagement.

Thereafter, some of us became quite engrossed in these great e-mail dialogues, others less—still choosing to gather weekly in person. A small and, at the time, barely notable division of social behaviors, and hence social circles, started within our tiny university network.

Viewed in retrospect, my experience as a master's student in the mid-1990s was not unique. Very early on, anecdotal reports started to emerge that indeed the internet was changing social behavior. A rather amusing incident in circulation was how a group of international students was observed in a dorm, laughing and engaging, each with their own PC, rather than socializing with each other. At the time, we found this behavior peculiar and, hence, the story amusing. Why would you choose to play with a computer or communicate with others abroad, when you had friends, company, sitting right next to you? The end of the story was, for its time, a seemingly perfect double twist. Indeed these students were socializing with each other. They were not engaging at all with friends from abroad, but rather with each other in the same room via computer interface.

At the time, the behavior raised some eyebrows, but was also simply attributed to the harmless pursuit of novelty of the new medium. What we did not see, however, was that this was a great foreshadowing of

things to come, something none of us, at the time, would ever have dreamed of. Now, merely one generation later, this behavior is not unusual at all: digital interface has become the primary mode of communication for all youth and many if not most adults under 60.

From Subtle to Extreme— First Hints of Problematic Usage

Beyond amusement, very early on, it was noted that high internet usage could also have quite serious detrimental effects.[3] Parallel to my own graduate school observation of social division, for some, internet usage was leading to social avoidance and isolation as opposed to broader socialization networks, albeit done under the precise illusion of communication and social interaction.

Similarly, in academia, the ideal tool for research and scholarship was negatively affecting academic performance and class attendance. Students were skipping class and handing in assignments late, having stayed up too late playing or "researching" on the Web. For a select group, time that was previously dedicated to work, school, chores, or social interaction with family, friends, and peers was now dedicated to internet usage—to the neglect of other activities and interactions.

The medium was showing potential to have exactly the opposite of its intended effect: reducing, as opposed to broadening, the scope of socialization, work, scholastic and general life efficiency. For some academics, questions started to arise as to whether this form of excessive internet usage had the properties of addiction.[4,5,6,7,8] The answer now, over 25 years later, is clearly "yes." As with all forms of addiction, some forms of excess are decidedly black and white. But what about the proverbial shades of gray, or should I say zebra? How, and when, do we mark a behavior crossing from positive to negative, from neutral to destructive? In contrast, when should we adapt? When is it purely contextual? When is change itself a mere sign of change of the times?

Raising Our Awareness of Impact

A good way to examine present influence is to take lessons from the past. Picture the arrival, or more importantly, the assimilation, of any of the great innovations of the last century (e.g., the telephone, television,

car, or airplane). They all have brought great benefit and some questionable shifts. The car is an ideal example; the advantages need not be mentioned as they are vast. The negatives, such as the ecological footprint and contribution to lack of fitness and obesity, are equally known. But what of the more subtle and compounding influences that contribute to the positive and negative shift of an entire culture as a whole? For example, few of us consider the car's central influence on massive amendments in our management of time and our expectations of travel distance.

An apt illustration of the car's central role in mass societal change is the development of suburbia. In the mid-20th century, the automobile was promoted as the means to an affordable family home for all, a pleasant drive away from the bustling city. This new personal form of transportation was the turnkey to the North American dream: poetic images of quiet neighborhoods, children playing in the streets, fresh laundry flapping in the clean air in massive backyards.

Within less than 30 years, however, this dream for many slowly shifted into a nightmare. It slowly metamorphosed into a daily 1.5-hour, two-way commute—3 hours per day, 15 hours every week—time sacrificed to the method, the transportation that initially made it, the dream, possible.

This theft of time is now accepted by many of us as standard. We accept the method that now takes us away from family, from friends: leaving us with less personal, or leisure, time. The driving of greater and greater distances to take children to school, to soccer practice, to "play dates," is customary. Beyond the invasion of screen-based technology, part of the reason kids don't play spontaneously in groups anymore is peer groups simply live too far apart.

The wheels spin further: the loss of hours per day to transportation has led to the perceived need to purchase and consume fast food, frozen dinners, and canned soups (all sorts of prepared and processed foods) as no one any longer has the time, or energy, to cook, let alone share a meal together. The perceived need now for two cars per nuclear family has resulted in accumulated debt, financial strain, and more work hours needed to pay for it all. We are far, far away from a cruise into work and a leisurely Sunday afternoon drive.

Plugging In

Similarly, the digital era crept into our lives. The PC, then laptop, e-mail, and the personal cell phone were all welcomed as godsends: tools that would change the global workplace in terms of logistic limitations and communicative efficiency. They would liberate us from our desks and eliminate distance with virtual time.

All this did happen, but what also happened, identical to the automobile, is that digital media's blessing also became its curse. The universal place-time accessibility we initially embraced thereafter systematically invaded all aspects of our lives. We are now always "on call": employers, employees, politicians, teachers, parents, spouses, children, lovers, all of us in (all) our multiple roles. Many of us now do not, or cannot, liberate ourselves from "accessibility" and the buzz of the world.

But what has this done to our brains?

The short answer is that our brains have sped up, but not in a good, way; in an overstimulated way. Our neurophysiological reaction, or functional adaptation, to the age of digital media is a higher state of arousal and the nemesis that comes with. What nemesis? Quite simply, higher states of arousal come with decreased abilities to self-quiet. Elevated states of arousal are further coupled with a reduced ability to self-stimulate and self-entertain. This includes reduced abilities to observe, integrate information, and to be creative. In essence, we have less ability to sustain focus on the normal, the baseline, including states of observation, contemplation, and transitions from which ideas spark—what many under the age of 20 now consider a void, proclaiming boredom.

We now feel agitated when not externally stimulated; we need to be occupied, entertained. We also have greater troubles quieting, including reaching states of repose, satisfaction, and restorative sleep.

The implications of this are vast. On a biological as well as a cultural level, such brain state changes affect learning, socialization, recreation, partnering, parenting, and creativity—in essence all factors that make a society and a culture. The neurophysiological processes that regulate mood and behavior are deregulating. What we are left with is massive behavioral-biological and, hence, cultural shifting. Placing this in the map of disorders or pathology, we now see that excessive usage of digital media has a concrete relationship to attention deficit hyperactivity

disorder (ADHD), autism spectrum disorders, and almost all forms of mood deregulation including anxiety, depression, and anger management, other forms of addiction, insomnia, all behaviors on the obsessive-compulsive spectrum and now even personality distortion and disorders.

Outside of pathology, we are all revving considerably higher, and accordingly, need higher and higher levels of stimulation not only to be interested in life but to engage with it.

CHAPTER 2

Technological Integration Versus Technological Interference

Digital Immigrants—How Do We Know If We Have a Problem?

What is a digital immigrant?

There are a few generations of the digital age. As will be discussed in chapters following, there are also accordingly different phases of amalgamation and accompanying neurophysiological adaptation. For now, however, I will speak of what Prensky[1] and others refer to as digital immigrants versus digital natives. Digital immigrants are my generation and older (a new minted 50 BTW). We are termed "immigrants" as we were not born into digital culture: we moved into it. My generation grew up with TV and landlines (telephones attached to walls). If you were lucky as a teenager, you might have had a jack in your bedroom allowing for some privacy in conversation; otherwise you spoke to all, under the eyes of all, in the kitchen or living room. Until we were well into our early twenties cell phones were from the land of our childhood science fiction (e.g., "Star Trek" and "Dr. Who"). In our mid-twenties the devices were still out of reach, belonging only to the outrageously wealthy or the foolishly in debt. Similarly, portable PCs were the domain of the funded or the fortunate. Most of us still had big clunkers if we owned personal computers at all. Within only a few years though (from 1995 to 2000) the new portable interactive technologies were available to all and at a price point that worked for most.

Perhaps of most importance in my generation and the ones preceding is how each of us chose to assimilate. True to how immigrants behave, some of us leapt into the new era while others stood in trepidation

on the sidelines, observing. Some of us even staunchly stood, resistant, wanting to preserve our former way of life and our culture of origin—choosing to leave the cultural change to occur in the second, third or otherwise native, generations. Resistance was considerably more common in those born pre-1960s than those between 1960 and 1975. This, I believe, was purely for developmental and social reasons rather than attitudinal. Regardless, more of us, than not, were eager to discover, and eager to partake, in the great shift.

Not that we realized it at the time, but the changes were indeed massive. With equally massive impact. This really was the beginning of a revolution rather than an evolution. The first digital immigrants of the 1990s were also in a very unique place. By being part of the shift, we were by our very existence witnessing and observing change in action. And change in ourselves! By nature of both our chronological age at the time (being twentysomethings), and current historical age (pre-millennial), a distinct advantage we (the early digital immigrants) have is our perspective: We have all been direct witness to great changes in both ourselves and the generation(s) that came after us.

At the onset of the i-tech phenomenon, most of us first noted surface changes. For example, what we perceived as an emergent shallowness of information, a subtle lack of depth and length of conversation, of attention: staccato of sorts, as opposed to a melody in personal interaction. But there was much more to come. Subtle changes in behavior soon conglomerated as we progressively focused less on each other and more on our devices.

Measuring Change—i-Tools of My Times

I feel extremely blessed to have been working in a branch of applied psychology (*electroencephalography and neurotherapy, a branch of psychology involving brain mapping and its treatment modality*) during this time of great transition. Working primarily with children and families, I have been able to observe firsthand not only the changes in our behaviors but also the changes in our brains, our neurophysiology and the psychological complaints associated with the assimilation of i-tech. From this vantage point, I can confidently speak of three generations or phases of neurological and associated behavioral change.[2] These I now

call pre, concurrent, and post i-tech. These changes clearly relate to the broadness of integration and the depth of immersion of the individual in the macro- and microculture of the technologies.

One thing that is now clearly obvious is that i-technologies affect each of us differently. For many of us, i-tech is a wonderful tool facilitating all that life has to offer. For others, however, i-tech can negatively affect work, relationships, our mental health, and generally thwart our well-being as well as that of those around us. The way digital technologies affect us indeed can vary immensely, as can the reasons why. Stripped down, everything is of influence: our age, gender, ethnicity, sexual orientation and identification, occupation, family dynamics, personality, state of mental health and happiness…and our biology. It is potentially an endless list.

All that said, for all ages and generations, determining if our usage is healthy or unhealthy boils down to two simple questions: First, to what extent are we immersed in digital technologies and why? Second, is our usage integrated or interfering? For all of us problems stem from why and how (and how long) we use the medium, not if we do or don't use it. For the very young, how early, is also of critical relevance.

As will be reviewed in much detail later, modalities and measurement systems now exist that can assist in determining if the use of digital media has a potential to be problematic. For many of us, however, warning signs emerge long, long before a problem is defined. On the slippery slope from unhealthy usage to full blown i-tech addiction, hints of depression (e.g., negativity, apathy, and withdrawing) or anxiety (edginess, sleeplessness, and moodiness) are signs of which all of us should be leery. True to most budding addictions though, the cascading pre-addict is frequently in a heavy state of denial. Untrue of other addictions, however, in internet or screen addiction, family, employers, and community tend be significantly less aware. Many of us are also personally or culturally further unwittingly enabling the problematic usage.

Generation One—What i-Problem?

There tend to be two presentations of problematic usage profiles. In the first, an individual's excessive use is overt but not identified as central

or contributing to a problem (*referred to as denial and naïve presentation*) and, of course, there is covert (*hidden*) use.

Between the first and second edition of this book, however, the notion of covert use has changed substantially and perhaps now even become irrelevant. Covert use, used to describe sneaking patterns such as children smuggling their phones to bed and smsing/texting or gaming all night. For adults it would be staying up late pretending to work but rather gaming, gambling, or watching porn. But now most of these activities are done directly under parents' and partner's noses. Hence, if we know someone is intentionally taking devices out of view, using them, or playing on them at inappropriate times or hours, can we classify the behavior as covert,…or just accepted,…ignored?

Regardless of definitions, very rarely is usage itself overtly identified as "the problem." Case in point, in the clinics where I have practiced over the last 20 years, until very, very recently, excessive use of i-tech was not reported at intake for either children or adults. Individuals presented for another concern such as poor scholastic performance, suspicion of ADHD, anxiety, depression, conduct disorder, insomnia, bullying or social isolation, marital conflict, etc. Excessive screen usage was just not on the radar.

Until recently these clients were a bit of an enigma. They did not respond to therapy as did others. Some would report no changes or very slight changes despite weeks of intervention. Others would report dramatic changes and subsequently regress completely. And then, there was inevitably an epiphany wherein it became apparent that excessive use of digital media had a compounding, if not central, role in symptoms. Excessive usage was key in the development or maintenance of the primary ailment or issue for which the individual or their family initially sought psychological services. But why did no one see this?

One explanation is that, unlike many other problematic behaviors or addictions, inappropriate or unhealthy usage of digital media can easily fly under the radar. As was noted, at the very beginning of the phenomenon, excessive and unhealthy applications were easily masked by legitimate work or scholastic pursuits (e.g., research) as well as otherwise harmless social behavior (e.g., Facebooking, texting, and tweeting). Today the issue is grossly confounded as usage is simply pro-

forma. We don't bat an eye at someone systematically checking their phone. Hence it is increasingly difficult to postulate whether one's usage or behavior vis-à-vis i-technology is excessive or otherwise unhealthy. Periodically checking in with the wife, the kids, or the office is now standard. That said, in the beginning, a key sociological factor contributing to the early spread of the unhealthy or negative aspect of the phenomenon was the value much of modern society places on sacrifice for work, or career martyrdom.

A Tale of Two Men

Take for example two men sharing stories at the office coffee machine. The first man, let's call him Jeff, laments how he stayed extremely late in an attempt to finish an important project. Only when absolutely exhausted did he head home. Having no time to spare to eat, he grabbed a burger at a drive-through. Once home, he said a quick "hello" to his wife and daughter before secluding himself in the den and resuming the project. Finally, project still unfinished, he took himself exhausted to bed at 3 a.m. The following day he laments (and boasts) to his office colleagues how it is only dedication that got him up on time to get to work. He hopes he can finish by the deadline at noon.

The second man, let's say Steve, shares how he felt he did a good enough job yesterday and was quite comfortable leaving the project at 5 p.m. Now, he is fit to resume. Being well-rested and in a good mood, Steve believes with a few uninterrupted hours he will surely finish by mid-morning. Steve tells of how he had a mostly pleasant evening at home with his family, cooking and sharing a lovely meal. He had a bit of a homework struggle with his daughter that blew out of proportion, but hey, that's kids and to be expected from time to time. He then took some personal time on the computer, searching the entertainment listings, stocks, and daily news, then went to bed, including lovemaking with his wife (a detail perhaps not shared with colleagues).

Ask yourself which man will get the social reward (empathy, support, or praise) for "dedication" to his work. Also, ask yourself which man was most likely distracting himself from his work, or entertaining himself otherwise, online at work as well as at home. Chances are that Jeff was systematically entertaining himself, or distracting himself,

with other online activities under the guise of work at his computer. This secondary use, not the complexity of project itself, was the cause of being behind on the project—and everyone (including him) "fell for it."

Turning Bad

The best way to establish if an individual has a problem is to determine whether usage is negatively interfering with work, school, or relationships. In the above example, Steve's usage would be clearly integrated: positive or neutral. His use of digital technologies did not interfere with his two primary relationships (his daughter and wife), nor did it interfere with his work. He was available for family cohesiveness as well as chores (family dinner and cleanup), parental duty (homework and behavioral struggle with daughter), and romance/intimacy within his partnership. He was also on schedule with his project at work. He used technology for personal time as well as perhaps for future social time (searching entertainment listings).

Jeff, on the other hand, was behind schedule at work, sacrificed his two primary relationships, including his parental duty, as well as his own health (fast food). It is highly likely that there will be consequences in his primary relationships (e.g., his wife becoming resentful of his absence and her double parental duty, and his daughter feeling abandoned and/or alienated from her father). Jeff's "work" was undoubtedly a cover for a multitude of other online activities. If his pattern is systematically repeated, there will be consequences at his work as well as compromised family dynamics, including marital strife and greater potential for future behavioral issues with his daughter.

Change of the Times

This story of Jeff and Steve tends to be one of digital immigrants, where one individual has clearly fallen prey to the medium while the other has not. Steve's usage is healthy, and integrated, while Jeff's is at best avoidant and interfering. Now, in the fourth decade of amalgamation, we also have some understanding of "why."

The distractions, in the early days of the internet, were disproportionately to pornography, cyber relationships (including cybersex)

and social interactive games (e.g., Second Life). The common theme between internet activities were also usually personal and otherwise rather "normal." Personalized and depersonalized sexual pursuits and real and fantasy relationship building are both very standard and hence indeed normal human pursuits that had found a new medium for expression.

In sum, people were being drawn in by otherwise natural human drives. If said actions did not conflict with the values of preexisting, or concurrent relationships, they were arguably harmless in small quantities. The issue, however, as demonstrated in the story of Jeff versus Steve is that they often did; interfere that is. Online pursuits could easily bloom into a double-edged sword harming the individual, their work, and their family too.

Psychosocial Instability and Poor Assimilation of Digital Immigrants

From a psychosocial perspective, it is highly likely that Steve was a well-adjusted and otherwise content individual, hence naturally merging or integrating the new technologies into his work and personal life and taking advantage of the advancement and the convenience of the medium. Jeff, on the other hand, was most likely experiencing some sort of psychological or social difficulty, for example, a mild depression or budding anxiety, perhaps an intimacy issue, or another subclinical pathology (*a mental disorder that is not quite strong enough yet to seek medical or psychiatric attention*). These subclinical problems were central factors in the development of problematic applications of the technologies,[3] as was what an individual chose to do next.

The second factor that ensures the development of a problem is to whom, or rather to "what," the individual turns to next. In the case of problematic usage of i-technologies, instead of seeking professional help, or otherwise communicating mental, physical, or emotional unrest to family or friends, individuals seek some sort of solace, or shelter, in escaping to i-media. And here is where a problem not only blossoms, but starts to grow roots. In what we now know is the catch of the medium, different from many other distracting activities or avoidance

strategies, escaping to i-tech will exacerbate, rather than solve (or soothe), an individual's original problem.

Observations of the Digital Immigrants

Observing what can happen within our own generation(s) is one thing. Observing what comes with the next can be quite another…

Digital Natives: How Can We Tell Normal Change from What Is Problematic?

Anyone over 40 who rides public transportation (or heck, even walks down the street or looks at their kids or grandkids in the back seat of their car) is observing a rather new human behavior. Just as foreshadowed by the story of the international students in Chapter 1, most teens and youth don't appear to talk directly to, or with, each other anymore. Communication appears completely mediated by technology. Youth share ear buds, send each other messages, Snapchat, laugh over and share content looked up, sent, and received. But they rarely converse directly without some form of i-device or i-assistance. (The behavior arguably is further no longer exclusive to youth—and has not been for a while.)

Is this due to novelty? Is it just plain fun? Does it serve an explicit purpose such as keeping those not in the group on a bus or subway line in the social loop? Or were the children who started this trend, like any generation before, just doing things a little differently than their parents? The larger question or concern of course is whether this is first evidence of an innocuous sociological shift, or are these the first explicit signs of generations, and now populations, who are no longer capable of communicating with each other without a digital mediator?

Prensky, and others, speak of preferred methods of socialization (and learning) in digital natives. I would like to potentially challenge the semantics of this: asking how we differentiate a preference from an emergent dependence? Is this "new" behavior a sign of integration and expansion of communication style, or is the use of technological interface interfering with the learning of social bridging in an otherwise typically rather awkward stage of adolescence? In sum, is technology interfering with healthy social development in youth?

Integration Versus Interference: Defining Problematic

Before we further explore what makes consumption of digital media problematic, it might first be helpful to define non-problematic. Non-problematic usage is true integration. The technology fits in, being integral to modern life, without overriding, or eclipsing, the development, or maintenance, of other healthy behaviors or relationships. Back to the story of Steve and Jeff; if Steve pulled out an iPhone at dinner to confirm an unfamiliar term his daughter learned in science class, it would be appropriate. He is using digital technology as a tool to facilitate comprehension or communication. In contrast, if Jeff interrupted his daughter, not letting her try to explain the term, choosing instead to look it up on his own, it would not. In doing this second action, Jeff would override his daughter's voice, and their relationship, for the instrument, and the technology—again integration versus interference. Interference has many other subtle compounding effects. Jeff's choice of action, for example, also risks compromising both the father-daughter relationship and his daughter's learning. It further compromises the development of patience and attentiveness in the listening–being-heard dynamic between father and daughter, as well as his daughter's learning to communicate efficaciously in new or unfamiliar (knowledge) territory, in this case, in language or terminology newly learned in science class.

Integration, or progress, is when a technology, due to superior efficiency, replaces other methods, or expands a desired trait. *Interference* is when a technology overrides a desirable trait or eclipses a developmental phase.

Back to one of i-tech's primary applications, communication: using i-tech devices while on the move, or over distances, can be a most positive application that keeps us connected and has the bonus of facilitating daily life. In the case of the above example of adolescents on public transport, if interacting through digital media is one method or communication tool of many, it is entirely innocuous, and those of us resisting had indeed better get with the times. However, if it replaces or eliminates eye-to-eye communication, or overrides the development of states and traits including observation, patience, and developing the ability to be comfortable in silence, we should be cautious.

Lastly, if youth can't do without, meaning they/you/we can't communicate, become nervous or agitated, in addition to bored, without our digital devices, this is a warning of developmental, if not pathological, change. Unfortunately, this appears, for many, to be where we are going; if not already at.

Cautions

When we are critiquing the dimensions of digital media and their influence on human behavior, it is key that a new technology not be blamed for, or confused with, personality traits, couple or family dynamics, or developmental stages that would exist regardless. For a couple with communication problems, for example, the reading of, or rather the hiding behind, a newspaper over breakfast in the 1950s, or the television in the 1970s, would be equally problematic to i-tech or screen-based technology usage today. The wall is present irrespective of the technology. Equally, a teenager does not need a smartphone, YouTube, or a gaming device to ignore or disrespect a parent. Parents are graced with this developmental stage regardless of digital media.

Three Types of Transformation and When to Start Questioning

Apart from the larger concerns of technologies interfering with natural phases of social or psychological development, we should be wary of three forms of psychosocial transformation.

1. In my clinical experience, the first form of problematic, or negative, application of digital media involves the medium *facilitating accentuation or acceleration of a negative or previously neutral behavior*. An example of acceleration of the negative in adolescence would be when a small high school clique's bullying becomes a massive attack of cyberbullying crossing social groups, schools, and even neighborhoods. An example of transformation of a relatively neutral to a negative behavior is when normal teenage sexual curiosity (e.g., watching some porn online) evolves into sexual deviance (e.g., becoming a voyeur). In both cases, the behaviors (bullying and sexual curiosity) already exist, but digital media functions as the tool of

negative magnification or negative transformation. *The technology is no longer a neutral tool.*

2. The second is the *altering of a natural social behavior, or natural drive, to an unnatural dimension*, for example, when multi-player internet gaming completely replaces person-to-person socialization (or real-life relationships). Equally of concern is when the viewing of internet pornography, or participating in cybersex, replaces the interest or exploration of person-to-person sexual interaction or real-life touch. *The medium replaces physical human relationships.*
3. The third is the *acceleration of a behavior to the realm of obsessive-compulsiveness*, for example, a health concern developing into chronic cyberchondria, or an interest in online romantic exploration developing into compulsive internet dating. Here, usage of digital media becomes negative, or problematic, *when a person continues with compulsive searching for information long after the purpose of the original quest has been fulfilled.*

These three classifications are not exclusive or static behaviors or categories; they also *evolve, change, compound, and accelerate*. In summary, a loose yet rather accurate measure of when usage of digital media becomes problematic is (1) when one can't do without, (2) when one can't stop, (3) when one chooses an internet or i-tech activity consistently over all others, and finally, (4) when there is some form of dismissed, or ignored, repercussion or consequence, interpersonally, scholastically, or professionally. In other words, quite simply, when the usage starts to have the properties of addiction.

Which brings us to a fourth point: Obsessive use, period.