

# The Cyber Effect

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## PROLOGUE

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### When Humans and Technology Collide

I am sitting on a hard, cold bench. My back is against a concrete wall in a police briefing room somewhere in South Los Angeles—in a neighborhood known for gangs, crime, poverty, urban decay, and, twenty years ago, brutal race riots. It is 4:45 in the morning. I haven't eaten anything for hours. Not a wise move. My stomach is churning, a combination of hunger, jet lag, and apprehension.

LAPD lieutenant Andrea Grossman begins the police briefing—and explains how, in an hour or so, a special task force will be arresting the biggest human trafficker in the United States and one of California's "Most Wanted." About forty law-enforcement officers will be involved in the operation, a team of experienced professionals pulled from the FBI, Homeland Security, Internet Crimes Against Children (ICAC), the California State Police, and the LAPD. And then there's me, the one person at the briefing without a gun. Only sworn officers are allowed to carry them.

Back in Ireland, where I'm from, it is rainy. The spring drags on, gray and wet. I think about my cozy office in Dublin, my library, my desktop computer, and my quiet academic life. Except my life is not so quiet lately. Over the past decade, while establishing myself as a forensic cyberpsychologist, I have traveled the world to meet with other ex-

perts in my field, conducted research, worked with law enforcement, attended conferences, and given hundreds of talks, seminars, workshops, and presentations. The field of cyberpsychology is new and still emerging, and each year it draws more interest. The sense of urgency is escalating. I think most of us who work on the front lines can feel it, along with a profound sense of loss of control. Our lives are changing, and human behavior is evolving. As a cyberbehavioral scientist, I believe this is because people behave differently when they are interacting with technology than they do in the face-to-face real world.

Some changes have occurred so quickly that it has become difficult to tell the difference between passing trends, still evolving behavior, and something that's already become an acceptable social norm. In this book, to make things simpler, I will be referring to face-to-face reality as "real life" or the "real world" to set it apart from cyberspace, although I am fully aware that what happens there can be as real as anything. New norms created online can migrate to real life. So what happens in the virtual world affects the real world, and vice versa.

Whenever I am asked to talk about my work, I start off with the formal definition. Cyberpsychology is "the study of the impact of emerging technology on human behavior." It's not just a case of being online or offline; *cyber* refers to anything digital, anything tech—from Bluetooth to driverless cars. That means I study human interactions with technology and digital media, mobile and networked devices, gaming, virtual reality, artificial intelligence (A.I.), intelligence amplification (I.A.)—anything from cellphones to cyborgs. But mostly I concentrate on Internet psychology. If something qualifies as "technology" and has the potential to impact or change human behavior, I want to look at how—and consider why.

Time is not on my side. My work is always in a race with technology. This presents a major challenge to how academics normally study a phenomenon. As scientists, how can we possibly keep pace with the tech changes we are seeing in our lives, in our behavior, and in our society? A good longitudinal study, which looks at human behavior over time and allows a researcher to make conclusive scientific statements, can take anywhere from a couple of years to a few decades. That's several lifetimes in tech-terms. And given what I've seen already, particu-

larly the new norms that are rapidly being created due to an accelerated form of socialization that I call *cyber-socialization*, I don't think we should sit around waiting for answers.

The good news: Some aspects of Internet psychology have been studied since the 1990s and are well known and documented. The effect of anonymity online—or perceived anonymity—is one example. It's the modern-day equivalent of that superhero power invisibility. The subject of some fascinating studies across many disciplines, anonymity has an impact that cannot be underestimated. It also fuels *online disinhibition*, another important contributor to other effects. I have been involved in a dozen different research silos, and have studied everything from organized cybercrime to cyberchondria, health-anxiety facilitated and amplified by doing online medical searches, and the one thing I have observed over and over again is that human behavior is often amplified and accelerated online by what I believe to be an almost predictable mathematical multiplier, the *cyber effect*, the  $E = mc^2$  of this century.

Altruism, for example, is amplified online—which means that people can be more generous and giving in cyberspace than they are face-to-face. We see this phenomenon in the extraordinary growth of nonprofit crowdfunding online. Another known effect of cyberspace is that people can be more trusting of others they encounter online, and can disclose information more quickly. This leads to faster friendships and quicker intimacy, but it also means that people tend to feel safe when they aren't. Due to *online disinhibition effect* (ODE), individuals can be bolder, less inhibited, and judgment-impaired. Almost as if they were drunk. And in this less-inhibited state, like-minded people can find one another instantly and easily, under a cloak of anonymity, which results in another effect: *online syndication*. I will explain these cyber constructs and “effects” in detail in this book, and they are described in a glossary of terms, but ultimately they will be fully understood and evaluated only by empirical science—by undertaking intensive experimental studies, manipulating variables, and identifying cause and effect. But cyber isn't a lab with white mice and levers. We are talking about a complex matrix of human data that is manifested in a virtual context. It involves painstaking digital forensic and cyberbehavioral detail.

There is an expression, “God is in the details,” that resonates with my work. *Forensic science* is the study of the physical evidence at a crime scene—fibers or bodily fluids or fingerprints. In TV terms, think *CSI*. *Forensic psychology* is the study of the behavioral evidence left behind at the crime scene, what we like to call “the blood spatter of the mind.” Then there’s my area, *forensic cyberpsychology*, which focuses on the cyberbehavioral evidence of a crime scene, or, as I like to think of it, the *cyber footprint*. It was the great forensics pioneer Edmond Locard, sometimes called “the Sherlock Holmes of France,” whose exchange principle put forth the basic premise of forensic science: “Every contact leaves a trace.” (Your fingerprints are now all over this book.) This is just as true in cyberspace. Almost everything we do online generates digital exhaust, digital dust, and digital prints. This digital evidence can help law enforcement investigate criminal behavior, whether the crimes take place in cyberspace, across the world, or down the street.

It was the pursuit of that kind of data that led me to Los Angeles. I was conducting a study with the Specialists Group at INTERPOL, the world’s largest international police organization, about youth risk-taking online and, hoping to accumulate data, I got in touch with Lt. Grossman at the LAPD. We had met previously at a conference at the INTERPOL headquarters in Lyon, France. I’d been impressed by Lt. Grossman and her work in the field of cybercrime. When she agreed to see me and discuss the INTERPOL project, I flew to California to meet her team.

Police can be very skeptical about academics descending from their ivory tower who are hungry for data but have very little understanding of the nitty-gritty nature of frontline law enforcement. So I was pleased that Lt. Grossman asked if I’d be interested in getting some work experience with the LAPD.

“Of course,” I replied, assuming that she was talking about a type of internship at her police precinct, where I would sit in on meetings, but she had something a little more proactive in mind.

“How would you like to suit up and come on an operation?” she asked, going on to explain that the identity and location of a trafficker of child abuse images, videos, and other materials had been determined

by using cyber-forensics. Lt. Grossman thought this would interest me, as an academic observer.

“Uh . . . yes,” I stammered. “You mean, suit up, like S.W.A.T.? When?”

“Tonight.”

My work involves the scientific investigation of behavior online—from the prediction of developing behavior, such as *cyber juvenile delinquency* (hacking), to profiling typologies for evolutions of criminal behavior (cyberstalking). I explore machine intelligence solutions to big-data problems (such as technology-facilitated human trafficking) and *intelligence amplification* (I.A.) solutions to child-related online sex offending. This is all demanding work that I have been trained to do and have learned to handle. But real-world frontline police work? S.W.A.T. takedowns? I have very little experience of that.

In my hotel room, later that evening, I dressed in black—the forgettable, blend-into-the-woodwork uniform of forensic experts worldwide. (Why hemorrhage data at fifty paces by wearing a pale-pink blouse to demonstrate that you’re feeling vulnerable, a splash of yellow for optimism, or a pattern to make you appear interesting?) Then, at 3:30 a.m., I grabbed a bottle of water, went downstairs to the lobby, and told the reception desk that a group of LAPD officers would be coming soon to pick me up.

The concierge looked at me skeptically.

“I’ve done nothing wrong,” I assured him. “I’ve been asked to observe a mission. That’s all.”

That’s how I wound up here, before dawn, in an LAPD briefing room. The weather in L.A. is always agreeable, so they tell me, but it is unexpectedly chilly this morning. Fortunately I have a bulletproof vest and a steel ballistic helmet to keep me warm.

“Resistance is always expected,” the briefing officer says. “If an officer goes down, step over them. Just keep moving forward. If you go down, stay down.”

I glance at the briefing book in my lap. It includes directions to the nearest hospital. *If you go down, stay down. . . .*

Faced with uncertainty—and potential danger—I adopt an attitude that has served me well in life: Hope for the best, expect the worst. And

that turns out to be a pretty good motto for almost any endeavor, whether you are living in the real world or online. Each time we join a new social network, download an app, pay a bill online, buy our children a new digital device, or meet someone on a cyber-dating site, we are faced with a steep cyber learning curve and can quickly encounter new challenges and risks. Hiking up a sheer mountain trail to enjoy a breathtaking view is one thing. Jumping off the summit to paraglide down is another. Some risks are worth taking. Others are just unnecessary. Which is which? That is what this book is about.

“Let’s roll!” Lt. Grossman calls out. Twenty chairs slide back at once. Boots stomp. Guns clank. I reach for my helmet and pause for a second and think, not for the first time that morning, *How on earth did I get here?*

### Where Am I?

We are living through a unique period of human history, an intense period of flux, change, and disruption that may never be repeated. A seismic shift in living and thinking is taking place due to the rapid and pervasive introduction of new technologies to daily life, which has changed the way we communicate, work, shop, socialize, and do almost everything else. This moment in time is not unlike the Enlightenment (1650–1800), when there were also great shifts in awareness, knowledge, and technology, accompanied by great societal changes.

Enlightenment delivers new freedoms. And the new freedoms allowed online are heady, thrilling, and enticing to billions of people. The concept of absolute freedom is central to the ideology of the Internet. But can this freedom corrupt? And can absolute freedom corrupt absolutely? More freedom for the individual means less control for society.

Some changes have been seductive and incremental—and have caused psychological norms to creep into new places. You barely noticed until, one day, suddenly you see a baby in a stroller being handed an expensive smartphone to play with or you see a toddler expertly swipe a touchscreen with a chubby finger. Or maybe you walk into a shopping mall and notice a group of kids huddled together solemnly looking at their devices—and not one another. So near and yet so far!

Or something might have hit you closer to home, like an increasingly distant and uncomfortable feeling in your relationship or marriage because your partner is spending hours alone with his or her computer—chatting and cyber-flirting with new friends worldwide, bingeing on Netflix, consumed by online shopping, or obsessed by the plethora of pornography sites so readily available now online.

The Internet is omnipresent, always delivering rich, stimulating content—all day, all night, always on. Between the years 2000 and 2015, the number of people with access to the Internet increased almost sevenfold—from 6.5 percent to 43 percent of the global population. At the Davos Summit in January 2016, it was announced that more than 3.2 billion people are now online. In less than ten years the number of cellphone subscriptions has grown from a little more than 2 billion in 2005 to more than 7 billion in 2015. The number of hours people spend on mobile phones is escalating rapidly each year, jumping an average of 65 percent in a two-year period. The same study found that mobile phone users checked their devices more than fifteen hundred times a week, and there are several apps that will count that for you, if you need a little help managing your habit.

The number of minutes per day that you spend checking your phone and scrolling through social media posts is not insignificant. To a researcher like me, who studies human behavior at the minute-by-minute level—in digital dust and footprints—these minutes indicate how a person is living—what they do and don't do. This is called *pattern of life analysis*, or how people live online. In the home, these minutes are not spent doing other things—reading a book to a child, playing with a toddler on the floor, chatting with your family at the dinner table, talking with your partner before bed. When you are checking your phone or spending time surfing websites, you are effectively in a different environment. You have gone somewhere else. You are not present in real-world terms.

Let me raise a question, one that has been fiercely debated by technologists: *Is cyberspace an actual place?*

My answer is unequivocal: Yes, it is. Cyberspace is a distinct place. You may be accessing it from a familiar environment, like the comfort of your own home, but as soon as you go online, you have traveled to

a different location in terms of your awareness or consciousness, your emotions, your responses, and your behavior—which will vary depending on your age, your physical and mental development, and your distinct set of personality traits.

Instinctively, we know this is true. Most of us have felt “lost” in cyberspace and realized—as if waking from a dream—that we’ve burned dinner, run late for an appointment, or forgotten to turn off the sprinklers. This is due to the fact that, in the real world, most people have learned to keep track of time effectively. Online, though, there’s a *time-distortion effect*. (Try this the next time you log on: Turn off your clock display, and every so often test yourself to see how well you can estimate the passage of time.) As complex as human beings are, and as adaptable, psychologists know from a myriad of studies and research that when an individual moves to any new location—a new home, a new school, a new city, or a foreign country—his or her behavior will change or adjust. One’s environment has a profound impact on one’s physical bearings, something we know from work done in the field of environmental psychology, an interdisciplinary approach that looks at the interplay between individuals and their surroundings. And according to theories of development, an awareness of self comes through a gradual process of adaptation to one’s environment. And as anyone knows who has moved or traveled, it can take time to absorb and acclimate to any new location or space. It can take a while to get your “sea legs,” as sailors who shove off from land to live aboard a boat would say.

But many people deny the awareness that they’ve entered a new environment when they go online, so they remain ignorant—and are fooled by their sense that nothing has changed. They are sitting in their own homes, surrounded by familiar objects, after all, and their bodies are resting in the cushions of familiar chairs and sofas. In their minds, they have not “gone” anywhere. But the conditions and qualities of the online environment are different from real life. That is why our instincts, which were honed for the real world, fail us in cyberspace.

Naiveté and bad judgment about this environment can be evidenced every day—when we pick up a newspaper and see that a politician has distributed photographs of his genitals to horrified strangers, when a

celebrity rants crazily on Twitter, or when another sex tape goes viral. Traditional authorities and support systems appear to be absent online—or they are just as confused as you are. As devices and gadgets change, and technology changes, the cyber environment changes with it, which impacts human behavior again. This causes upheaval to individuals, industry, finance, government, all of society. The more changes there are, the more new situations arise, creating only more confusion.

Psychologists know that living in a state of societal change is easier for some than others. But for most, trying to keep pace with recent technological changes has been dizzying. While many people are still finding their footing in this new environment, with all its new neighborhoods and new behaviors, there are many more changes yet to come. This can only result in more new situations and more confusion.

One sure way of coping with a state of constant flux is to become more knowledgeable about how the cyber environment affects all of us—how people, yourself included, may act there. Knowledge is power, and it's tremendously reassuring. A familiarity with the basics of cyberpsychology will help you answer the questions I hear all day, and would hear all night if I were to never sleep and just read my email.

Questions like:

- At what age can my baby start watching digital screens?
- Is it okay for a toddler to play with an iPad?
- Is there a connection between online gaming and ADHD in young boys?
- Should I allow teenagers to spend hours in the bathroom with their smartphones?
- Does technology contribute to social isolation?
- Can real relationships be formed in cyberspace?
- Why do people troll online?
- Should I be afraid of “the Deep Web”?

Cyber is not just a transactional medium, for things like passively viewing television or making a phone call. It is a highly interactive, highly engaging, and highly immersive environment—uniquely compelling and attractive to humans. Perhaps too compelling. What about

your toddler who throws a tantrum when you ask for your tablet back, or your teenager who screams when Wi-Fi slows down, or your aunt and uncle who seem to be in a constant state of *tech rage* (“The computer’s broken!”), or the fact that your grandmother on Facebook has made lots of new online “pen pals” in Nigeria?

Cyberspace is full of place names—social networks, forums, sites—and once there, we join up with a far larger group than we’ve been with before, which also makes this environment distinct. There are now billions of people online. This has prompted a lot of new situations and confusion. With such a wide array of new friends and contacts in your life, it’s crucial to know more about human behavior—and understand how it changes online. Our instincts have evolved to handle face-to-face interactions, but once we go into cyberspace, these instincts fail us. We are impaired, as if we had been given keys to a car but not learned how to drive. We need more tools and more knowledge. Because if you spend time online, you are likely to encounter a far greater variety of human behavior than you have before—from the vulnerable to the criminal, from the gleeful and altruistic to the dark and murderous.

My focus on cyber-forensics in my work with law enforcement means that I witness both the best and the worst aspects of human behavior manifested online. I like to say that technology was designed to be rewarding, engaging, and seductive for so-called normal populations. But did anyone really think about how it would impact abnormal, deviant, criminal, and vulnerable populations?

Considering those risks is part of my work too.

### How to Read This Book

We all know about the incredible benefits of the Internet. I could talk all day about them—the convenience, connectedness, affordability, creativity, altruism, educational and commercial opportunities, entrepreneurship, and cultural exchange. I’m pretty sure you are aware of these things too. An army of marketing experts working for all the biggest tech companies and conglomerates do nothing but dream up new and better irresistible products and new and better ways to sell them to us.

They are supergood at convincing us of the necessary features of these gadgets and software and apps and touchscreens.

My job isn't to criticize technology. Good science focuses on balance. If I seem to focus on many of the negative aspects of technology, it is in order to bring the debate back to the balanced center rather than have one driven by utopian idealism or commercialism. My job is just to provide the best wisdom possible, based on what we know about human beings and how their cognitive, behavioral, physiological, social, developmental, affective, and motivational capabilities have been exploited or compromised or changed by the design of these products.

Technology is not good or bad in its own right. It is neutral and simply mediates behavior—which means it can be used well or poorly by humankind. This understanding is fundamental to my work. This is no different from how we regard automobiles and drunk driving. Any technology can be misused.

One of my earliest influences was J.C.R. Licklider, an American psychologist and computer scientist who in 1960 wrote a seminal paper, "Man-Computer Symbiosis," which predated the Internet but foretold the potential for a symbiotic relationship between man and machine; in fact, you could say he was the first cyberpsychologist. I read "Lick" with amazement at his ability to gaze into the future with such clarity and wisdom. Early on I was also drawn to the work of Patricia Wallace, who wrote *The Psychology of the Internet*, an influential academic book and popular success in 1999. Soon afterward, I became aware of John Suler, a clinical psychologist and pioneer, the acknowledged "father of cyberpsychology," who has been working in this area since the late nineties and wrote *The Psychology of Cyberspace*, published as a digital book in 2004. John has really captured the essence of cyber in his work and has explored the potential benefits and hazards of cyberspace and characterized the way people tend to behave in the online environment.

Just as I was embarking on my own study and research, I reached out in cyberspace to John. This led to an exchange of emails, which led to

an eventual face-to-face meeting at Rider University, in New Jersey, his academic home. They say it's hard to meet your idols. But in my case, I just wish I'd worn the right shoes.

It was a grueling hot day, and John had just come from a lecture when I arrived on campus. He wanted to stretch his legs a bit. "Let's walk while we talk," he said. Then, with the air of a Socratic philosopher striding across the Acropolis, he set off at warp speed across the quad. John is a tall man, and each stride meant about four hurried steps for me. To prepare for our meeting, I had carefully considered various cyberpsychological constructs that I thought we might discuss, but I didn't think it would happen outdoors in blistering heat, or while I was wearing heels that were unsuitable for uneven terrain, much less a forced-march pace that would make a marine weep. In many ways, all the rest of us are still trying to keep up with John.

Over the past decade, he has become my great friend and colleague. Some of his groundbreaking constructs and observations inform a number of the concepts addressed in this book. In recent years, I have had the pleasure of meeting a growing group of like-minded researchers worldwide, who share ideas with me and collaborate on studies. I am thrilled to showcase an impressive body of work in the chapters to come. Approximately thirty peer-reviewed journals now publish an estimated one thousand articles every year on topics related to cyber-behavior, a field that is expected to enjoy exponential growth in the next decades due to the pervasive and profound impact of technology on humans.

Like other fields of scientific endeavor, mine is a land of jargon and caution. The behavioral sciences have been blindsided by developments in technology to a certain extent. In the late 1990s colleagues of mine referred to the Internet as a passing phenomenon. In the mid-2000s they said that people would never use online social media platforms to communicate. Now fifteen years and billions of people later . . . a game of catch-up is going on.

Academics are great at finding complicated ways to not really say what we mean. Our academic papers are littered with hedging adverbs like *arguably*, *plausibly*, and *questionably*. We seem to enjoy adding an *-ably* to as many words as possible, hoping to render our sentences

harmless. Some researchers employ what I call “sleight of word” as a career-protection mechanism, just in case, at some point in time, an idea might be proven wrong. But I don’t believe scientific breakthroughs are achieved by metaphorically sitting on the fence. On the cyber frontier, we need scientists who are prepared to nail their colors to the mast and back their own informed instincts. Of course we need evidence-based studies over time, but how long can we wait?

Babies are being born, kids are growing up, and lives are being changed. Society is being reshaped. We need to talk about this now.

In hopes of reaching a wider audience, I have tried to make this book as practical and straightforward as I know how. I have tried to make the science comprehensible and spare you too many stats and studies. For those who share this affinity or are interested in a deeper dive, there are extensive chapter notes to draw on in the back of the book. They are written with a broad audience in mind as well.

To keep up with changing technology, and changing human behavior, my work requires creativity, flexibility, and an ability to juggle a lot of theoretical constructs. It’s probably a good thing, then, that I haven’t got the sort of brain that thinks in a linear way. I feel more like a depository of organized chaos, but this helps me identify patterns quickly and make intuitive leaps. My approach is transdisciplinary by necessity—drawing on psychology, sociology, anthropology, computer science, criminology, and network science. It can cross other academic boundaries too. I find that the different disciplines help to illuminate problems that are arising, and help to illuminate solutions too.

In the absence of longitudinal studies, I employ logic—a mixture of common sense and reasoning—then construct plausible arguments based on a body of knowledge and current observable phenomena and reports, which I hope will start some meaningful debates about human behavior online, something I feel is much needed. I have also drawn on those very special and uniquely human skills: insight and intuition. As the great robotic scientist Masahiro Mori said, “Do not ignore the small things.” In science we should not be afraid to listen to ourselves or to pay attention to the little things. Mori himself was not reluctant to share his thoughts and suspicions—about humans and machines, about artificial intelligence, and about the need to take pleasure, even

delight, in our intuitions. His approach inspires me. Academics need to reconsider how we handle behavioral problems that are evolving at the speed of technology. We need academic first responders.

Quite often, I have leaned on the investigative journalism of publications such as *Wired*, the *Washington Post*, the *New York Times*, and other reliable sources and legacy media to read emerging frontline reports of anecdotal evidence, see patterns of behavior, and try to make sense of them. In a field as rapidly evolving as the Internet, and the technology using it, we need good journalism more than ever.

In the nine chapters to follow, I have arranged material into areas of special concern—as well as my own focus. The impact of technology on human behavior begins at birth and ends at death, so I have chapters that deal with all age groups—from babies, toddlers, kids, and teens to adults. In chapters about addiction and compulsive behavior, I've looked at ways that some types of problematic behavior can be enormously impacted by the online environment. And in a chapter about the phenomenon of cyberchondria, I've argued that the prevalence of the online medical search has resulted in a rise in unnecessary doctor visits and risky surgical procedures.

The frightening revelations in this book, and the chapter on the Deep Web, are not included simply for kicks and thrills. The dark hidden corners of the Internet where criminals syndicate and a black market is thriving are things every single person online should know about. Why? Because more and more young people are being enticed to go there, driven by a combination of adolescent risk-taking and curiosity. Somehow they've gotten the wrong impression that it's perfectly safe in the Deep Web, even fun. But it isn't.

My own particular concern is the impact of technology on the developing child. The Internet has opened the world up to our children, yet it gives the world access to them too. I don't think most people know enough about this. There is a great paper in the journal *Pediatrics* on the impact of technology on the developing child entitled "The Good, the Bad, and the Unknown." It's that last part, *the unknown*, that really bothers me. As the clinical psychologist Michael Seto has said, "We are living through the largest unregulated social experiment of all

time—a generation of youth who have been exposed to extreme content online.”

What will happen to this generation over time? What is the impact in terms of exposure to the harsher and bleaker aspects of the Internet?

### *CSI: Cyber*

The raid on the house in South Central L.A. was as terrifying as you might imagine, and I have to confess that as our convoy pulled up outside the target house, I turned to Lt. Grossman to ask if I could stay in the armored police car rather than move forward with the unit.

“No, Mary, it’s not safe,” she replied.

The armored car wasn’t safe? Wow. I thought, *What am I getting into?* The next twenty minutes went by in a blur. There was a lot of shouting, banging doors, barking orders with guns drawn, handcuffings, and arrests. As an observer, it was both frightening and fascinating. I stood in the background, next to a wall of the living room where the suspect was apprehended, and I found myself tapping the wall, hoping it was solid concrete and would protect me from stray bullets. No bullets were fired, I am happy to report. The raid was a complete success, the kind of slick professional operation that this LAPD unit carries out several times a week. The main suspect was taken immediately to a mobile on-site LAPD computer forensics field truck, known as “the beast,” where he confessed.

Once it was all over, the police team relaxed and tucked into a hearty feast of breakfast burritos while I sat quietly, sipping bottled water in a state of relief and shock, still swaddled in my protective gear. I have been asked to go out with Lt. Grossman and her team a few times since, but I assured them that my real-world frontline policing experience is truly complete. I have the utmost respect for the work carried out by first responders in law enforcement—day in, day out—but participating as an observer in an exercise like this served to reinforce this respect. And the truth is, I don’t think that I am cut out for frontline active service in the real world—but I am happy to serve on the cyber frontier.

Besides, my real job is challenging enough—finding risks in places where we feel perfectly safe. Each year has brought more studies in my field and more discoveries. While conducting my research, I have had a chance to meet and speak with leaders in law enforcement and policy makers in government around the world, and have engaged as an academic with Europol, INTERPOL, the FBI, and the White House. In 2012, supported by a great mentor and colleague, Professor Ciaran O’Boyle, I founded the CyberPsychology Research Centre in Dublin, now an international network designed to support and nurture cutting-edge research projects, and most recently found myself spending a good bit of time in Hollywood, working on the television show *CSI: Cyber*, inspired by my work. In the show, Patricia Arquette plays Avery Ryan, a special agent in the FBI Cyber Crime unit who is tasked with solving high-octane crimes that “start in the mind, live online, and play out into the real world.” That describes my work perfectly.

### Factoring the Human

Earlier in this prologue I asserted my view that the Internet is distinct from the so-called real world, but that I don’t mean to suggest that what happens there isn’t real. And in terms of human behavior, what happens online is a little like one of those evolving flu viruses or Ebola. Once behavior mutates in cyberspace, where a significant number of people participate, it can double back around and become a norm in everyday life, something I call *cyber-migration*. This means that the implications of the online experience and environment are ever evolving and profound, and impact us all—no matter where we live or spend time.

When I studied psychology as an undergraduate, we used to say that the problem with the field was that for too long it had “lived on a diet of white mice and college student surveys.” Something similar can be said of technology: For too long it has lived on a diet of data, devices, and tech experts. Now it’s time to turn our focus to the greater socio-technological implications. How have these advancements changed human behavior and society? It is time to consider that awkward entity, *Homo sapiens*, whose thumbs are too big for cellphone keypads,

whose bodies are too clumsily shaped for wearable technology design, and whose memory is too weak to retain multiple ten-digit passwords. In other words, it's time to factor in the human. Sometimes our excitement about technology has prevented us from seeing the bigger picture.

In the midst of the human migration to cyberspace, it is important to examine what's behind us, where we are now, and what lies ahead. Like travelers heading off on an adventure, we need to be careful not to rush too quickly out the door without making sure we are carrying things we need for the journey we're undertaking. There are some important things, aspects of human life that have served us well for centuries and are crucial to our survival, that we can't afford to lose or abandon on this journey. This is where the discipline of cyberpsychology can be invaluable, delivering insight at the intersection of humans and technology. My hope for this book is to do just that.