THE SIGNALS ARE TALKING

WHY TODAY'S FRINGE IS TOMORROW'S MAINSTREAM

FORECAST AND TAKE ACTION ON TOMORROW'S TRENDS, TODAY

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INTRODUCTION

"Hello, Are You Lost?"

THE FUTURE DOESN'T simply arrive fully formed overnight, but emerges step by step. It first appears at seemingly random points around the fringe of society, never in the mainstream. Without context, those points can appear disparate, unrelated, and hard to connect meaningfully. But over time they fit into patterns and come into focus as a full-blown trend: a convergence of multiple points that reveal a direction or tendency, a force that combines some human need and new enabling technology that will shape the future.

It's something I discovered living in Japan, way back in the twentieth century.

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Akihabara District, Tokyo, 1997. The bottom of my jeans were already drenched as I made my way from the subway through the downpour and past a cacophony of cartoon voices and computer-generated swirls of electronica. The sheer amount of information and noise made it hard to concentrate.

I had a map written in Japanese, but that wasn't the problem. The waterlogged paper made it impossible to read the few characters left that hadn't blurred entirely. I found myself under some elevated railroad tracks and standing in front of a nondescript door, but the hacker friend I expected to meet was nowhere in sight. Maybe I was in the wrong place.

I shoved my hands deep into my coat pockets and squeezed past a series of twisting alleys all lined with rows and rows of circuits, motherboards, cables, wire cutters, and tiny plastic parts of all shapes and sizes. More information. More noise. There were "no smoking" signs everywhere, but that didn't stop the group of men walking ahead of me.

Eventually, I stopped at a tiny electronics shack and tried to read the map again.

"Hello," I heard a tentative voice. "Are you lost?"

He was, it turned out, a computer geek, albeit one who had a couple of decades on most of the folks who make up this species. Tattered back issues of *Pasokon Ge-mu* and "*Oh! X"* magazines were piled up next to disassembled PC towers. I explained that I was trying to find my friend, a regular in Akihabara who was building a new kind of game that could be played on a mobile phone.

The corners of his mouth crinkled upward as he motioned me over toward a counter in the back of the store.

On the glass were two small mobile phones. He gave me one and told me to wait. He took the other in his hands and started tapping on the alphanumeric keypad. A moment later, I saw a message flash on my screen. こんにちは—"hello" in Japanese. I'd used mobile-to-mobile messaging before, but tried to muster a "gee-whiz" look so as not to offend him.

Then, he sent me another message. This time, the text was blue and underlined. It looked like a web address, but that wasn't possible. It was 1997, and back in America, the most exciting mobile technology was a compact 1G flip phone that had a retractable antenna. This was something entirely different.

"Try," he said. I pressed a button and the phone started downloading something.

"Wait . . . is this a ringtone?" I asked. "Am I on the internet?"

On the screen, I moved the cursor down to the link and pressed "enter." As I did, all the noise and all that information diffused into decipherable nodes of data. I could hear the signals talking.

This phone in my hand was an experiment on the fringe, a clever hack. I shifted my thought to networks of phones all connecting to the internet, to websites, to the Shinkansen train schedule . . .

Another signal. If we could receive information, we would necessarily give out our information, too—passively and directly. We would buy train tickets, right from our phones. Network operators would know details about us, what we clicked on, what we downloaded. Service providers would earn revenue based on our usage. They would have incentives to provide more bandwidth and faster speeds . . .

Another signal. I started thinking about all the other early research I'd been hearing about. Japan was on the brink of a much faster mobile network that would allow for more people to connect at once. Increased capacity also meant higher speeds, and for the first time, the ability to send files to other devices . . .

Another signal. Digital cameras were getting smaller. An engineering professor at Dartmouth was at work on an active pixel image sensor, something so tiny it could be embedded into a pen. Two Japanese companies, Sharp and Kyocera, were trying to put image sensors into their phones. Teenagers had become obsessed with *puri-kurabu* photo vending machines—they regularly visited with friends, posing for photos of themselves. They'd use an interactive screen to decorate the photos with different backdrops and doodles before printing them out as stickers.

I listened as the signals connected me to adjacent nodes. I knew of others who were experimenting with tangentially related projects. A startup in New York City had successfully wrested electronic mail—"email," for short—from university researchers and turned it commercial. For the first time, everyday people were getting online, transfixed by this new medium and excited about sending fast, short messages between computers within just a few seconds. Commercial email networks were starting to boom, unable to meet demand. At the same time, consumer behavior had started to shift. People expected and received faster communication. They created digital identities with vanity email addresses. They had access to a "reply-all" command—a futuristic megaphone that broadcast their messages to large, engaged audiences.

And then there was the group of mad scientists out in Sunnyvale, California—engineers who'd created the first car-based GPS in the early 1980s. Nothing remotely similar had existed until that point, so they had to borrow an ancient Polynesian term to name the thing they'd built. They called it

the Etak Navigator[1] (Polynesian for "a set of moving navigational points"); it was so far ahead of its time that its value meant little, if anything, to the average consumer. I remembered reading an old issue of *Inc.* magazine, where the founder of Etak explained his bigger vision: "Let's say you're in your car, and you want to go to dinner. You've got this box on the dash. You punch in 'Japanese,' then 'cheap,' then 'good sushi.' The box takes over and guides you to a place."[2]

The Etak never made its way into our cars, but standing there, holding this black mobile phone in the middle of Akihabara, I could imagine a future version of myself using an adapted form of that fringe technology. I'd punch in "good sushi" and text my hacker friend the GPS coordinates of where to meet me. Rather than carrying around a camera so that I could take photos, get them developed, and send them through the mail back to the United States, I'd make a video phone call to my parents and share my sushi dinner with them, in real time.

Suddenly, I realized I wasn't lost at all. I heard the signals talking, and they were telling me how this experimental phone from the fringe would eventually enter our mainstream to dramatically transform all facets of human life in the future. I was holding a physical manifestation representing breathtaking change: it would reshape how we operate our businesses, how we work, learn, and relate to each other. It would democratize our access to knowledge. It would manipulate our attention spans and shift the neural pathways in our brains. It would speed life up and usher in a universal expectation of immediate access to information and, inevitably, a culture of on-demand goods, services, and content.

"*Mirai kara kita ne.*" It's from the future, said the old computer geek.

"No," I told him. "Not from the future."

Because right now, standing in his tiny electronics stall in Akihabara, we were in the present. Just as the phone hadn't traveled back in time from some futuristic date to 1997, neither was our pre-mapped destiny already written in the stars. It was up to us to listen to the signals talking, and to map out the future for ourselves.

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Waterloo, Ontario, 2007. Mike Lazaridis, the cofounder of BlackBerry, was working out on his treadmill at home, staring up at the television. Forgettable commercials cycled through every fifteen minutes. Then one caught his attention. Set against a minimalist black background was a hand holding a mobile phone, one that had no buttons. A male voiceover began: "This is how you turn it on," and with a simple swipe the phone was unlocked, revealing a dozen candy-colored, sleek icons. "This is your music," the voice continued, as the phone turned horizontally and album covers appeared, which could be flipped through with the simple flick of a finger. "This is the web," the voice said, and the *New York Times* instantaneously loaded inside of a web browser, mimicking exactly what it looked like on a computer screen. "And this is a call on your iPhone," the voice said at last, before Apple's iconic logo faded in.[3]

Lazaridis, a global pioneer in mobile communications, hadn't seen the iPhone coming. And yet here was this new trend in mobile technology—a computer-like phone, with no buttons—that was now entering the mainstream. He found out about the iPhone via a commercial, just like everyone else.[4]

That summer, Lazaridis got his hands on an iPhone and pried it open. He was shocked by what he

saw—it was as if Apple had stuffed a Mac computer into this tiny, handheld mobile device.

Two decades earlier, Lazaridis and a fellow engineering student, Douglas Fregin, had founded a computer-science consulting company, which they called Research in Motion, or RIM. Their breakthrough product was a new kind of mobile phone, which offered workers the ability to send and receive emails securely while they were out of the office. They called it the BlackBerry.[5]

BlackBerry quickly became a status symbol as much as an essential productivity tool. "If you had a BlackBerry you were an important person, as at that time a lot of people didn't have a smartphone," said Kevin Michaluk, founder of the CrackBerry.com news site. Vincent Washington, who was a senior business development manager, said that new product meetings would often remind him of that infamous briefcase from *Pulp Fiction*. Lazaridis would walk in with his own special briefcase, and "there would be this golden glow of devices." Brendan Kenalty, who was in charge of RIM's customer base management, often found himself chided for his job title. Why on earth would anyone need a loyalty and retention strategy for a BlackBerry?[6]

Lazaridis was curious, but dismissive. With a device that had become so addictive and indispensable—it did earn the nickname "CrackBerry," after all—RIM had become one of the largest and most valuable companies in the world, valued at $26 billion.[7] It controlled an estimated 70 percent of the mobile market share and counted 7 million BlackBerry users.[8]

Lazaridis already had a successful suite of products, so he and his team weren't watching the fringe. They weren't paying attention as a new trend emerged—smartphones that would become all-purpose mobile computing devices, with the power of a PC right in our pockets. Rather than carrying a BlackBerry for business and an iPod or a laptop for personal use, consumers would naturally gravitate toward one device that could meet all the demands of their everyday needs and work tasks.

Initially, it wasn't clear that this single-device trend—and especially a phone with such a radically different design—would stick. In addition to disparaging the iPhone's short battery life and weak security relative to the BlackBerry, Lazaridis mocked its lack of a physical keyboard: "Try typing a web key on a touch screen on an iPhone, that's a real challenge. You cannot see what you type."[9]

At its launch, comparisons to the BlackBerry were inevitable, and they were harsh for the iPhone. Adding a calendar event or updating a contact had to be synched manually on an iPhone. There was no push email, and the inbox system was confusing. The Safari browser offered a stunning interface, but it was extremely slow, even with text-only pages. Apple's iTunes store may have offered far more apps, but could they be trusted? They'd been made by outside developers, not certified partners as was the case with BlackBerry.

These arguments further distracted RIM from recalibrating its strategy and from monitoring the fringes of society, even as it was becoming clear that the iPhone was ushering in a new era of mobile connectivity. Rather than quickly adapting its beloved product for a new generation of mobile users, RIM continued tweaking and incrementally improving its existing BlackBerrys and their operating systems. But that first iPhone was in many ways a red herring. Apple swiftly made improvements to the phone and the operating system. Soon it became clear that the iPhone was never intended to compete against the BlackBerry. Apple had an entirely different vision for the future of smartphones—it saw the trend in single devices for all of life, not just business—and it would leapfrog RIM as a result.

Cisco and SAP adopted iPhones. Apple and IBM entered into a long-term partnership to develop

one hundred new apps. As RIM executives struggled to understand how they'd been blindsided by this new trend, the company was forced to launch a desperate marketing campaign that paid iPhone users up to $550 to switch back to a classic BlackBerry. In 2012, Lazaridis and his co-CEO Jim Balsillie stepped down. By the end of 2014, RIM's market share had collapsed to 1 percent.[10]

BlackBerry executives failed to make the necessary leaps like the ones I'd made a decade earlier in Akihabara. I was immersed in the fringe, looking at new experimentation and research, spotting patterns and working out possible scenarios for the future. They kept their heads down, fixated on their successful product. "Success is a lousy teacher," wrote Microsoft cofounder Bill Gates. "It seduces smart people into thinking they can't lose."[11]

Success rendered RIM helpless in the end. What about the rest of us? Are we helpless as well, because the future is full of surprise competitors and moonshot devices? Polaroid, Zenith, Blockbuster, Circuit City, and Motorola struggled because the future surprised them, too. Rather than helping to create their new reality, executives were instead asking themselves, "How did we miss that?"

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This book contains a method for seeing the future. It's an organized approach that, if followed, will advance your understanding of the world as it is changing. Reading it, you will learn how to think like a futurist, and to forecast emerging trends as they shift from the fringe to the mainstream, and how to make better decisions about the future, today.

If you are in any position of leadership—whether you're the CEO of a large corporation, a member of a nonprofit board, a mid-level human resources manager, a media executive, an investor, a chief marketing officer, a government administrator, a school superintendent, or the head of your household—you must strategically monitor trends and plan for the future. Failing to do so will put your organization and your future earnings at risk, but there are greater forces at work. If humans do not make a greater effort to understand the implications of our actions today, we are in danger of jeopardizing our own humanity.

I am a futurist, and I research emerging technology and forecast trends for a living. The term "futurology" comes from the Latin (*futurum*, or future) and the Greek suffix *–logia* (the science of), and it was coined by a German professor named Ossip Flechtheim in 1943,[12] who, along with author H. G. Wells several decades earlier,[13] proposed "futurism" as a new academic discipline. It's an interdisciplinary field combining mathematics, engineering, art, technology, economics, design, history, geography, biology, theology, physics, and philosophy. As a futurist, my job is not to spread prophecies, but rather to collect data, identify emerging trends, develop strategies, and calculate the probabilities of various scenarios occurring in the future. Forecasts are used to help leaders, teams, and individuals make better, more informed decisions, even as their organizations face great disruption.

Technology is the unilateral source of nearly all of the significant things that have changed the world in the past five hundred years, including movable type, the sextant, the moldboard plow, the cotton gin, the steam engine, oil refining, pasteurization, the assembly line, photography, the telegraph, nuclear fission, the internet, and the personal computer. At some point, these were all mere fringe

science and technology experiments.

This is not a book about technology trends per se, as a book of today's trends would be outdated and useless even before it came off the press. That's how fast the world is changing. A book that only offers a series of trends would force you to apply someone else's vision of the future to your own organization, industry, or market. Technology trends themselves—smartwatches, virtual reality, the Internet of Things—make for good media headlines, but they don't solve for the ongoing questions facing every organization: What technology is on the horizon? How will it impact our customers or constituents? How will our competitors harness the trend? Where does the trend create potential new partnerships or collaborators for us? How does this trend impact our industry and all of its parts? Who are the drivers of change in this trend? How will the wants, needs, and expectations of our customers change as a result of this trend?

To answer these questions, you need more than someone else's prognostications. You need a guided process to evaluate and adapt the pronouncements made by researchers, other businesspeople, and thought leaders within their professional spaces. You need a way to see the future for yourself.

The Signals Are Talking is a systematic way of evaluating new ideas being developed on the fringe that, at first blush, may seem too "out there" to affect you. But in every possible construct, our future is completely intertwined with technology, and as I discovered in Tokyo's Akihabara District[14] in 1997, nothing in technology is ever really too esoteric that it doesn't deserve a few moments of attention. There is no possible scenario where technology does not play a significant role in the years, decades, and centuries to come. Therefore, the trends we must track and the actions we put into place necessarily involve technology in some way.

The method in this book is made up of six steps. You can think of it as a set of instructions for the future—though this is no ordinary instruction manual. First, you must visit what I call the "unusual suspects" at the fringe. From there, you will uncover hidden patterns, connecting experimentation at the fringe to our fundamental human needs and desires. The patterns will reveal to you a possible trend, one you'll then need to investigate, interrogate, and prove. Next, you'll calculate the trend's ETA and direction: Where is it heading, how quickly, and with what momentum? However, identifying a trend isn't enough—as RIM discovered in 2008, when it attempted to launch its self-described "iPhone killer." You must develop probable, plausible, and possible scenarios in order to create a salient strategy in the present. There is one final step: pressure-testing the strategy against the trend to make sure the action you're taking is the right one.

The instructions are illustrated with stories that range from Sony being brought to its knees by hackers, even though company executives could have easily foreseen its future troubles, to the scientific community being shocked, and then outraged, when it learned that Dr. Ian Wilmut and his team had cloned a sheep named Dolly.

These and other stories may be familiar to you. But when we use the instructions to decipher the signals, what you see will start to seem quite strange. Your perception of present-day reality will, I hope, be challenged. You may even feel disoriented. But I feel confident that you will never interpret the world around you in quite the same way again.

Turn the page and listen closely. The signals are talking.