The Profession of IT, 'Surfing Toward the Future'

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Everybody, it seems, is interested in innovation. Many professionals actively seek innovations to deal with immediate concerns, such as product designs, and with long-term concerns such as education, pensions, and healthcare. Despite huge efforts, success rates are low. A new report, *Surfing Towards the Future*, by the Chilean National Council on Innovation for Competitiveness led by Fernando Flores, gives an unprecedented account of how innovations emerge. It proposes a skill set, “surfing history,” based on reading waves of possibilities and riding them to success. Crucial elements are the climate of exploration and adventure, the timing, and balance when buffeted by the unpredictable. I organized my reflections on the report as an interview.

You say that innovations are historical emergences. What does that mean?

When you take a long view, you see that innovations seem to appear at moments in history when the conditions are most conducive. The conditions are a need in the social community, and the existence of a suitable technology base. The innovation begins when someone proposes a new combination of existing technologies and components to meet the need. Timing is delicate and critical. Once the conditions are “ripe,” several people may propose the same innovation around the same time. Many innovation proposals fail because of poor timing; there is too little interest in the social community or the technologies needed to make them work do not exist.

I hear frequently that innovations fail because of management problems or lack of creativity, not because of timing. Would not more management discipline or cleverness lead to better results?

Strategic planning is one of management’s favorite tools. Unfortunately, it is a broken concept. It assumes implicitly that there is a fixed future and we can position ourselves for maximum return when that future arrives. But there is no such thing as a future-that-will-happen, only a set of possibilities for what might happen. Unpredicted events can suddenly change the picture, blocking our path or opening up new and unanticipated paths. These unpredictable events can be almost anything such as a natural disaster, an emergency, a new declaration by a leader, a new technology, or a chance meeting of a new person. There is no fixed path—such as a plan would have you follow—to navigate through such uncertainty.
The design thinking movement advocates creativity and imagination. From a business perspective, we often have an abundance of creative and imaginative proposals for solving our problems. How do we choose which ones to pursue? How do we turn the chosen ones into reality? It is all too common that people who plunge into creative design workshops are initially exhilarated by the possibilities they create, and then later frustrated by the indifference others display toward their designs and by the difficulties of getting people to agree to adopt them. Creativity and imagination are important, but not enough.

Wait a minute. We are peppered with stories of great inventors and geniuses who changed the world. Do you mean that their creativity and imagination was not the reason for their success?

We are very skeptical that innovation is caused by geniuses. We believe innovations emerge at moments in time when all the conditions are right. The person we credit in retrospect was an agent of history. We need to understand the conditions that make the time for an invention “ripe” and the dispositions that enable an inventor to sense the convergence and act on it.

Consider Louis Pasteur, who gave us a rabies vaccine in the 1890s. He had a history of other major innovations and was widely regarded as a genius. Pasteur was a master chemist. Two hundred years earlier, there was no field of chemistry. Pasteur could not have existed at that time. Similarly, if he were born 50 years later, others in the 1890s time period, who were also working on vaccines, would in all likelihood have discovered a rabies vaccine; it would be a done deal in his new time. The contribution we remember him for was possible only at that moment of time in France.

Come on. Pasteur clearly had something to do with it. He was not just a lucky bystander.

We agree. We think Pasteur had a skill we call “surfing” that enabled him to ride the waves of possibilities swirling around him and find a path that led to great value. An example of Pasteur’s surfing skill arose in the early 1880s, when he was searching for an anthrax vaccine. After he discovered the vaccine and verified in his lab that it worked, he did not go public, to the great frustration of his colleagues and advisors. The right moment showed up when a famous veterinarian challenged him to a public test of the vaccine. He accepted the challenge. In the test, no vaccinated animal got anthrax and every unvaccinated animal perished. The theatre of the test and its subsequent publicity propelled Pasteur, his anthrax vaccine, and his germ theory of disease into public prominence and earned him encomiums like “benefactor of humanity.” His timing and sense of drama were impeccable. We argue that Pasteur was a genius at surfing waves of possibilities. We would also speculate that if Pasteur lived in a different time or place, his surfing skill would have helped him make other achievements, but not anthrax or rabies vaccines.

What about Thomas Edison? He is celebrated for his creativity and imagination. Was he a surfer?

Edison was recognized as a genius and, yes, he was a virtuoso surfer as well. Contrary to the popular story, he did not invent the light bulb. A long search for electric lighting had begun in the early 1800s. He joined the search in the 1870s because he saw how to build an electrical distribution system that would power lamps in homes and shops. He performed hundreds of experiments until he found a lamp design that would last long enough to be useful. He announced his incandescent lamp in 1879. A year later, he patented an electrical distribution system and got one operating in 1882 on Hudson Street in New York City. He said lamps were useless without electricity and he pledged to make electricity so cheap that only the rich would burn candles. He undertook the lamp experiments only when he believed that by the time he found a robust lamp he would have a solution for cheap electrical distribution. He timed his entry onto the waves of those possibilities and rode them to a convergence. He set off an avalanche of people moving to use electric rather than gas lighting.
What do you mean by avalanche?

Avalanche is an important metaphor for innovation.¹ It is a cascading series of events where each one triggers new events. Entrepreneurs try to anticipate the right moment—the tipping point²—when an innovation proposal will trigger an avalanche of people adopting the proposal. If the timing is too early, the proposal will not be a tipping point. If it is too late, someone else will have started the avalanche. The metaphor is borrowed from complexity theory, where snow avalanches or sandpile avalanches can only be described by the frequency and duration of a cascade, but it is impossible to predict whether any particular event will trigger a cascade or how long it will last. Edison banked on cheap electricity causing an avalanche of people moving from gas to electric lighting. Intel Chairman Andy Grove once said any technology that could do something 10 times better than any current technology creates a high risk of an avalanche in favor of that technology. In the Internet, the introduction of the Mosaic browser in 1994 triggered an avalanche into the World Wide Web and into commercial use of the Internet; prior to that time, commercial uses were discouraged. Today, a number of education leaders see MOOCs as the beginning of an avalanche that will transform education.

What about research in science and technology? If we would pay for more research and development, we would have more components to solve our problems.

We agree that science and technology R&D are important, but R&D is not a reliable precursor of innovation. Technologies are deeply woven into social systems and their practices. Even when we have an exploitable scientific recurrence, we cannot predict how the corresponding technology will be used because that depends on how the social system moves with it.

What about putting those three elements together? Suppose we pay attention to creativity, science, and technology. Can we then get the innovations we need?

Still no. That is the Silicon Valley Illusion. Silicon Valley tries to reduce innovation to an equation: science + technology + creativity = innovation. There are many social processes and practices in the background that enable Silicon Valley to be a technology innovator. No one has been able to replicate Silicon Valley in other places because they do not understand all the social processes, and even if they did, the processes probably would not fit with the culture of another region. It is far better to establish close ties with people in innovation regions than to try to replicate their regions in yours.

Now I am at a loss. If none of the usual approaches—planning, genius, science, technology, and creativity—is sufficient for innovation, how does someone go about it?

This was on our minds when we started our work on the report. If Chile winds up adopting policies based on assumptions that do not work, it will not succeed in its goal of improving its competitiveness. This is why we stepped back to ask how innovations actually happen. We produced the new interpretation you see in the report, and that allowed us to make policy recommendations that are likely to help Chile. And any other country as well.

Our new interpretation is that innovations emerge in history. Every innovation bears the imprint of its history and its era. The more common notions of new ideas and adopted practices hide the historical emergence. Unless you can see how historical emergence works, you cannot create policies that foster it.

Our examples of Pasteur and Edison point out that innovation is not simply a moment of insight, it is the product of the era (the times). The ingredients of an innovation are a concern or problem for which a resolution would be valuable, a set of existing components (including technologies) that enable or constrain possible resolutions, and a proposal for a particular combination of components (a design). Pasteur’s concern was to protect people against rabies; existing components included methods for producing animal vaccines, expertise in chemistry, expertise in microscopy, and a validated theory of germs; the proposal was a rabies vaccine. These three elements are all highly depen-
In innovation, the waves represent movements of possibilities.

as chasing an opportunity or dodging a threat in business.

Ah, you are mistaken; possibilities are quite real. Think of all the things you wanted but could not get. The possibilities did not materialize, and the failures could be just as life changing as being wiped out by a crashing wave.

So where do we find these waves of possibilities?

They appear in the conversations, moods, and emotions of a community. Every conversation opens new possibilities and is affected by the moods and emotions of its participants. The innovator looks for signs that a possibility has many followers (or does not) and which emotions are manifested in the conversations and in people’s behaviors. Conversations and moods that continue over time within a large group are big waves worth watching. Some of the new social media, such as Twitter, are cultivating many new observers of shifting waves of moods in social communities. Since the conversations and the commitments they fulfill cause a little bit of history to be made, we can say that the waves of conversations are making history. That is why we can say that innovators are surfers of history.

What kinds of “possibility waves” must I surf?

We think there are six, depending on the time horizons during which the waves move. Just like waves on the ocean, possibilities have different wavelengths and directions. Starting with the widest, the horizons are:

1. The “fulgor.” That Spanish word, also found in English, means something dazzling and bright. We use it as a metaphor for an insight that opens up a new world of possibilities for dealing with a concern.
2. Next is basic science, which is a search for recurrences that explain what is going on and suggest new technologies. These searches can be triggered by fulgors. Research centers, laboratories, and universities, and universities are common locations.
3. Next is a search for applications of basic science principles.
4. Next is a search for new products that embody concrete applications.
5. Next is opening new markets for products supporting the applications.
6. Finally, is the everyday use of things.

The experienced history surfer is aware of movements at all these levels at the same time.

What conversations make me into a surfer?

There are two kinds. Pragmatic conversations are the ones in which we request, promise, offer, declare, assess, and assert. These conversations make commitments, and commitments produce actions. If we are good at fulfilling our commitments, we build trust.

The other kind is the world-opening conversation. Sadly, this kind is much less common. In these conversations, we tune in on concerns, sense moods, articulate possibilities, notice anomalies (disharmonies), harbor contradictions, and suspend judgments.

What do you recommend for those wanting to learn to be surfers of history?

This is a big topic that will get us into the challenges now faced by our education institutions. Let us come back to it in a future interview.

References

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