Winning at Innovation

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Those who interpret innovation as invention will be losers. Those who interpret innovation as adoption of new practice in a community will be winners.

nnovation is one of the hottest topics in technology, business, and government. Everyone believes that if they do not innovate faster, their competitors will surpass them. The subject of innovation has motivated many authors to write—Amazon.com lists more than 30,000 books with "innovation" in their title.

Success statistics for innovation are not encouraging. One in 500 patents returns the inventor's investment. Only 4 percent of innovation projects succeed in meeting their financial objectives. Most large-scale innovations take 5–10 years to be adopted.[1]

The research indicates that about 90 percent of the effort in a successful innovation goes to getting user communities to adopt it; only 10 percent goes to ideation. Ironically, the media and many of the best-selling books emphasize ideation—"stimulating the creative juices"— making it seem that you are 90 percent there once you have prototyped your novel idea.

My colleagues and I set out to understand why the success rates for innovation are so poor given all the effort and brainpower that has gone into understanding how innovation works and how to manage it. In *The Innovator's Way*,[1] Robert Dunham and I presented these conclusions:

❯ Most definitions of innovation are vague and give little guidance on measuring success.
❯ Most theories of innovation explain how innovation worked in the past but do not say how to generate innovation in the future.
❯ Most explanatory theories of innovation are deeply flawed but contain just enough truth to keep them in play.
❯ The assumption that ideation drives innovation undergirds the most popular theories. We called that assumption the Invention Myth because ideation yields inventions and there are so many counterexamples to the hypothesis that inventions cause innovation. The myth leads people to invest heavily in idea creation and dissemination and distracts them from the important work of bringing about adoption.
❯ Serial innovators hone a definite skill set, which we called the eight innovation practices: sensing, envisioning, offering, adopting, sustaining, executing, leading, and embodying. Each practice elicits commitments necessary for the innovation. Failing at any one of them is usually enough to block the innovation.

Because people overwhelmingly agree that innovation has happened when you see that a community has adopted a new practice, we defined innovation as *emergence of new practice in a community*. We use the term "adoption" instead of "emergence" when the new practice results from an innovator's leadership. Successful innovators achieve adoption at rates far higher than the prevailing 4 percent.[1]

Bob Metcalfe, the inventor of Ethernet, tells the story of 3Com, a company he founded to make and sell Ethernets.[2] On his sales trips, he did not find executives ready and waiting for Ethernets; he constantly had to confront their doubts about a new and unfamiliar technology, persuade them of its benefits to their companies, and convince them that he would be a trustworthy supplier of Ethernets. Metcalfe summarized his effort with his famous saying, "Invention is a flower, innovation is a weed." He spent one year developing his Ethernet idea and the next 10 years selling Ethernets. Sales do not matter in invention, but they matter significantly in innovation.

FAULTY THEORIES

A number of explanatory theories of innovation have emerged. Here are five most popular:

> *Innovation pipeline*: an innovation begins as an idea and flows through stages of prototyping, production, and marketing before arriving in the marketplace.
> *Innovation funnel*: a set of ideas is progressively winnowed by reviews, prototype tests, and market tests until the few with greatest merit make it to the marketplace.

> *Network diffusion*: an innovator injects an idea into a social network, where it spreads out across the communication channels of the network until everyone has a chance to adopt it.
> *Innovation cell*: a protected pocket of innovators spins off ideas into the surrounding environs.
> *Disruption*: Established businesses are nibbled to death by small challengers with a different business model that offers a low-grade version of their

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product to customers they do not want; eventually the alternative matures and disrupts their main business because they cannot compete with it.

Unfortunately, there are many important counterexamples to each of the theories. The flaws of these theories arise from two main sources.

The first source is that these theories are all retrospective. In hindsight, we describe the pattern the action seemed to follow. However, innovators in the middle of the action usually cannot see where they are in the pattern. The actions available to them appear risky and uncertain. There is no clear path. Bruno Latour[3] would call the hindsight pattern "ready-made-innovation" to distinguish it from the innovator's

messy experience of "innovation-in-the-making." The pattern is useless as a map for navigating the devilish details, the contingencies, and the surprises the innovator encounters with innovation-in-the-making.

The stories behind these patterns say that the successful actions of innovators were deliberate, considered, and often inspired choices by persons able to make sense of the situation and control it. On the contrary, Metcalfe would say that when he was in sales meetings, nothing was certain. He had to learn his customers' doubts and concerns, show them that the Ethernet took care of an important concern, and earn their trust in him as supplier. How did he learn their doubts? How did he discover their unmet concerns? How did he construct a proposal on the spot for how they could try Ethernets at acceptable risk? How did he lead them to the conclusion that he was sincere and competent and had their best interests at heart? He often had no idea what it would take to close a deal—and in many cases he failed to close a deal. In hindsight, the Ethernet looks like a simple and powerful idea whose adoption was inevitable, but at the time adoption was uncertain and frustrating. The best Metcalfe could do was approach each encounter with a sense of confidence that he could

lead the conversation to a successful conclusion.

The second source of flaws is the assumption that ideas start the process. Ideas are indeed important in innovation. It seems that someone's idea triggers the pipeline, feeds the funnel, starts a wave in the network, seeds the cell, or drives the nibbler. Yet numerous innovations did not begin with an idea. For example, social innovations such as Mothers Against Drunk Driving or, more recently, legalized pot and same-sex marriage welled up in popular opinion and swept many people along. The leaders of these movements report that they were redressing injustices and

Given these flaws, it is hard to see how careful strategic planning, innovation process management, and charismatic leadership can work consistently well.

My purpose here is to offer a different account of innovation that opens the possibility that innovators can navigate the contingencies and shape the outcome.

PRACTICES

As an interpretation of innovation, "emergence of new practice in a community" is completely different from "product of new ideas."
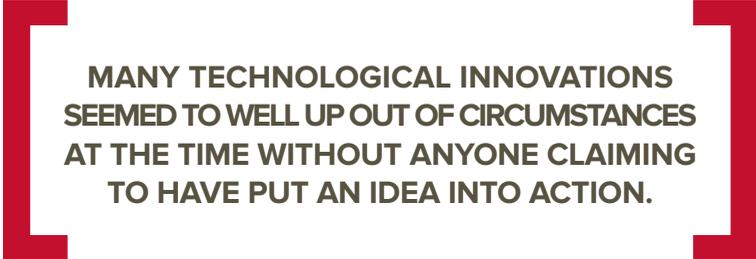
The term "practice" has two meanings. One is the repetitive work to

autonomous capabilities and sensibilities that need no conscious thought. This is very important. Our brains work too slowly to produce skillful action by applying rules and knowledge in real time. Practices enable us to respond effectively in real time with instant recognition of possibilities and actions ready at hand.

Practices are learned by doing—engaging with members of the community, performing actions repeatedly, and receiving performance assessments from community members until we meet the community standards without consciously thinking about them.

In contemporary usage, knowledge almost always means "know-what"—facts, rules, procedures, explanations, and theories—but not "know-how"—skill at doing things. A favorite term of scientists and educators is "body of knowledge," meaning all the recorded information about a field arranged in an organized framework. Seeking to recognize know-how, Michael Polanyi[5] introduced the term "tacit knowledge" for skills that we have but cannot explain how we do them—he popularized the motto "We know more than we can say." Because "knowledge" implies that that we can explain something, and yet we cannot explain how we do our practices, Polanyi would say that tacit knowledge cannot be part of a body of knowledge. I side with Polanyi to treat knowledge as a practice rather than practice as knowledge.

> # [MANY TECHNOLOGICAL INNOVATIONS SEEMED TO WELL UP OUT OF CIRCUMSTANCES AT THE TIME WITHOUT ANYONE CLAIMING TO HAVE PUT AN IDEA INTO ACTION.]

not creating ideas. Many technological innovations seemed to well up out of circumstances at the time without anyone claiming to have put an idea into action. For example, blogging seemed to well up without an identifiable inventor. Donald Schon[4] gave many examples of innovations that welled up without an identifiable idea source—for example, a bureaucracy changed a rule or a faster technology was installed. Many of what we call "ideas behind innovations" are actually stories constructed after the practices were already emerging. The "ideas" explained the practices but did not generate them.

learn or refine a skill. The other is the way members of communities do things. We are interested in the second meaning. Practices are habits, routines, trained tendencies, and ways of taking care of concerns. Practices are embodied—imprinted into the individuals and the social interactions of communities. They include shared beliefs, shared understandings of history, shared values, and shared concerns. When we talk about professional practice, legal practice, engineering practice, or medical practice, we invoke this sense.

Practices are automatic. This is what we mean by embodied—they are

The skill acquisition framework proposed by Stuart and Hubert Dreyfus in 1980 is excellent for understanding how we learn practices of a domain.[6,7] They say that a learner moves through six stages: beginner, advanced beginner, competent, proficient, expert, and master (see Table 1).

TABLE 1. Stages of learning.	
Stage	**Manifestations**
Beginner	Person knows of the domain and desires to learn. Declares a commitment to learning the domain. Capable only of following rules given by a teacher or representative of the domain. Must trust the teacher. Can be very slow and tentative while learning and trying out the basic rules.
Advanced beginner	Familiarity with common situations. Learns and applies maxims—tips and rules of thumb to be used when certain symptoms appear. Still needs help and is faster about figuring out what to do and making the moves.
Competent	Has learned the norms of the domain. Common situations all look familiar and the person knows what to do right away. Does not require supervision to avoid common mistakes and satisfy customers. Asks for help when confronted with an unfamiliar situation.
Proficient	Has developed a high level of skill that others admire and imitate. Sets new standards of performance.
Expert	Has extensive experience. Quickly sees solutions to problems that baffle others. Sought out as a teacher, manager, and problem-solver.
Master	Has developed a long view of the domain and knows how to intervene to change the game that everyone else is playing.

A person's progress takes time, practice, and experience. The person moves from hesitant rule-based behaviors as a beginner to fully embodied, confident, intuitive, and game-changing behaviors as a master. A beginner, for example, does not know the domain and must rely on others for the basic rules and to correct mistakes. A competent person knows how to perform all the basic standard practices of the domain and does not need supervision to avoid common mistakes. Continued practice with assessments from more experienced members of the community is necessary to guarantee progress through these levels and avoid the fate of just getting better at making mistakes.

We say that someone "embodies a practice" when they can perform it skillfully without conscious thought. Communities embody a practice when its members all embody it. Innovations are embodiments of new practices in communities.

As we progress through the stages of learning, we acquire sensibilities about what concerns people have and how they might react to our actions. An expert negotiator knows that people from many non-US countries spend a lot of time getting to know you through small talk and stories before they will discuss negotiating a deal. Lacking this sensibility, a novice can cause the negotiation to break down and have no idea what happened. An important sensibility for innovators is moods. Individuals and communities will not join an innovation if they are negatively disposed about the possibilities. Innovators need to recognize moods and orchestrate moods receptive to the innovation.

Innovators frequently find themselves needing to learn about a new community of which they are not a member. The ideal way to learn is to approach the new community as a beginner and work your way up at least to advanced beginner. This can

be difficult for those already experts in another domain—the mood of confidence in our expertise gives way to frustration in a new domain where we lack expertise.

EMERGENCE
When we say that a practice emerges in a community, we mean that the collective behavior of the group organizes around the new practice, supporting and sustaining it.

Technologies are tools and equipment that enable and facilitate practices. For example, the telephone facilitates the practice of having a remote conversation with a friend. The telephone did not arise from thin air. Alexander Graham Bell proposed the device to enable voice signals to travel over existing telegraph lines, thereby offering remote voice conversation as an alternative to telegrams. The new technology enabled a new offer—remote talking—that became a widespread practice after telephone

companies implemented lines, repeaters, instruments, operators, subscription fees, and repair services.

Many innovations begin when a member of the community recognizes some condition as a breakdown or anomaly and determines to do something about it. In 2009, the founders of Uber, seeing that hailing a taxi was a frustrating experience for many people, proposed a new practice of calling for a ride via a smartphone app. In 1880s France, Louis Pasteur, seeing that anthrax was a microorganism (a germ) that killed cattle and sheep by disrupting their body chemistry, developed vaccines to give the animals immunity. A breakdown in the current practice—for example, flagging down a taxi or quarantining sick animals—was the opportunity to propose a new practice—activating an app or injecting a vaccine. When the new practice was adopted, everyone said that an innovation had occurred. The new practice replaced the old.

It is not accurate to say that the Uber founders' idea, or Pasteur's idea, caused the innovation. People adopted the Uber practice out of frustration with the prevailing hand-hailing practice or a desire for a more convenient way to get a ride. The Uber founders' ideas about databases, GPS, and match-making algorithms were of no concern to them. French farmers adopted the vaccination practice out of deep anxiety for their animals and their own financial well-being. Pasteur's ideas about chemistry, microscopes, or microorganisms were of no concern to them. All these adopters were not moved by an idea but by the tangible results, the relief, and the satisfaction from the new practice.

It is important to highlight two aspects of how innovations emerge and then spread through the community:

❯ There is a set of conditions that many community members experience as a breakdown or an intolerable disharmony.

❯ The innovator responds to the conditions by proposing a new practice; the new practice combines existing technology components and practices in a novel way.

Emergence is constrained by the existence of conditions ripe for change and of practices and technologies that can support the change. The innovation could not have happened sooner because the conditions or supporting factors did not exist. Pasteur could not have invented anthrax vaccine 10 years earlier because anthrax was not a problem then. He could not have invented it 10 years later because someone else would have done that.

> **THE INNOVATOR, NOT THE TECHNOLOGY, IS THE DRIVER OF CHANGE. THE TECHNOLOGY OPENS NEW POSSIBILITIES, INTO WHICH INNOVATORS MOVE WITH OFFERS.**

The innovator, not the technology, is the driver of change. The technology opens new possibilities, into which innovators move with offers. If people accept the offers on a wide scale, we say that the innovation has emerged.

More than one person may respond to the current conditions with offers of new practices. This is called "multiple independent discovery." It often seems like a mystery that two people working independently can discover the same thing. Independent discovery is perfectly natural when you see practices rather than ideas. The practices belong to the community, and multiple people in the community can respond to community-wide breakdowns. They are not so independent after all.

Consider Steve Jobs and the iPhone. The familiar story is that Jobs was a hard-driving, difficult genius who conceived the iPhone and pushed it through despite resistance from the people working for him. A more careful look shows that he had been pursuing the idea of an intelligent assistant for almost 20 years. Early attempts like Apple Newton failed because the technology was not able to support the kind of offer Jobs had in mind. By 2005, when he announced the iPhone, a lot of technologies and practices had converged, making his offer credible and enticing. Instead of offering a customizable intelligent assistant, Jobs offered a cool way to establish a customized, personal identity in a digital world. The iPhone was not an app platform, it was a social statement. The iPhone depended on several key components:

❯ a deal with the telecommunications companies to invent a "data plan" for customers sending data over voice links;

Practice	Description
TABLE 2. Five foundational practices for achieving adoption.	
Sensing	Sensing an opportunity in an unmet concern or a disharmony; being unsettled by an anomaly.
Envisioning	Telling an attractive, compelling story about a better world if the unmet concern were taken care of.
Offering	Making proposals to take care of the unmet concern. Proposals typically combine existing practices and technologies in new ways and they are iterated in response to reactions from the community.
Adopting	Eliciting commitments from early adopters to try the new practice for a limited time.
Sustaining	Eliciting commitments from the majority to enter the new practice for an indefinite time. Supporting them with an infrastructure that aligns with other practices, values, and norms of the community.

❱ the success of the iPod, which became a component of the iPhone;
❱ the success of the iTunes store, which became the model for an app store;
❱ the expansion of an existing community of Apple software developers into a community of app developers; and
❱ the availability of new technologies such as Gorilla Glass.

Jobs made an offer that only Apple was positioned to make, and which appealed to a large number of people.

AGENCY OF INNOVATORS

Even with innovations that seem to emerge without anyone being the lead innovator, you can see human agency at work if you look carefully. Consider the earlier example of blogging. No one knows who the first blogger was and no one has ever stepped forward to claim credit. Blogging appears to have started when someone started posting his or her diary on a webpage. That person opened a new possibility that others assessed as cool and imitated. Still others followed by designing software to facilitate the new practice for

new bloggers. Web technology made blogging possible and supported those who wished to pursue it—but people, not technology, drove the process.

To humans, new possibilities are like flames to moths. All we need are a few members from our community to move toward them, making offers, requests, promises, assessments, and declarations that bring the rest of us along. By studying a large number of innovations and interpreting what happened in this way, Dunham and I saw a common pattern in the actions of innovators:[1]

❱ Feeling a sense of concern, breakdown, disharmony, or anomaly.
❱ Desire to do something about it arising from their care for the community and concern about identity in the community.
❱ Building a story about how things can be better. Many stories show how the "current common sense" is fostering the breakdown and then propose a "new common sense" that overcomes it. Listeners react to a good story with "I want that."
❱ Offering to build what is needed to get there.

❱ Mobilizing commitments from those who accept the offer.
❱ Building an infrastructure to sustain the new practice.

The elements of this pattern are not sequential steps. They emerge concurrently in the innovator's conversations. The heart of all this is the offer. One of our philosopher friends, B. Scot Rousse, put it this way: *An offer is the birth of a new future, in the present, in the hands of those who care.*

These aspects of the agency of innovators in emergence led us to describe five foundational practices and three advanced practices of innovation leaders (see Tables 2 and 3).

ESSENTIAL COMMUNICATION PRACTICES

The eight basic innovation practices are conversations, each aiming to elicit certain commitments. The five basic practices are all necessary: if any one fails to elicit its commitments, the desired innovation fails.

We found that many of our students are unaware of commitments being made in their conversations. This is because our traditional way of understanding conversations focuses

TABLE 3. Three advanced practices for achieving adoption.

Practice	Description
Mobilizing	Cultivating relationships and social network to back your offer and help make it happen; depends on the social power of the network and on your personal power. Brings early adopters and later majority adopters into the new practice.
Appropriating	In the mood of a beginner, investigating related domains to understand their history behind their concerns, and to discover existing practices that might help with the concern you are dealing with.
Navigating	Finding your way amidst conflicting waves of possibilities, moods in the community, and resistance; coming to your goal without having a detailed plan to get there; and maintaining your balance and center when hitting turbulence.

elsewhere. Our traditional understanding is that conversations are communications among people that transmit information from one to another, seeking to have all the parties achieve the same mental model (understanding) of the world around them. Once they agree on the mental model, they can coordinate actions effectively.

We offered a new framework in which language is not primarily a carrier of messages but a medium that shapes the world:[8]

> The world is a vast, swirling sea of conversations.
> In conversations, people make commitments, which move them to produce actions.
> There are five kinds of commitments: request, promise (or offer), declaration, assertion, assessment. They are made by speech acts.
> Each speech act alters the world in some way. We have tremendous power to shape the world through our conversations.
> The basic linguistic structure of coordination is the conversation-for-action loop, which blends these commitments so that two parties can achieve a condition of satisfaction they mutually care about.
> As biological beings, we accumulate histories. We embody not only our personal experiences but interactions with others and indeed the history of our communities prior to our arrival.
> Our histories give us concerns, identities, and moods, each of which opens and closes possibilities we see for the future. We disclose our concerns, identities, and moods through conversations.

We use the term "navigation" for the ability to move toward an objective in a world shaped by ever-unfolding conversations, without knowing the exact path to get there. Navigation means we can cope successfully with contingencies and surprises that cannot be predicted. To do this:

> We are sensitive to the histories of communities, enabling us to see and respond to people's concerns.
> We read the moods of our communities, enabling us to detect what people are receptive to.
> We discern possibilities in social space, enabling us to spot openings we can enter and avoid cul-de-sacs of resistance.
> We learn which groups, organizations, or networks have social power, enabling us to follow the movements of leaders.
> We cultivate relationships and build networks that accumulate social power.
> We develop emotional stability, enabling us to maintain our balance and center in the moving waves and forces of the world generated by other people's conversations.

Many people do not look at the world this way. They see it as a collection of objects in various arrangements with one another—action is movement with and among objects. They do not see the world as a space of practices, shaped by conversations, where objects are focal points and tools for practices. They do not see they are agents who can shape the world through requests, promises, offers, declarations, and assessments.

In our work with students, we find that those who do not learn or engage in the innovation leadership practices are consigned to frustration that their

ideas never get taken seriously. They are the losers.

We find that the new interpretation empowers our students to become powerful innovation leaders within a few months of engaging and practicing. They are the winners.

Today the word "innovation" has joined a group of get-rich-quick buzzwords. I seek rigor in the discussions of innovation. What exactly is innovation? How does it work? What is the role of human agency in producing it? How do we tell if we have achieved it?

Innovation is a natural aspect of humans living together in their interacting communities. New practices are constantly being born and others are dying out. Leaders seek to shape the conversations in the community to facilitate the emergence of practices of benefit to the community.

When we see that an innovation has happened, we have a bad habit of assuming the innovation originated with an idea and we look backward to find and recognize the person who first articulated the idea. This is very misleading because many innovations emerge without an originating idea— they began as a response to a concern, such as disgust with injustice. The ideas formed as the process evolved. Ideas are not the cause of the process, but rather a byproduct. Our success at innovation will be limited if we just concentrate on creating ideas and downplay the work of adoption.

Latour pointed out that the experience of innovation in the making is usually messy and chaotic with no clear path to the goal, whereas a retrospective analysis usually seems to reveal a path.[3] Navigation as we have discussed is the way an innovation leader can move in the mess and chaos, when the path is unknown and the ideas are not yet completely formed. ⊏

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