the myths of innovation

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The Myths of Innovation

by Scott Berkun

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Printed in Canada.

Published by O'Reilly Media, Inc., 1005 Gravenstein Highway North, Sebastopol, CA 95472.

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Interior Designer: Ron Bilodeau
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Printing History:

May 2007: First Edition.

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ISBN-10: 0-596-52705-5
ISBN-13: 978-0-596-52705-1
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CHAPTER 4

People love new ideas

Imagine it's 1874, and you've just invented the telephone. After hi-fiving your friend Watson, you head down to Western Union—the greatest communication company in the world—and show your work. Despite your excellent pitch (a century before PowerPoint), they turn you down on the spot, call the telephone a useless toy, and show you to the door. Would you have given up? What if the next five companies turned you down? The next 25? How long would it take to lose faith in your ideas?

Fortunately, Alexander Graham Bell, the telephone's inventor, didn't listen to the folks at Western Union.[1] He started his own business and changed the world, paving the way for the mobile phone in your pocket. Similar stories surround innovators like Google founders Larry Page and Sergey Brin, whose page rank ideas were turned down by AltaVista and Yahoo!, the dominant search companies of the day. George Lucas was told all kinds of no by every major Hollywood studio but one, for the original *Star Wars* screenplay. And, don't forget that Einstein's $E=mc^2$, Galileo's sun-centered solar system, and Darwin's theory of evolution were laughed at for years by experts around the world.

Every great idea in history has the fat red stamp of rejection on its face. It's hard to see today because once ideas gain acceptance, we gloss over the hard paths they took to get there. If you scratch any innovation's surface, you'll find the scars: they've been roughed up and thrashed around—by both the masses and leading minds—before they made it into your life. Paul C. Lauterbur, winner of the Nobel Prize for coinventing MRI, explained, "you can write the entire history of science in the last 50 years in terms of papers rejected by *Science* or *Nature*."[2] Big ideas in all fields endure dismissals, mockeries, and persecutions (for them and their creators) on their way to changing the world. Many novels in classics libraries, including James Joyce's *Ulysses*, Mark Twain's *The Adventures of Huckleberry Finn*, and J. D. Salinger's *The Catcher*

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1 Bell is often credited as the inventor, but Elisha Grey merely failed to file his patent a few hours sooner. Second, Western Union did reject Bell's proposal, but it's unclear how strong their rejection was. (If they saw its potential, would it have been wise to tell Bell on the spot?) See *http://inventors.about.com/library/inventors/bltelephone.htm*.

2 Kevin Davis, "Public Libraries Open Their Doors," *BIO-IT World*, February 2007, *http://www.bio-itworld.com/archive/111403/plos/*.

in the Rye were banned upon publication; great minds like Socrates and Plato even rejected the idea of books at all.[3]

The love of new ideas is a myth: we prefer ideas only after others have tested them. We confuse truly new ideas with good ideas that have already been proven, which just happen to be new to us. Even innovators themselves read movie reviews, consult Zagat restaurant ratings, and shop at IKEA, distributing the burden of dealing with new ideas. How did you choose your apartment, your beliefs, or even this book? We reuse ideas and opinions all the time, rarely committing to the truly *new*. But we should be proud; it's smart. Why not recycle good ideas and information? Why not take advantage of the conclusions other people have made to efficiently separate what's good and safe from what's bad and dangerous? Innovation is expensive: no one wants to pay the price for ideas that turn out to be not quite ready for prime time.

There is an evolutionary advantage in this fear of new things. Any ancestors who compulsively jumped over every newly discovered cliff or ate only scary looking plants died off quickly. We happily let brave souls like Magellan, Galileo, and Neil Armstrong take intellectual and physical risks on our behalf, watching from a safe distance, following behind (or staying away) once we know the results. Innovators are the test pilots of life, taking big chances so we don't have to. Even early adopters, people who thrive on using the latest things, are at best adventurous consumers, not creators. They rarely take the same risks on unproven ideas as the innovators themselves.

The secret tragedy of innovators is that their desire to improve the world is rarely matched by support from the people they hope to help.

Managing the fears of innovation

What's the most stressful thing that can happen? Juggling hungry cocaine-addicted baby tigers? Doing standup comedy in front of your coworkers and in-laws? Well, if you believe the studies, it's the big five: divorce, marriage, moving, death of a loved one, and getting fired.[4] All stressful events, including tiger juggling, combine

[3] Plato, *Phaedrus*, *http://classics.mit.edu/Plato/phaedrus.html*.

[4] *http://www.surgeongeneral.gov/library/mentalhealth/chapter4/sec1_1.html*.

fear of suffering with forced change. A divorce or new job demands that your life change in ways out of your control, triggering instinctive fears: if you don't do something clever soon, you're going to be miserable (or dead). Although it's possible to endure the big five simultaneously, a notion that quiets most complaints about life, surviving just one devastates most people for months.

Now imagine some relaxing events: reading a funny novel by the ocean or having beers with friends by a midnight campfire. They're activities with little risk and guaranteed rewards. We've done these things many times and know that others have done them successfully and happily in the past. These are the moments we wish we had more of. We work hard so we can maximize the amount of time spent on the planet doing these kinds of things.

Innovation conflicts with this desire. It asks for faith in something unknown over something known to be safe, or even pleasant. A truly innovative Thanksgiving turkey recipe or highway driving technique cannot be risk-free. Whatever improvement it might yield is uncertain the moment it's first tried (or however many attempts are needed to get it right). No matter how amazing an idea is, until proven otherwise, its imagined benefits will pale in comparison to the real, and nonimagined, fear of change.

This creates an unfortunate paradox: the greater the potential of an idea, the harder it is to find anyone willing to try it (more on this in Chapter 8). For example, solutions for world peace and world hunger might be out there, but human nature makes it difficult to attempt them. The bigger the changes needed to adopt an innovation, the more fears rise.

> *There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order, this lukewarmness arising partly from fear of their adversaries…and partly from the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it.*
>
> —Niccolo Machiavelli

The list of negative things innovators hear

Every creator hears similar criticisms to his ideas. While I don't have proof, I bet the first caveman who captured fire, the first Sumerian with a wheel, the first person to do anything interesting in any society in human history, heard one of the following after he pitched his idea:

- This well never work.
- No one will want this.
- It can't work in practice.
- People won't understand it.
- This isn't a problem.
- This is a problem, but no one cares.
- This is a problem and people care, but it's already solved.
- This is a problem, and people care, but it will never make money.
- This is a solution in search of a problem.
- Get out of my office/cave now.

Sometimes very smart people say these things. Ken Olsen, founder of the Digital Equipment Corporation, said in 1977, "There is no reason anyone would want a computer in their home." The leading art critics in France, in response to the opening of the Eiffel Tower, made comments like, "[that] tragic lamppost springing up from its bowels…[is] like a beacon of disaster and despair."[5] It took the British Navy, at the peak of their dominance in the 17th century, 150 years to adopt a proven remedy for scurvy. Bo Peabody, serial entrepreneur, wrote, "It's astounding the number of people who will tell you and your ideas are crazy. I have been thrown out of more than a thousand offices while building my six companies."[6] Remember, it's hard to know the future, and all great minds have failed to predict what would take off and what wouldn't. My point isn't to make fun of famous people for being wrong; instead, it's to point out that we're all wrong much of the time (see Figure 4-1).

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[5] John Lienhard, *The Engines of Our Ingenuity* (Oxford University Press, 2006), 186.

[6] From *Lucky or Smart*, 28.

Figure 4-1. *Many critics demanded that the Eiffel Tower be torn down when it was built. Today, it's one of Paris' most popular attractions.*

Experienced innovators anticipate these criticisms. They prepare refutations or preempt them, as in, "Who would want electricity in their homes? Let me tell you who…."[7] But even with preparation, charm, and amazing ideas, convincing people to see an idea in the same way as its creator is difficult. Most have little interest

[7] Edison was a shameless promoter of electricity, crossing moral and ethical lines. He created the first electric chair to demonstrate that his competitors' designs were unsafe, unlike his (which wasn't true). Matthew Josephson, *Edison: A Biography* (McGraw-Hill, 1959), 348–349.

in having their minds changed, a fact that's hard to remember when you've spent your life savings, or an entire weekend, killing yourself to invent something. This gap—the difference between how an innovator sees his work from how it's seen by others—is the most frustrating challenge innovators face. Creators expect to be well received. They look at accepted innovations and the heroes who delivered them and assume their new innovations will be treated the same way (see Figure 4-2). But no matter how brilliant an idea is, the gap exists. Until the innovation is accepted, it will be questioned relentlessly.

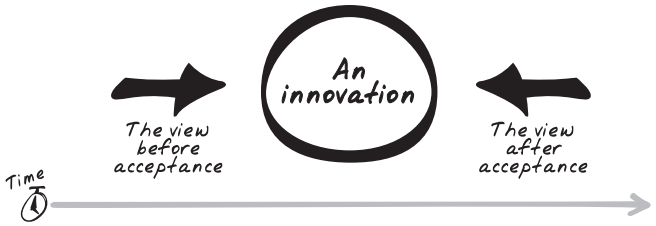

Figure 4-2. *Innovators know of other innovations only after the fact, and they are surprised when their ideas are treated differently from the accepted innovations of the past.*

Many innovators give up when they learn ideas, even with dazzling prototypes or plans in hand, are the beginning. The challenges that follow demand skills of persuasion more than brilliance. As Howard Aiken, a famous inventor, said, "Don't worry about people stealing an idea. If it's original, you will have to ram it down their throats."[8] Although beating up people to convince them rarely works, Aiken's point holds: people are unlikely to be as interested in your ideas as you are.

The observation many would-be innovators never make is that most criticisms are superficial. The spoken questions only hint at the real concerns. Responding to superficial comments is a loser's game, persuading demands mapping criticisms to deeper issues. All of the negative comments listed above can be mapped to one or more of the following perspectives likely held by others:

- **Ego/envy:** I can't accept this because I didn't think of it.
- **Pride and politics:** This makes me look bad.

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8 *http://en.wikipedia.org/wiki/Howard_Aiken.*

- **Fear:** I'm afraid of change.
- **Priority:** I have 10 innovative proposals but resources for one.
- **Sloth:** I'm lazy, bored, and don't want to think or do more work.[9]
- **Security:** I may lose something I don't want to lose.
- **Greed:** I can make money or build an empire if I reject this idea.
- **Consistency:** This violates my deeply held principles (no matter how absurd, outdated, or ridiculous they are).

The effect of these feelings, whether justified or irrational, is the same. They're just as real in the mind of the person feeling them as anything else. If your boss feels threatened by a proposal—even if those reasons seem entirely paranoid or delusional to you—those feelings will define his behavior in response to new ideas. If those feelings are strong, it's easy for him to use the comments above to reject proposals for even the greatest ideas. If the innovator defends only the superficial and makes no attempt to persuade the deeper feelings to change, or find ways to recast the innovation so that those feelings become positive, she will fail to get the support she needs.

For example, when Galileo claimed the sun was the center of the solar system, he faced persecution from the Church and the Western world for reasons listed above. It wasn't the idea itself that caused the outrage—it was how that idea made them feel. They didn't care about what was at the center of the solar system. Galileo would have been in similar trouble had he suggested the earth rotated around a purple dragon or a half-eaten sandwich. They weren't upset about the details of his theory; they were angry that anyone would advocate a theory different from the one they believed in (of course, making fun of the Pope didn't help any).[10] It was the principle of the thing and how it questioned their sense of order—two common reasons for rejecting ideas that have nothing to do with the idea itself.

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[9] Related quote: "Most people would rather die than think; in fact, they do so." —*Bertrand Russell*

[10] In short, when Galileo wrote *Dialogue Concerning the Two Chief World Systems*, he put quotes from Pope Urban VIII into the mouth of his character Simplicius, a fool who is ridiculed for defending against heliocentricism. See James Reston, *Galileo: A Life* (Beard Books, 2000).

This is the magic double-secret principle: innovative ideas are rarely rejected on their merits; they're rejected because of how they make people feel. If you forget people's concerns and feelings when you present an innovation or neglect to understand their perspectives in your design, you're setting yourself up to fail.

The innovator's dilemma explained

Earlier, I asked you to imagine inventing the telephone. Did you like that? Well, you'll like this even more, as this scenario has a surprise ending.

Imagine it's 1851, and you're sick and tired of waiting for the Pony Express to deliver important messages. You happen to meet a Mr. Morse and buy into his idea for using copper wire to send instant messages over great distances. Your friends laugh, telling you to get a real job—wires are silly things for grown men to play with. At great financial risk, you build the first cross-country cables in the U.S., and it works, changing the world. Your organization thrives for years; the nation is communicating, for a price, over your cutting-edge digital communication network. Wealthy and famous, attractive people soon throw themselves and their money at you. But you're not finished: in a fit of innovation, you create the first stock ticker in 1866, give the nation its first standardized time service, and revolutionize the financial world with money transfers—allowing people to send cash thousands of miles across the country in seconds.

In the middle of your glory, as your rise to innovation fame reaches untold heights, a young man visits you. He holds an odd machine in his hands. He claims it will replace everything, especially all the things you've struggled all your life to build. He's young, arrogant, and dismissive of your achievements. How long would you listen before you threw a telegraph at him? Could you imagine, given all you'd built, that something as simple as his clunky wooden box would replace everything you know? Or would you have the guts to give up the innovations you'd made and put everything behind the unknown?

This challenge of mind is known as the *innovator's dilemma*. The face off between Western Union and Alexander Graham Bell (dramatized but roughly accurate in my telling) has been played out

for centuries, with the captains of one aging innovation protecting their work from the threat of emerging ideas. The concept is well described in Clayton M. Christensen's book, *The Innovator's Dilemma*, which provides hearty business examples of faith in the past blinding smart people from the innovations of the future.[11]

It's both a psychological and economical phenomenon: as people and companies age, they have more to lose. They're not willing to spend years chasing dreams or to endanger what they've worked so hard to build. Attitudes focused on security, risk aversion, and optimization of the status quo eventually become dominant positions, and even become organizational policy at companies that were once young, nimble, and innovative. Even its success enabled it to grow into mainstream businesses, diminishing their interest and capacity for new ideas.

For these reasons, it's rare in art, music, writing, business, and every single creative pursuit for innovators to sustain that role throughout their lives. It's not that their talent wanes, it's more that their interests change. Having succeeded, their strongest desire is not to find new ideas to conquer, but to protect the success they already have.

Frustration + innovation = entrepreneurship?

The last 30 years has seen an amazing wave of innovation at the intersection of technology and entrepreneurship.[12] Companies like Apple, Google, Microsoft, HP, and Yahoo! started as small groups who dismissed the well-worn path of convincing others and chose instead to realize ideas on their own. These start-up ventures were born at the frustration of failing to make innovation happen in larger, established businesses. Had the founders of these companies found positive responses from corporations, history might be different. Frustration with people in power is a

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[11] Clayton M. Christensen, *The Innovator's Dilemma* (Harvard Business School Press, 2003).

[12] This power combo has been a phenomenon since the early days of the Industrial Revolution, when the first steam engines, factories, and mining systems were pioneered by entrepreneurial technologists, free by modern governments to build businesses on their own. See Arnold Pacey, *The Maze of Ingenuity* (MIT Press, 1992).

perennial complaint among creative minds: Michelangelo and da Vinci were infuriated by their employers' limited ambitions and their peers' conservative natures in the same way creative people are today.[13]

Innovators rarely find support within mainstream organizations, and the same stubbornness that drives them to work on problems others ignore gives them the strength necessary to work alone. This explains the natural bond between breakthrough thinkers and new companies; innovative entrepreneurs not only have the passion for new ideas, but they also have the conviction to make sacrifices that scare established companies.

The risks for an individual focusing 100% of his resources on a crazy idea are small: it's one life. But for an organization of 500 or 10,000 people, the risks of betting large on a new idea are high. Even if the idea pays off, the organization will be forced to change, causing fears and negative emotions to surface from everyone invested in the success of the previous big idea. Of course, some corporations are so large that they can take great risks: they can lose $20 million on an experiment and survive. But these efforts fail so often that it's possible that having less to lose works against innovation, compared to scrappy bootstrapped efforts led by people with everything at stake.

But as rosy as it sounds, the entrepreneur, whether she's wealthy or happy living on ramen noodles,[14] must eventually convince one group of people—customers—of the merit of her ideas. And if she doesn't have enough money to support her new ideas, or her family refuses to eat canned chili for the third straight month, she'll need to convince a second group—investors. As far as we know, both groups are human beings (though some debate the DNA of venture capitalists) and have the same emotional responses listed above.

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[13] However, the major difference between the 15th century and the present day is opportunity. Back then, if you had an idea for cathedral design or siege weapons (hot technologies of the day), you were dependent on the one organization that could afford your services: the Church. But software programmers in the late 20th century and beyond not only have many patrons, they have the means to build their dreams themselves.

[14] For a trifecta of innovation, see Tadashi Katoh and Akira Imai, *Project X - Nissin Cup Noodle* (Digital Manga Publishing, 2006). It's a graphical novel history of how instant ramen noodles were invented, and how the office staple of noodles in a cup came to be.

How innovations gain adoption (the truth about ideas before their time)

One frequent saying in innovation circles is "an idea ahead of its time." What a strange phrase. How can an idea be ahead of its time? How can anything be ahead of its time? It makes no sense. What people mean when they say this is one of two things: they think the idea is cool but not necessarily good, or they're trying to get you to buy it. But it's a lousy pitch. How often do the things we imagine from the future work out in the present? Personal rocketships? Cars that fly? Nuclear-powered everything? The odds of cool ideas from sci-fi movies gaining adoption are poor, and it's far from a compliment to have something labeled "ahead of its time."[15] People don't slave away on insanely difficult work, sacrificing the pleasures of life, with the singular hope that, on their deathbeds, after everything they've done has been ignored, they will be told they were "ahead of their time." To be told your idea is ahead of its time is innovation pity, not praise.

But more importantly for us, this phrase exposes myths about how innovations do gain adoption in the world. First, it assumes technology progresses in a straight line (as covered in Chapter 2). To be ahead of its time implies than an idea *has* a time, marked in red at the universal innovation headquarters, waiting for people to catch up to it: an entirely inaccurate, innovation-centric view of how people live.

In *Diffusion of Innovation*s, Everett M. Rogers writes:

> *Many technologists think that advantageous innovations will sell themselves, that the obvious benefits of a new idea will be widely realized by potential adopters, and that the innovation will therefore diffuse rapidly. Unfortunately, this is very seldom the case. Most innovations in fact diffuse at a surprisingly slow rate.*[16]

The book takes an anthropological approach to innovation, suggesting that new ideas spread at speeds determined by psychology and sociology, not the abstract merits of those new ideas. This explains the mysteries of great innovations that fail and bad ideas

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[15] Notice I said movies, not sci-fi books. Films are visual media and choose technologies that look good or have dramatic value, not necessarily things that solve important problems, have progressive value, or obey the laws of physics.

[16] Everett M. Rogers, *Diffusion of Innovations* (Free Press, 2003), 15.

that prevail—there are more significant factors than the ones inventors focus on. Technology prowess matters much less than we think in the diffusion of innovation.

Rogers identifies five factors that define how quickly innovations spread; they belong in every innovator's playbook. Roughly summarized and loosely interpreted, they include:

1. **Relative advantage.** What value does the new thing have compared to the old? This is perceived advantage, determined by the potential consumer of the innovation, not its makers. This makes it possible for a valueless innovation—from the creator's perspective—to gain acceptance, while more valuable ones do not. Perceived advantage is built on factors that include economics, prestige, convenience, fashion, and satisfaction.
2. **Compatibility.** How much effort is required to transition from the current thing to the innovation? If this cost is greater than the relative advantage, most people won't try the innovation. These costs include people's value systems, finances, habits, or personal beliefs. Rogers describes a Peruvian village that rejected the innovation of boiling water because of cultural beliefs that hot foods were only for sick people. You could argue all you wanted about the great benefits of boiling water, but if a religious or cultural belief forbids it, you're wasting your breath. Technological compatibility is only part of what makes an innovation spread: the innovation has to be compatible with habits, beliefs, values, and lifestyles.
3. **Complexity.** How much learning is required to apply the innovation? If a box of free, high-quality, infinite battery-life cell phones (and matching solar-powered cell towers) mysteriously appeared in 9th-century England, usage would stay at 0%, as the innovation requires a jump in complexity that would terrify people ("They're witches' eggs—burn them!"). The smaller the perceived conceptual gap, the higher the rate of acceptance.
4. **Trialability.** How easy is it to try the innovation? Teabags were first used as giveaways so people could sample tea without buying large tins, radically improving the trialability of brewed tea.[17] Samples, giveaways, and demonstrations are

[17] Joel Levy, *Really Useful: The Origins of Everyday Things* (Firefly Books Ltd, 2002).

centuries-old techniques for making it risk-free to try new ideas. This is why the GAP lets you try on clothes, and the Honda dealership gives anyone with a pulse a test-drive. The easier it is to try, the faster innovations diffuse.

5. **Observability.** How visible are the results of the innovation? The more visible the perceived advantage, the faster the rate of adoption, especially within social groups. Fashion fads are a great example of highly observable innovations that have little value beyond their observability. Advertising fakes observability, as many ads show people using a product, say, drinking a new brand of beer, with all kinds of wonderful things happening. Many technologies have limited observability, say, software device drivers, compared to physical products like mobile phones and trendy handbags, which people use socially.

This list clarifies why the speed at which innovations spread is determined by factors that are often ignored by innovators. They grow so focused on creating things that they forget that those innovations are good only if people can use them. While there's a lot to be said for raising bars and pushing envelopes, breakthroughs happen for societies when innovations diffuse, not when they remain forever "ahead of their time."

This list is a scorecard for learning from past innovations, as well as a tool for improving diffusion of innovations in the present. The key is to trivialize this list as bastardized marketing, as if these traits can be grafted to an innovation after it's finished, or simply pumped into sales literature and advertising (though those efforts rarely make the difference). Is it a successful innovation if it's purchased but ignored or bought and soon returned? A better way to think of the list is as attributes of the innovation itself.

And since these factors vary from culture to culture, some innovations gain acceptance in surprising ways. There is no uniformity in progress around the world; innovations may be adopted by one culture or nation decades before another. As William Gibson wrote, "The future is here. It's just not widely distributed yet," and no innovation is immune. Everything new passes through groups of people in unpredictable ways and, given the limits of human nature, always will.