



## Innovate or Suffer Slow Brain Asphyxiation

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“Failing at Innovation?” a recent Businessweek headline fretted. “The U.S. created fewer start-ups ... in 2007 than in 1990,” the article said. “Those new companies that do get formed employ fewer people, [with] new establishments [opening] for business with about 7.5 jobs on average, compared with 4.9 jobs in the 2000s.”

That’s too bad, because it sucks to work for a company that isn’t innovative. It sucks not on a universal scale, per se, but on a tilted axis that slides technologists down to the depths. That’s because, in general terms, technologists are particularly addicted to innovation, compared with those in the population who skirt change and dislike novelty.

Innovation itself is a fuzzy term, and defining the causes of its diminishment is a somewhat subjective endeavor. Is entrepreneurial innovation only defined by startup formation? That leaves out innovation by established organizations. What is true innovation, as opposed to a minor product tweak? Is the country losing its potential innovators by failing to retain immigrants who come to our universities, as suggests John Shegerian, the entrepreneurial, second-generation Armenian-American who launched what’s considered the Google of recycling? Or, as the Businessweek article surmises, does it have more to do with a lack of startup funding?

Who knows? These are questions for economists, historians, and Businessweek journalists. On a more “What’s this mean to my bottom line?” level, a set of arguably more pertinent questions might include: What are the traits of an innovative workplace? How do you foster such a thing? For technology professionals looking to work for an exciting company: How do you determine how innovative a company is? Are there warning signs that tell you when a company is fossilizing? What are some questions to ask in the research stage or in an interview that can help you figure it out?

But first, is it really that bad?

It’s like Larry Chiagouris says: “There’s yet to be a completely, generally agreed upon measure of innovation.” For example, if you look at patents as an indicator of innovation levels, you’d think that China was blowing everybody out of the water.

But it’s a misconception, said Chiagouris, professor of Marketing at Pace University’s Lubin School of Business and a former economist. If you look at Chinese patents, you’ll find that a lower percentage go

on to global patent venues, as opposed to merely being in-country patents. “Compared with other countries, the Chinese are not issuing patents at the same rate, proportionate to their population, as the other countries in the global, international world of patents,” he says.

So, like other metrics, patents aren’t a good indicator of innovation. The Chinese are pumping them out so fast not because they’re innovating, but because “They care more than most about what other people and markets think of them,” Chiagouris says. “Because they care what other people think of them, more so than most, they’ll do whatever it takes to make the world think better of them. But many patents are much ado about nothing. There’s nothing there.”

At any rate, why do we care?

No, really, why do you care if you work at an innovative company? It’s not like everybody wants to work at a job where things are always blowing up or getting born in some scary spasm of goo. Some workers only want a steady paycheck. Some employees just want stability. One person I interviewed called that type of worker “the population of the Midwest,” but I’m not sure I want to align this article with him, because Kansas might hurt me.

It’s not even worth asking an innovator why he isn’t scared, why innovating is more important than staying safe in a troubled economy. They don’t know. They scarcely understand the question. It’s like asking somebody why they keep doing that inhalation of oxygen thing.

Take Shegerian, CEO of Electronic Recyclers International and ERI's subsidiary organizations, [www.1-800-RECYCLING.com](http://www.1-800-RECYCLING.com) and [www.urbanmining.org](http://www.urbanmining.org).

Electronics recycling doesn’t sound very sexy. It wasn’t, for a long time. It was done by companies whose main business might be, say, metal mining, with recycling as an afterthought, or by what Shegerian calls “mom and pop scrap dealers.”

“Good guys,” Shegerian says, but, well, they’re used to doing things their way. “Legacy dinosaurs,” he says.

Shegerian came along, picked up a struggling recycling company with a name that was way too long, slapped it into the next millennium by picking up databases containing all the local recycling outfits he could get his hands on, put those databases into smartphone apps to offer recycling just about anywhere for virtually anything (not just electronics but also refrigerators, air conditioners, light bulbs, batteries, maybe soon glass, you name it), hooked it up with an 800 number linked to a site, and badda bing, badda boom, the Google of recycling was born.

He’s not good at expressing why it feels so good to innovate. He can tell you that he’s got the brightest, shiniest people knocking on his door. “Everybody wants to join us. We’re inundated with applications from people my age who want to reinvent their careers,” he said. “I get this all the time: ‘John, I work with the biggest law firm in L.A., in New York, in Boston. I make \$xxx/year. I just want to come work for you, because I want to change the world.’ We get private equity [stars], tech firm [stars]. We get all of them. They say, ‘I want to change the world.’”

We know technology attracts creative people. That's not rocket science. What that attraction boils down to, however, is brain science.

This is your brain on innovation

David Preston is your typical technology guy. He gets bored easily.

Out of full-time work since November 2010, Preston's a technology expert in event marketing. He's actively interviewing for a new position, and is evaluating companies on the basis of innovative culture.

The idea of stability, of just getting a paycheck, of doing the same thing day in and day out in an environment where things don't change, is oppressive. "My brain is always looking to explore new avenues," he says. "I would get bored."

Many, if not most, technology professionals can relate to Preston and Shegarian's frame of mind. The reason, according to Dr. Rick Hanson—neuropsychologist, expert on brain plasticity and author of *Just One Thing: Developing a Buddha Brain One Simple Practice at a Time*—has to do with the basal ganglia, a group of brain nuclei at the base of the forebrain that's strongly connected with the cerebral cortex, the thalamus and other areas.

"Some people's basal ganglia crave more stimulation," Hanson says. That's actually why a drug like Ritalin works for ADHD: it gives basal ganglia the stimulation they crave, so there's less cause for the afflicted to seek stimulation outside of themselves.

That doesn't mean you're smarter, but it does mean you're prone to be innovative—innovation being equated with the stimulation brought by new things. "You could be as smart as, or brighter, than the next guy, but if your ability to process information is limited, if your buffer is fairly small, you need to slow down the incoming stream," Hanson says. "And it is there, in our neural structures, where we see why some of us need to work in an innovative environment."

And truly, this should be a golden age for technologists, given that we live in times where we are surrounded by talk of professional fulfillment. At any rate, the times should be better for stimulus-hungry basal ganglia types, since nobody talks about job security or longevity these days.

"We spend a lot of time talking about fulfillment and happiness and being creative and matching our interests with our jobs," Chiagouris says. "Thirty, 40 years ago, it would have been how to get a job that would take you to 65. It was all about security, longevity. Now it's not, because people don't have any expectation that where they'll go will be secure. Unless you work for the government, maybe."

What's wriggling when you lift up the rock?

And so yes, not only do technologists want to work in innovative climates, they can't even really expect the consolation prize of marrying the boring stepsister of longevity if they don't. Which leaves the question of how, exactly, you figure out whether a company is innovative before you sign on to work for it.

Preston, the easily-bored event manager technology expert, does it by checking out a company's engagement with all their stakeholders—particularly their customers, employees and investors. “Obviously, engagement can be facilitated through various mediums, but in today's technology-enabled environment, the deployment of tools to speak to, share content, gather opinions and generally have a two-way dialogue with the stakeholders are all readily available,” he says. “If an organization is not deploying these tools and is stuck in the position of a one-way dialogue —?talking at' the stakeholders— then this is a general indication that they are technologically not aware. This would raise a red flag for me in terms of potential employers. ... This is not to say we all have to have a Twitter account, a Facebook page or a YouTube channel, but it does mean that if they're in the game of listening, learning, and evolving their business, then they have to be using tools to reach out and have a dialogue.”

An example of an innovative company whose culture is evinced in this way is one of Preston's former employers. That internationally-known company uses its intranet to engage employees, Preston points out, running regular jam sessions online, gathering thoughts, issues and ideas, and then turning them over to the employees for solving. “At times they have over 10% of their employees online contributing—over 30,000 people,” he said. “Employees feel listened to, engaged, and valued because of this.”

Whither the product lifecycle?

Product lifecycles are another good indication of innovation, or lack thereof. Kathleen Brush, who's spent over 20 years as a senior executive (CEO, GM and CMO), with 15 of those years as a turnaround pro, has been doing technology company turnarounds since 1994. In all of the 15 companies she's worked at, product sales of one or more core products were trending downwards when she arrived.

Instead of the products being innovative, they were commodities, if not downright obsolete, Brush says. Nothing was being introduced or even in development to pick up the slack. This isn't the kind of information you can pick up from public reports, since companies aren't required to report product sales, so you have to make a point of asking for it.

That isn't always easy. For the most part, people don't understand lifecycles, Brush says. Lifecycles are shaped in curves: A product starts at the bottom when it's new, then it grows, usually on a gradual curve, generally building up a little hill. Then it gets to the top, at the peak of its growth, when it gets mature. The curve flattens out, then it rounds a corner and starts to come down in the product's decline phase. Products reach saturation. They get old. In high tech, it can happen very, very quickly.

“In looking at that, when I plot the lifecycles position, I'll find products are heavily clustered on that downward side. It's just terrible,” Brush says. “Once you're at that situation, with everything heading downhill, if the company doesn't do anything, it will ultimately fail. If they decide to do something, you'll go into flat growth at best, until they can figure out another innovation to bring into the portfolio.”

Brush sees employees coming into an expiring company like that—people who've joined before word got out that there would be 300, 400, 500 layoffs.

“They say, ‘How could I have known?’” Brush says. “I say, ‘You didn’t ask the right questions.’”

The employees should have asked these questions during the job interview process:

Are sales increasing?

How fast are they increasing?

Who are your competitors?

How well do your products compete?

What other companies are looking to enter the competition?

“Those questions are so incredibly important,” Brush says. “If you’re joining a company because you want to join something that’s stable, and not get laid off in two to three years, you’ve got to know what phase of lifecycle the products are in. And you have to know: How sustainable is it, relative to the competition?”

Generally, people are honest, Brush says. There’s no reason not to be. So in a failing company, they might answer, “Well, sales are stalled right now, or declining, but what we’re doing, we’re hiring a bunch of salespeople, and we’re assuming that will help.”

“Once you hear that, step back,” Brush says. “It’s a bad sign. They’re throwing stuff against the wall.”

Regarding how well their products compete, the company will tell you they compete very well. That’s where social networking skills come in. Brush recommends talking to people you know in the company, or in the industry, or at the competition. The truth will come out.

It’s important to ask beyond the company itself, Brush says, because product managers are paid to be cheerleaders. “They’ll say, ‘Yea, yea, it’s going great. Microsoft thinks they have something good, but we’ve got product z, and they can’t touch us with a 10-foot pole.’ Yea. Yea. Right.”

For example: Brush has worked at companies where “everything was looking rosy,” but then oh no, here comes Apple or Google deciding to enter the competition. Two years ago, when she was working at a cell phone software company, Apple came out with the iPhone. The company was annihilated. It obsoleted half the product lines.

“When I saw it come out, it was like, ‘Oh. My. God,’” she says. “I was running product management and marketing. I go to product marketing and I said, ‘Hey, did you guys know about this?’ They said ‘Well, we knew they were doing something.’ I said, ‘You didn’t tell anyone?’ They said, ‘We don’t think it will matter.’ I said, ‘Are you guys smoking dope? You have to take things like this dead serious. Companies are wrecked by people like you.’”

How do things go so very wrong?

Chiagouris thinks it happens when you get a CEO or president from the non-innovative parts of the corporation—finance or accounting—instead of from the sources of innovation: marketing or R&D. Brush thinks innovation fails when companies start listening to their customers and jumping to give them widget a or widget b, running down the widget path to please customers instead of coming up with new products or experimenting with real breakthroughs.

Rick Hanson, for his part, ties it to our lizard brains.

According to neuroscientist Paul MacLean's evolutionary triune brain theory, our brains actually contain three brains in one, with the earliest evolved segment being the deeper-in-the-brainstem situated, primitive reptilian complex, upon which the more recently evolved paleomammalian and neomammalian (limbic system and neocortex) levels of brain are based.

Those three levels of brain have three primary functions, Hanson says: First is to avoid harm, such as getting eaten by tigers. The second function is to seek reward: i.e., to go after the carrots. The third function is to seek attachment to others. Together, the triune brain can be in responsive mode, where it's calm, content, and caring, or it can be in reactive mode, which is triggered by frustration, rejection, disappointment, greed, or fast-approaching quarterly goals, and which manifests as jealousy, envy, shame, clinging to our own group, and/or being aggressive to outsiders.

"The thing is, when we're OK, when we haven't been voted off the island, we default to the good place," Hanson says. "But mother nature developed hair-trigger mechanisms to tip us into hatred, greed, and heartache."

Hanson has worked in business management, where he has routinely seen business managers and directors making short-term/long-term calculations. Such calculations often motivate managers to trigger the reactive mode in workers, which is "a really good way to get short-term benefits," he says. "You make workers a little afraid, you keep them hungry, you challenge them so they're afraid of being voted off the island, you dangle top performers in front of them so they can then use ancient systems of envy to motivate them."

It works short-term, but it's disastrous for long-term gains. A company gains quarterly results but suffers in the long term, because people cannot innovate unless they inhabit the sweet spot of being energized by the reactive mode while still having the positive energy of the responsive mode, which relies on feeling valued and secure, Hanson says. "Once in a while innovation comes from panic, from aggression," Hanson says. "But usually, good, sustainable innovation is rooted in the responsive mode."

I was talking to a software developer specializing in bioinformatics who recently gave notice to his client that he was quitting a contract with a state government. One of the sweetest aspects of quitting the job, he said, was that he wouldn't have to deal with Oracle DBAs anymore. Oracle, rightly or wrongly, has a reputation for running in reactive mode. Because of this atmosphere, out of the bioinformatic specialist's many colleagues who joined Oracle after its acquisition of Sun, not one remains at the company, he says.

“And note that Oracle never innovates,” the developer said. “All they do is swallow companies. That’s the only way they survive—they shake down their customers, and they buy up other companies’ innovations.”

The sanctity of seemingly unproductive time

Rhythm is crucial to true innovation. But it is a precious thing that is sacrificed by a thousand cuts from a thousand emails or a thousand Blackberry calls for attention.

Not that data input isn’t important to innovation as well, Hanson says. The ideal, dynamic, rhythmic process of cycling is formed with a phase of immersion in tons of new material, new ideas and new possibilities. That influx is a peak that must be followed by a trough, where innovative people can go offline.”

When they are no longer flooded, the minds of innovative people can go quiet. This allows for a kind of integrative, gestalt-forming process to occur, Hanson says. From this quiet, seemingly unproductive trough where input is processed, innovators then cycle out to another peak, which issues forth as creative expression—i.e., great ideas.

“Sometimes in the workplace environment these days, where people are so flooded by information, and the expectations are that they respond on a moment by moment basis, and they can’t go 10 minutes without looking at their Blackberry constantly, in that context, there’s so much pressure in the workplace to be up to speed, well, that can get in the way of true innovation that will truly allow a company to leapfrog its competitors,” Hanson says. “It’s important to appreciate peaks and troughs. Otherwise, constant flooding with new information makes cognition superficial and scattered.”

The key point is to appreciate that different parts of our brains process different information at different speeds. Think of a machine with gears: Some spin very rapidly. Similarly, for example, the pace of our verbal thoughts is extremely fast: We can easily have two to three distinct verbal thoughts per second, Hanson says. In a minute, people can speak 300+ words. But a creative breakthrough—where the brain has integrated 1,000 pieces of information and is checking that data against its inner sensing mechanisms to judge what’s more or less important—is an integrative process, putting together language and integrative processing functions of the left hemisphere with the visual gestalt of the right hemisphere. Abstract reasoning in the cortex meshes with the emotional/rewards-oriented processing of the limbic system and comes together with the deep, primitive vitality of the lizard brain/brain stem. It all comes together, but such gestalt coalescence takes time.

“For that to happen, people need to slow down enough, to allow slower systems that are more ruminative,” Hanson says. “They have to chew the cud sometimes. If you’re constantly racing, you just aren’t giving yourself space to come up with something new.”

You can see it at a company like Google, these built-in opportunities for people to go offline. Nap pods; readily available food; the encouragement of deliberately unproductive conversations.

Like many of those who are talented at fostering creative environments, Kathleen Brush has an instinctual grasp of this need to break the grasp of the reactive mode.

Her modus operandi: Taking her people to the beach.

“Innovation and creativity doesn’t occur when you’re looking at a computer screen, or research reports, or talking to engineers or customers,” Brush says. “They’ll just fill your head with notions. It’s up to you to pull all this stuff together. In order to do that, you have to bust out, get out from behind the computer, get outside. Get to an environment where you can freely think.”

She brings them to parks, to beaches. She walks into CEOs’ offices and tells them that all of their teams are leaving, except a few she leaves behind to answer the phone.

She brings her creative technologists, starved for rumination, to the beach. She brings her innovators to that emblematic scene of evolution, where our progenitors, crawling forth on their lizard hands, came forth to walk the land.

She brings them to the beach, and it is here that she fostered an environment where the first pre-SOA SOA frameworks could be visualized, and it is here that the energy of our lizard brains are fused with the reasoning capacities of our mammalian brains. It is here that the chatter is stilled, and it is here that innovation can emerge.

To innovate, and to breathe innovation back into a company, we must stop.

We must breathe.

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