HOW THE PAST INFORMS THE FUTURE

Jack Steinberger, Nobel laureate in physics (1988), at Lindau Meeting 2008

What will it take for technical innovation to triumph in an age of metrics? Six Nobel laureates--*who've been there*, done that--point the way.

Is it an economic crisis or a crisis of innovation?

Metrics, fantastic wealth creator that it is for its many corporate masters, has now got innovation trapped in its maw of analytic machinery, laments Tony Golsby-Smith in the *Harvard Business Review*. Of course, he's far from alone in pointing out that disquieting situation. Most everyone else is aware of what the metrics movement is up to. In this strangely suffocating economy of ours with its rapid-fire financial crises, something is eating the heart out of innovation. And most aspiring innovators, like the Borg, are sensing that resistance is futile.

"Formula for breakthroughs in research: Take young researchers, put them together in virtual seclusion, give then an unprecedented degree of freedom and turn up the pressure by fostering competition." James D. Watson, Nobel Prize in Physiology or Medicine 1961

We've all witnessed metrics and business analytics at work on corporate accounts where they can strip any budget down to the bone faster and smoother than a school of piranha. It's enough to make a roomful of shareholders downright giddy as the wealth piles up right before their eyes. Everything previous to metrics is medieval bean counting. Just switch on the software, load in the data and watch the churn. It doesn't take long, and that's the best part. Value creation, as it's called, is moments away.

"Discovery requires research, and research implies exploring the unknown, with, by definition, the inability to predict how useful or profitable whatever will be found could turn out to be." Christian de Duve, Nobel Prize in Physiology or Medicine 1974.

The metrics process begins at research labs with three seemingly innocent but deadly questions. "What is the return on investment on this project?" "What value are you creating for stakeholders?" "Are you meeting your milestones?" Anyone within earshot can feel the chill descend.

"Curiosity pays! Preserving knowledge is easy. Transferring knowledge is also easy. But making new knowledge is neither easy nor profitable in the short term." Ahmed Zewail, Nobel Prize in Chemistry 1999.

As Golsby-Smith contends, the replies coming from researchers are predictable and inevitable. The innovation team is scared and feels forced to tell lies; or "they will try hard to extrapolate numbers from market trends and past experience, rather than thinking about customers, good ideas, and new paradigms; or "forces an innovation team to abandon anything controversial and go back to the concrete world that they already know." In short order, everyone starts wondering where's the tsunami of innovation that usually pulls the economy from the brink. Are we selectively breeding only those ideas that the metrics crowd feels will create value…quickly?

"Continually stuff the infinite list of applications that have benefited mankind up their noses." Harry Kroto, Nobel Prize in Chemistry 1996.

"The reason that America surged in the 1960s and 1980s and late 1990s isn't because of anything —the government did, it was due to innovation," writes Moses Ma in the *Tao of Innovation*. "The mainframe revolution hit in the late 1950s and generated about $5 billion in the sales of chips that powered an economic growth spurt that we can call the *first wave* of the computing revolution—as well as increased core efficiency for the companies using those mainframes. Similarly, the PC revolution hit in the late 1970s, launched the second wave, and generated about $25 billion in chip sales. And more recently, the Internet revolution powered Bill Clinton's recovery, by generating $200 billion in chip sales. Each wave of innovative growth produced millions of the right kind of jobs.

"Bell Labs could afford to support curiosity-driven research that often lead to unanticipated applications, largely because it was a monopoly regulated by government." David Gross, Nobel Prize in Physics 2004.

"Continuous innovation is not a luxury anymore it is becoming a necessity," write Tom Friedman and Michael Mandelbaum in *That Used to Be Us*. "In the hyper-connected world, whatever can be done, will be done. The only question for a company is whether it will be done by it or to it: but it will be done. So a company that does not practice continuous innovation by taking advantage of every ounce of brainpower at every level will fall behind farther and faster than ever before."

"I'm going to play with physics, whenever I want to, without worrying about any importance whatsoever." Richard Feynman, Nobel Prize in Physics 1959.

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—Dr. Fritz Sennheiser

Electronics pioneer;
think, Sennheiser microphones