A survey of innovation

A dark art no more

Like management methods before it, innovation is turning from an art into a science

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“What matters gets measured.” That is one of the basic tenets of corporate strategy taught at business schools. As driving growth through innovation is today at the top of corporate agendas you would expect to find managers treating it like a science. After all, manufacturing philosophies such as “total-quality management” (a process of continuous improvement) and “Six Sigma” (which uses statistical methods to eliminate variations and defects) were quantified and widely deployed a long time ago, often with good results.

Yet innovation remains a frustratingly fuzzy notion. Many bosses think it is essentially a creative process. Some anoint “chief innovation officers”, bring in consultancies or set up secret “skunk works” to tease out the ideas they fear their own bureaucracy might squash. One senior executive maintains that innovation simply cannot be defined exactly, but that “like pornography I know it when I see it.”

The wrong measure

Jorma Ollila, non-executive chairman of both Nokia and Royal Dutch/Shell, argues that it is a mistake to measure innovation by the number of patents issued by a company or the extent to which new technologies are introduced. He suggests that the most fertile area of innovation today can be found in management.

One reason why bosses might not want to be too obsessive about creativity is that generating ideas is the easy part. Exploiting them has always been harder. As Thomas Edison, one of America’s greatest inventors, put it, genius is 1% inspiration and 99% perspiration. But many managers are reluctant to take the same hard-nosed approach they use in other parts of their business and apply it to fragile creative types.

If any firm has an analytical approach to innovation it should be Google. After all, the firm’s superstars are its software engineers. It is so obsessed with data that it posts nerdy tip sheets on statistical-quality measurement above the urinals at the Googleplex. And yet managers sound like mumbling teenagers when they are asked how they approach innovation.

Marissa Mayer, the company’s flamboyant head of “user experience”, declares that Google is not merely a search engine but “an innovation engine” that needs constantly to reinvent itself—“just like Macs and Madonna”. As 3M and some other firms do, Google grants its engineers permission to spend 20% of their paid time on pet projects unrelated to their daily job. She points to a few examples of new products that have emerged this way, such as Gmail, but cannot provide any
real evidence that allowing staff to take time off from their normal jobs contributes more to the firm than it costs.

It is a question that even Eric Schmidt, Google's chief executive, cannot answer. Surprisingly, he declares that trying to measure his firm's innovation process would choke it off altogether. Tim Brown, head of Ideo, a design consultancy, concurs: "A lot of innovation is anti-Six Sigma. You want a lot of variance."

**Fuzzy logic**

Not surprisingly, Jeffrey Immelt, chairman of GE, strongly disagrees. His firm has long been a champion of Six Sigma. Mr Immelt reckons that "operational excellence" is the crucial part of innovation, not the fuzzy ideas-generation bit. He suggests that "passion and vision" might make up just 20% of the process.

Larry Keeley of Doblin, a innovation consultancy, has followed this debate closely for decades and insists the answer is clear: "Creativity is maybe 2% of the innovation process. It's a vanishingly small component, and it's the part you can acquire from outside the firm."

Despite difficulties trying to define it, the innovation process is steadily becoming a practical science to be measured, taught and managed. Clayton Christensen, a professor at Harvard Business School and an expert on the subject, insists that "innovation simply isn't as unpredictable as many people think. There isn't a cookbook yet, but we're getting there."

The Haas business school at the University of California at Berkeley has already gone so far as to revamp its entire curriculum to concentrate on innovation management. Berkeley is home to some of the leading experts on the subject, including Henry Chesbrough (who popularised the notion of "open innovation") and AnnaLee Saxenian (whose recent book "The New Argonauts" analyses Silicon Valley and related innovation clusters). Richard Lyons, now of Goldman Sachs, led the revamp at Haas in his previous job. He is convinced that all managers can be taught how to nurture innovation.

The rough outline of how this might be done is emerging. But there is no one-size-fits-all strategy. Bosses have to appraise the strengths and weaknesses of their firms honestly and continuously to take account of rapidly evolving competitive threats. But cut through the clutter of PowerPoint presentations and faddish slogans, and a number of things become clear.

**All that jazz**

For a start the debate over creativity versus execution should be put to rest: firms need to do both. But that does not mean they have to do it all themselves. On the contrary, the double act is best managed with a loose and open approach during the wild and woolly idea-generation phase, and a tighter, more concentrated one to turn ideas into products or services. John Kao, author of "Jamming: The Art and Discipline of Business Creativity", likens the process to playing jazz: there is no fixed score in any given improvisation, but that does not mean there are no underlying principles either.

P&G is a good example of an inward-looking firm that has embraced creativity and openness with some success. But Mr Lafley, its chairman, makes clear this is no mystical process. He argues that even a process that is open to fresh thinking from the outside, as P&G's is, can be run the same way as a factory: "It is possible to measure the yield of each process, the quality and the end product."
On the flip side, a firm known for emphasising execution over creativity is GE. Its focus on the practical application of new ideas, rather than invention itself, goes all the way back to its founder, Edison. Indeed, he commercialised but did not invent the light bulb.

GE's strength is not in breakthrough inventions but, to use Mr Immelt's words, “in turning $50m ideas into billion-dollar ideas.” His way of doing that is a highly structured process that involves a mix of management training, increased exposure to outside ideas (for example, his firm is starting a venture capital fund to get “early visibility” of clever inventions) and continuous funding for the development of new ideas. He also emphasises that the acceptance of failure is an integral part of the effort, as long as it is “fast failing”.

It is the last bit of Mr Immelt's process that points to one of the biggest thoughts emerging from innovation research in recent years: neither idea generation nor execution is as important or as tricky as the filtering process that links the two. Harold Sirkin, of the Boston Consulting Group, is the co-author of “Payback”, a book on innovation strategy. He scoffs that “firms have too many ideas and too much emphasis on creativity—more ideas merely choke the funnel even more.” In fact, the more ideas a firm comes up with, the more important it is for bosses to decide early on which of them to kill off. This is to avoid heading down countless and costly dead ends. As Ron Adner of Insead, a French business school, puts it, “Innovation is a loser's game, as we know most initiatives fail. But the truly innovative companies know how to deal with losing.”

That is why failing fast and learning from those failures is so important for companies. Niklas Savander, of Nokia, argues that given today's accelerating pace of global innovation firms “need really harsh discipline to weed out ideas quite quickly—we are working at fast failing, but are not there yet.” He thinks his own company's legacy as a hardware manufacturer—a capital-intensive and slow-moving sector compared with software or services—is holding it back.

Turf wars are another obstacle to fast failing. Employees in one part of a company often reject ideas and advice from a different part. Mark Little, GE's head of research, confesses that getting his boffins to kill off unviable projects is the hardest task he faces: “Like a dog with a bone, people don't want to give them up.”

Even if firms can overcome the stigma of failure, how exactly are bosses to know which potential innovations to kill? Mr Christensen, author of “The Innovator's Dilemma”, believes he has cracked the code. He says it can require unlearning some of the things that managers often accept as golden rules. The chief one is the belief in listening and responding to the needs of your best customers.

**Siren songs**

This seemingly sensible strategy can be a dangerous siren song, Mr Christensen argues. His influential book shows how even successful firms can get into trouble by trying to please their best customers. Because there may be only a handful of highly profitable, high-end buyers who want and can afford more features and better performance, firms can invest heavily in trying to deliver what this elite group wants even though the resulting products may end up beyond the reach of the majority of their customers.
That, argues Mr Christensen, allows upstarts to enter the market and offer inferior (although perfectly adequate) technologies and products at much cheaper prices and push incumbents into ever smaller niches—and ultimately out of business altogether. He cautions this “disruptive” innovation is not the same thing as “radical” or “breakthrough” innovation, although the notions are often conflated. In his view, personal computers disrupted IBM's mainframe computers and Digital Equipment's mini-computers, as did Nucor's highly efficient mini-mills to US Steel's blast furnaces.

Now Chinese and Indian firms are poised to disrupt established companies everywhere in much the same way, he argues. Their impact, he says, will be even more traumatic because both countries have a large pool of domestic customers—many of whom have only just begun consuming and do not have the same high expectations as Western customers typically have. Chinese and Indian companies can practise on their domestic customers while they improve quality to the point they can begin to export. South Korean firms have already gone through much the same process with consumer-electronics and cars—and in the process have frightened many of their Japanese rivals.

**Snap, and it's too late**

In a sense, Mr Christensen's management myths echo a sentiment expressed by Edwin Land, the inventor who founded Polaroid. “People who seem to have had a new idea have often simply stopped having an old idea,” he said. Alas, his successors at Polaroid did not pay attention. The firm stuck by its successful old idea for film-based instant photography and stubbornly ignored the disruptive potential of digital imaging until it was too late. Polaroid went bust in 2001.

Mr Christensen's alternative innovation strategies include watching out for new technologies or new business models which are designed to attract customers who may not be using your product today because it too expensive or too complicated. Sony's early transistor radios were tinny compared with RCA's big home versions, but teenagers who never had radios loved these cheap devices.

He also thinks it is better to make things simpler and easier for the bottom and middle of the market, as personal computers did, rather than add needless bells and whistles for the handful of top customers who can afford and demand them. And he says companies should act decisively to co-opt or pre-empt disruptive ideas themselves, even if it threatens their core businesses in the short run.

Executives at US Steel, a traditional integrated steel-firm nervously eyeing the threat from new mini-mill technology, nearly built a cheap and cheerful mini-mill themselves to compete against the upstart Nucor. However, recounts Mr Christensen, those aspiring innovators within US Steel were forced to halt the profitable project by bean counters, who argued that it was cheaper just to produce more steel from the firm's existing blast furnaces (since their capital costs had been paid for and steel could be produced for merely the marginal cost of cranking out an extra tonne). That short-term thinking scuppered the giant firm's best chance for reinventing itself.

Peter Drucker, an eminent management guru, argued decades ago that innovation and entrepreneurship are “purposeful tasks that can be organised—are in need of being organised” and should be treated as part of an executive's job.

Is there a risk that with too many rules, firms could lose out to serendipity? Ask Mr Lafley how he intends to keep P&G's edge if innovation becomes less ad hoc and he immediately points to Toyota's embrace of total-quality management as a model. Many firms have studied the Japanese carmaker's legendary methods, as P&G's rivals are even now studying its innovation model, but
none has really been able to copy it. That is because Toyota's real edge is the strong culture which drives its unrelenting quest for quality.

Bill Reinert, a senior Toyota official based in North America, explains it thus: “What's discontinuous about our firm is the very long view of management. That vision has pushed us from being a closed company to one with continuous information flows, both into the company and within it, about market, regulatory and geopolitical trends.”

A symbol of this is Toyota's Prius hybrid-electric car. It was a risky bet on an unproven technology, but it has been a huge success. It was a long-term vision, says Mr Reinert, that overcame the firm’s innate caution. And in the future the company is going to have to make similar bets again. “We are convinced that we are entering a disruptive future, and we want to be ready for it,” he says. He is not alone in taking that view.
In his book “The Innovator’s Dilemma”, Clayton Christensen (see article) made a distinction between two different types of technology that affect business, a distinction that has since become accepted wisdom. On the one hand he described what he called “sustaining technologies”, technological developments that help organisations to make marginal improvements in what they are doing. These require only gradual change and pretty much retain the status quo.

On the other hand, there are what Christensen termed disruptive technologies. These are wild and unexpected technological breakthroughs that require corporations to radically rethink their very existence. At first they seem of limited interest, but eventually they completely overturn existing products and markets. Christensen quotes the examples of the mobile phone (which took the wind out of the sails of fixed-line operators), digital photography (which sent sales of camera film plummetting and caused Kodak to change its whole business model) and online retailing (which continues to bruise many a traditional retailer).

One problem with disruptive technologies is that they do not always hit the market with a bang. They are often born prematurely, so that those firms which pioneer them see their performance deteriorate at first.

Another problem is that disruptive technologies often come at the world from unlikely directions. They rarely emerge from big established organisations, for which they do not initially seem to represent a worthwhile opportunity. Large companies are designed to be comfortable with sustaining technologies. They know their markets and want to capitalise on the value of that knowledge. They don’t want to be distracted by risky “maybes”.

In his follow-up book, “The Innovator’s Solution”, Christensen changed the term from “disruptive technology” to “disruptive innovation”, arguing that it was rarely the technology per se that was disruptive (or sustaining) but the use that companies made of it, the innovation that it enabled them to undertake.

Christensen’s distinction between the disruptive and the sustaining reflects a long-recognised dilemma of corporate strategists—whether to go for the big bang change or whether to shuffle along with business more or less as usual. For a while in the 1990s the slow shuffle was in favour, backed by concepts such as kaizen (see article), the Japanese idea of gradual improvement, and BPR or business process re-engineering (see article). But by the late 1990s, along with a disruptive innovation called the internet, a certain impatience had crept in.

More and more companies began to look for “breakthrough opportunities”, developments that would enable them to leapfrog ahead of their opponents. This they needed because more and more of them came to believe (along with GE’s legendary leader, Jack Welch) that they had to be
number one or two in their markets, or not in them at all. For those at the back, there was only one way to jump into those positions—by a big dramatic change. Business as usual was just not going to make it.

Christensen believes that the best way for big organisations to harness the potential of disruptive innovations is to set up (or buy) separate “spin-off organisations” that can behave as if they are small and buzzy. Such spin-offs, however, need to have a very different culture from their parents. They need to get excited about small markets, for instance, and they have to have a much higher tolerance of failure.

**Further reading**


**More management ideas**

This article is adapted from “The Economist Guide to Management Ideas and Gurus”, by Tim Hindle (Profile Books; 322 pages; £20). The guide has the low-down on over 100 of the most influential business-management ideas and more than 50 of the world’s most influential management thinkers. To buy this book, please visit our [online shop](http://www.economistshop.com/asp/bookdetail.asp?book=3106).
Opening statements

Defending the motion

William H. Saito  
Founder and CEO, InTecur, K.K.

A nation needs an environment that supports steady, progressive and perhaps undramatic innovation. It is only by standing on the shoulders of past achievements that a few firms are able to reach for the stars and take on the massive risks associated with disruptive innovation.

Against the motion

Douglas C. Merrill  
Founder and CEO, ZestCash

Disruptive innovation creates an ecosystem that helps the innovator, other companies, and users across many domains. The ecosystem adds value to the innovator's customers, to the customers of the other ecosystem members, and lets the innovator learn from the fast followers.

The moderator's opening remarks

Mar 8th 2011 | Kenneth Cukier

There is no fiercer argument among technologists than the topic of disruptive versus incremental innovation. What is more important: big breakthroughs or steady optimisation?

The debate is over. Both are needed, and exactly how they work together will often depend on the initiative of innovators. More information at Economist Debates.
The notion would seem preposterous today, now that Toyota is the world's biggest car company and the likes of RCA and Zenith shuffled off their mortal coil as Sony, Sharp and Panasonic took over. The Japanese get the most patents per population, and dominate a gaggle of industries upon which the world relies, even if they did not invent them. From LCD screens, NAND flash memory chips, hybrid cars, nuclear power, hybrid vehicle technology, super-fast trains and many more, Japanese firms are world leaders.

But the devotion to disruption is back—and the reason is the internet. Sure, the tinkerers can beat us at tinkering, the thinking goes. The West still trounces rivals because it creates breakthrough technologies. The internet is just one example. All the businesses models atop the web, from Google and eBay to Facebook and Twitter, are others.

Thankfully, thrust into this debate are two exceptional individuals who have experience in the salt mines of innovation. Arguing in favour of the motion is William Saito, a serial entrepreneur who was raised in America by Japanese parents. Among his credits is a biometric API that was licensed to around 160 firms before his company was acquired by Microsoft.

Mr Saito decries the myth of disruptive innovation "It is only by standing on the shoulders of past achievements that a few firms are able to reach for the stars and take on the massive risks associated with disruptive innovation," he explains.

His worthy adversary, Douglas Merrill, is the CEO of Zestcash and the former CIO of Google. In arguing against the motion, he introduced the (apocryphal) phrase by Henry Ford: "If I had asked my customers what they wanted, I'd have built a faster horse."

As Mr Merrill concludes: customers "will lead you down a step-by-step incremental path, slightly adjusting your product each time. This will result in a lovely, well put-together, faster…horse." Only disruptive innovation creates a platform for others first to work off of. It is a social gain, not just one for firms, he explains.

One issue still unaddressed is whether one form of innovation depends on the other. In other words, does incremental innovation owe itself to the disruptive sort, since you need a breakthrough in order to start tweaking? Or, vice versa, does continual improvement create the environment for disruptive new things to emerge?

What do you think?

The proposer’s opening remarks

Mar 8th 2011 | William H. Saito

Growing up in the West, we learn the myth of disruptive innovation early on. We are taught that inventions such as the telegraph, telephone, car, airplane and yes, even things like the iPod and Google prove that real genius lies in inventing something that shakes up the world and shatters the status quo. We instinctively prefer sensational, disruptive innovation because it catches our attention and it reflects the qualities in both the individual and the organisation that we admire most.

Yet I believe that the Western emphasis on disruptive innovation is not as desirable—for either a company or an economy—as a culture of steady, incremental innovation such as that found in Japan.

Of course, there is no modern economy that has only one without the other. Some disruption is always necessary, and the two approaches ultimately work hand-in-hand. Disruption creates new product categories, while incremental refinement polishes them and makes them smaller, cheaper, faster and better. Incremental innovation is like evolution: it may move slowly, but it may also produce what appear to be radically new, even disruptive events. On closer examination, though, we see that these disruptive forms grew out of the same creative gene pool as their predecessors. For example, we would not have created the telephone or airplane through incremental innovation, yet that is precisely the process that led from those early inventions to the iPhone and the 747.
not invent the hybrid car nor radically change its design or structure, and yet, by a thousand systematic adjustments, it has created the market leader in that field for more than a decade.

The company is famous for its "million ideas" programme whereby every year tens of thousands of employees suggest ways to improve assembly, quality control, parts delivery, new business expansion, etc. This ability to constantly innovate and refine every aspect of corporate growth based on cost-free internal suggestions is one reason that Toyota continues to be seen both domestically and abroad as a symbol of Japanese business.

It also points to the truth that incremental innovation can produce disruptive effects. Just as the mass production of inexpensive, fuel-efficient cars severely disrupted America's Big Three carmakers, the application of those same quality control processes to high-end vehicles delivered a serious shock to the German luxury car makers.

All of this grew out of Toyota's characteristically gradual, strategic process of innovation. No pressure for disruptive technologies, just a firm belief that 10,000 small improvements are just as effective as one radical new innovation.

Toyota is just one illustration of why I believe a nation needs an environment that supports steady, progressive and perhaps undramatic innovation. In fact, without this solid underpinning, disruptive innovation is not even possible, since disruptive events are not created ex nihilo; they grow out of the technical and social frameworks that came before. It is only by standing on the shoulders of past achievements that a few firms are able to reach for the stars and take on the massive risks associated with disruptive innovation.

As someone who built a successful business in California during the 1990s, I have seen first-hand the results of worshipping the disruptive innovation approach: for every successful firm on the road, there were miles of dead, burned-out companies. Of course, that is a risk that many young, entrepreneurial managers are willing to take, and the system should support them if they do. However, stockholders rarely want an established company to risk its existence on a turn of the roulette wheel.

Even in the case of venture business, companies find that targeting disruptive innovation is more easily said than done. Truly disruptive events are more often the result of serendipity than the product of corporate strategy; no one can reliably produce breakthrough technologies. Once again, this does not mean that radical, disruptive innovation is bad—quite the contrary—but it is no way to run a sustainable company or underpin an economy.

Thus, I am increasingly convinced that it is more advantageous to build a climate like Japan's that provides widespread support for sustained, incremental innovation and allows for outlier individuals and businesses to make disruptive bets every once in a while. The better economy is the one that emphasises constant minor improvements, with a capacity to produce larger and faster innovation when necessary, and even, in a minority of cases, truly game-changing developments that appear to have been born spontaneously. The alternative—emphasising disruptive, game-changing innovation at the expense of a stable foundation of constant improvement—may produce headlines, but it will not prove sustainable.

Hundreds of books have been written about innovation. Entire forests have given their lives to the topic. Yet much of the result has been, at best, glib. A more practical way to appreciate it is with a simple truth: companies that fail to change are consigned to the dustbin of history as their markets change and the world moves on.

To understand why disruptive innovation is better than the incremental variety, it is necessary to define "better"; we need to know the goal. I assert the goal of innovation is "to win in current markets and grow into new ones."
The best innovations come from listening to users and then meeting their unmet needs. Your next product or service should be based on what your users want. If they want it, they will buy it. Otherwise, it will sit on the shelf next to the thousands of other unwanted products, like bubblegum-flavoured toothpaste.

The problem is that users do not really know what they want. As Henry Ford famously—or apocryphally—said, "If I had asked my customers what they wanted, I'd have built a faster horse."

Your users can only envision what they already have. Their requests will be slight variations on your current product. If you ask them, they will lead you down a step-by-step incremental path, slightly adjusting your product each time. This will result in a lovely, well put-together, faster … horse.

However if you do not ask your users, but instead watch what they do, you will be led to a totally different outcome.

Consider Google search's spell correction. If you are searching for a music artist named "Brittany Spears", you will be shown results for "Britney Spears" (the correct spelling of her name). This is spell correction—Google figures out what you meant to search for, not just what you actually typed in.

The engineers who built spell correction noticed that searchers who entered "Brittany Spears", didn't like the results, and kept searching until ultimately arriving at results for "Britney Spears". Google's engineers could not have asked searchers if they wanted spell correction, because searchers would not have known they needed or wanted it.

Although spell correction is a great example of incremental innovation in the field of search, it relies on a truly disruptive innovation beneath it: harnessing "machine learning" across vast amounts of data to create a novel virtual product. Google has hundreds of engineers using terabytes of anonymised search data to create new value.

Using machine learning, instead of people, enabled Google to provide excellent search results in dozens of languages. Google then built on this disruptive change using hundreds of incremental innovations; step-by-step development matters too.

Moreover, Google's machine-learning innovation created a new ecosystem of companies. The ecosystem spans all industries, including advertising, social networking, enterprise software, and (like my new company) financial services. Each member copied and improved upon Google's innovation.

Google then learned from the other members of the machine learning ecosystem. Work done by other members aids the original innovator. John Donne undersold himself. No man is an island—and successful companies, even less so. The ecosystem helps all.

This is the sine qua non of disruptive innovation: a host of other companies spring up to make use of the new development, helping many types of consumers. The original innovator then learns from the other members of the ecosystem. Value is created both for the innovator and for a variety of other companies. Not only were searchers helped by Google's application of machine learning to vast data sets, but also customers in many other areas.

Although incremental innovation helps an individual company improve, it does not generally create an entire ecosystem. Having created the ecosystem, incremental innovation follows naturally.

This is why disruptive innovation is better than incremental innovation: disruptive innovation creates an ecosystem that helps the innovator, other companies, and users across many domains. The ecosystem adds value to the innovator's customers, to the customers of the other ecosystem members, and lets the innovator learn from the fast followers.

Disruptive innovation is not magic. It does not arise from serving lunch to your employees. It comes from listening to your customers—not about what they say, but about what they do.

This feedback cycle—a disruptive innovation followed by incremental learning from other members of the ecosystem—is critical to both setting and keeping pace with technical and social change. In other words, disruptive change is required to avoid building a faster horse.
Innovation in America
A gathering storm?
Confronted by Asia’s technological rise and the financial crisis, corporate America is losing its self-confidence. It should not

LISTEN to the growing cries of despair coming from some leading business people, and you might imagine that corporate America’s competitiveness could be the next victim of the global financial crisis. But Jeffrey Immelt, the boss of GE, the world’s largest industrial firm, sees opportunity amid the woe. “Companies and countries that really play offence vis-à-vis technology and innovation are going to come out ahead,” he said this week at an event in New York to present GE’s coming innovations in health-care technology.

With those words, he touched on a debate that has been heating up for many months. Even before the financial crunch began, many businessmen were worried that America was losing its lead in innovation to India and China. They were particularly upset that Asian rivals had been investing with more gusto in teaching young people mathematics and science, and in advanced scientific research. America’s National Academy of Engineering even issued a report last year, “Rising Above the Gathering Storm”, arguing that America’s “economic and strategic security” was in question because of lack of investment.

The cries are growing louder. The Council on Competitiveness, an influential group of American company bosses, university presidents and labour leaders, issued a terse report on the matter on November 11th and demanded that Barack Obama “take bold action to recapture America’s competitiveness” in his first 100 days in office. Craig Barrett, the chairman of Intel, the world’s biggest chipmaker, has also made similar complaints of late.

And in a speech in Washington, DC, on November 18th Eric Schmidt, chief executive of Google, an internet giant, claimed that government-funded research done in university laboratories was “the core aspect of America’s competitiveness”. Without a dramatic increase in investment in such research, and in maths and science education, Americans risked becoming mere “captive consumers” at the mercy of rising Asian powers, he argued.

Venturesome America
So does the relative decline of America as a technology powerhouse really amount to a threat to its prosperity? Nonsense, insists Amar Bhidé of Columbia Business School. In “The Venturesome
Economy”, a provocative new book, he explains why he thinks this gloomy thesis misunderstands innovation in several fundamental ways.

First, he argues that the obsession with the number of doctorates and technical graduates is misplaced because the “high-level” inventions and ideas such boffins come up with travel easily across national borders. Even if China spends a fortune to train more scientists, it cannot prevent America from capitalising on their inventions with better business models.

That points to his next insight, that the commercialisation, diffusion and use of inventions is of more value to companies and societies than the initial bright spark. America’s sophisticated marketing, distribution, sales and customer-service systems have long given it a decisive advantage over rivals, such as Japan in the 1980s, that began to catch up with its technological prowess. For America to retain this sort of edge, then, what the country needs is better MBAs, not more PhDs.

America also has another advantage: the extraordinary willingness of its consumers to try new things. Mr Bhidé insists that such “venturesome consumption” is a vital counterpart to the country’s entrepreneurial business culture.

Is he right? The lack of long-term data means this has become “a quasi-theological dispute”, says Robert Litan of the Kauffman Foundation, a charity that provided some funding for Mr Bhidé’s work. But the contrarian should not be dismissed out of hand. For a start, he is right to argue against making a fetish of invention. Edison did not invent the light bulb and Ford did not think up the motor car, but both came up with the business-model innovations required to profit from those marvels.

And as GE’s Mr Immelt likes to say, his firm is not great at invention, but it is outstanding at “turning $50m businesses into billion-dollar businesses”. Adam Segal of the Council on Foreign Relations, a think-tank, points out that the sensors that America’s soldiers use are no longer secret technology, but they use them in sophisticated ways that rivals cannot copy easily.

There is another reason to take the current “techno-nationalism”, as Mr Bhidé calls it, with a grain of salt. Even if China and India really are surging ahead in the number of technical graduates (and research by Vivek Wadhwa of Harvard University casts doubt on the quality of many of those degrees), innovation is not a zero-sum game. On the contrary, there is growing evidence that the rise of the giant emerging economies may even help those companies from the rich world that take a global approach to innovation.

For several years Booz & Company, a management consultancy, has compiled a ranking, called the Global Innovation 1000, of the world’s leading firms ranked by investment in research and development. It has shown in the past that spending more on research has no correlation with better financial performance. But this year’s study, recently released, found that multinational firms that took a global approach to research outperformed those that concentrated their research spending in their home market.

Why? “Being global and open is now necessary for innovation,” says Henry Chesbrough of the University of California, Berkeley. Cost is only one reason (and not usually the main one, Booz argues) to have a global research presence. Another advantage is the ability to tap into pools of talent abroad. But the most important advantage is the ability to listen to, and learn from, customers in new markets.

As well as helping designers come up with products relevant to those markets, it also allows innovation to flow the other way. Indians often share mobile phones, notes Stephen Johnston of Nokia, so the handset-maker developed software to allow multiple phone-books on a single handset; this idea is now being brought to Western markets so that users can, say, separate their
home and work contacts. Similarly, GE has developed low-cost medical scanners for Asian markets that are now being sold in other poor countries, too.

Clayton Christensen of Harvard Business School is not fully persuaded by the arguments put forth by Mr Bhidé (who happens to be a former classmate). He thinks Chinese and Indian firms may in time “disrupt” established American companies just as personal computers challenged mainframes, and he worries about America’s education system. But he accepts Mr Bhidé’s notion that it is more useful to teach technical skills to managers and factory workers than merely to crank out more theoretical scientists.

Most importantly, Mr Christensen agrees with Mr Bhidé that there is no case for protectionism. Some techno-nationalists argue, for instance, that “American innovation” should receive preferential tax treatment or subsidies. Such proposals make little sense given the increasingly global and open nature of innovation. As Mr Chesbrough wryly puts it: “What’s good for Intel may not necessarily be good for America.”