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Business innovation

Don't laugh at gilded butterflies

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Rather than chasing wonder new products, big companies should focus on making lots of small improvements

THE Gillette company's website flashes out a message to the e-visitor: “Innovation is Gillette”, it claims. There are few big companies that would not like to make a similar claim; for they think innovation is a bit like Botox—inject it in the right corporate places and improvements are bound to follow. But too many companies want one massive injection, one huge blockbuster, to last them for the foreseeable future. Unfortunately, successful innovation is rarely like that.

The latest manifestation of Gillette's innovative skill will appear in stores in North America next month. The global leader in men's “grooming products” is rolling out a successor to its popular three-bladed Mach3 range. It will not, as comedians had long anticipated, be a four-bladed version (Schick-Wilkinson Sword reached that landmark first, in September 2003, and Gillette has taken it to court for its pains). Rather, it will be the world's first vibrating “wet shave” blade. The battery-powered M3Power is designed to bounce around on your skin to give (yes, you guessed it) “a smoother, more comfortable shave”.

For a company that claims to embody innovation, this is less than earth-shattering. On the innovation scale it falls closer to Brooks Brothers' new stain-proof tie than to the video-cassette recorder or the digital camera—especially since there is a suspicion that Gillette may be keener to create synergy between its razor and its batteries division (it owns the Duracell brand) than it is to usher in a genuinely new male-grooming experience.

But the launch is symptomatic of an important business trend: blockbuster new products are

harder and harder to come by, and big companies can do much better if they focus on making lots of small things better. Adrian Slywotzky of Mercer Management Consulting says that, “in most industries, truly differentiating new-product breakthroughs are becoming increasingly rare.” He claims, for example, that there has not been a single new dyestuff invented since 1956.

Even in relatively zippy businesses like pharmaceuticals, genuinely new products are fewer and further between. Spending on pharmaceutical R&D has doubled over the past decade, but the number of new drugs approved each year by America's Food and Drug Administration (the industry's key regulatory hurdle) has halved. Drug companies still live in the hope of finding a big winner that will keep their shareholders happy for a long time. But this focus means that many unglamorous, but potentially interesting, compounds may be bottled up in their laboratories.

The road to invention

Big companies have a big problem with innovation. This was most vividly described by Clayton Christensen, a Harvard Business School professor, in his book, “The Innovator's Dilemma” (Harvard Business School Press, 1997). Few conversations about innovation take place without reference to this influential work.

The Oxford English Dictionary defines innovation as “making changes to something established”. Invention, by contrast, is the act of “coming upon or finding: discovery”. Whereas inventors stumble across or make new things, “innovators try to change the status quo,” says Bhaskar Chakravorti of the Monitor Group, another consulting firm, “which is why markets resist them.” Innovations frequently disrupt the way that companies do things (and may have been doing them for years).

It is not just markets that resist innovation. Michael Hammer, co-author of another important business book (“Re-engineering the Corporation”, HarperCollins) quotes the example of a PC-maker that set out to imitate Dell's famous “Build-to-Order” system of computer assembly. The company found that its attempts were frustrated not just by its head of manufacturing (who feared it would lead to most of his demesne, including his job, being outsourced), but also by the head of marketing, who did not want to upset his existing retail outlets. So the innovative proposal got nowhere. Dell continued to dominate the business.

Mr Christensen described how “disruptive innovation”—simpler, cheaper and more convenient products that seriously upset the status quo—can herald the rapid downfall of well-established and successful businesses. This, he argues, is because most organisations are designed to grow through “sustaining innovations”—the sort, like Gillette's vibrating razor, that do no more than improve on existing products for existing markets.

When they are hit by a disruptive innovation—as IBM was by the invention of the personal computer and as numerous national airlines have been by low-cost carriers—they are in danger of being blasted out of their market. This message found a ready audience, coming as it did just as giant businesses from banking to retailing, and from insurance to auction houses, were being told that some as-yet-unformed dotcom was about to knock them off their pedestal.

Innovative lessons

William Baumol, a professor at New York University, argues that big companies have been learning important lessons from the history of innovation. Consider, for example, that in general they have both cut back and re-directed their R&D spending in recent years. Gone are the droves of white-

coated scientists surrounded by managers in suits anxiously awaiting the next cry of “eureka”. Microsoft is a rare exception, one of the few big companies still spending big bucks on employing top scientists in the way pioneered by firms such as AT&T (with its Bell Laboratories) and Xerox (with its Palo Alto Research Centre, the legendary PARC).

This will prove to be a wise investment by Microsoft only if its scientists' output can be turned into profitable products or services. AT&T and Xerox, when in their heyday, managed to invent the transistor and the computer mouse (respectively); but they never made a penny out of them. Indeed, says Mr Baumol, the record shows that small companies have dominated the introduction of new inventions and radical innovations—independent inventors come up with most of tomorrow's clever gizmos, often creating their own commercial ventures in the process (see table).

Miracles of the small inventors

Innovations by US small firms in the 20th century

Air conditioning	Hydraulic brake
Assembly line	Integrated circuit
Audio tape recorder	Microprocessor
Biomagnetic imaging	Overnight national delivery
Continuous casting	Personal computer
Defibrillator	Quick-frozen food
Digital X-ray	Safety razor
DNA fingerprinting	Soft contact lens
FM radio	Vacuum tube
Front-end loader	Zipper

Source: US Small Business Administration, Office of Advocacy 1994

But big companies have shifted their efforts. Mr Baumol reckons they have been forced by competition to focus on innovation as part of normal corporate activity. Rather than trying to make money from science, companies have turned R&D into an “internal, bureaucratically driven process”. Innovation by big companies has become a matter of incremental improvements within the processes that constitute daily operations.

In some industries, cutbacks in R&D reflect changes in the way that new products travel down the “invention pipeline”. During the late 1990s, for example, Cisco Systems kept itself at the cutting edge of its fast-moving high-tech business (making internet routers) by buying a long string of creative start-ups financed originally by venture capital. The company's R&D was, as it were, outsourced to California's venture capitalists, who brought together the marketing savvy of a big corporation and the innovative flair of a small one—functions that were famously divorced at AT&T and Xerox.

These days there is less money going into venture capital, and a new method of outsourcing R&D is on the increase. More and more of it is being shifted to cheaper locations “offshore”—in India and Russia, for example. One Indian firm, Wipro, employs 6,500 people in and around Bangalore doing R&D for others—including nine out of ten of the world's top telecom-equipment manufacturers.

Pharmaceutical giants continue to get their hands on new science by buying small innovative firms, particularly in biotech. Toby Stuart, a professor at the Columbia Business School in New York, thinks that this shows another change in the supply chain of invention. He says that many of the biotech firms are merely intermediating between the universities and “Big Pharma”, the distributors and marketers of the fruits of academia's invention. Universities used to license their inventions to these firms direct, but small biotech companies make the process more efficient. They are well networked with the universities, in whose “business parks” they frequently locate their offices. They may not, of themselves, be very innovative.

Companies need to resist the feeling that it is not worth getting out of bed for anything other than a potential blockbuster. Product cycles are getting shorter and shorter across the board because innovations are more rapidly copied by competitors, pushing down margins and transforming today's consumer sensation into tomorrow's commonplace commodity. Firms have to innovate continuously and incrementally these days to lift products out of the slough of commoditisation. After it used innovation to create a commoditised market for fast food, McDonald's struggled

before recently managing to reinvigorate its flow of innovations.

Finding a niche

Another factor to take into account is the fragmentation of markets. Once-uniform mass markets are breaking up into countless niches in which everything has to be customised for a small group of consumers. Looking for blockbusters in such a world is a daunting task. Vijay Vishwanath, a marketing specialist with Bain, a consulting firm, says that Gillette's bouncy blade may yet end up as no more than a niche product—fine if it is profitable.

Mr Chakravorti believes that the problem lies with the marketing of new innovations. It has not, he says, caught up with the way that consumers behave today. “Executives need to rethink the way they bring innovations to market.” Too many are still stuck with the strategies used to sell Kodak's first cameras almost 120 years ago, when the product was so revolutionary that the company could forget about competition for at least a decade. Today, no innovation is an island. Each needs to take account of the network of products into which it is launched.

Companies that fail to come up with big new headline-hitting blockbusters should not despair. There are plenty of other, albeit less glamorous, areas where innovation can take place. Management thinkers have identified at least three. Erik Brynjolfsson of the MIT Sloan School of Management, says that the roots of America's productivity surge lie in a “genuine revolution in how American companies are using information technology”. Good companies are using IT “to reinvent their business processes from top to bottom”.

Reinventing, or simply trying to improve, business processes can offer surprising benefits to firms that do it well. The software that runs many business processes has become an important competitive weapon. Some business processes have even been awarded patents. These are controversial and, because they may stifle rather than encourage the spread of new ideas, are probably not in the wider public interest. Yet Amazon obviously views its patent for one-click internet purchasing as valuable, and there are plenty of other examples, particularly in the financial-services industry.

Nevertheless, there is no doubt that, patented or not, what Mr Hammer calls “operational innovation” can add to shareholder value. In an article in the April issue of the *Harvard Business Review*, he asks why so few companies have followed the examples of Dell, Toyota and Wal-Mart, three of the greatest creators of value in recent times. None of them has come up with a string of revolutionary new products. Where they have been creative is in their business processes.

While superficially mundane, Wal-Mart's pioneering system of “cross-docking”—shifting goods off trucks from suppliers and straight on to trucks heading for the company's stores, without them ever hitting the ground at a distribution centre—has been fundamental to the company's ability to offer lower prices, the platform for its outstanding success. Is it not over the top, though, to glorify such a common-sense change with the title “innovation”? For sure, it does not call for a higher degree in one of the obscurer corners of science. But Wal-Mart did something no competitor had ever dreamed was feasible and that was highly innovative.

Mr Hammer, who was once a professor of computer science at MIT, believes that the best qualification for innovation is a basic training in engineering. Crucially, he says, engineers are taught that design matters; that most things are part of a system in which everything interacts; that their job is to worry about trade-offs; and that they must continually be measuring the robustness of the systems they set up. Such a frame of mind, he believes, fosters innovation. It may be no coincidence that many of the greatest corporate leaders in America, Europe and Japan, past and present, trained first as engineers.

Companies are being encouraged to embrace other forms of innovation too. In a recent issue of the *MIT Sloan Management Review*, Christopher Trimble and Vijay Govindarajan, two academics from Dartmouth College's Tuck School of Business, recommend that they try a little “strategic innovation”. The authors point to examples such as Southwest Airlines, a low-cost American regional carrier, and Tetra Pak, a Swedish company whose packaging products are handled at least once a day by most citizens of the western world. Such companies succeed, they say, “through innovative strategies alone, without much innovation in either the underlying technologies or the products and services sold to customers.”

Tetra Pak's strategic innovation involved moving from the production of packages for its customers to the design of packaging solutions for them. Instead of delivering ready-made containers, the company increasingly provides the machinery for its customers to make their own packages: the fishing rod, not the fish.

But customers can then use only Tetra Pak's own aseptic materials to make their containers. This strips out all sorts of transport and inventory costs from the production process, for both Tetra Pak and its customer. It also makes it very difficult for the customer to switch suppliers.

Southwest's innovative strategies include its bold decision to increase capacity in the immediate aftermath of September 11th 2001, and its carefully timed rolling out this May of competitively priced routes focused on Philadelphia, an important hub for the ailing US Airways, an airline lumbered with an expensive legacy (such as highly paid crews). The low-cost carrier “is coming to kill us,” said US Airways chief executive David Siegel shortly before his recent resignation. And he was not exaggerating.

In his recent book, “How to Grow When Markets Don't” (Warner Books, 2003), Mr Slywotzky and his co-author Richard Wise recommended another form of innovation. “A handful of far-sighted companies”, they claim, have shifted their focus from product innovation to what they call “demand innovation”. They cite examples such as Air Liquide and Johnson Controls, which have earned profits not by meeting existing demand in a new way but “by discovering new forms of demand” and adapting to meet them.

The French company Air Liquide, for example, was a market leader in the supply of industrial gases. But by the early 1990s gas had become a commodity, with only price differentiating one supplier from another. As its operating income plunged, Air Liquide tried to behave like a far-sighted company: it almost doubled its R&D expenditure. However, it reaped few fruits. An ozone-based alternative to the company's environmentally unfriendly bleach for paper and pulp, for example, required customers to undertake prohibitively expensive redesigns of their mills.

The company's saviour came serendipitously in the form of a new system for manufacturing gases at small plants erected on its customers' sites. This brought it into closer contact with its customers, and led it to realise that it could sell them skills it had gained over years—in handling hazardous materials and maximising energy efficiency, for example.

After exclusively selling gas for decades, Air Liquide became a provider of chemical- and gas-management services as well. In 1991, services accounted for 7% of its revenues; today they are close to 30%. And because service margins are higher, they account for an even bigger share of profits. An ozone-based bleach could never have done half so well.

The dilemma solved?

In his latest book, “The Innovator's Solution”, published late last year, Mr Christensen argued that established companies should try to become disruptive innovators themselves. He cites, for

example, Charles Schwab, which turned itself from a traditional stockbroker into a leading online broker, and Intel, which reclaimed the low end of the semiconductor market with the launch of its Celeron chip.

There are, says Mr Christensen, things that managers can do to make such innovations more likely to happen within their organisations. For example, projects with potential should be rapidly hived off into independent business units, away from the smothering influence of the status quo. The ultimate outcome of any one disruptive innovation may still be unpredictable; the process from which it emerges is not.

In the end, though, “no single innovation conveys lasting advantage,” says Mr Hammer. In the toys and games business today, up to 40% of all products on the market are less than one year old. Other sectors are only a little less pressured. Innovation and, yes, invention too, have to take place continually and systematically.