Innovation For the Taking

A Just Thinking Paper

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In business today, profitable innovations are available for any firm to adopt.

The out of pocket price is either low, or zero.

The key question is personal - "Do I have the guts to do it?"

Unfortunately, fear is rampant. Few people or firms will act. We all know that the economy has slowed. The United States Central Bank has lowered interest rates repeatedly. Many dot.coms have failed. Other business face losses, have written-off investments, are laying-off employees, have closed venture arms, and are projecting poor earnings. Everyone is under pressure. Many firms, faced with these realities, are doing little about their future. They make no bold moves. They are now playing defense all the time. And that needs to change. There is an opportunity to strike, now. Firms can and must improve, now. The risk is tiny, and while competitors wait, do nothing, and remain fearful, some businesses are going to win 'big time' with innovations that cost nothing, or little, and often contribute profit immediately. The winners will be the firms that choose to act.

Below are examples. Most are free. A few are proprietary technology, but they are worth the price. One had a 160-fold payback in the first year. With that type of return, there is no excuse for inaction.

Strategy.

Strategy comes from the Greek *strategia*, meaning general-ship. Unless your business is killing people and destroying things, few military metaphors help, with the exception of training and logistics, but fundamentally, strategy is not an extension of the budgeting process. Strategy is a plan. The important points are the plan's adaptability, its core focus, and the vision and discipline to kill off useless methods and errors.

Dell

Michael Dell formed Dell computer in his college dorm-room - a perfect bootstrap entrepreneur. No venture capital firm approved his business plan. This college kid made-up his business as he went along, and since around 1984, as Peter Drucker has said, any firm could copy his core and non-proprietary innovations. Yet, no one has copied Dell. Why?

Dell is paid in advance for his hardware. He builds nothing that is not already paid for. His accounting, compared to his competition, actually looks funny, because he

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has what he calls 'negative working-capital'. His firm measures inventory in hours. Dell offers a limited set of products & services and sells directly to customers. Today, Dell has a few patents on some technology, but the fundamental business has very little proprietary technology. Other firms could do these things.

Vanguard
Vanguard was founded in 1975 and now has about $550 billion in mutual fund assets. Some Vanguard funds have grown 31,000% over that period. Yet, they have no proprietary technology. Their innovation is cost consciousness. They offer no-load funds - they focus on low costs - they run largely index funds - they charge redemption fees to cut turnover - have straightforward client communication and education - minimize marketing expenses with public-relations and word of mouth - use direct distribution - employ and exploit generic money-managers avoiding the high-priced stars - and tie employee bonuses to cost savings. Other firms could do these things.

Ikea
Ikea, the furniture maker, had 230 million customers go through their stores in 2000. Ikea found, though cost-accounting analysis, that 40% of furniture costs were in the final assembly, so they quit that part of the business. They decided to design, with an in-house team, for customers to do the final assembly. Now, they also design their furniture to be easy and inexpensive to manufacture. 100% of their manufacturing is done through long-term partners. The focus of their products is to be simple for customers to self-select, self-transport, as well as self-assemble, and all with little or no help from a Spartan sales staff and almost no customer service. Other firms could do this.

Southwest Airlines
Southwest Airlines has a market cap of about $14 billion. They continue to be the most profitable airline in the industry. They fly only profitable routes. This choice (requiring zero dollars and instantly boosting profits) is rejected out of hand by other airlines. Southwest uses one type of plane for easy maintenance and training. They don't think they are competing with other airlines; they think they are competing with ground transportation. They offer very low prices - usually fly from secondary airports - offer point-to-point service - have no seat assignments - no food to prepare - and offer no baggage transfers. They have quick airplane turnarounds - an excellent on-time record - and pay top wages to an excellent staff of employee-owners in the cockpit, in the cabin, and on the ground. They are a model for the industry. Why don't other firms take this non-proprietary knowledge and do the same, or at least some of the same things?

More examples:

How about a firm that cut employee turnover to zero and production costs by 90% by offering 13 weeks paid vacation?

How about another cutting 99% of project time?

How about another that found $1.5 billion in revenue from existing assets, with zero capital costs?

Manufacturing.

Manufacturing is thought of as pure execution. But some firms have taken a step back and used strategic thinking to boost the power of their execution, using rules of thumb such as 'never accept a job as given,' and 'always get or make better tools.'

Cut 99% of Project Time - Chrysler
DiamlerChrysler cut over 99% of the time necessary for decking, where models of the drive-train are placed in a prototype automobile. In 1993, the design of the Concorde model's decking process took 30,240 minutes, or three weeks. In 1998, the automated decking process took 15 minutes. The key for DiamlerChrysler was the use of 3D stereo-lithography - which they call 3D printers (www.3dsystems.com) - to create plastic, life-size, simulated car parts for their full-size automobile models. ("Enlightened Experimentation, The New Imperative for Innovation," by Stefan Thomke, *Harvard Business Review*, Feb 2001, p. 69.)

200,000 Checks In Minutes - Boeing
Boeing, as described in Karl Sabbagh's book, *21st-Century Jet: The Making and Marketing of the Boeing 777*, designed and assembled jets using computer aided drawings for about 100,000 unique parts. Boeing had to change designs when any two of their thousands of engineers created parts that overlapped and interfered with one another. By the time the team got to so-called Stage 2 and Stage 3 mockups, entire systems had to be redesigned, and entire wiring systems had to be rerouted. Each of the 100,000 components had to be created by hand and checked in the design for 'interference.' With the 777, Boeing created the EPIC, Electronic Preassembly in the Computer System, so that every engineer could design the parts and systems in the computer, and check that design with all other engineers. This simultaneous design and test radically reduced subsequent production problems. In just one check of a three-dimensional wing flap, the computer did 200,000 tests in a few minutes and found 251 interferences. Then, in real-time, engineering teams self-organized to resolve these interferences.

Marketing.

Marketing is primarily the design of the communication between a company and its customers, and the customers and the company.

Distribution and Adoption - Speed - Netscape
Marc Andreessen created the Mosiac Web browser, the precursor of Netscape's Navigator. He created a prototype on one sleepless weekend in 1993, and then spent 6 weeks to beef it up. Over the next year, over 2 million copies were downloaded - free. This success of the browser, based on a rapid prototype, was also largely based on how very easy the browser was to install. Rapid prototyping, going directly to customers and users, offering free samples, and ease of use are not proprietary technologies. (*Radical Visionaries*, by Thaddeus Wawro, Entrepreneur Press, Irvine CA 92614, 2000.)

Distribution and Adoption - Built to Give - Vindigo

Vindigo.com, as described by Seth Godin in his book *Ideavirus*, is an Internet business based on the phone-book model that employs the Palm operating system, so that customers can get their own directory of restaurants, entertainment, and stores, in major U.S. cities. Vindigo charges restaurants and others to list in their website directory. But users distribute the Vindigo application to new customers. When the user shows Vindigo to someone, and they say they want the software, too, the user points the Palm's IR port at their Palm, clicks 'give', which is a big button on the screen, and in about 60 seconds a new copy of Vindigo is on a new Palm. Vindigo started with 100 downloads. Now, it is the fastest growing application on Palm, with 250,000 users signed up in the United States last year. Which is 10 times the number of people who signed up for wireless Internet access according to *The Standard*, January 8, 2001, in "Info On The Go," by Lydia Lee. Other firms could design to do this.

Structure

Structure is a powerful element in business. A market structure is based on demographics. Everyone knows what baby boom demographics are doing to business. A corporation's formation, as a 501c3, or a for profit Delaware C corporation, will radically effect it's processes and performance, by design. Measures and rewards are structures of a job. If a firm pays a bonus for a patent, employees will patent things. If bonuses are based on sales, they end up with a lot of salesman. Contracts specify what the 'bottom line' is, in most business processes. These structures set the future for the business, regardless of strategy. Thus, structure is a very important business element.

Innovation Structure - 3M
3M has set up a performance structure that allows scientists to spend 15% of their time working on whatever interests them. This changes thinking, and, much more importantly, actions. And with the 3M requirement that divisions generate 30 % of their revenues from new products introduced in the past four years, the 15% allowance adds credibility, and a practical tool for that goal. 3M also has an active internal venture capital fund to support promising new ventures, preserves a dual career track to encourage innovators to remain innovators rather than become managers, and grants prestigious awards for innovations and entrepreneurial success. (http://jimcollins.com/)

1,200 Profit Centers - A.B.B.
A.B.B. Group has over 200,000 employees in major business segments that include power generation, power transmission and distribution, industrial and building systems, financial services, and rolling stock. They have structured the firm as a matrix organization with 1,200+ separate companies and separate profits centers. There are no proprietary secrets here. Any firm could do this. (*A.B.B: The Dancing Giant: Creating the Globally Connected Corporation* by Kevin Barham, and Claudie Heimer.)

Kill Bureaucracy Before It Starts - Gore Company
The Gore Company insists that no division have more than 150 People. Thus, their commitment to communication and to cutting bureaucracy is authentic. (*The Tipping Point: How Little Things Can Make a Big Difference*, by Malcolm Gladwell.)

Isolate a Team to Avoid Problems - BMW
BMW wanted a wonderful design for the new X5 Sports Utility Vehicle, and wanted to protect the designers, who face unique pressures. So Chris Bangle, director of design for BMW, carved out a six-figure design budget, and sent the entire design team away from the BMW facility for 6 months, so that they would not be distracted by anyone. Thus, no one would trample on the creative seeds they were planting. Bangle realized that his team worked differently from the engineers and finance people and he needed to protect creative people doing creative work. ("The Ultimate Creativity Machine, How BMW Turns Art into Profit by Chris Bangle, *Harvard Business Review*, Jan 2001, p 47.)

Technology.

Technology has moved from being a tactical tool, to a strategic advantage for many firms. The aggressive application of technology changed the steel industry when Nucor Steel exploited the electrically fired mini-mills. FedEx changed shipping with the application of real-time tracking systems. Cheap computing and networking has crushed the price of communication. All firms must adopt the cost effective applications of technology, or face destruction by competitors.

I.D. Chip the Size of a Grain of Sand - Hitachi
Hitachi's new 'meuchip' measures about 0.4 millimeters on each side, and looks like a grain of sand. These read-only chips hold about 128 bits of data for identification, and contain wireless technology that can talk to a reader device 12 inches away over the 2.45 gigahertz band. Since they are so small, they can be put into ink, labels, holograms, embedded in currency and documents, put in logos, and, generally, they can make life Hell for counterfeiters, and Heaven for warehouse and supply chain people who must track everything. (*BusinessWeek*, July 23, 2001, p 87.)

160-Fold Investment Payback - In One Year - Bios
The Bios Group writes software that runs on PCs and exploits complexity theory and so-called 'ant algorithms' – rules that mimic the movement of ants – to improve supply chains at a host of prominent companies. Helping Southwest Airlines, for example, Bios discovered that a rule governing cargo operations – put freight on the first plane going in the right geographic direction – led to higher costs, because it increased the number of people required to find, pick, transport, place, and resend each shipment. But the Bios solution, with a small label and an operations change, based on the $60,000 Bios Group study, led to annual savings of $10 million for Southwest Airlines in the first year. (www.biosgroup.com)

No New Customers Needed - Royal Bank of Canada
The Royal Bank of Canada created a comprehensive customer database, available online to all branches and offices, in the hope of serving customers better. The average customer - and they have 9 million - buys roughly 3 financial services from

the Royal Bank, and over l4 from other sources. Using this newfound customer knowledge, executives refocused their marketing efforts on existing customers, and the profitability of their existing customer relationships soared. (www.royalbank.com)

P&L On Each Customer - Harrah's Entertainment Inc.
Harrah's, the hotel and gaming company, runs a customer-loyalty program known as Total Rewards. Because of the sophistication of the program, Harrah's can market to its clientele as individuals. "We have a P&L on each customer," says senior VP of brand operations and information technology John Boushy, referring to a profit-and-loss statement. "That has been fundamental for us in learning which marketing program has the greatest impact and value to the customers as measured by their behavior." (http://investor.harrahs.com/)

Competition.

Too often companies think that their business is a war with their competitors, and not a romance with their customers. Worse, when an employee comes up with an innovation that competes with an existing product or service, the employer kills the innovation, apparently not realizing that if they don't innovate, their competitors certainly will.

Surpass Your Own Products - A.B.B.
A.B.B. is willing to have employees create innovations that compete with, and supercede, existing business lines. Mats Leijon, an A.B.B. engineer, created a high-voltage generator that allows power to go directly from the generator to the overhead cables without the step-up transformer. This promised to wipe out one of A.B.B.'s core businesses. But despite the threat to their existing product line, A.B.B. has several leading customers adopting the new 'Powerformer'. (*A.B.B : The Dancing Giant: Creating the Globally Connected Corporation*, by Kevin Barham, and Claudie Heimer.)

People.

Many firms lie about people. In the August 1997 issue of *Fast Company* magazine, an article, 'The Five Most Common Lies in Business', by Alice van Housen, notes that when firms say, "People are our most important asset." What they actually mean is, "People are our most worrisome and unpredictable asset. Our most important assets are really our financial assets." Too often, rather than treat employees like the most valuable asset, many them employees like teenage boys with whiskey and car keys. Below are some exceptions, from firms that treat people well.

13 Weeks Paid Vacation - Will Vinton Studios
The Will Vinton Studios is the creator of the California Raisins and other foamation and claymation television, movie, and commercials for customers like Dominos Pizza, Kraft Foods, Levi Straus, and Nickelodeon. Employee retention is critical. And given that their creative employees all actually want to do their own work, management has to support them. The firm, faced with very high turnover, and production costs of $500,000 per minute of film shot, instituted a paid 13 weeks of vacation per year. That is a little over 3 months off, with pay. Employees can also use any of the firm equipment any time after hours. And when someone, on their own,

does a new piece of work, management asks that they show the new film to them, and, based on management expertise in the industry, Will Vinton executives may be able to sell the work, where the individual artists would have a much more difficult time. Using new systems and software, rather than filming one project at a time, the firm can now schedule and execute on up to 63 productions simultaneously. And they deliver episodes of the foamation television show 'The P.J.'s' at 90% lower production costs per minute. Employee turnover has declined. ("Feat of Clay," by Ron Lieber, *Fast Company*, April 2000, page 230.)

250% Higher Productivity - Microsoft
Microsoft improved productivity 2.5-fold from each employee, due to one simple action - everyone got an office. According Tom DeMarco and Timothy Lister's book *Peopleware*, productivity depends on simple provisions, such as standards of private offices for software developers, each with a door and window, turning off public address systems, phones that can be set for 'do not disturb', and auditioning software job candidates.

Grown Ups - A.B.B.
A.B.B. Group, as described earlier, is the world's leading power engineering company, with over 200,000 employees, and is made up of 1,200+ companies around the world. Their management style and philosophy could be summarized as, management by and for grown-ups. Constructive debate is welcomed, managers from different countries work together effectively, largely because C.E.O. Barnevik communicates constantly and focuses almost exclusively on clarity, and practical business matters. (*A.B.B : The Dancing Giant: Creating the Globally Connected Corporation*, by Kevin Barham and Claudie Heimer.)

Employee Autonomy - Enron
Over the past decade, Enron's commitment to the invention – and later domination – of new business categories has taken it from a $200 million old-economy pipeline operator to a $40 billion new-economy trading powerhouse. In 1985, Enron began trading natural gas as a commodity. Soon it was opening new markets, trading electric power, pulp, paper, even broadband. Jeff Shenkman, the COO of Enron Global Markets, credits the company's culture. "Challenging conventional wisdom is something we push here," he says. "The way we do things today is different from how we will do them six months from now." For example, a trader in Enron's London office was able to attract 350 people for a project to take the company's gas-trading operations online – before upper management even knew about it. Launched in November 1999, Enron Online has racked up $129 billion in transactions, along with their slice of each trade. "We didn't start it because the chairman said we needed an e-commerce strategy," says EVP Steve Kean. "The quality and strength of ideas are determined by how many employees support them, not by upper management. Good ideas are able to attract the resources they need to move forward freely." (www.enron.com)

Failures Welcome - Charles Schwab
After launching in 1974, Schwab became the first firm to offer free IRA accounts (1982), introduce a software-trading product (1985), and move operation online (1996). Schwab credits his willingness to overlook failures. "To introduce new ideas, you have to be able to take a lot of ridicule," Charles Schwab says. "If you undermine

the bad ideas, no one will ever want to come up with a good one. And if 50% of them work, that's pretty damn good." (*Clicks and Mortar*, by David S. Pottruck, Terry Pearce.)

Leverage Failure - IDEO
Failure is also a critical part of success for IDEO, the premier design firm in Palo Alto, California, whose designs include the Palm V. General Manager Tom Kelly says that without an acceptance of rapid iterative failure, that leads to ultimate success, designers will build sleek and expensive prototypes before they have the answers they need. He says, "You guys have to have the guts to create a straw man." (*The Art of Innovation : Lessons in Creativity from Ideo, America's Leading Design Firm*, by Tom Kelley.)

Measures and Goals.

There is a Zen story that the novice archer can easily beat the archery master. How? The answer is, "Do not tell the master where the target is." Such is the nature of measures and goals. Firms get more of what they measure and the goals that they support.

Individual Performance Measures - C.R. England
C.R. England is a private trucking company in Utah. They measure everything, from cargo temperature to the speed at which invoices are processed, and use the numbers to improve performance. Every employee has a customized set of performance measures, depending on what he does. All employees get a customized performance report each week, and the results show up in their paychecks. The firm has increased its truck fleet sevenfold in seven years, and revenue per truck has grown one-quarter over the same period. ("You Can Have It All," by Stratford Sherman, *Fortune*, March 4, 1996.)

Cut 90% - Canon
Canon is known for basic technology innovation and they often choose, as they did with the copier market, brutal goals to insure that they focus on large gains. In the case of their redesign of the plain paper copier, they set a goal of producing a product at $1/10^{th}$ the current costs, and that it required zero maintenance.

30% From New Products - 3M
3M requires that divisions generate 30% of their revenues from new products introduced in the past four years. (www.jimcollins.com)

33% From New Products - Rubbermaid
Rubbermaid is known for product proliferation, with their goal of 33% of sales coming from products that are less than 5 years old. They also enter a new market segment every 18 months, and over 90% of new product introductions are successful.

40% From New Products - Gillette
Gillette insists that 40% of sales must come from products that are less than five years old. This goal requires about 20 new products, not line extensions, per year. (www.gillette.com)

Profit Multiplier.

Profit Multiplier is a term used by Adrian Slywotzky and David J. Morrison in their book, *Profit Zone*, to describe a business model that a firm uses to generate multiple revenue from a single asset. Disney is an excellent example. The 'Lion King' was first a successful movie, but then was also successful video, and PC game. The process also created outlets for Lion King toys, clothes, other license goods, as well as a Broadway musical. Other firms can uses these methods. For example, a ski resort found that their key asset was not snow but the mountain, and they opened in the summer for mountain bikers. Williams Co., a pipeline firm, found that their key asset was not pipelines, but the dirt and the easements, and they go into the fiber optic network business, buying up defunct pipelines and railroads for easy access. A cellular firm found that they could offer their wireless network to business clients for data transmission, because the voice network was largely dormant at night.

Better Artificial Limbs - NASA to Harshberger
NASA created a new spray-on foam insulation (SOFI) to protect the 385,000 gallons of liquid hydrogen and 143,000 gallons of liquid oxygen in the Space Shuttle's external tanks. Harshberger Prosthetic and Orthotic Center of Birmingham, Alabama, USA, found that the SOFI had superior temperature stability and was less subject to distortion than their previous mold materials. It turned out that the foam was perfect for making molds of amputee patient's residual limbs in the construction of more rigid molds to then be carved by a computer controlled fabricating machine, which created an exact mirror shape of the patient's stump and thus helped to create a better fitting prosthetic. (“Inventions from OuterSpace,” by David Baker, *Scientific American*, Random House, New York, 2000.)

Super Paint - NASA to Inorganic Coatings
Inorganic Coatings Inc., of Malvern Pennsylvania, USA, licensed IC531 from NASA. The paint that coats the shuttle launch tower, to protect it from weather and the thermal shock of multiple launches, is now used to protect landmarks from the Golden Gate Bridge to the Po Lin Buddha. (“Inventions from OuterSpace,” by David Baker, *Scientific American*, Random House, New York, 2000.)

Aerodynamic Grooves - NASA to Swimsuits
NASA research found that small v-shaped, angled grooves that are almost imperceptible, and pointing in the direction of the flow, stop so-called 'turbulence-bursts' of typical aerodynamics and hydrodynamics, and improve flow friction rates by as much as 10%. Arena North America of Englewood, California, seized on the idea. They now market the Strush ST competition swimsuit that employs the v-shaped and angled grooves. (“Inventions from OuterSpace,” by David Baker, *Scientific American*, Random House, New York, 2000.)

Remote Sensors - Emerson Electric
Emerson Electric is the world's largest maker of compressors for refrigeration, heating, and air conditioning systems. Two years ago they used the Internet to enter a new service industry - remotely monitoring their customer's systems. When Emerson's internet monitoring system noted that the electricity powering the compressors in the refrigerators at an Atlanta, Georgia supermarket were flowing intermittently, and thus threatening to shut down the store's power system, an Emerson staffer quickly notified

a store manager, who dispatched an engineer to fix the problem. "We would have lost $100,000 in fresh foods if the refrigeration system failed," says Charles Peters, senior executive VP and E-business leader at Emerson. (www.emersonelectric.com)

Patent License Revenue.

Patents may be described as the *result* of research and development at many firms. The execution of the Profit Multiplier process, described above, earns more revenue from existing assets. Patents are usually thought of as defensive limited monopolies, but some firms such as Texas Instruments and IBM have turned their patents into free-cash-flow pipelines, by licensing their technology to allies, and competitors, and making money from their innovations in new ways.

Boost Revenue 3,300% - IBM
IBM, since 1990, has been working to boost revenue from existing patents. In 1990, they earned $30 million licensing their patents. In 1999 IBM earned $1 billion in license revenue, demonstrating the power of an effective patent management strategy. (www.ibm.com financial statements 1990-1999)

CFO's Office Becomes Profit Center - Kingsley Baird
Kingsley Baird, Inc. turns patents into money. Many large R&D firms have sunk over $3 million in each innovation prior to being granted a patent. Each patent then costs $10,000 a year to maintain ownership in up to 72 separate patent jurisdictions. However, according to these large R&D firms, over 90% of their patents are doing nothing for them, providing zero license revenue, and little or no useful monopoly protection. Kingsley Baird charges $15,000 per patent, creates a custom sales strategy, and presents each patent to CEO buyers, who are interested in innovations. If targeted CEO buyers license the technology, the patent owner gets license revenue. If no one wants to license the technology, Kingsley Baird shows patent owners how to donate the technology to an engineering school and save the $10,000 a year in legal maintenance costs, and also reap millions of dollars in tax benefits. This strategy helps turn the CFO's office from a cost to a profit center. (www.kingsleybaird.com)

$3 Trillion - IP Market
British Technology Group, a consulting firm, estimates that just 3% of global intellectual property's commercial potential was realized in 1999. Within the USA, that translates into roughly (US) $110 billion out of a $3 trillion total commercial potential. (www.ptgplc.com)

Machine Created Patents - HGS
Human Genome Sciences (HGS), a biotechnology company that patents genes for licensing to drug manufactures, produces an extraordinary 200 patent applications per month, using an automated patent-application process. HGS cuts months off the typically lengthy patent-application process (the average patent pendency period is 2.4 years from application to issuance) using proprietary software that captures information about genes and fills out the patent applications. (www.hgsi.com)

Conclusion.

If a firm wants to gain higher revenue and profits, more productivity, and even new markets, innovations are available for the taking. The keys are knowing what's available, how it can apply, and the risks and benefits.

You need only to act.

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