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## The Innovation Mindset in Action: 3M Corporation

by Vijay Govindarajan and Srikanth Srinivas | 12:00 PM August 6, 2013

In three recent blog posts we looked at the innovation mindset in individuals, profiling game changers Jerry Buss ([http://blogs.hbr.org/cs/2013/07/the\\_innovation\\_mindset\\_in\\_acti.html](http://blogs.hbr.org/cs/2013/07/the_innovation_mindset_in_acti.html)), Peter Jackson ([http://blogs.hbr.org/cs/2013/07/the\\_innovation\\_mindset\\_in\\_acti\\_1.html](http://blogs.hbr.org/cs/2013/07/the_innovation_mindset_in_acti_1.html)), and Shantha Ragunathan ([http://blogs.hbr.org/cs/2013/08/the\\_innovation\\_mindset\\_in\\_acti\\_2.html](http://blogs.hbr.org/cs/2013/08/the_innovation_mindset_in_acti_2.html)). These three innovators share common qualities, which we call the innovation mindset, a robust framework which can be applied at the micro (individual) as well as macro (organizational) levels: they see and act on **opportunities**, use “**and**” **thinking** to resolve tough dilemmas and break through compromises, and employ their **resourcefulness** to power through obstacles. Innovators maintain a laser focus on **outcomes**, avoid getting caught in the activity trap ([http://en.wiktionary.org/wiki/activity\\_trap](http://en.wiktionary.org/wiki/activity_trap)), and proactively “**expand the pie**” to make an impact. Regardless of where they start, innovators and innovative companies persist till they successfully change the game.

Take, for example, 3M Corporation. 3M was awarded the US government’s highest award for innovation, the National Medal of Technology (<http://clinton4.nara.gov/textonly/Initiatives/Millennium/capsule/3m.html>). Over a 20-year period, 3M’s gross margin averaged 51% and the company’s return on assets averaged 29%. 3M has consistently been highly ranked, often in the top 20, in *Fortune* magazine’s annual survey ([http://money.cnn.com/magazines/fortune/most-admired/2013/list/?iid=wma\\_sp\\_full](http://money.cnn.com/magazines/fortune/most-admired/2013/list/?iid=wma_sp_full)) of “America’s Most Admired Corporations.” How do they do it?

*Innovative companies provide forums for employees to pursue **opportunities**.*

One of 3M’s strengths (<http://multimedia.3m.com/mws/mediawebserver?6666660Zjcf6IVs6EVs666IMhCOrrrQ->) (PDF) is how it treats promising employees: give them opportunities, support them, and watch them learn and thrive. 3M provides a rich variety of centers and forums ([http://solutions.3m.com/3MContentRetrievalAPI/BlobServlet?lmd=1349327166000&locale=en\\_WW&assetType=MMM\\_Image&assetId=1319209959040&blobAttribute=ImageFile](http://solutions.3m.com/3MContentRetrievalAPI/BlobServlet?lmd=1349327166000&locale=en_WW&assetType=MMM_Image&assetId=1319209959040&blobAttribute=ImageFile)) to create a pool of practical ideas that are then nurtured into opportunities and provided the necessary resources for success. Scientists go out into the field to observe customers to understand their pain points. Customers also visit Innovation Centers set up specifically for the purpose of exploring possibilities, solving problems, and generating product ideas. Scientists share knowledge and build relationships at the Technical Council, which meets periodically to discuss progress on technology projects, and the Technical Forum, an internal professional society where 3M scientists present papers— just two of 3M’s fruitful forums.

Arthur Fry ([http://en.wikipedia.org/wiki/Arthur\\_Fry](http://en.wikipedia.org/wiki/Arthur_Fry)), a 3M employee, attended a Technical Council where Spencer Silver spoke about trying to develop a super-strong adhesive for use in building planes; instead, Silver accidentally created a weak adhesive that was a “solution without a problem.” Fry, who sang in a church choir, had the niggling problem of losing the bookmark in his hymnbook. Fry noticed two important features of Silver’s adhesive that made it suitable for bookmarks: the note was reusable, and it peeled away without leaving any residue. Fry applied for and received funding to develop a product based on Silver’s accidental discovery. Thus was born the Post-it note.

*Innovative companies create an environment that fosters the right tension with “**and thinking**.”*

One critical balance at 3M is between present AND future concerns. Quarterly results are important but should not be the sole focus; staying relevant is also important but cannot come at the cost of current performance. 3M has several mechanisms to sustain this “and thinking.” Employing the Thirty Percent Rule (<http://www.wired.com/techbiz/media/news/1998/01/9858>), 30% of each division’s revenues must come from products introduced in the last four years. This is tracked (<http://www.smartplanet.com/blog/smart-takes/how-3m-thinks-about-structures-r-d/17129>) rigorously, and employee bonuses are based on successful achievement of this goal. 3M also uses “and thinking” in their three-tiered research structure. Each research area has a unique focus: Business Unit Laboratories focus on specific markets, with near-term products; Sector Laboratories, on applications with 3-to-10 year time horizons; and Corporate Laboratories, on basic research with a time horizon of as long as 20 years.

*Innovative companies create systems, structures, and work environments to encourage **resourcefulness** and*

*initiative.*

Reporter Paul Lukas best expressed ([http://money.cnn.com/magazines/fsb/fsb\\_archive/2003/04/01/341016/](http://money.cnn.com/magazines/fsb/fsb_archive/2003/04/01/341016/)) the resourcefulness of 3Mers: “A 3M customer identifies a problem, and a 3M engineer expresses confidence in being able to solve it. He bangs his head against the wall for years, facing repeated setbacks, until management finally tells him to stop wasting time and money. Undeterred, the engineer stumbles onto a solution and turns a dead end into a ringing success.”

Richard Drew ([http://money.cnn.com/magazines/fsb/fsb\\_archive/2003/04/01/341016/](http://money.cnn.com/magazines/fsb/fsb_archive/2003/04/01/341016/)) is just such an engineer. Running some Wetordry sandpaper tests at an auto-body shop to improve paint removal, he noticed that the painter was not able to mask one section of a two-tone car while painting the other. The tapes available at the time, back in the 1920s, either left a residue or reacted with the paint. Drew assured the painter that 3M could solve the problem and worked on it for two years, eventually receiving a memo from senior management instructing him to get back to work on the waterproof Wetordry sandpaper. Drew did, but he continued working on the tape project on his own time. The result: Scotch tape.

3M has a rich set of structures and systems to encourage resourcefulness:

- **Seed Capital:** Inventors can request seed capital from their business unit managers; if their request is denied, they can seek funding from other business units. Inventors can also apply for corporate funding in the form of a Genesis Grant ([http://money.cnn.com/2010/09/23/news/companies/3m\\_innovation\\_revival.fortune/index.htm](http://money.cnn.com/2010/09/23/news/companies/3m_innovation_revival.fortune/index.htm)) . (The Post-it was funded by a Genesis Grant.)
- **New Venture Formation:** Product inventors must recruit their own teams, reaping the benefit of 3M’s many networking forums as they seek the right people for the job at hand. The recruits have a chance to evaluate the inventor’s track record before signing up. However, if the product fails, everyone is guaranteed their previous jobs.
- **Dual-career ladder:** (<http://www.businessweek.com/stories/2006-05-09/3ms-seven-pillars-of-innovation>) : Scientists can continue to move up the ladder without becoming managers. They have the same prestige, compensation, and perks as corporate management. As a result, 3M doesn’t lose good scientists and engineers only to gain poor managers, a common problem in the manufacturing sector.

*Innovative companies focus on the right set of **outcomes**. They tailor what is measured, monitored, and controlled to suit their focus, and strike the right balance between performance and innovation.*

3M has created measurement and reward systems that tolerate mistakes and encourage success. 3M rewards successful innovators in a variety of ways: the Carlton Society, named after former company president Richard P. Carlton, honors top 3M scientists who develop innovative new products and contribute to the company’s culture of innovation, and the Golden Step is a cash award. 3M also has a rich tradition of telling the stories of famous failures that subsequently created breakthrough products (<http://www.businessweek.com/stories/2006-05-09/3ms-seven-pillars-of-innovation>) — such as the weak adhesive that inspired Post-It notes— to ensure a culture that stays innovative and risks failure for unexpected rewards. Another 3M failure story ([http://money.cnn.com/magazines/fsb/fsb\\_archive/2003/04/01/341016/](http://money.cnn.com/magazines/fsb/fsb_archive/2003/04/01/341016/)) from its early days, still repeated inside the company: 3M’s initial business venture was to mine corundum, a material they planned to use to make grinding wheels. Instead, what they found was inferior abrasive. After much experimentation came their first breakthrough product: Wetordry sandpaper.

*Innovative companies have strong mechanisms to ensure a continuing focus on **expanding the pie**, by effectively converting non-consumers into consumers, and providing richer solutions to current consumers. In the process they transform their industry, community, country, and sometimes even the world.*

3M uses a research and development focus and a unique “15% rule” to ensure continuing effort on expanding the pie. 3M spends approximately 6% of sales on research and development ([http://solutions.3m.com/3MContentRetrievalAPI/BlobServlet?lmd=1349327166000&locale=en\\_WW&assetType=MMM\\_Image&assetId=1319209959040&blobAttribute=ImageFile](http://solutions.3m.com/3MContentRetrievalAPI/BlobServlet?lmd=1349327166000&locale=en_WW&assetType=MMM_Image&assetId=1319209959040&blobAttribute=ImageFile)) (PDF), far more than a typical manufacturing company. This has resulted not only in new products but also the creation of new industries. David Powell, 3M’s vice president of marketing, affirms (<http://multimedia.3m.com/mws/mediawebserver?6666660Zjcf6lVs6EVs666lMhCOrrrrQ->) R&D’s importance: “Annual investment in R&D in good years— and bad— is a cornerstone of the company. The consistency in the bad years is particularly important.”

William McKnight, who rose from his initial bookkeeping position to eventually become chairman of 3M's board, best explained the logic of the 15% rule ([http://money.cnn.com/magazines/fsb/fsb\\_archive/2003/04/01/341016/](http://money.cnn.com/magazines/fsb/fsb_archive/2003/04/01/341016/)) :  
“Encourage experimental doodling. If you put fences around people, you get sheep. Give people the room they need.”  
3M engineers and scientists can spend up to 15% of their time pursuing projects of their own choice, free to look for unexpected, unscripted opportunities, for breakthrough innovations that have the potential to expand the pie. For example, some employees in the infection-prevention division used their “15% time” to pursue wirelessly connected electronic stethoscopes. The result: In 2012, 3M introduced the first electronic stethoscope ([http://money.cnn.com/2010/09/23/news/companies/3m\\_innovation\\_revival.fortune/index.htm](http://money.cnn.com/2010/09/23/news/companies/3m_innovation_revival.fortune/index.htm)) with Bluetooth technology that allows doctors to listen to patients' heart and lung sounds as they go on rounds, seamlessly transferring the data to software programs for deeper analysis.

The innovation mindset is a game-changing asset for companies as well as individuals. Innovative companies like 3M use creative “and” thinking and resourcefulness to pursue promising opportunities and strategically meet outcomes, all the while “expanding the pie.” Such organizations create the structure, systems, and culture to enable their people to think and do things differently in order to achieve extraordinary success.