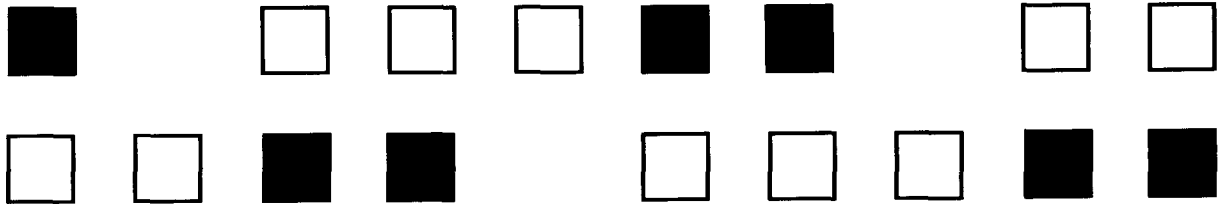


The Post-It Note: An Intrapreneurial Success

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It is indeed a pleasure to be here today.

I'd like to talk to you about several things: entrepreneurs and intrapreneurs; about 3M, and why it has been so successful in spawning intrapreneurs and new products; about the development of Post-It Notes, a classic 3M story; and about how and why you might develop an intrapreneurial climate.

Advantages of Intrapreneurship

"Intrapreneuring" is a word coined by Gifford Pinchot in his book, *Intrapreneuring*. We had intrapreneurs for years at 3M, but didn't know what to call them.

The entrepreneur, working in a smaller arena, must have many different skills under one hat to direct all phases of a project—management, production, engineering, marketing, economics, materials, packaging, process technology, legal and so on. Few of us are so well-rounded. But even if we were, many challenges, including the development of Post-It Notes, require so many skills and so much time that they could not be met by one person in one lifetime.

Fortunately, the role of the intrapreneur offers an alternative. We can put a team together, and with those other skills, form a new corporate body—a "super-person" with more time and talent. Some of the people on the team may also be intrapreneurs in the true sense, but are investing a smaller portion of their time and talents than you are in a particular project. In short, there are more ways to be an intrapreneur than an entrepreneur.

The intrapreneur's core problem is to convey his or her vision to the team and the company to accomplish the goal. Intrapreneurs are at-

tracted by big firms: they like big problems, the large capital base, the variety of talents, and the equipment and technology available. They are especially attracted by the "patient" money necessary for long-term projects that may require five to seven years of investment with no measurable return.

But let me warn you. Intrapreneurs are a different breed—burrs under the saddle for many managers. They want to change things, spend money, think long term, ask embarrassing questions, challenge authority, and perhaps be disruptive. Truth, and the chance to make something happen, are often more important to them than the conventional motivations of money or power.

Nevertheless, to hire those innovators and intrapreneurs we give them time and money and freedom and a perspective of the company. We hire them to look without knowing what they will find.

The 3M Approach

Statistics show that small companies develop the greatest number of new products. And yet, at 3M, we have been astonishingly successful in new products. With over 40,000 products, we are the world's most successful new products company. We have a goal: That 25% of sales must come from products that did not exist five years before.

3M gives "Golden Step Awards" for products that sell \$2 million, at a profit, within the first two or three years of national introduction.

In 1981, when Post-It Notes won a Golden Step Award, 13 other products also won the same award. Nationwide, fewer products meet

those standards. This year, 3M had over 50 Golden Step Winners.

How does 3M foster this creative climate? The first part of the answer is that innovators aren't just found in management. As a matter of fact, very few breakthroughs result from top-down decisions.

New-To-The-World things require perspectives, associations, and new information that is not always available to the executive. Top-down decisions are fine if you are going after an established market with existing technology. Examples of this are the Japanese and Koreans going after the electronics or automotive markets.

New things generally come from the inside-out, from people scattered throughout the entire organization. Also, while innovation starts with the initial idea for a product, a lot more creativity and new ideas are needed to build the idea into a business. Innovation and intrapreneuring must be allowed at every level of the corporation. If managers aren't innovative, if they don't provide the climate for creativity, if they can't set aside their carefully laid plans to take advantage of a new opportunity, then intrapreneurs have little encouragement.

Another factor is 3M's organization. 3M is like a bunch of small companies pasted together. Each company, or division, sells to specific markets, such as Business offices, Automotive, or Electronics. Each has its own business plan and profit and loss statement. This prevents us from straying from the needs of the customer. For the individual, it means being far from the top or the bottom, so communications are shortened and the individual's activities can have an impact on the success of the division. The divisions are organized into groups and the groups into sectors, and there are four sectors in the company. I, for example, am in the Commercial Office Supply Division of the Commercial Markets Group of the Industrial and Consumer Sector.

3M is intrapreneurial. Roots are easy to trace. We were blessed with innovative founders, who hired others like themselves. As a result, this particular trait was passed down from the first employee to the most recent; it's in our company's genes.

One of our early innovators was a man by the name of Dick Drew. Back in 1923, Drew saw the need for a tape that would quickly and accurately mask two-tone automobiles for painting. His first tape was too rigid and didn't conform to the curves and angles of the auto

body. William McKnight, 3M's chief executive officer at the time, ordered Drew to stop working on the tape because it was giving our quality sandpaper products a bad name.

Drew did stop working on the tape—for exactly one day. During that period, he stumbled across a crepe paper toweling substrate that was being considered for use on sandpaper. It stretched, and it was perfect for Drew's tape.

Drew began working on the tape in his spare time. Shortly thereafter, Mr. McKnight walked through the lab. Even though Drew didn't really have any spare time, and even though Drew's project directly contradicted his order, McKnight didn't stop him.

As a result of that episode, Mr. McKnight instituted 3M's policy of allowing its researchers to spend up to 15% of their time on projects of their own choosing. This was a pretty revolutionary policy, particularly for the 1920s, but it's one 3M supports today.

I'd like to say a word about that 15 percent, or "Bootleg" rule as we call it. No one really has extra time. Often, the 15 percent is time that's put in after 5:00 or on weekends. That's where some of my "bootleg" time came from when I first started working on Post-It Notes, because I was working on a high priority project, developing a shelf arranger tape for library shelves.

The bootleg rule gives us a chance to shape our own careers. McKnight recognized that people give their best efforts to the projects they're most interested in. The reward for the extra effort is that we are soon officially asked to do what we wanted to do all along. Many of 3M's major new products were developed by people giving extra effort to champion something new.

Dr. Spencer Silver, the 3M researcher who discovered the Post-It Note adhesive, is a good example of modern creativity at 3M. He discovered the Post-It Note adhesive accidentally, while trying to develop the opposite—super strong adhesives.

Although the adhesive wasn't his original target, Silver was convinced of its merits. He took it to others within 3M and asked how they thought it might be used. There was a definite lack of enthusiasm for his discovery.

In other companies, this might have been discouraging and all the reason needed to drop the idea. But Spence didn't feel obliged to. At 3M, we're a bunch of ideas. We never throw ideas away because you never know when

someone else may need it.

Obviously a delicate balance must be maintained between skepticism and encouragement. People need the opportunity to make errors, to explore what looks like blind alleys, and to do so with some confidence in themselves and the organization. But at the same time, they need to be challenged and tested.

In addition to the 25% new product rule and the 15% bootleg time, 3M encourages intrapreneurial activity in other ways:

■ **Executive Champions.** Intrapreneurs would never succeed without an executive champion who is committed to new products, who can commit funding, and act in partnership to cut through the politics and the red tape that can tie up a program.

■ **Scrounging.** An entrepreneur generally has to start from scratch, but in a large organization like 3M, the 80:20 rule applies. In our case, 80% of the equipment and materials needed can be found within the company and can be scrounged by the intrapreneur. This is not only a huge savings in capital, but helps to get a product through the test market stage economically. If the product succeeds, permanent equipment can be purchased.

■ **Freedom To Fail.** I wouldn't have been penalized if Post-It had failed. Entrepreneurial spirit would disappear if people were penalized for tries.

McKnight said, "Mistakes will be made. But if the person is essentially right himself, I think the mistakes he or she makes are not so serious in the long run as the mistakes management makes if it is dictatorial and undertakes to tell people under its authority, to whom responsibility is delegated, exactly how they must do their job."

■ **Dual Ladder Policy.** People with highly refined skills shouldn't be forced to become managers to get ahead and increase their earnings. We have people with technical skills and responsibilities and others with people and budget responsibilities. This produces teamwork and focuses attention on what needs to be done. We won't miss out on pay or perks by sticking to our knitting.

■ **Communications Network.** With about 3,000 people on the St. Paul Campus working on R&D, and hundreds more in labs in France, Britain, Japan, Germany, and Italy, we need formal and informal ways to share information and ideas.

Among the formal are our Tech. Forums, Tech. Forum Displays of new 3M products and technologies; Tech. Forum Symposia, featuring special classes, guest lecturers, and papers by our own researchers; and Tech. Forum Chapters. We also have a Tech. Council, where Tech. Directors and lab chiefs set some policies and advise top management.

Among informal channels, we have hobby and recreational clubs, coffee breaks, libraries, and a Critical Skills Roster, so an expert can be located on any subject.

Developing the Post-It

So now lets talk about the story of how Post-It Notes came to be. The idea originally came to me when I sang in the choir at North Presbyterian Church in 1974.

I was a member of my church choir and marked hymnal responses with pieces of scrap paper. Invariably they'd fall out of the book or slip between the pages—a big nuisance. My mind began to wander one day during the sermon, and I thought of Spence's adhesive. If I could coat it on paper, that would be just the ticket for a better bookmark.

I went to work the next day, ordered a sample of the adhesive and began coating it on paper. I only coated the edge of the paper so the part protruding from the book wouldn't be sticky.

In using these bookmarks for notes back and forth from my boss, I came across the heart of the idea. It wasn't a bookmark at all, but a note. Spence's adhesive was most useful for making paper adhere to paper, and a whole lot of other surfaces as well. And yet, it wasn't so sticky that it would damage those surfaces when it was pulled off. The notes were a systems approach to communicating because the means of attachment and removal were built in.

This was the insight . . . it was a whole new concept in pressure sensitive adhesives. It was like moving from the outer ring of the target to the bullseye.

Post-It Notes wouldn't have gotten anywhere if I had stopped with submitting the idea and hadn't gone to the work of getting materials and making samples. The old story that invention is 10% inspiration and 90% perspiration is true, and my perspiration on this project had just begun.

I encountered serious technical problems very early. First there was the problem of get-

ting the adhesive to stay in place on the note instead of transferring to other surfaces. I think some of those church hymnals have pages that are still sticking together.

Have you ever noticed how our pads are no thicker at the adhesive layer than in the rest of the pad? Even though 3M is noted for its coating expertise . . . we didn't have the coating equipment capable of giving us the necessary precision on an imprecise backing such as paper.

Refer to Diagram

And once we had the adhesive coated, we didn't have a good way of measuring the coating weight.

Some of the early bookmarks wouldn't stick at all and others couldn't be pulled off without ripping the paper. It was difficult to maintain a consistent range of adhesion.

All of these things bothered our production people, but I was delighted by the problems. If there is anything that 3M loves, it is to create a product that is easy for the customer to use, but difficult for competitors to make.

Eventually, we had to develop new ways of coating and measuring, but then these problems became our strengths. Problems are really opportunities in disguise. The tougher they are, the better. If the problems are easy to solve, your competition will soon be making it too.

Now that is the beauty of bootleg projects. They allow you to keep a low profile during the time when the early, tough problems arise that require creative solutions. Sometimes it just takes time to work out those creative solutions or to learn the new skills that you need to accomplish the task.

Throwing a lot of money or people at the task doesn't speed it up, but it does cut down on management's ability to afford to be patient. Things can be killed before they get a chance.

Communication skills are vital. It is important for the intrapreneur to be able to convey as clear a vision as possible to management and the team.

One of the principal problems an inventor faces is describing concepts and tactile or sensory things that are really new. That's why it's very important to have a good quality prototype.

One of the things I had going for me right away was support from my lab supervisor and permission to charge expenses to "Miscellaneous Accounts." This is one of the ways the corporation puts teeth into Mr. McKnight's

policy of giving us freedom to chase new ideas.

The corporation had provided me with just enough time and money to get started. We were able to get Post-It Notes into pilot scale manufacturing because I had enough latitude to keep working on this project, because of teamwork and help from my boss, because 3M divisions are under constant pressure to create new products, and because the system was leaky enough that a bag of this and a drum of that would magically appear in the lab when needed.

Even though we had a prototype, we still had a long way to go. Each new product must be adopted by one of our business development units. People in those units must be convinced that new products have sufficient market potential.

My father, an engineer, gave me some good advice while I was still in college. He said that engineers have to deal with people over whom they have no authority. If they want to get their programs accepted, they have to sell their ideas. I sold pots and pans and luggage door-to-door while I was in college. The lessons I learned were valuable, and I was about to use them selling the Post-It Note idea to the new business development groups. I put together samples of Post-It Note pads and information on how I thought they might be used, which I took to all the business development people, managers, and supervisors within our division.

Through the new business development units, we got a little more money and were able to put together teams of lab, engineering, marketing, cost accounting, packaging and production people. Still, we had trouble generating serious enthusiasm for Post-It Notes.

At 3M we measure a new product by asking if it improves the value of people's time and if it meets a real need. Determining that real need is tough.

For instance, if Dick Drew had conducted a market survey before he invented transparent tape, results probably would have said that people didn't need a tape. Yet when Drew presented transparent tape, they could immediately see its value and began buying it.

While I continued my selling efforts with the new BDUs, I was getting some important help from my lab director, Geoff Nicholson. He started passing out samples of the product to our senior executives's secretaries. They promptly fell in love with these little yellow notes and began using them. Before long their

bosses began borrowing them, and soon a few very highly placed people started showing up in our labs just to see how we were doing.

Incidentally, while I had started out as the team leader, that part had passed back and forth subsequently between marketing and engineering. Others were better suited to that function than I, and I needed to be free to focus on technical problems.

What Geoff Nicholson accomplished by planting Post-It Notes among our senior executives is hard to measure exactly but it clearly played a major role in making the product a reality.

That brings up another point about 3M's creative climate. No matter how much power you have, no matter how persuasive the arguments for a product, you always need someone in management to be your sponsor or advocate.

If it weren't for Geoff, my immediate supervisor Bob Molenda, and Joe Ramey, who was our Division Vice President, Post-It Notes never would have emerged from the lab.

These three were especially supportive when we received disappointing results from an initial market test. Joe Ramey and Geoff jumped on a plane and made unannounced calls to end users in a test market to gauge customer reaction and determine what to do with the idea. Post-It Notes were more expensive than regular scratch paper. Would customers pay the extra price?

After successfully taking orders for Post-It Notes in Richmond, Virginia, and hearing users pleading for us to continue sales, Ramey was convinced that Post-It Notes were marketable.

The marketing strategy was reformulated to emphasize sampling. We formulated a critical path diagram with a box for each job and step that had to be done, from the prototype stage through national introduction. We had no idea of how we would accomplish all the jobs within a certain time. But we managed to do it, working as a team.

A major problem we had to solve was quality control. Quality is an integral part of the 3M story. Our company learned the importance of quality early when its first abrasive material was contaminated by oil, almost putting the company out of business. Instead, the founding fathers borrowed \$500 to set up a quality control laboratory.

As we began the Post-It Note program, a group of us sat down and mapped out every raw material, every processing step, and inter-

mediate product that was needed to produce the product.

We developed testing procedures and if the product did not meet the specifications, we scrapped it. This meant we had to learn quickly how to do it right.

This approach has paid off. Of the millions of pads made since Post-Its were introduced nationwide in 1980, we've had fewer than 75 complaints. This is a tough target for competition to follow. That's important, because if you hurry to market with a product thinking you can resolve quality problems later, you've set the table and your competitors will eat your lunch. So for good business reasons and to keep customers happy, we never experiment at the customer level.

There's obviously much more to the story and I would be remiss if I didn't give credit to the people in marketing. Again, some of them were skeptical, but by establishing appropriate and surmountable barriers, we were able to refine the product. We were able to answer questions from our customers because we had worked out the answers among ourselves.

Two of the final keys to 3M's climate for creativity are our dual ladder system and our internal system of recognition and rewards.

3M's Reward System

In many other companies, a technical person like myself would have to manage people and budgets to receive additional pay and recognition. The 3M dual ladder system allows people to advance on the technical side of the ladder, assuming additional responsibility for technologies instead of people or budgets. That means that people who are happiest working in the lab can remain there without losing pay raises or recognition.

Since I began working on Post-It Notes, I've received three promotions to my present title of corporate scientist, the highest title on the technical side of 3M's dual ladder.

That means I don't have to scrounge for supplies and materials. It means I can choose many of the projects to work on and help to define technical paths for others.

Many people have asked if I receive royalties from the sale of Post-It Notes. The answer is no. But I don't regret that. I couldn't have invented Post-It Notes as a start-up new company. It took all the machinery and supplies that a large corporation such as 3M can offer, plus the skills of a host of people to create a business around the product. I don't have

all the necessary skills, and that's why I'm an intrapreneur—one who invents new products inside a corporation—instead of an entrepreneur.

Developing a Creative Climate

In my opinion, companies that wish to encourage intrapreneurship must:

1. Provide intrapreneurship the necessary time and resources.
2. Be sure management sponsors the concept. Management must also convey
 - Trust
 - Expectation of excellence
 - A long term focus
 - The practical rewards of the sponsorship function
 - An openness to criticism. People who want to change things are not always selective in what they look at.
 - A willingness to facilitate change. (This may be harder than you think.)
3. Give intrapreneurs freedom: a lot of rope. Sponsor, do not manage, their program.
4. Forgiveness, freedom to fail, leeway to change directions.
5. Enrich the climate by sharing goals. People like to work in realistic directions, and don't want to have their time wasted.

Also, management must allow people to understand the system, not just what they do, but

how their work interacts with others inside and outside the company. You can't improve something you don't understand.

What's the Pay-off?

When you have a steady growth, people feel secure, are more productive, and have more fun. Headhunters give up on 3M'ers. Even a steady state doesn't mean standing still, it means replacing old products with new and good products with better.

People involved with intrapreneuring identify with the company; there is a sense of community. The usual polarizations do not occur, such as union/company, management/employees, and our department/their department. Intrapreneurship adds excitement and interest to our lives. It makes us givers, not just users. It gives us some control in our lives. It enables us to leave something for someone else; to improve the quality of life for ourselves and others.

In the U.S., if you want to explore the edges, intrapreneuring is a way to do it.

A Chemical Engineer by training and 30-year man at 3M, Mr. Fry capped a long career with the Post-It Notes, his idea which he co-developed with Spencer Silver and 3M's intrapreneurial encouragement.

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