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CAREER DEVELOPMENT : ARTICLES

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Opportunities: Research Inc.

Peter Fiske
United States
9 May 2008

Last month, I traveled to seven campuses in the United States to present my workshop, "Put Your Science to Work!" The largest event, the National Institutes of Health's (NIH's) [first annual postdoc symposium](#), drew nearly 800 participants. The day was filled with panel discussions about a wide range of nontraditional career paths and practical survival skills for early-career scientists. Many in the audience were eager to hear about life in the private sector.

A research scientist can differentiate a lab's approach not just by quality--which certainly is important--but also by the "flavor" of the work: the approach to problem-solving, the tools used, and intangibles such as originality and creativity.

Most scientists and engineers look at the private sector as a source of employment, a source of research funding, or both. But private-sector businesses offer scientists another valuable--and unappreciated--resource: insight into how to grow your research career. Having started and run two small businesses, I see numerous parallels between my activities as a business leader and the activities of a leader of a research group. Think business and science are worlds apart? The parallels may surprise you.

THE SCIENTIST AS SMALL-BUSINESS OWNER

You might think it undignified to compare yourself and your research career with the owner of a local pizza shop. But consider this: Most businesses are solo ventures led by one person who starts the company and then does all, or almost all, the work. Although "sole proprietorships" can be enjoyable and profitable, they present several challenges. First, you and you alone are responsible for everything that happens: There is nobody else you can rely upon to get the work done, and there's nobody else to fall back on in times of crisis. You are responsible for the highest value tasks such as winning new customers and the low-value tasks such as sending invoices, paying vendors, and cleaning laboratories. It is nice to be your own boss but painful to discover how rotten a boss you can be to yourself. By hiring junior-level people to handle the "routine" aspects of running the business, a business owner can create more value by applying more of her time to the highest value activities. This is how a business scales in size and value.

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Young scientists like you face the same situation. When you start out, you are on your own, the boss of your own tiny research business. You do your own experiments, reduce your own data, and write your own papers. Completing all those tasks, while also teaching and serving on committees, doesn't leave much time to drum up new business (grants), advertise your product (give talks and network), or diversify (explore new research areas). Hiring a grad student or a postdoc allows you to partition the work of your business (lab) into "production" activities and "business development" activities. One regrettable consequence, say many principal investigators (PIs), is that the "production" work--lab analyses, data reduction, experimental design--is rewarding and important whereas the "business development" work (grant writing), although also important, can seem far removed from actually doing science. And it can be drudgery!



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Not every young scientist aspires to grow her research enterprise into the research version of a big business. Growing a research group places additional demands on the PI (business owner), requires more resources, and creates more responsibilities. In his two articles from a few years back, Michael McClure, then chief of the Organs and Systems Toxicology Branch of the Division of Extramural Research and Training at the National Institute of Environmental Health Sciences, [made a similar analogy](#) between the life of a PI and the life of a CEO. McClure's analogy focused on running a life-sciences research group with annual operating costs topping \$200,000 per year. But some investigators, like some business owners, are content to stay small.

In the business world, small companies that stay small and under the control of a sole proprietor are often referred to as "lifestyle businesses." A "lifestyle business" can afford its owner a relatively good living, flexibility, and no hassles--except for the hassles the owner imposes on herself. When I was a graduate student, there was an equivalent career-path fantasy that many of my fellow graduate students dreamed about: being a professor at a small liberal arts college, where research was a sidelight to one's career and teaching was the main attraction. It sounds nice, but the reality rarely matches up. A more realistic variation is the sole investigator who has an active connection to someone else's lab. This can be a nice arrangement because the sole investigator can use facilities and be productive while not having to worry as much about meeting payroll.

No matter what size your research "business" is, you should consider a host of business strategy issues, such as:

Product differentiation. The pizza-shop owner knows she or he is not the only one in town making and selling pizzas. Similarly, research scientists understand that other research scientists are competing for the same pot of funding to do similar work.

One way to win "customers" is to make a "better" product. But, as the pizza-shop owner knows, "better" is subjective. That's a good thing, because it opens up room in the market for product differentiation. The pizza-shop owner might choose to specialize in one type of pizza, such as Chicago deep-dish or Brooklyn thin-crust. Similarly, a research scientist can differentiate a lab's approach not just by quality--which certainly is important--but also by the "flavor" of the work: the approach to problem-solving, the tools used, and intangibles such as originality and creativity. Sometimes an unusual approach to pizzamaking can create a blockbuster new product; who but a Hawaiian would have thought to put pineapple and ham on a pizza? An unusual approach to research can, occasionally, result in a breakthrough that becomes the basis of an entire career or even an entire discipline.

Customer base. Every business owner thinks carefully about how to attract and retain customers for their product or service. Many businesses start with only a single customer--often a government agency--who may provide nearly all the business's revenue. This is pleasant and perilous at the same time. It is nice when you have a single large customer because it simplifies your work. You have only one customer to please, one point of contact to communicate with, and one set of demands to address. But being dependent on one customer means that your fate is inextricably tied to theirs. If that customer hits hard times or changes directions, your business is toast.

Many life scientists have experienced the equivalent situation with NIH. Scientists whose labs relied on NIH funding--especially those who ran their labs on a single, precious R01 grant--faced disaster when funding rates plunged.

Savvy businesspeople have learned that a distribution of customers is critical to building a stable business. It is commonly observed that businesses make 80% of their money from 20% of their customers. But smart businesses maintain activity with the other 80% of customers because membership in the "fat 20" changes with time. Some high-volume customers shift purchasing patterns. Existing customers refocus and drop away. So you need new customers to replace them.

Savvy research scientists do the same thing. Although one or more major grants can form the backbone of funding for their labs, they work to diversify income, building smaller research programs with funding from other agencies or creating a mixed portfolio of funding from public and private sources. Some scientists combine research activity with a "product" such as a textbook or educational material. [Richard S. Fiske](#)* has supplemented his research activity for years with the revenue from a science-education video he produced years ago. This income stream is relatively small, but it comes with few strings attached.

Others, such as the [Virginia Institute of Marine Science](#), which pairs a research program with a federally and state-funded data-collection, monitoring, and marine-resource management program, combine revenue-generating activities in other clever ways. A steady flow of state and federal revenue stabilizes the funding profile for the institution while allowing it the flexibility to seek new sources of R&D funding. Still other researchers combine grant income with consulting income. (I wrote about the value of consulting in an [earlier column](#).)

Royalties and consulting income, in particular, tend to be paid directly to the investigator and not to the laboratory. Sure, that extra money would make those mortgage payments less stressful, but even a small amount of money, such as \$5000 a year, could be enormously helpful in your research "enterprise." It would be money with no strings attached, and you would be able to spend it however you wish.

Owners of small businesses often have to choose whether to channel profits back into the business or into their own salaries. This may be the most important parallel between a laboratory and a small business: In both cases, the work is more than a job. It's personal, and its success is worth some personal sacrifice. Consider the parallel situation of many public-school teachers: They may spend hundreds of dollars every year on supplies for their classrooms, and they get paid less than most scientists! Why? Because it's not just a job, it's a mission.

Being a successful *anything*--scientist, teacher, science policy analyst, business owner--requires effective strategy and tactics. Borrowing strategies--and sometimes values--from the world of business can help you move ahead and differentiate yourself.

*Yes, there is a relation: He is my dad.

<p>Peter Fiske is a Ph.D. scientist and co-founder of RAPT Industries, a technology company in Fremont, California. He is the author of Put Your Science to Work and co-author, with Dr. Geoff Davis, of a blog (at phds.org) on science policy, economics, and educational initiatives that affect science employment. Fiske lives with his wife and two daughters in Oakland, California, and is a frequent lecturer on the subject of career development for scientists.</p>	<p>Comments, suggestions? Please send your feedback to our editor.</p>
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