# Lost in Translation

## Facing Up to Translational Research

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In the business world (which inches ever closer to the scientific world), terms such as "think out of the box" and "paradigm shift" are so in vogue that they are out of fashion. After all, the only people who actually think in boxes are the dead, and since the word "paradigm" does not mean anything, the term "paradigm shift" is just as meaningful (another corporatism) as "sausage shift." Currently, in science, we have our own buzz word, "translational research." Whichever academic center you visit and whatever despairing grant review panel you sit on, I guarantee that the term "translational research" will surface. In fact, I bet that somewhere on earth at every second of every day, somebody somewhere is using the term "translational research" because they are tacitly aware of the fact that a paradigm shift is upon us and that there is an urgent need to think out of the box and reinvent our corporate culture—as scientists.

What is translational research? Can I start dreaming of my children becoming translational researchers? The wonderful thing about translational research is that every one knows exactly what it means—the only trouble is that none of them have the same definition. One senior colleague told me that translational research "is to bring the gene from the laboratory to the bedside," whereas another colleague's definition was "shifting science to the community—outreach they call it" (I assume that this is a paradigm shift).

If we glance back to the early days of modern science about 200 years ago, scientists developed hypotheses, found a sponsor, tested their idea in their laboratory, discussed their findings with their peers, and then published a manuscript before developing the subsequent hypothesis. *Philosophical Magazine* and the *Journal of Science* were first published in 1844, preceding the first issue of *Nature* by 25 years. At that time, science was the beacon of progressive thinking, and being "scientific" was akin to being modern. This is no longer the case. Today, it is technology that is modern and science that is stuffy.

In the biological sciences, we trail progress rather than define it. For example, we are (understandably) prone to follow the research priorities of the National Institutes of Health or other funding bodies, forgetting that their agendas are reflective of external pressures rather than visionary. In this context, is the notion of translational research simply a reflection cast in the pool of progress rather than the river that serves it? Is translational research the scientific response to a world that is changing rapidly around it?

In the 1980s, Filofax flourished, and in 1990, Microsoft Corporation launched their first popular (3.0) Windows operating system. Thereafter, multitasking became normative. The familiar picture of the modern woman e-mailing her partner within seconds of e-mailing her assistant, all while waiting for the airplane's door to close, would have been beyond the belief of Emily Wilding Davison, who threw herself under the king's horse, Anmer, to become the martyr for the Suffragette movement in 1913. The interfacing of personal and professional life into an amorphous blur is normative and illustrates how traditional professional-personal boundaries have disappeared. Science is just catching up—a decade late; the traditional boundaries are disappearing.

The term translational research is simply a semantic for capturing the essence of what is occurring outside of our ivory towers of academia. Corporate is translating to community, private is translating to personal, and mobile phones are translating into an all-encompassing life-support unit. "Translation" is everywhere. The question we need to ask in science, however, is what gets lost in translation? The science of 1800 was the light that led to the emergence of modern living but was built on the deep historical foundations of knowledge: Socrates, Aristotle, the Ancient Egyptians, and Galileo, to name a few. What will we lose by ditching thousands of years of process, thinking out of the box, and shifting our paradigms to "translational research" where hypotheses now represent observing the effect of 10,000 genes on scenario X or retrospectively examining how 50,000 proteins respond to soup Y? Of course, linear, hypothesis-driven research is not yet extinct, but the future is one where it could be. Should we turn our backs on the past and embrace the new modernism, which, let's face it, is a trend we are following rather than defining?

As I upload my agenda for the week, search for a book online, check how many sequences have been put through my high-throughput sequencer, align my metabolomics with my proteomics, and multiplex the interlaced solution, should I really contemplate flushing my Blackberry (if you think that is a fruit, then you do not need to read this article) down the toilet? Maybe! Perhaps I should turn off the computer and toss my PDA under the hoofs of Anmer if it will give me the time to do what I am supposed to do as a scientist: take a look at the world and think.

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