

Paris gets a new cultural crucible

Scientific breakthroughs are reached through aesthetic, as well as scientific methods, argues a bioengineer, who is this week opening a culture centre to explore such creativity.

David Edwards

In the early 1990s, I worked with Howard Brenner at the Massachusetts Institute of Technology (MIT) on problems of fluid mechanics. We prided ourselves on a certain way of seeing truth in form. "Aesthetics" was how Brenner taught me to describe what we were up to.

My subsequent career showed me that, although science and art do not seek anything near the same ends or generally the same means, the two become one at pioneering moments. We may use the scientific method, of deductive experiment and analysis, to pursue our ideas, but those ideas are born and propelled in new directions through the aesthetic method — moments of induction and association, when our sense of beauty tells us what ought to be true. We innovate in science by viewing it as art.

In the mid-1990s, while teaching at Pennsylvania State University, I collaborated with MIT materials scientist Robert Langer. We needed to create an insulin particle for the treatment of diabetes that would effectively fly through the air and land in the lungs. It struck me that we should redesign the particles to resemble kids' whiffle balls, perforated plastic spheres designed for indoor baseball. Like many new ideas, this one came about not through deduction but by association, in this case of a drug particle and a childhood memory. My idea arrived through the aesthetic method. We put the idea to the test with laboratory experiments — the scientific method — and published it in *Science*.

Ironically, such an approach seems particularly necessary to commercializing science. Interacting with bankers and entrepreneurs showed me how intuition and risk-taking are central to the culture of business. On the basis of such experiences, I started the Idea Translation Lab (ITL) at Harvard University. Here, students from all disciplines develop ideas ranging from a new application of microfluidics in architecture to music as medicine. ITL student teams helped in the start-up of the Massachusetts-based pharmaceutical company Pulmatrix, and the not-for-profit infectious disease organization Medicine in Need, or MEND, based today in the United States, France and South Africa.

Unfortunately, most academic, humanitarian, cultural and industrial organizations discourage the simultaneous development of aesthetic and scientific



A. POTIGNON

Le Laboratoire will showcase experiments that fuse art and science.

methods. Specialization is as essential to science as it is to art. Yet without the freedom, or the time, to wander in our research, to explore avenues of inquiry that cross conventional boundaries, we jeopardize something elemental to the pioneering spirit.

So I am creating the cultural centre Le Laboratoire, opening this week in Paris, with the proceeds from the sale of the company founded to develop the whiffle-ball idea. Le Laboratoire will present to the public art and design works-in-progress resulting from seasonal experiments. Leading international artists and scientists will explore, for example, the experience of cell division through visual art, making plants smarter using fluid mechanics, personalizing urban homes through biometric testing, or designing a synthetic world where avatars evolve through the uploading of personal biometric data.

Such experiments will aim to stimulate creativity with cultural, commercial, social and educational ramifications. Initial partners include Apple, Société Générale, the Wellcome Trust, the French National Research Agency for AIDS, Connaissance des Arts, Radio Classique and Harvard's ITL.

Already, an international constellation of cultural organizations fosters art and science crosstalk. The 40-year-old *Leonardo* journal, and the more recent organization Art & Science Collaborations, document and encourage interdisciplinary partnerships.

Many science laboratories, museums and businesses host artist residences, including the University of California in Berkeley, the Natural History Museum in London and Xerox in Silicon Valley, California.

Our fellow art-and-science exhibition spaces include the Science Gallery due to open in 2008 at Trinity College, Dublin, and the new Wellcome Collection galleries in London, where biomedical science is explored through artistic expression. The latter is funded by the Wellcome Trust, long a major donor to polymathic collaborations.

But Le Laboratoire is the first experiment-driven art and science incubator. The centre aims to nurture and showcase a potent creative process that merges what we conventionally refer to as art and science. This method of human inquiry is at once intuitive and deductive, sensual and analytical, directed and comfortable with uncertainty, embracing nature in its complexity and able to model nature in its essence.

David Edwards is a professor of bioengineering at Harvard University, 29 Oxford Street, Cambridge, Massachusetts 02138, USA. He is the author of the forthcoming books *Niche* and *ArtScience: Creativity in the Post-Google Generation*.

Le Laboratoire opens in Paris on 19 October
www.laboratoire.org