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David Edwards, *Artscience: Creativity in the post-Google Generation* (Cambridge,

Massachusetts and London, England: Harvard University Press, 2008)

At a superficial level, scientists and artists can be depicted as polar opposites: left-brain analytic thinkers versus right-brain intuitive creators. Where scientists attempt to define the world objectively in terms of laws and proofs, artists are interested in the emotional truths that underpin our subjective experience of that world. This is, of course, a massive oversimplification – albeit one that both sides may at times seek to accentuate. One need only think of such figures as Joseph Banks or Leonardo da Vinci to realise that art and science have a long and reciprocal relationship and that both are founded on a combination of method and result. Many early scientists relied upon artistic representation to document and present their work, while artists depicted and were informed by studies of science and medicine. The process continues today. New technology not only provides artists with fresh tools and means of expression, it also raises issues around which art can be created. Scientists use art to communicate their ideas (such as the *Large Hadron Collider Rap*) or to visualise scientific forms.¹ These processes can, by and large, progress without any particular engagement between the two disciplines, and as such could be regarded as exploitative, but there is also the possibility for deeper cross-disciplinary dialogue. This can be seen in fields such as bioethics and art conservation, but considerable barriers in the form of institutional and cultural practices still stand in the way of art-science interaction.

David Edwards is a bioengineer and philanthropist. With Aurélie Edwards he founded *Le Laboratoire*, a centre for artistic and scientific

collaboration situated in Paris. In *Artscience*, he explains how the two disciplines can catalyse 'creativity in the post-Google generation.' Edwards' basic thesis is that crossing the conventional lines between science and art (a process he calls 'idea translation') creates an environment in which innovation flourishes. To illustrate how this happens and why it is important, he provides examples of individuals who have successfully combined aesthetic and scientific methods to pioneer new territories in culture, social theory, industry and research.

Common to all these stories is the need for the artist or scientist to understand or apply the methods of the other. Edwards' first example illustrates the transition from art to science (and back again). While working as a concert pianist, Diana Dabby read a series of articles on future trends in music written by engineers. Thinking she might be able to pioneer her art by better understanding the science, she returned to study electrical engineering at MIT. After struggling for years with the complexities of chaos theory, she saw a parallel between the patterns surrounding the theory of a mathematical 'strange attractor' and those of musical variation on a theme. By mapping notes onto the solutions to chaos equations, she not only provided a new way to view chaos, but also a new composition technique. This work not only formed the basis of her doctoral thesis; her musical interpretations are widely performed today. The reverse transition occurred with Don Ingber. While studying biochemistry, he became fascinated by recurring natural structures like the helices in DNA and the geodesic shells of viruses. This led him to enrol in an architectural design course, where he learned about tensegrity structures. Realising that the way such structures responded to tensile stress was very similar to that of tissue cells, he hypothesised that such external structural changes might alter the cytoskeleton **within** the cells and thus their biochemistry. This idea of chemical-mechanical transduction (and his subsequent proof of it in the laboratory) was the foundation of cellular biomechanics.

Both these stories can be seen as examples of idea translation in academia, but Edwards addresses similar innovations within industry, humanitarian organizations and cultural institutions. Finally he describes the way in which

Le Laboratoire functions as both a space for collaboration between scientists and artists, but also as an exhibition and cultural centre where the public is invited to become involved with the projects underway.

As a scientist, I found *Artscience* not so much a revelation as an articulation and extension of my own thoughts on the relationship between science and creativity. Science progresses through a combination of intuitive understanding and methodical proof, while the emotional and psychological impact of an artwork is contingent upon the process by which it is created. The idea that the balancing of scientific and creative energies is a way of enhancing one's own life also falls under Edwards' definition of artscience, and many of my colleagues are as artistic outside the lab as they are professional within it. I suspect that fewer artists feel that they have the ability or opportunity to engage with science. There is an implicit (and in some cases explicit) perception that people do art because they cannot succeed academically. Although there is now some academic recognition of artscience in New Zealand with the development of degree courses in bioethics and science communication, the movement is primarily from science to art rather than art to science. This is not to say that they do not occur, but collaborations of the sort that produced the book *Are Angels OK?* (2007) are rare.² This is where there may be real possibilities for establishing the kind of interaction space *Le Laboratoire* exemplifies. This book should also give artists the sense that they have something valuable to contribute to science and encourage them to look for opportunities to engage with the scientific community.

Edwards clearly intends his book to be aspirational and motivational, but his vision of artscience is, to a degree, utopian. While celebrating the achievements of interdisciplinary interchange, he avoids some complicated and controversial issues. For example, what is (and is not) valid artscience? Edwards reluctantly admits that Damien Hirst's preserved shark is a form of artscience insofar as it challenges us to consider the relationship between biological form and mortality, but Hirst himself is not an artscientist.³ He had no need to study biology or think about the physiological transitions between life and death in order to create his installation. From that point

of view, Hirst's work appropriates from rather than engages in the scientific process and its classification as 'artscience' is thus questionable. On the other hand, while the plastinations of the anatomist Gunther von Hagens quite clearly emerge from the intersection between art and science, he openly concedes that his work is intended to entertain as much as inform. In contrast, Paul Trotman's documentary *Donated to Science* (2009) is as much about the ethics of dissection as it is about the process itself.⁴ Both projects leave lasting impressions as they ask us to consider the relationships between the living and the dead, but von Hagens could be regarded as manipulating artscience as a means of generating controversy and notoriety in a similar manner to Hirst, rather than inviting us to contemplate why his work is so shocking. Does this cross a line between art and exploitation?

Although these and other questions – such as that of how an artist or scientist assesses knowledge from another discipline – need to be addressed, the idea of creating cross-disciplinary spaces is an exciting one. Insofar as the book is in itself an example of artscience, it should act as a catalyst for new opportunities for artists and scientists to explore.

- 1 Will Barras and Kate McAlpine, *Large Hadron Rap* (2008), 4:49mins online video rap, <http://www.sciencefriday.com/videos/watch/10143> [accessed 22 Oct 2010].
- 2 Bill Manhire and Paul Callaghan, eds, *Are Angels OK?: The Parallel Universes of New Zealand Writers and Scientists* (Wellington: Victoria University Press, 2007).
- 3 Damien Hirst, *The Physical Impossibility of Death in the Mind of Someone Living* (1993), Tiger shark, glass, steel, formaldehyde solution. Metropolitan Museum Of Art, New York.
- 4 Dr. Paul Trotman, *Donated to Science* (2009), 56mins, documentary screened on New Zealand Television, 18 November 2009, <http://prnfilms.co.nz/> [accessed 22 Oct 2010].