

From Science to Art and Back Again!

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Whenever I hear about the ‘art-science divide,’ I think back to the interview for my present position of Associate Professor of Physics at the University of Oregon. A few members of the search committee took me out to dinner; this is when the conversation strayed to a line on my resume describing my interest in art. One of the faculty members responded by saying, “ah yes- when I read that you went to art school, I almost threw your application in the bin.”

I first encountered the art-science divide at the age of 16, when the English education system required me to choose between the two. By then, I had already sold a few paintings. I also had developed an intellectual thirst for science. Struggling with the decision, I asked my father for advice. After a two-minute discussion of job prospects for both professions, I set off down the road toward a career in science, studying physics at Nottingham University.

By the time I started my Ph.D., I was living a double life. During the day, I experimented with currents flowing through electronic devices at milli-Kelvin temperatures. By night, I joined local artists in an old rented warehouse and painted huge abstract works. I stumbled home at dawn and five hours later re-emerged in the physics laboratory in paint splattered boots.

I found the contrast between these two worlds to be intolerable because I could not dedicate my time to a single passion. Eventually, I realized that art and science had a common thread- both were fuelled by creativity. Whether writing a paper based on my data or filling a canvas with paint, both processes told a story.

With this revelation, I desperately wanted to merge my artistic and scientific worlds, but I couldn’t see a way forward. My colleagues advised that, if I wanted a successful postdoctoral career, I must investigate “real” scientific issues. They explained that the talents of a trained physicist should not be wasted on artistic “trivia.”

Taking research fellowships in Canada, Japan and Australia, I traveled the world, giving talks and writing papers on chaos and fractals in nanometer-scale electronic devices. Compared to my artist friends back in Nottingham, it looked like science had rewarded me with a great life. During this period, however, in the back of my mind I resented the fact that I had to choose between a career in art and science.

In 1994, I took a year off from science and attended the Manchester School of Art to paint and study art history. While writing a dissertation on Jackson Pollock, I realized that his drip-painting technique could be similar to the way nature builds its fractal scenery. I began to view the artist's drip paintings as experimental patterns and thought about ways to measure their fractal content by adapting the analysis techniques I had used to investigate fractals in electronic devices.

When I returned to the University of New South Wales in 1995, I continued my research in electronic devices. Simultaneously, I started the long and delicate procedure of developing pattern analysis techniques designed to "understand" art. The project was carried out in my spare time, using analysis equipment set up for my electronics research and therefore the costs were minimal.

This pattern analysis could not be a purely scientific endeavor, but would require additional training in art theory. I therefore pursued a research degree in art theory, basing my thesis on the fractal analysis of Jackson Pollock's paintings. None of the art faculty wanted to take on such an unusual project and I was assigned a supervisor who was on sabbatical. Half-way through my studies, my overwhelmed supervisor left Australia to investigate the art of barbed wire in Kansas. I have not heard from him since.

Two years later, I submitted a successful thesis and the Australian Broadcasting Company aired a TV program on my work. In response to hundreds of phone calls from an enthusiastic public, I embarked on a series of public lectures, earning up to \$1500 for each of the supporting societies. *The Boston Globe*, *The London Times*, *The Sydney Morning Herald* and other international newspapers took up the story. I have since published this work in *Nature*, *New Scientist*, *The Physicist*, *Physics World* and related work will appear in *Scientific American* and *Leonardo*. At the Nobel symposium on chaos last June, I delivered an invited talk on electronics and the banquet speech on Jackson Pollock.

I believe this success directly reflects the enthusiasm that both the public and many academics have for research projects that mix art and science. Indeed, the project has since expanded beyond art and physics to include collaborations with researchers in architecture, human physiology and perception psychology.

The secret to a successful career in inter-disciplinary studies is finding like-minded colleagues. Prior to my interview at the University of Oregon, I asked a collaborator if my resume should include my year at art school. He suggested that I keep it in and not hide my interest in art. I accepted the position at Oregon and today I am busy preparing a lecture course on the Physics of Light, Color and Art.

For more information about my work:

<http://materialsscience.uoregon.edu/taylor.html>

Art-Science conferences this summer:

<http://www.isis-s.unsw.edu.au>,

<http://www.sckans.edu/~bridges/bridges.html>