CONNECTING SILOS – INVITING ART AND SCIENCE INTERACTIONS

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Abstract
In tertiary education in Australia there are often clear divisions between disciplines defined by hierarchy that is established for administrative purposes. These purposes often conflict with notions of trans-disciplinary study by creating an environment of competition rather than one of collaboration. Through this project we brought together science and art by developing a ‘hands on’ workshop where scientists and artists explored tools and techniques from unfamiliar disciplines. Collaborative projects and self emersion post workshop resulted in an exhibition of outcomes. The development of these outcomes challenged both artists and scientists to explore their discipline boundaries and connectivity by using tools and knowledge in unique ways.

Keywords: Creative science, discovery, inquiry, methodology

Background
Our initiative aimed to facilitate a reconnection between art and science disciplines. Historically, particularly before the rapid development of scientific understanding in the 1800s, there was much more room for art in critical thinking and discovery [1] and science was still embedded in religious influence [2].

While the industrial revolution made the exactness of science essential it was also a time when art was institutionalised and creative boundaries defined [3]. The development of separate art and science programs in primary and secondary education has enhanced this divide. Furthermore, tertiary education is currently limited in its scope of trans-disciplinary study. In some ways we have not let go of our industrial revolutionary thinking, and building metaphorical walls around paradigms and processes hails the natural cross fertilisations between disciplines. Indeed the hierarchy of administration and funding formulas used in universities often work to stifle collaboration between disciplines and drives internal competitive behaviour.

As part of the initiative to connect the art and science sectors at Southern Cross University (SCU) we ran a workshop to explore knowledge creation [4] and understanding and to develop science inquiry, science creativity and science accessibility. Eighteen people [5] with a range of experience in various science and art backgrounds participated in the workshop titled SYNERGY 1+1>2.

The Process and Explorative Discussions
The workshop setting engaged both artists and scientists and facilitated collaborative interactions. We made follow up sessions in laboratories and studios available for all participants and some 10 weeks later we held an exhibition of outcomes.

During the two day workshop we introduced and compared the current approaches and methodologies used in both science and art. This exploration assisted participants to engage with both disciplines and explore discipline specific language.

A key point we explored during the discussion was the lack of performative research and a role for reflection in the scientific methodological approach. The primacy of objectivity in the logocentric tradition within western culture was challenged. Subjective experience and the expansiveness of meaning in an openended polysemous context were also introduced.

The predominance of emphasis on rationalisation in science may be a result of the high cost of scientific research and/or finite timeframes linked to funding outcomes. As well, to maintain success in granting, a scientist must be on the ‘top of their game’ and maintain/improve their track record based on any number of measured performance criteria including commercialisation. Perhaps a direction where practice-led research is headed [6]. As a means of maintaining performance one strategy is to know the answer to the question posed in a grant application before applying. Failure is unacceptable.

Our exploration of science methodology introduced some of the drivers of science research and highlighted that funding driven research has come at the cost of limiting ‘creative science’. While hypothesis testing is an essential part of science it determines that the outcome of the enquiry is seen within the limits of what is already known [7] or is even the limits of the direct focus of a particular project. Indeed training in ‘creative science’ and ‘scientific inquiry’ is lacking and much of the current scientific training is linear and process driven rather than explorative.

Art practice was explored and the role of art in society was debated. The important point made was that art practice enabled creativity and discovery. Technological development and the use of sophisticated visual practices have expanded the disciplinary scope [8] and this expansion also enables engagement with science.

In the workshop we wanted to enable artists to engage with scientific tools, techniques and principles while also enabling scientists to engage with creative thought and studio practices. The scientists were introduced to ideas and processes of embodied, subjective mark-making. They focused on the physicality of the sensorial experience of repetitive drawing of lines with charcoals and other media in large collaborative works 4-5 meters long (Fig. 1). There was no objective orientation upon the outcome. Reflection upon what the outcome expressed, or ‘spoke of’ revealed a myriad of denotative and emergent factors. Whist this was recognised as a playful signifying practice, participants could also identify a mapping of a few deeply shared analogies. This demonstrated how the immersion in process at an intuitive level could lead to the shared symbolic in cultural memory.

Fig. 1. Results of scientists mark-making during studio practices, a collaborative exercise. (Photo © A. Reichelt-Brushett)
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The artists explored thin layer chromatography (Fig. 2), filtration, steam distillation, cell culturing, microscopy, and redox reactions (Fig. 3) as an introduction and springboard for future development of themes in their arts practice.

The Outcomes

At the exhibition of outcomes it was inspiring to see the tools of science used and applied with unspecified scientific purposes. Exhibited pieces included naturally dyed silks with naturopathic qualities, bacteria cultures representing individuals and host organisms (e.g. Fig. 4), chemical reactions and transformation of elements and compounds, questions on coal and energy, artistic statements on Gaia and Lovelock’s challenges with credibility, explorations of brain and thinking, and pieces that challenge the ethics and imagination of genetic science.

Fig. 2. Leopard losing its spots—a creative exploration using thin layer chromatography. (© M. Dawson. Photo © A. Reichelt-Brushett.)

Fig. 3. Contraception - Copper metal and silver nitrate redox reaction. (© W. Powitt. Photo © A. Reichelt-Brushett.)

Fig. 4. The Body Beautiful – capturing the body surface and organic world that is us. Growing life from face imprints on agar gel and overlayed body painting imprints. (© A. O’Flynn)

Scientists viewing the exhibition were challenged by the familiarity of subject material, however, there was something more, thoughts of ‘letting go’ (if only for a while) to explore creative science and engage in a less literal interpretation of art. Other viewers of the exhibition showed genuine enthusiasm for exploring science.

Participants were asked to rank according to their personal interests eight subject areas including biology, chemistry, biodiversity, environment, pollution, water, space and place, and identity and culture at the commencement and at the end of the workshop. The survey results showed that all participants (artists and scientists) ranked the traditional sciences biology and chemistry more highly in terms of personal interest after the workshop experience than before it. This reinforces the need to develop creative science training to enhance the excitement of learning science.

The focus on discipline specific studies in society has limited the important role that trans-disciplinary studies play in ‘discovery’. Can practices in ‘discovery’ be taught? We propose the workshop process and follow up sessions presented here as a model for facilitated knowledge transfer for trans-disciplinary inquiry.

References and Notes

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