

"Fine Art research into the digital image: the pragmatics of gaining research funding whilst still producing art"

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Background

I'm the coordinator of the recently established DARF (Digital Art Research Facility) at the Tasmanian School of Art, as well as being lecturer in "computing in art" at the school. DARF has just received its first large 3 year ARC (Australian Research Council) grant, which is I believe the first such grant from the ARC for an activity focused around image making.

This talk is about treading the fine line between pragmatism and idealism, about doing what is necessary to gain funding, while still being able to do something worthwhile, about providing research opportunities for postgraduate students without taking away their creative freedom. My ideal of research is an "open view" based upon collaboration and communication, where there can be a multitude of aspects to research ranging from personal concerns and development through to the universal or even to practical pragmatic problems, research in the creative arts does not necessarily have to be a bifurcation into theory and practise, but can encompass a range of discourses. By removing some of the boundaries between the "professional" research of academics and the research "training" of postgraduates and finding areas of shared interest rather than barriers of difference, synergy can be generate which leads to unexpected outcomes; the whole can be greater than the sum of the parts. That's the ideal anyway, what follows is an attempt to develop a research programme based upon this. By research programme, I mean a line or lines of inquiry involving a group of people which will last for at least 5-10 years and probably continue for longer than the people involved.

First a bit of background...

Before coming to work at the TSAH, 3 years ago, I had spent the previous ten years in a "traditional" scientific research culture; firstly as a postgraduate in "pure" research, then as a experimental scientist in strategic and applied research with CSIRO Division of Oceanography, then finally as a research facilitator, using my understanding of research processes to develop computer network and support systems for researchers. I've also had a lifelong interest in art, music and literature, and it was during this latter period that I began to spend concentrated time exploring these areas. I have always been a reluctant servant to the computer, but I have been lucky enough that mastery of the machine has allowed me access to many opportunities that I wouldn't have had otherwise.

My reasons for coming to work at the TSAH where two fold:

- Through my long term involvement with computing, it was obvious that computing was about to have a major shift into the visual, that the metaphors of computing were shifting from words and numbers to images and space, that this would have tremendous cultural and sociological implications as this technology develops.
- I was dissatisfied with the major research paradigms being used in science; the emphasis upon specialisation and reductive formalism, the lack of credence given to intuition. The visual arts offer a very different type of research paradigm (although one with a long history); understanding and development occur through heuristic processes, often relying upon intuition and paradox, rather than logic and reason.

Its inevitable in making such a transition that you bring a good deal of baggage with you, and I've spent the past couple of years trying to determine what aspects are useful from the scientific paradigm to developing successful research paradigms, and how these can be integrated with an art research paradigm, without suffocating the unique and essential aspects of visual art research.

There are a few conditions which I think are fundamental to a successful research programme in the later part of the 20th C:

- "Critical mass" of researchers, little research is successfully conducted by individuals working in an isolated environment, successful research is generally conducted within groups of researchers working in a particular area, although they don't necessarily have to be all working in the same way on a particular problem.
- Identity & continuity, the research programme has to develop an identity and a profile which becomes widely known within the field, more so than the individual researchers, which can also serve to act as a credential for the people who have worked with the group. It is also important to maintain continuity in research projects, that one follows out of another, with some but not too many new directions.
- Publications, success is measured by output, successful research willingly shares its results and methods, and it is only through publication that researchers can expect their research to be supported.

I don't think any of these ideas are new to the history of visual art practise, certainly in recent history early modernism abounds with successful research programmes; Cubism, Fauvism, Impressionism, Surrealism etc, but the constraints of the academic research system does place it in a very formal and competitive domain.

The problems of constructing a successful research programme in the visual arts become:

- developing an area of inquiry which is compelling enough to encompass a range of practises and personalities without losing its cohesion, identifying common concerns
- at least outwardly fitting the paradigms and indicators of research in traditional academic culture.
- and increasingly being able to demonstrate some direct benefit of the research to the wider community.

History of DARF

It was something of a shock to first walk into the computing facilities at the TSAH and find 5 fairly feeble Macintosh computers sitting in the corner of a room largely dominated by drawing desks. CSIRO is a relatively well funded organisation, and I had been managing budgets of up to a quarter of a million dollars annually. Computing is expensive, particularly in areas such as the visual arts where new capabilities are emerging, continual injections of cash are required to stay anywhere near the cutting edge.

The Tasmanian School of Art has been a part of the University of Tasmania since the early 80's, and has recognised for some time that if it is to survive as more than a small regional art department, that developing research and research training were a priority. The school has been tackling the ARC (Australian Research Council) head on for about 5 years now, while the school's Ceramic Research Unit has received two large arc grants and had some success with small grants, the failure rate has been high compared to more traditional academic areas.

The pragmatic approach to my problems of resources seem to be to develop a research programme to try and bootstrap my department from its fledgling status into something that would be at least nationally competitive. It was pretty obvious that this was not something that I could do solely by myself, or that in the current climate that the money would fall from the skies. My initial strategy was to seduce some of the other staff to computing, by running digital imaging classes for all staff who were interested. As a result of this the nucleus of a research team developed, Prof. Geoff Parr, the then head of the school and a long time experimenter with reproductive processes, Milan Milojevic a printmaker, and Mary Scott a painter and myself, whose prior art practise had been based in video and interactive installation using discarded or obsolete technology.

As a research team we have very little in common, our areas of practise and concerns are totally different. What we share in common is an excitement about the potential and possibilities of digital imaging technology and frustration's with its limitations.

Digital imaging was ideal for us for developing a research programme. It has the characteristics of:

- being relatively new and immature, and largely unexplored

- having potentially significant cultural impact.
- having significant commercial applications
- the researchers having a significant "track record" in image making and a diverse range of skills and experience in image making.

The area of digital imaging that we have particularly focused upon is the digitally produced print; the relationships between and the potential of the screen and actuality of the print. Many words have been written about digital imaging, its relationship to other media and its future potential. I think surprisingly little real experimentation has been done with the medium. The members of DARF are all practically orientated people, and we have taken a practical experimental approach to the medium. One of the problems of high technology is its complexity, because of this we tend to take for granted the underlying processes, it becomes a "black box" or a series of "black boxes", which we put things into, and get things out of, and because black boxes are inviolable, we accept what comes out, even if we're not happy with it, because that's the way things are. We even congratulate ourselves if the "black box" behaves the way it is supposed to, often after performing a series of ritualised incantations.

This is particularly the case with digital imaging, a technology originally developed for remote sensing for military and scientific applications, then converted and further developed for the commercial publishing and prepress industries over the past twenty years, and has consumed tens or hundreds of thousands of person years of effort. Little thought has been given in this development process to artists, to the creative and expressive potential of this technology. In the course of working on this project I've had occasion to have my head buried deeply in some of the engineering literature of the field, and it has become very apparent that the ideals of the engineering community developing this technology are focused upon goals which often have little to do with the aesthetic requirements of the artist. Engineers have as their ultimate goal production or reproduction of images with maximal clarity, as in photographic reproduction, more nebulous aesthetic qualities such as depth and surface are generally ignored or poorly understood.

I've been torturing technology since I was a child; taking delight in lifting the lid on black boxes and putting things together in ways that engineers never intended, and that in our own individual ways and aspects has been what we have been attempting to do with these projects, to lift the lid a little on the black boxes, stick our fingers in and mess with what we're not supposed to, in order to glimpse what the technology really has to offer.

While this talk of technology and black boxes may give the impression that these have been overly engaged with the technical, the actuality is more holistic than that; our primary aim is to explore and develop the potential of this medium. This involves an engagement and experimentation on a number of levels, from the lofty conceptual to the simple pragmatics of making something work. The research

outcomes are primarily the works we produce, the conceptual understanding of the medium which is developed from producing the work, the techniques which are developed to implement and further the conceptual understanding, and finally the software and hardware which have been developed to solve practical problems.

As I said before to undertake this sort of research utilising current technologies requires money and quite substantial amounts of it, with regular injections or even more money. With a lot of assiduous grant writing (I have been involved with writing 6 large ARC grant applications, 9 small ARC applications, university and faculty research infrastructure grant applications, we have managed to bring something like \$150,000 into the school to purchase equipment and materials. In two years we've managed to go from a situation of having no equipment, to one of the best equipped facilities in the country for doing this kind of research. The process started at the beginning of last year with a university grant that Geoff and I received, called "Process as imprint in the digital image", which had as its aims:

This project will investigate the association of formative pixel clusters and its figuration (subject) in display scale computer-generated images. It will describe the various pixel pattern characteristics for a range of interactive results. This project will investigate the duality of formative pixel clusters, and subject matter, in enlarged computer-generated images, their interactive association, technical options and aesthetic outcomes. It will describe the pixel pattern characteristics and effective optical mix for a range of results.

This enabled us to buy a Encad Novajet III large format (36" wide) inkjet printer. At this stage large format inkjet printers were only just beginning to be used for producing images, they had originally been developed for drafting applications in engineering and architecture. These printers are quite dumb and in order to produce images require an additional piece of equipment called a Raster Image Processor or RIP engine for short. Unfortunately we didn't have the funds at this stage to buy one of these so I had to build one. It was also unfortunate that this took a lot longer than I thought it would, and the RIP engine has only been working well since this January this year. Useful byproducts of this time consuming and generally tedious process were a thorough understanding of the raster imaging processes and a very flexible system for rendering images which has become essential in subsequent projects.

Geoff and I have approached this project in quite different ways, sometimes working collaboratively, sometimes in quite distinct directions. My interest has been focused on how the rendering of an image into dots affects the appearance and reading of an image. (Show fish)

Also as part of this project Geoff and I were interested in developing collaborative research training models, and invited a number of postgrads working in the area to

experiment with using the printer along the lines of this project. This very open research training model was fraught with problems, the technical support and maintenance of the printer became such that my research time disappeared and work on the direct aims of the project became obstructed.

However from this initial experimentation two new projects were born which allowed for the foundation of DARF this year with a research infrastructure grant from the faculty.

The mission statement of DARF is to *"Develop and conduct research programmes in the exploration and application of digital technology to the Visual Arts, and in so doing develop research training opportunities and methodologies."*

Since there were now two research projects and four researchers relying on the inkjet printer, and an urgent need to start producing results and publications in order to obtain future grant funding, access to the printer was drastically scaled back and limited to postgrads who would be working in a way which would further the ends of the project. In fact this year we have gone to the other extreme and only had one honour student working with us, but the collaboration has worked very well, and he has made very valuable contributions to the projects. Recently we were also successful in gaining a research infrastructure grant from ARC funding via the university which has allowed the purchase of a second generation even larger format printer and more powerful computers, which will allow greater involvement with postgrads in the future.

DARF itself is not a closed shop, nor is the research conducted limited to digital imaging and printing, access is however limited to people who can demonstrate competence with the equipment and have a project which fits the mission statement; "research in the exploration and application of digital technology within the Visual Arts".

The two projects being conducted using this printer are quite distinct although complementary, the first with Geoff and myself is:

Characterisation of formative digital mesostructures in computer generated images

"This project will investigate the technical and aesthetic affinities between formative digital mesostructures and the representations they create. It will develop alternative, less uniform mesostructures, resulting in increased versatility in the digital rendering of pictorial surfaces. An understanding of the function of mesostructure in printed digital images and the added means to model image surfaces will be significant to visual artists and graphic designers, and it will have direct application in the visual communications industry."

The second with Mary, Milan and myself is:

The application of traditional Painting and Printmaking layering techniques to digital printing technologies.

And has as its aims

The aims of this project are two fold, initially it is to experiment with and develop a methodology for the adaptation of existing printing hardware and computer software to accommodate the traditional techniques of layering used in Painting and Printmaking. Secondly it is to investigate the feasibility of applying this methodology to purpose built hardware and software for eventual commercial development.

Note we are not above claiming some eventual commercial application if it helps add weight to the project proposals.

I've been working across the two projects, and have combined applications from both into the same images. While not wildly prolific with these images, there are something like a dozen test black and white test prints, and half a dozen layered prints to produce a final image. The final image itself may take several days to produce. It can be a very drawn out and frustrating process when at two am. after printing the seventh layer the printer malfunctions or a cartridge starts to misfire.

As researchers we work with a system of loose collaboration, meeting formally approximately every two weeks, and informally more often than that to discuss each others work and approaches and exchange ideas, occasionally with closer collaboration on a particular print or imaging project.

The research programme is at an early stage of development, there are many years worth of worthwhile research in addressing some of the questions that have already been raised by the work that has been done. The pressing concerns at the moment are to produce worthwhile results, to get these results published in whatever forms we can, to generate the essential publishing "track record" which is the prerequisite for being a successful researcher. Publishing is taking a variety of forms from entering prints in competitions, to exhibitions to articles. What is really required is a peer reviewed journal of art practise, and there have been some discussions at the school of developing such a journal on the world wide web.

Finally as I mentioned at the beginning we have just received a large ARC grant which will provide funding for three years. The attainment of the grant is significant not just to us, but to visual arts researchers in general, as it opens up another chink in the stony armour of the ARC. My colleague Prof Geoff Parr has been lobbying the ARC for many years, and was this year the first artist appointed to the humanities panel for the ARC large grant round and told me the

other day that the ARC has finally acknowledged that creative works can be a valid outcome of research.

The task of tackling the ARC for funding is not easy, and don't expect to succeed the first or even the second time you try, having written or partly written fifteen ARC grant applications in the past three years, I can assure you that it is not an enjoyable process, but not without rewards. I would encourage you to undertake the process, because the more applications there are from the creative arts, the more likely the ARC is to take them seriously and the greater proportion that will eventually be funded.

The essential ingredients for success are:

- have a compelling project, something that needs to be done now, that is essential to someone.
- persistence, it may take several years before the proposal is successful
- study the system, it has its own internal rules, logic and language
- chat up your assessors, expert assessors who give you a good rating are what get you the grants

The benefits of the process are to really focus your mind upon your idea, and the knowledge that you are helping fit the round peg of the creative arts into the square hole of traditional academic research.

For examples of recent work and other activities of DARE:

<http://www.artschool.utas.edu.au/DARE/>