

Computers, drawing and the Feral Drawing Group

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This paper describes my own practice, a new research grouping, and the fit they have with a developing academic research culture in art & design.

The context

Having been inappropriately shepherded into the university sector, it has become a pragmatic necessity for art and design to demonstrate that it too is, or embodies, research. The attempt to do so is clouded in part by the use of the word 'research', often (understandably) by the same people, in the same studios or meetings, in a range of contexts where it has different meanings or connotations. Research for an undergraduate is not the same activity as doctoral research or what a lecturer/practitioner might claim as research. An ongoing concern must be to ensure that work appropriate to its creator is not subverted by the perceived demands of research in a university.

My practice

I trained in, taught and practised fine art for many years before following up a long-standing interest by taking a post graduate degree in computing. I found I was considered unusual in having bridged art and science though I was never aware of any dichotomy - my interest in ideas and in the visual sat comfortably under both headings. As an artist I had exhibitions which would later be considered as research output; after my supposed metamorphosis into a scientist I produced books and papers. Now I am producing both artefacts and written material. I also supervise and examine practice-based doctoral research students.

For many years I have described my research interest as being in the relationships between drawing, computers, creativity and artificial intelligence and my enthusiasm is sustained by the frisson that comes from juxtaposing those words. The manifestation of that interest has meanwhile been explicit in books and written material, and implicit in artwork.

A long-term, ongoing project at the heart of this interest is KIKI, a largely theoretical life-drawing computer. Her domain of interest is creative mark making and as such she provides a vehicle for testing the validity of captured understanding of drawing processes. KIKI currently exists and is developing as a paper model, functions of which are being separately realised on a computer with the aim of later building a unique application. By her very nature KIKI provokes questions both about the nature and *raison d'être* of drawing and about the specifics of mark-making, some of which she will hopefully answer. The fact that she exists within a computer also extends the ongoing debate about the nature of creativity, artificial intelligence and consciousness. *Scribo ergo sum?*

The group

Three colleagues and I have recently formed the Feral Drawing Group. We have different backgrounds and are sited in different departments of different schools of our university but share a fascination with what might lie at the extreme edges of drawing. My own background I have already outlined. My colleagues are: Martin Woolner, a furniture designer with drawing interests that have led him to drawing collaborations with an architect/choreographer; Jo Davies, a professional illustrator who has overtly embraced research alongside her practice and co-organised the *Drawing as Process* conference; and Polly Macpherson, a ceramicist and enthusiastic ‘new researcher’ lecturing in three-dimensional design. Also working on the group’s first project is Tavs Jørgensen, a research assistant developing innovative rapid-prototyping applications at our new <make> R&D unit.

We are united by our enjoyment of working with one another, by mutual respect, and by issues of drawing. Our introductory ‘mission’ statement ends by stating that we plan to have fun. We do not intend to open the group to other colleagues but to invite them (and others from outside when appropriate) to join us on a project-by-project basis. This structure is grounded in reservations about large themed research groups where ideology is more important than personal interaction.

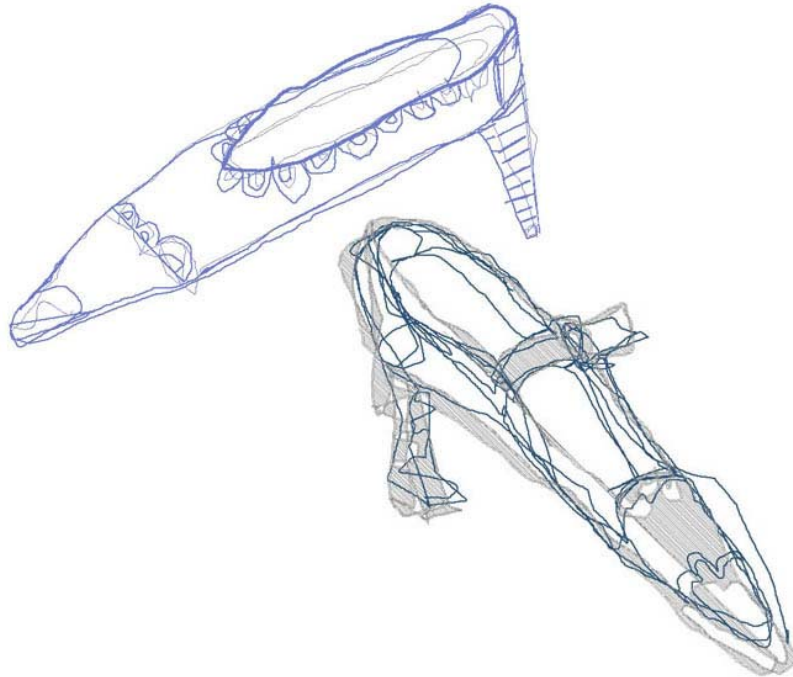
Having had informal discussions over coffee for some years about three-dimensional drawing (during which we came close to acquiring a research student with a PhD project in the area) Martin and I started making connections with the rapid-prototyping¹ centre he was establishing. Polly suggested an inaugural project exploring the overlap and Jo was carried along. Our agreed brief, therefore, was to see how the newly-available technology could be used to draw – working independently but pooling and discussing our findings. Not an explicit research question but Piet Hein has pointed out that art is solving problems that cannot be formulated before they have been solved.

The project is a potentially rich one in university research terms since it links to industry through the commercial <make> centre, is expected shortly to involve collaboration with another university and lead to collaborative funding bids, has an RA involved and a PhD student associated (and the intention of developing a research degree cluster), and will lead to a varied range of types of outputs across a range of disciplines. Although our work is still in its early stages it created interest when shown recently at the *Challenging Craft* conference in Aberdeen.

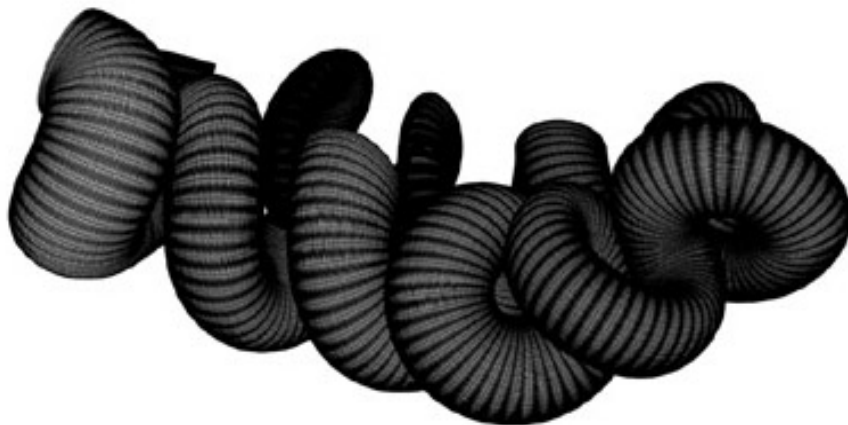
¹*Rapid-prototyping enables a model created in a computer modelling package to be easily output as a three dimensional object. Data for the model can be created within the modelling software or input from an external source such as a 3D digitiser. The digitiser we had available to us has a pointer on an arm which is hinged much like an anglepoise lamp. This allows the pointer to be moved freely by hand within a space (limited by the arm dimensions) with the pointer’s position at all times being transmitted to the computer and plotted on screen. It allowed us to draw in 3D space and subsequently make a model, if we chose, of our ‘drawing’.*

Colleagues' work

Each of us has found our individual interests leading us to explore different aspects of the process's potential. I concentrate here on my own work, but briefly outline below the areas being developed by my colleagues.



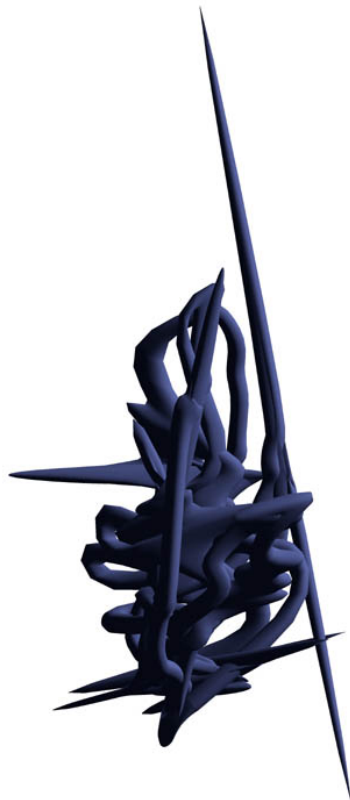
Jo Davies - the translation of traditional objective two-dimensional drawing into three dimensions and the evolution of new languages that this entails.



Martin Woolner - the exploration of Boolean processes as part of a new drawing methodology.



Tavs Jørgensen - the expression of freehand drawing in three dimensions as an object; here developed into a set of UKSPA awards.



Polly Macpherson - intuitive drawing which concentrates on the relationships between sound, mark, body placement and mark making.

My work

As soon as I started playing with the process I found myself drawn to the ambiguities and contradictions that arose from bringing traditional drawing experience to a 3D canvas.

Objective drawing traditionally involves making marks on a 2D surface to stand for an external 3D reality. The drawing process is effectively the manifestation of an intellectual viewing transform, one typical function of which is to find representation for the Z-dimension in an XY-plane. Self-portraiture using a mirror introduces, of course, the intermediary of a reflective 2D plane on/in/through which the reversed 3D scene is viewed.

When offered a drawing tool which has the freedom to move in 3-space rather than merely across a flat surface (the digitising arm), a radical paradigm shift emerges. The Z-dimension can be directly represented by marks orthogonal to the XY-plane; suddenly the need for spatial transformation is gone.

In practice, abstract drawing using the digitising arm seemed to promise a new freedom. Drawing imaginary 3D forms proved instinctive, though too easily literal. But confronted with a mirror image of myself in a first attempt at self-portraiture, there was no intuitive reason to take advantage of this new freedom and move my hand toward or away from the virtual image. The aerial marks which the attempt generated perversely sat on a self-imagined, though clearly defined, 2D picture plane. The physical realisation of the 3D aerial marks was also enigmatic as their representation appeared on a 2D computer monitor screen, whilst having the ability to be manoeuvred in real-time in the virtual 3-space of the screen.

In the early stages of the investigation therefore, drawn marks were made in response to an imagined 3D head (sited within the limits of the digitising arm) and the marks were merely qualified by reference to the matching image in an adjacent mirror. Mental and visual excursions between the aerial mark-making space and the reference mirror proved, however, to disturb the clarity of sense of spatial position within the drawing arena. It was possible to hold a fairly accurate mental image of the accretion of virtual marks only as long as the space they occupied was concentrated upon exclusively. Checking the mirror was a distraction as was, to a lesser extent, checking the screen image.

When undertaking a traditional drawing it is common to visualise a 3D space superimposed over the plane of the paper and marks which, in reality, move across that plane can be imagined as having an orthogonal component. In a mental exercise such as that, the virtual representation of the three-dimension scene lays over the paper and marks can be conceived of as driving 'into' or rising 'out from' the 2D image, their residue being the actual marks on the paper. The Z-dimension is conceptually present even though its mappings exist in XY space alone. However conceived, that is the norm in a flat drawing representing a spatial real world.

But when working with the digital arm where does the drawing exist – in digitiser space, on the monitor screen, in the model data file, on a paper print out, in a 3D animation, or as a rapid-prototyped 3D model? Is the drawing two-dimensional or three-dimensional? My current, though shifting, semantic view is that the 'real' drawing is in the data and

that all else is an alternative representation – albeit far more accessible to human sensibilities. The view that it should exist in sensory space is, however, understandable.



Three views of three self portraits

The screen representation of the path of movements made by the digital arm (using typical 3D software) is a single line. This line has no real-world thickness and needs to be treated as the path for a swept 3D form in order for it to evolve into an object – albeit a virtual digital object. The sweeping process ‘fattens’ the line in accordance with a defined profile. This means that the 3D marks can be given oval, rectangular, or any other profile sections, of any scale. Significantly, this is a post-drawing decision – or at least a post-gestural decision. The drawing process now seems to extend beyond the phase of mark-making gesture and requires a post-processing phase to give substance to the virtual mark-path

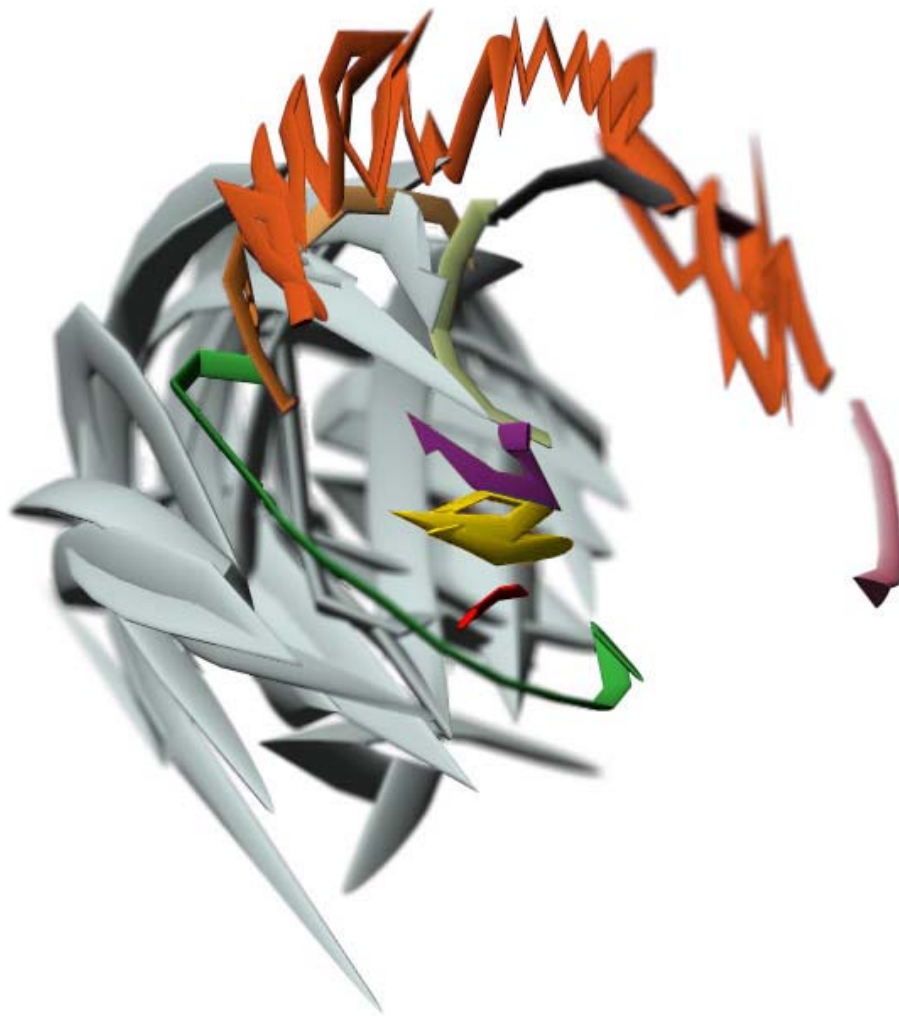


Head drawing swept into a 3D form which can be output as an object



An early attempt to bind 'floating' lines with cylindrical connectors

Other characteristics of the drawing, or of its 2D representation, can be set or changed after the gestural creation phase. The rendering parameters, such as colour, texture, reflectivity, depth cueing, lighting, etc., and the rendering method itself are all addressable. Whilst similar changes can be made to all computer-based imagery (and in most traditional print processes) in this case the drawing does not ‘exist’ until these parameters have been defined, either explicitly or by default.



An early 12-mark self portrait with post-processed depth cueing

A technical issue arises when turning a 3D drawing into an object if the drawing is made up of more than a single line. In the computer model the different lines making up the drawing are held in their correct spatial relationships but in the real world of the subsequent object the action of gravity turns them into a heap of discrete parts. Several solutions present themselves but my temporary solution is to use the modelling software to construct the minimum number of connections between the lines for them to become mutually supportive. At this stage the connections are consciously blatant and more imaginative solutions may follow.

This unique drawing process has therefore, in this context, a strange mixture of spontaneity and post-gestural consideration, the latter phase potentially lasting many times longer than the former; in the case of the image above a ratio of at least 1:100. It also opens itself to representation in many ways, both two- and three-dimensionally, with all outputs driven by the same data. Whilst these features are anomalous when compared to conventional drawing they hold the potential for a rich new drawing form which our research hopes to reveal.

On research content

This paper chooses not to position itself in a research continuum by citing previous work in the field. Neither a research question nor a methodology is explicit (or perhaps even clear) though both could be formalised if required for other purposes. For me, and I think for all of us working on the project, this is a start-point enquiry as opposed to an end-point enquiry where a clear target has been defined. It is an immersive investigation – with systematic phases – aimed at increasing the sum of knowledge within a limited domain. For some it will give rise to art. It also embodies scholarship and, for some of us, innovative professional practice. It can, however, be fairly and unambiguously described as research.