Loss and the Effect of Computer Drawing on Time, Revelation, Iconicity, Authenticity and Morphology in Art Practice

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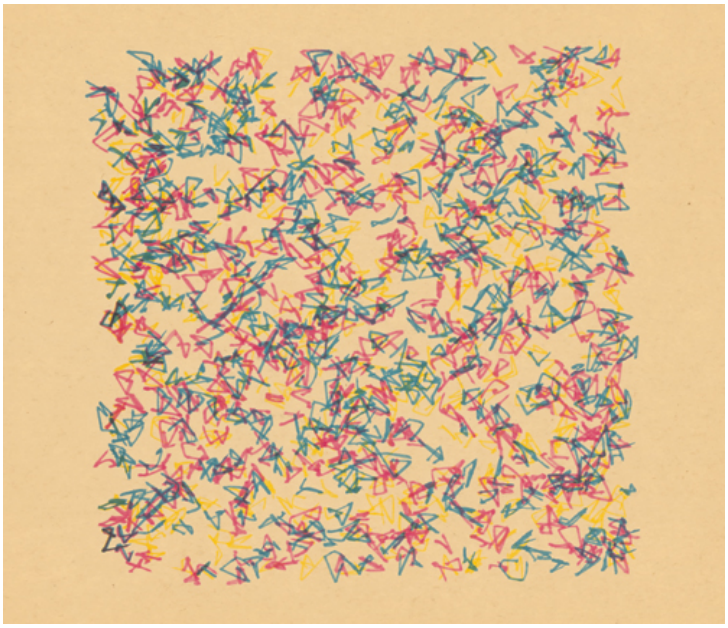
Summary



Untitled Drawing, Stephen Bell, 1978, Edding 1380 brush-pen on newsprint, 9 x 9 inches

Stephen Bell has been using computer programs to produce fine art drawings since 1977, and has focussed on the effect of computer technology on participatory and interactive work.
Sarah Thompson has been exploring the use of computers in art for more than twenty years, and has also reviewed fine art and new media art online.

As experienced artists familiar with using computer graphics as well as other art media, in this paper we discuss the effect on art practice of using computer technology to produce drawings. Five aspects of artistic engagement with drawing are discussed: *time, revelation, iconicity, authenticity* and *morphology*.

The call for submissions to Tracey regarding the impact of computer technology on drawing led us to explore whether we might be able to contribute to the growing body of discourse on this subject exemplified by initiatives like Tracey and other recently established drawing research centres. Much of the writing in this discourse about art and computer technology, which has been pursued since the early 1960s , from the pioneering work of Jasia Reichardt, John Lansdown and organisations like the Computer Arts Society in the UK and many others around the world, to contemporary discussions, has been descriptive of technique and has been pedagogic in intent. Reflection on the conceptual impact on practice is less common, and it is in this context that we situate this essay, in which we articulate some of the outcomes of the discussions that have ensued between us.

Introduction

In this paper we consider the relationship between drawing using 'traditional' media and producing computer graphic works. Five themes emerge from our discussion. *Time, revelation, iconicity, authenticity and morphology* are key aspects involved in drawing, both in traditional terms and using a computer. These are the areas that we have identified as important to consider in both. We look at artists' particular approaches to illustrate and develop the use of these characteristics, with the clear intention of expressing the difference between media, and what is gained as well as what is lost in the process.

We also ask, how does computer use affect these characteristics in digital art practice, and how does the artist adapt? Stephen Bell's 'behavioural drawings' using programming, as well as work by other artists, will be used to illustrate how adaptation to computer use can develop new forms of drawing specific to the medium, which extend the very concept of drawing itself, as the work is executed by the machine.

1. Time

Making a drawing can be said to be an action which occurs over *time*. Although this may seem obvious, it is important to acknowledge that 'hand made' work, as opposed to that calculated by computer, is time-based and has its own particular characteristics which are distinct from the time based qualities inherent in using computer technology. An important aspect is the responsiveness of the materials, the speed of 'morphological' mapping, and the interaction of the artist with these materials.

A significant difference with computer use is that the computer completes the drawing, whether it is through a direct input device like a graphics tablet or, perhaps in a more profound sense, through executing a program by the artist. Very often there is a time lag in terms of inputting drawn marks, so at an important level the artist is *working with the machine* as it calculates how to respond in programmed terms. So time is therefore expanded in relation to traditional techniques when an artist is interacting with the machine and its software. Graphics tablets are generally considered a less adequate way of achieving the same results as pencil and paper for example. The responsiveness of the machine to the artist's inputs creates a different sense of productive time, one that inevitably begins to relate to time-based media like video or animation. In terms of programming the machine, the computer executes the instructions through an algorithm, and 'drawings' are generated over time, creating an animation which in Stephen Bell's work for example, might be of the generation of the plotted effects of specified 'marks', which are actually programmed agents interacting with each other. Even when the artist's input is apparently direct, the data from the graphics tablet is mapped via a program, to change pixel values.

This relationship between the traditional and the computer programmed drawing is noted by Mason: 'Many of the computer artists at the Slade took inspiration from Klee's concept of drawing – "An active line on a walk…", described in his *Pedagogical Sketchbook*. They found a parallel with the crafting of code to draw lines that then appeared on a screen.' (Mason 2008, 189)

That the algorithm executes its permutations over time is a significant quality of drawing with a computer, which could be said to close a gap between the traditional drawing on paper and time-based media.

Like Stephen Bell, Paul Brown was a Slade student in the 1970s. He found ' …this programmatic way of working to make "logical statements using formal elements as grammar" inspirational.' (Mason 2008, 190) It seems he was inspired by the logic which could generate permutations over time, and Mason relates this to Le Witt's 'exclusion of personal expression' (Mason 2008,190) as well as to late modernist conceptual art. Bell and Brown both engaged audience participants in the realisation of some of their work and they also became involved in the emerging medium of computer animation.

Essentially drawing with traditional media gives more physical control, in terms of hand-eye co-ordination, than drawing with a computer, which either 'maps inputs' using a graphics tablet or drawing program, or carries out a sequence of instructions to generate lines or marks, which can be

outputted using for example, a plotter, printer, video recording or they can be displayed live on a screen. The tactile physical feedback, for example, the feel of the texture of the support medium and related changes of the drawing material that informs the user of traditional media, are lost, but this is not some Faustian pact where all is lost and nothing gained.

The 'lost' aspects through using computer technology, the morphological mapping of traditional drawing techniques, can also can be shown to be exchanged for gains, in terms of geometric and mathematical facilities embodied in the program, for example: calculating projections or compositing different elements into one image or 'instantaneously' altering colour palettes. Collaborative activity, which we consider in the section on morphology below, is potentially extended, as well as a new type of concern with time-based media, with artists working with real-time animation and other forms of moving image practice, interaction and networking.

2. Revelation

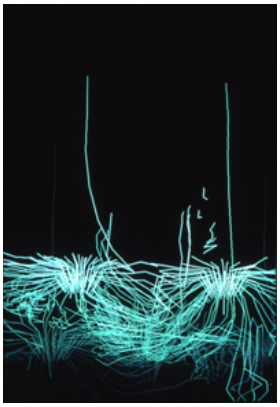
The next key quality, is *revelation.* Through the processes of drawing, perceptions and ideas are revealed to the artist, which are not possible to perceive in any other way. It is this methodology of perception through practice that, it can be argued, is difficult to achieve in the same way by conceptualizing and instruction giving, which is essentially what using computer technology entails.

What does the artist learn through drawing with a machine? This may be characterised by three aspects:

- what they wanted to portray or depict using the technology, which they did not realise would be a part of that 'expression',
- what has been revealed to them through the process of using the computer itself, in terms of how computers work and how they affect 'expression' itself, as it is very often the case that it is only through practice that the artist perceives a large part of what they are trying to achieve,
- what the software enables them to achieve, sometimes in terms of processing the image through different filters and other aspects of applications, while in programming terms, the revelation is inevitably in the reification of interacting instructions too complex to be realised by hand.

Artists often view themselves to be working with the machine in a collaborative sense, and this often yields part of the revelatory qualities in their work. Collectivity should also be taken into account, in terms of working with the machine-enabled network: the internet.

A key example of artists who work with the aesthetics and challenges of networked communication are Eva and Franco Mattes, who are 0100101110101101.org. They have said: 'We are performing together with the machine.' (Mattes 2010) They treat machine relations as continuous with their experience as seen in the example of 'Life Sharing', (2001) an early work, when they made the details of their lives public and their computer hard drive accessible to an online audience. This is an example of contemporary computing, which looks at the intrinsic qualities of networked computing, as well as the peculiar traits of lived experience and its relationship with networked art practice. What is revealed through this type of work is that a conceptually based mapping can be shared with a global audience. It is this *sharing* aspect which is identified as a significant conceptual aspect to the work. This work doesn't address drawing literally, and yet it relates in a profound sense to the aesthetics of creative computer use in terms of mapping data, and what those concepts reveal to the artist and participant.



Smallworld Vista, Stephen Bell, 1989
Photograph from Computer Screen, variable dimensions

It is possible to say that Stephen Bell's 'drawings' of computer generated trails left behind by 'creatures', to which he has assigned values, to do with gender, predation, prey, hunger etc, are enacted by the machine, revealing behaviour and creating visual effects which would be impossible, or at least very difficult, to generate by hand. His practice focuses on designing algorithms, i.e. sequences of instructions that describe what type of images are to be generated. Bell considers that he manipulates symbolic representations of imagined forms using programming, which he finds as satisfying as using traditional media. It is the quality of 'emergence' in his work that constitutes a different type of revelation in his practice. This use of the aleatory in drawing corresponds to the automatic techniques employed by Surrealists but with an added discipline of rule-based decision making which we see for example in the traditionally executed work of Kenneth Martin and Jean Spencer and the computer based work of the algorists Roman Verostko and Jean-Pierre Hébert, as well as pioneers like Manfred Mohr.

This ability to program, and to let the computer execute the 'drawing', demonstrates the potential in these kinds of productive relationships with technology, where the realisation is 'shared' with the machine. The revelation takes place but it happens when observing the result of the computer's activity rather than the artist's own direct mark making.

3. Iconicity

The resulting work in traditional drawing is *iconic* in terms of the fact that the marks were all made intentionally by the artist, if not all consciously. Allowing for the important influence of the subconscious, the image created is a personal document, a mapping of both the morphology of the observational combined with the morphology of the artist's personal concerns and expressive responses. We consider here whether computed drawings share this quality of iconicity.

If we compare the computed drawing to the film image, then the computer drawing, unlike the photographic film image, is clearly more iconic than indexical in its qualities : ' … the photograph is an iconic index (or indexical icon), objective and subjective at the same time. To employ the terms introduced by Etienne Souriau in the 1950s, the indexical aspect corresponds to the profilmic event: the objective appearance of the scene in front of the camera; while the subjective corresponds to the filmographic, which comprises all those elements that result from the manipulation of the camera and the process of editing.' (Chanan 1996)

The similarities with a machine extending the artist's perceptions is of course significant. The computer does this mainly though, through permutations or transformations, rather than capturing indexical information, unless the photographic is used in the process of the digital production of these images. It is impossible to predict what will be generated by the program in its entirety.

With computing there is the additional aspect of marks which were specifically programmed by the artist, as a conceptual extension within their practice, much like Sol Le Witt's work, in his 'wall drawings' for example which were a series of instructions executed by draughts-people, 'The idea

becomes a machine that makes the art' (Sol Le Witt in Kosuth 1969, p841). In this sense, as noted above, the artist very often becomes aware that a large part of working with computers is conceptualising and instruction-giving. This instruction giving, or programming, generates iconic images, which function as art.

This iconicity becomes somewhat secondary though in terms of computing, when artistic control gives way to programmed interactions and emergent behaviour. Morphological similarities to the 'real world', in terms of human or animal behaviours, are 'generated' by the artist's program, in Bell's work for example. Unless the artist sees herself as omnipotent, she more often acknowledges that her abilities are being extended by working with the machine.

> Reichardt wrote, "The computer has thus enabled people without the ability to draw as much as the simplest design, to produce pictures that are both intricate and visually satisfying." However this point of view raised complex issues of skill and fed the popular notion that machines could grant anyone the power to become an artist. (Mason 2008, 104)

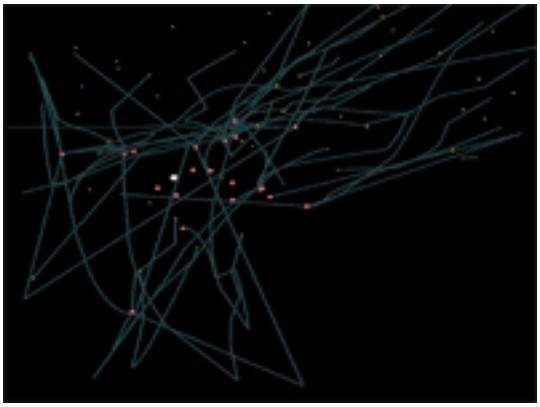
We can see then that since the early days of using computers in art, there has been a distrust and lack of understanding about the skill it takes to make images using a machine which are usually, though not always, characterised by a predominantly conceptual approach. This has lead to misperceptions of the largely iconic nature of these generated images, questioning whether they are iconic because of the artist or because of the machine and its software or program. This iconicity, which is so important to artists, can though, still be thought to be more or less complex based on the skills of the artist.

It is important to consider the way that working with the machine enables the creation of iconic images, but also incorporates something akin to what Chanan has identified as the indexical in film and photography, the incidental or unplanned capturing of details unforeseen by the artist. The inclusion of machine based artifacts, or qualities which the artist didn't intend, but have emerged through unexpected outcomes of the logic of a program's execution, is part of the culture of computer created images. This, more than any other quality in programmed drawing, may mark it out from other drawing practices.

4. Authenticity

Perhaps part of what is lost in computer generated 'drawing', is the reification of authenticity in terms of who or what is doing the mark making The decision to use the technology is usually based on perceived advantages over existing technologies. When considering drawing in this context, one is inevitably faced with the argument that work produced using existing 'traditional' technologies is in some way qualitatively superior to that produced by computer technology, essentially because it is analogue rather than digital. This becomes apparent most often in discussions of authenticity.

This discussion is not unique to artists. Digital computer technology has, by being used to simulate many activities previously realised by using other technologies, led to a re-evaluation across an innumerable range of disciplines of the value of retaining existing boundaries, categories and processes. Common to all these reconsiderations is the inescapable fact that some aspects of the disciplines' activities are encoded as patterns of binary digits, stored in enormously complex electronic devices. It is this apparently simple technological development that has led to the changes we are addressing. Unless the concepts and methods to be encoded are digital in their essence, the effect of digitalization can lead to an abstraction which fundamentally changes them. Any discipline that embraces digital technology implicitly or explicitly accepts this interpretation, or mapping, as digitized data is almost always an approximation. This has very big implications.



Beesworld Screen Grab 1, Stephen Bell, 2009
Screen Grab from Computer Screen, 1024 x 768 pixels

The materiality of computing, contributes to the dilemma. 'Miniscule electronic charges are being altered as the physical architecture of the computer discharges and charges patterns. Eventually establishing a relatively stable pattern of charges which can be used to control a device like a screen or printer to present the pattern in a form we can perceive (visually).' (Thompson 2010). As different hardware displays the same data differently is the audience perceiving the same work, or many different ones when they see (re)productions? And does it matter?

Drawing with a computer also inevitably challenges notions of authenticity, not only in terms of its reproducibility but also as there is a sense of collective authorship in terms of the programs or software being used. The latter is a similar issue to that which film makers face. The film director Bernardo Bertolucci has said in relation to making films: 'For a long time I thought that a movie was the expression of one person… it was the beginning of the sixties when I started, and the idea of the "auteur", the author, was very imposing… Later, in the years between 1971 and 1974, I had no choice but to change my mind… I had to accept that the film was also the expression and the result of a collective creation.' (Bertolucci et al 2003) This sense of 'collective creation' is often experienced by the artist using a computer, when the artist is impressed by what the machine might reveal or enable them to achieve through the collectivity, in terms of software use as many other people may have embodied their concepts of drawing in the programs and hardware. Collaboration in creative terms can be embraced specifically.

In an interview with Simon Faithfull about his work for the net, 'Adelaide' (1999), he describes the simplicity of his approach which exploits computing techniques from a different time. In this work he addresses issues of authenticity explicitly:

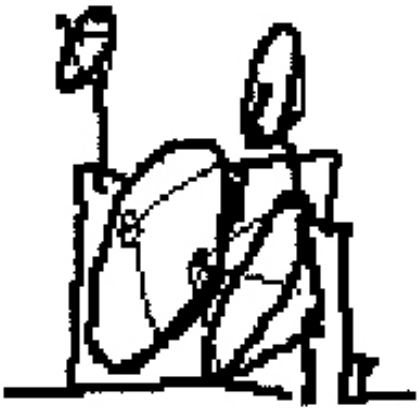
> Mouse drawings (or now track-pad drawings) have been part of my practice for a while. Perversely, I enjoy using an antiquated drawing program as this, with its pixilated line, brings to the surface the building blocks, almost texture, of a digital image. I enjoy the gap between the personal nature of "doodles" and the anonymous "bitty" recording of this information. A large part of drawing in a conventional sense has been to do with the pencil line being an authentic and unique record of the artists hand. In this case, even though the track pad does faithfully translate this act into low grade digital information, there is of course now no authentic original. (Thompson 1999)

What becomes apparent when considering authenticity, both from the point of the artist and the viewer, is then perhaps primarily the artist's relationship with the machine itself. It is precisely the 'anonymous' nature of the translated data which some artists find difficult to accept, due to the sense of loss of authorship, yet others embrace and explore this territory.

5. Morphology

A further aspect which may also affect artists' views of drawing and computing and which relate to traditional techniques are: the 'morphological characteristics of art' (Kosuth 1969). It could be argued that just as Kosuth saw the conceptual in art practice as renouncing or moving away from the concern with 'morphological characteristics', and instead becoming preoccupied with generating meaning through the processes of the conceptual system itself, it is also an important aspect of the instruction giving procedures in computer programming. This 'renunciation' is perhaps part of computer generated 'drawing' practice and might be identified as a loss.

Does 'drawing' imply or even demand that a human body part is moved physically through a shape/path that corresponds in *morphological* shape to the visual shapes that constitute the drawing? In interfaces that use pointing devices a match between movement and mark is not essential. The facilities programmed into drawing software like 'snapping' to grids or other objects, image processing like 'filters', all take effect without a morphologically similar movement of the human body. If we were to agree that using graphics tablets etc, with software that maps human movement to a database and then applies processes to it can be seen in totality as drawing, then it is possible to argue that producing drawings using programming techniques is also drawing.



satdish.GIF, Simon Faithfull, 2001
emailed gif image, variable dimensions
(courtesy of the artist)

Simon Faithfull has articulated this dialectic between the individual artist and a sense of collectivity, as well as using mapped morphologies, in terms of making quick sketches on a Palm Pilot, while in residence in New York (2000) and London's Whitechapel Gallery (2001). He emailed these simple sketches to a large mailing list of all the people he'd been in touch with, encouraging others to join in. Using a Palm Pilot made it possible for Faithfull to sketch while on location, and the reproducibility of these images on computer made it possible to reach an audience outside the gallery, thus engaging them in his residency. 'It was a querky collection of daily sketches, schematic in style, which gave a sense of events or places.' (Thompson 2001)

There is a certain humour in this work as well, where the mapped morphologies appear 'naïve' in their execution, although the location gives them weight and purpose.

In Kosuth's view, the morphological was a characteristic of art which he saw as an impediment to appreciating art as a 'question of function' (Kosuth 1969, 844). The computer seems to profoundly affect this traditional notion of art practice, and morphology is often regarded as naïve or humorous in computer drawings like Faithfull's. Artists working with computers are often influenced by the importance of the conceptual in art making terms, and in the case of drawing, this perhaps leads to the loss of the predominance of the morphologically iconic, and a new relationship between drawing and the indexical within the moving image tradition, for example in motion capture.

Summary and Conclusion

We have asked how computer use affects the characteristics: *time, revelation, iconicity, authenticity* and *morphology*, in digital art practice, and how the artist adapts. Through an analysis of practice it is possible to see what is lost with the influence of contemporary technologies. We have argued that there are losses with regard to time related aspects however also these can be shown to lead to gains, in terms of geometric and mathematical facilities, collaborative activity as well as a new concern with time-based media, with artists working with animation and new forms of moving image practice, as well as interaction and networking.

The artist's continuous relationship with, or employment of, the computer to 'reveal something to them', describes a different methodological relationship than when using traditional media, which both challenges authenticity as well as the traditional mapping of morphologies through hand-eye coordination, presenting the artist with new challenges like programming the computer, distributed or networked authorship, or the difficulties and challenges of inputting data.

The potential in programming and letting the computer execute the drawing, supports the proposition that artists abilities may be extended by working with the machine. This is fundamentally different to direct drawing as it involves, either implicitly or explicitly, the use of instructions to create drawings, rather than hand-eye coordination. Does this challenge the notion that such work can be considered in the same context as drawing because it lacks the hand made component of making?

Autheticity and *morphology* can be said to be the most affected characteristics in drawing with computers, as illustrated by Faithfull's work, and can be considered as partially 'lost' to a machine based practice. Faithfull's work is filled with irony at this reality, and places an emphasis on the artist's location in time and space as the significant aspect of these works rather than drawing skill itself. However the algorists place importance on the authenticity of the algorithm, which like conceptual artists such as Kosuth and Le Witt are a sequence of instructions, and which uniquely share the art making activity with the machine. Was Kosuth misguided in being so harsh in terms of the morphological characteristics of art becoming less important? It is at least the case that the conceptual is a key part of drawing practice in terms of using computers, and with the use of algorithms becomes extraordinarily relevant. Paradoxically the use of computer technology supports the importance of morphology in the processes of drawing through mapping inputs, but these activities inevitably merge with the indexical qualities of machine 'capture', traditionally found in the moving image or photography, in terms of motion capture particularly.

We have discussed how artists often view themselves to be *working with the machine* in a collaborative sense, not simply using it, and this often yields part of the revelatory qualities in their work. There is also the aspect of collectivity in terms of working with the machine-enabled network, the internet, as well as other aspects of collaboration. 0100101110101101.org have demonstrated that sharing is a key aspect of interactivity, which could be said to have its roots in conceptual art, where the participant would complete the work by carrying out a series of instructions, much like an algorithm as in some of the work of Yoko Ono or more broadly of some of the work by Antony Gormley. This gives the participant an experience of making which is unique to them.

Any concern regarding the legitimacy of collective work may be referred to Bertolucci's 'collective creation' approach to film making which also relates to the changing nature of art practices in relation to the computer, where artists increasingly overlap with moving image producers in terms of the type of work that they make.

Reproducibility of images on computer and using computer enabled networking as a broadcasting device, makes it possible to reach an audience outside the gallery. This is of course part of a much larger change where anything that can be digitized may be distributed worldwide, including digitized versions of traditionally made drawings.

Experiencing and reading or interpreting the visual productions of computer graphics programs can have much in common with perceiving work produced using other media. Using computer technology to *produce* drawings is however fundamentally different, due to the fact that the medium is essentially that of conceiving of and giving ordered instructions whether explicitly through programming or implicitly through interfaces that simulate or emulate the methods of manipulating other media. There

is however common ground between drawing in traditional and computer based media indicated in this paper by themes: *time, revelation, iconicity, authenticity* and *morphology.* We believe that these themes could be profitably explored further in the continuing critical dialogue between practitioners, critics and historians confronting the challenge of using these new media.

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Note

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