Biologically–Inspired Computing for the Arts: Scientific Data through Graphics

Anna Ursyn
University of Northern Colorado, USA
INTRODUCTION

The phenomenological experience of water during the activity of swimming repetitive strokes in a swimming pool serves as a means to investigate the premise that drawing is phenomenology. In recent years, there has been a growing interest in the relationship between drawing and phenomenology and the possibility of process of drawing to be considered phenomenology; this focused study intends to extend some of the thinking around this particular aspect of drawing. The specific experience of swimming identified here provided the opportunity to collect data through personal experience, which was subsequently translated into drawn marks with both traditional
drawing media (charcoal, graphite and paper) and an Apple iPad (Brushes and Sketchbook Pro apps). The chapter compares the data from both processes to uncover whether the introduction of the digital interface of the Apple iPad impacts on the premise that drawing is phenomenology.

Experience/Consciousness

Dewey (1934, p. 38) states, “An experience has a beginning and an end, ‘experience’ is ongoing, what we perceive every waking moment through consciousness.” For clarification, the experience of swimming with repetitive strokes is considered to be ‘an experience’ as it has a clear beginning and end. Moran (2000, p.60) states, “… consciousness is the basis of all experience …” This research adopts the position that an experience, such as the experience of swimming referred to here, consists of all that appears in consciousness during the time it is experienced. As Velmans (1996) states:

The “contents of consciousness” encompass all that we are conscious of, aware of, or experience. These include not only experiences that we commonly associate with ourselves, such as thoughts, feelings, images, dreams, body experiences and so on, but also the experienced three-dimensional world (the phenomenal world) beyond the body surface.

Working on this basis the translation of experiences of water into drawn marks considers the physical elements of the water – visual and tactile qualities for example, alongside the psychological affect the water has on the state of consciousness; what it feels like to experience water.

Drawing with Traditional Media

However, despite conflicting definitions most (including: Farthing 2005; Petherbridge 2008 in Garner 2008 & 2010; Fisher 2003 in Newman & De Zegher 2003) acknowledge both: the intimate and immediate manner of drawing with traditional media, as Marden (in Farthing 2005: 30) states there is, “Less between the hand and the paper than any other medium”; and the potential of drawing to record the trace of the draftsman in the marks created whilst drawing, to allow the viewer to become, “… as close to the action of an artist’s thought as one can get” (Newman & De Zegher 2003: 70). Rosand (2002) furthers the debate of this attribute of trace by both: considering drawing’s ability to record the trace of the draftsman; and by suggesting that drawing is a phenomenological process – recording its own making through the trace of the marks. Rosand (2002: 12) states, “… the line recalls the process of its becoming through the act of drawing, the gesture of the draftsman.” The interest for this research is two-fold: firstly that drawing is phenomenology, capable of recording experience through the marks made whilst drawing; secondly, that drawing is a phenomenological process, capable of recording its own making through the trace of marks. Through discussion of the creative process of drawing during the translation of the identified experience, the chapter will attempt to make implicit aspects of the process of drawing explicit; considering if the intervention of the digital interface of the Apple iPad impacts or alters the potential of drawing to both document the specific identified experience and record its own making.

Drawing with an Apple iPad

Over the past few decades there has been a growing interest within contemporary fine art in drawing with technology. From drawing programmes, such as Adobe Illustrator and Photoshop, graphic tablets, moving image cameras, and the more recent use of Apple products: iPod Touch, iPhone and iPad, artists (for example, James Faure-Walker,
Angela Eames and John Roome) have embraced emerging technologies within their practices. Perhaps the artist most notable for his ability to embrace and incorporate new technologies into his work is David Hockney.

Over a career so far spanning over fifty years Hockney has worked with a range of technology, as it became available, including photography, photomontage, video projections and even embracing the potential of photocopiers and fax machines (Isenberg 2011). In 2009 the exhibition entitled ‘Drawing in a Printing Machine’ (Annely Juda Fine Art) featured a series of inkjet printed computer drawings Hockney created through collage and drawing on a graphic tablet with the program Photoshop. Hockney (Annely Juda Fine Art 2009) states, “Photoshop is a computer tool for picture making. In effect it allows you to draw directly into a printing machine, one of its many uses.” It is perhaps not surprising then that Hockney has incorporated the latest Apple technology into his working processes.

In 2008 Hockney began to draw on his Apple iPhone using the Brushes App. Hockney would produce several drawings a day on his Apple iPhone emailing them instantly to a group of friends. Hockney has since progressed to the larger scale iPad, still working with the Brushes App. He has replaced the sketchbook he constantly carried in his jacket pocket with his Apple iPad. Hockney still paints with oils, however the Apple iPad drawings constitute a large part of his creative output at present. In 2010 the exhibition, ‘Fleurs Fraiches’ at Pierre Bergé – Yves Saint Laurent in Paris exhibited several of Hockney’s digital drawings on installed Apple iPhones and iPads. This form of exhibition allowed the drawings to be seen in their original luminous state rather than as printed versions. A further exhibition of his works in Humlebaek, Denmark entitled ‘Me Draw on iPad’ saw Hockney email the entire exhibition to the gallery, regularly updating the exhibition through emailing new works (Juxtapoz 2011). Whilst Hockney uses an Apple iPad on a daily basis, he has not left behind traditional drawing processes using the media alongside one another to, “… see and feel nature more clearly” (Hockney in Isenberg, 2011). Hockney sees the Apple iPad as, “… a serious tool …” which actually influences his other work due to its, “… boldness and speed” (Hockney in Isenberg, 2011). Hockney’s ability to take advantage of the benefits of new media and his insistence on its ability to inform his engagement with traditional media inspired the use of the Apple iPad for this study. It is worth mentioning here that this study is focused on drawing with the Apple iPad; it is not within the remit of the research to discuss the vast range of digital technology available at present.

BACKGROUND: CONTEMPORARY FINE ART DRAWING

Drawing as a Phenomenological Process: First Person Research

Several researchers have carried out first-person research into the relationship between drawing and phenomenology concentrating on a specific aspect. Karen Wallis’s (2003) research utilises drawing from life along with painting, adopting a methodology that incorporates a phenomenological approach. However, the inclusion of these two entities has a different emphasis to this research. Wallis incorporates phenomenology to influence how she approaches her drawings or paintings – Merleau-Ponty’s (1964) suggestion that you are both seer and seen, (that is, not only are we, as human beings, seen by others, due to the position of our eyes we also have the ability to see ourselves in the world) influenced her decision to incorporate herself within the picture frame – unlike this research Wallis does not suggest that her process of making itself is phenomenological. Wallis (2003) is not suggesting drawing is particular to a phenomenological practice as the
research here is but that by being both seer and seen the approach is phenomenological.

Prosser (2004) conducted phenomenological research, which included the production of several drawings and texts discussing themes such as Dasein, Ennui, Xenia, Notitia and Fantasia. The research included: a discussion of phenomenology; a phenomenological approach to the above themes; and phenomenological drawings. As with Wallis, Prosser’s approach was phenomenological, although he did not discuss the process of drawing as phenomenological or relate the themes of the text to the drawings.

Cain’s (2007) research through drawing focuses on drawing as a means of gaining understanding, which she entitles, “… drawing as coming to know …” Cain (2007) states, “I began to consider that drawing was perhaps a knowledge-constituting process involving a dialectic between knowing and not-knowing.” Cain (2009) concludes that, “… the experience of making a drawing makes visible what are essentially tacit processes in activity through our ability to make sense of what we do.” As a consequence, and in contrast to this research, Cain’s research focused on, “… the evolution of the practitioner rather than the evolution of the drawing” (Cain 2009).

MacDonald’s (2009) first-person research concentrates on a multi-sensory approach to observational drawing as a “form of enquiry … relating to the body and embodied experience.” MacDonald used direct mark-making in response to perceptions. MacDonald’s research also relates to Cain’s in that it discusses drawing as a means of understanding perceptual processes. In contrast to MacDonald’s research this research does not look at representational drawing per se but seeks to explore the experience of swimming repetitive strokes in a swimming pool through the most appropriate means.

Harty’s (2010) practice-led research sought to answer the question: How is it possible, through drawing, to identify and translate the elements of a specific experience into drawings? The research engaged with processes of drawing and phenomenology and/or psychoanalysis in order to address the question. One of the research considerations was that repetitive processes of drawing were phenomenological, recording the drawing process through the marks left on the paper. The research emphasis however, offered conclusions from a first person perspective furthering understanding of human experience and the documentation of implicit elements of processes of drawing offered insights into, and consequently, furthered understanding of a creative process. This premise is furthered in this research, which seeks to consider the hypothesis that drawing is phenomenology through the exploration of the identified experience.

Drawing as a Phenomenological Process: Third Person Research

In contrast to the first-person research of practitioners there are two theoreticians who discuss drawing and phenomenology from a third-person perspective.

Bailey’s (1982) research presented a philosophical thesis, which sought to discuss drawing as implicitly connected with phenomenology; presenting the argument that the draughtsman, whilst drawing, is a phenomenologist. Bailey (1982: 3) states, “Within the scope of all the ways he [the draughtsman] makes his marks, through all their transmutations, he seeks routes for the interrogation of how things are.” The thesis focuses on drawings, which are representational of the physical world but the author suggests that the same holds true for drawings, which seek to uncover the “how things are” of an internal thought. Bailey (1982: 339) relates the movement of the draughtsman’s thought with the trace left upon the surface of the paper, as he suggests, “More deeply than any other form in the visual arts, drawing immediately betrays how the draughtsman thinks.” Proceeding to state, “… drawing gives us insights into the pathways of the draughtsman’s thought-in-action …” (1982: 340). Within the thesis Bailey (1982:
also states, “The draughtsman draws to give order to his thought, it is a process whereby he makes clear to himself what he is doing. It is a process that simultaneously orders and enlarges his experience.”

Rosand (2002) writes from the perspective of a viewer of Masters’ drawings (including, Leonardo da Vinci, Raphael and Michelangelo). He argues that drawing is a phenomenological process capable of both recording the movement of the draftsman’s mind and the drawing’s own making through the trace of marks on the paper’s surface. Rosand (2002) suggests that viewing drawings can lead the viewer directly back to the draftsman. “Drawing is re(enactment). So too is our response to drawing. The line is a direct record of the draftsman’s gesture. The gesture of drawing is, in essence, a projection of the body …” (Rosand, 2002: 16). The chapter refers to Rosand’s research when discussing the process of drawing, however, this research concentrates on the process of drawing whilst discussing the experience of swimming repetitive strokes rather than on the viewing of drawings once completed.

**DRAWING THROUGH WATER//WATER THROUGH DRAWING**

**Experiences of Water**

“… water ‘substantiates’ links between the body and the material environment in which it is, equally, the substance of life for every organism” (Strong 2004: 62). As Schwenk & Schwenk (1989: p.5) state, “… water embraces everything, is in and all through everything; because it rises above the distinctions between plants and animals and human beings …” Water forms a large part of our existence from drinking, bathing, and travelling, we rely on water to support our existence. We experience water through all of the senses, whether breathing in the damp autumn morning air, listening to the sound of rain splashing against the window or watching the moonlight illuminate the sea, water appears to us as a fully sensuous experience. We experience water in a variety of means that are often contradictory: at its most obvious water is a means of survival – an adult human body is approximately 60% water; conversely, water potentially causes harm and death – through drowning etc.; water is also a means to establish political borders and as such also determines economies; water is a means of relaxation – through submersion and the calming effect of audible experiences of water. Our experiences of water are multifarious and in some instances individual.

Strong (2004) argues that water helps to develop a sense of self within the environment; our interaction with water builds and determines our communities. Strong (2004: 5) states that, “… engagement with the environment provides synaesthetic experiences that are integral to the generation of meaning and instrumental in the development of cultural values and practices.” In agreement with this, Malpas (2006) discusses the potential of water to be constitutive of place; it ties us to our environment. Malpas (2006) states, “To think through the significance of water in human life […] involves more than just considerations of health or of economics – it touches on our very constitution as human, since it touches on our constitution in and through place.”

There is a potential therefore to consider that experiences are culturally bound and to some extent individual; our relationship with water is constituted through our cultural environment and beliefs. However, Strong (2004) considers there are many experiences of water that we all share, for example its physical qualities and variations of temperature and as such, “Human sensory experience of these qualities is to some degree universal, and this commonality doubtless contributes to the recurrent themes of meaning encoded in water in many different contexts” (Strong 2004: 49). One experience of water that appears to generate comparable effects on consciousness whatever
the cultural background or environment is that of being under water for example, immersion during the activity of swimming.

**Immersion in Water**

Immersion in water generates a feeling of weightlessness and ease of movement within the body. There appears to be a disconnection with the world and rather than alienation, a sense of calm and security. The muted world under water appears to allow a removal from the noise and chaos of the environment we exist in allowing a heightening of self and clarity of thought. As Valéry (in Sprawson 1992: 101) suggests, “It seems to me that I discover and recognise myself when I return to this universal element. My body becomes the direct instrument of my mind, the author of its ideas.” The body is free from the usual pressures experienced and there is a sense of containment within one’s self. As Sprawson (2004: 135) states, “Swimming […] can cause a sense of detachment from ordinary life. Memories, especially those of childhood, can be evoked with startling strength and in vivid and precise detail.” Swimming can induce states of consciousness that are close to the feeling of meditation as the body moves rhythmically through the water, emerging for air at regular intervals. This experience of repetitively submerging and surfacing was the inspiration and focus of the drawings discussed later within this chapter. The interest lies in understanding more about what effect this experience of repetitive action in water had on the state of consciousness and how this could be documented by drawing.

Immersion in water generates a particular state of consciousness as the changing environment challenges our senses and perceptions. Sounds are muted, vision distorted and there are contradictory perceptions of isolation from others around and conversely, a fusion with the environment that envelops the body. This fusion with the environment, where the boundaries of inner and outer experiences have become fused, means it is hard to determine where the body stops and the environment begins. There is an awareness of ourselves, as a part of, not separate to our surroundings (Harty 2010: 65). This state of fusion, Csikszentmihalyi and Csikszentmihalyi (1988: 38) refer to as flow suggesting that, “… the clearest sign of flow is the merging of action and awareness. A person in flow has no dualistic perspective: he is aware of his actions but not of the awareness itself.” Bollas (1987) describes feelings of being joined with an environment as reminiscent of when we were infants and our every need was taken care of by our mothers. We saw her as what Bollas (1987) terms a ‘transformative environment’, we were aware of ourselves as a part of the environment however, not as a separate entity. Bollas (1987) suggests that these experiences happen before we have the ability for speech or thought and therefore the experiences are what he terms, ‘unthought known’ – we are familiar with the experience but we are not capable of remembering them through language or recalled thoughts.

Many people have identified this feeling of fusion with an environment when submerged in water and it is considered that these experiences may have resonance with the experiences of security of the womb, being suspended in and protected by the amniotic fluid. As Sprawson (2004: 143) states, “It is generally accepted that in the area of the unconscious, water in any form and immersion in it suggests a hidden desire for a return to the security and irresponsibility of the womb and its amniotic waters.” This desire to return to the security of the womb could be compared with Bollas’ (1987) ‘unthought known’ a feeling of familiarity without any conscious memory of the experience. There is also speculation that associations with the experiences of the womb are made in early life when being bathed or immersed in water and these experiences serve to affirm and potentially strengthen them throughout life (Strong 2004).
Rhythm in Repetitive Actions

Immersion however, is short lived before the impulse to breathe initiates resurfacing. The activity of swimming repetitive strokes necessitates a systematic resurfacing that develops a rhythmical action. The significance of rhythm within repetitive action on a generation of a state of fusion or flow is its resonance with the rhythm of existence; a series of rhythms - the changing of the seasons, the sequence of night and day, life and death, or the beating of the heart, for example - which regulate being. When we experience rhythm in any capacity it has the potential to resonate with the very core of existence and it is this factor that contributes to the generation of the state of fusion during repetitive actions (Harty 2010). Dewey states, (1934: 156) “Underneath the rhythm of every act […] there lies, as a substratum in the depths of subconsciousness, the basic pattern of the relations of the live creature to his environment.” This again has resonance with the unthought known of the experience of the womb, the recalled connection with repetitive sounds of the mother’s heartbeat experienced within the womb. “… water sounds replicate these ‘heard’ or ‘felt’ in the womb and […] consequently, humans associated rhythmical and circulatory sounds with prenatal security” (Strong 2004: 53). Therefore, swimming with repetitive strokes in a swimming pool has the potential to initiate a series of sensations and evoke long forgotten memories as the body is thrust through the water in a rhythmical pattern of submerging and surfacing. This potentially explains some of the reasoning behind why many become addicted and obsessive about swimming; it potentially fulfills a desire to return to the security of the womb.

Experiences of Drawing

When commencing the research through drawing consideration was given as to the appropriate means to draw. It was considered that if drawing commenced through direct observation there might be a tendency to concentrate only on the visual perceptions of water rather than the experience as it appeared to consciousness. The aim of the drawings was to research the experience of water phenomenologically; to uncover all that appears to consciousness, both physical and psychological elements of the experience. Drawing from observation was considered therefore to limit that experience to visual perceptions, as attention would be concentrated on the elements present – the physical not psychological qualities. As a consequence the decision to draw from memory appeared to be most pertinent approach as memory had the potential to contain all the significant elements as they appeared to consciousness.

Consideration was also given to the type of traditional media chosen to carry out the drawings to compare with the process of drawing with an Apple iPad. Pencil, charcoal and paper were selected as they were considered to represent a range of traditional media. Two apps were selected for the iPad, Sketchbook Pro, due to its range of drawing materials and mark making qualities and Brushes, due to its ability to ‘play back’ the drawing in creation and its publicized use by Hockney.

Before commencing drawing, memories of experiences of water during the repetitive activity of swimming were recalled and the phenomenological text detailed below generated by the author, to articulate and identify some elements of the experience to assist the process of drawing:

... breathe chaotic calm, dapple gushing fluidity, contemplate … breathe, bubble, repetitive weightlessness emerging, ripple blow, flashing, tiredness splash … breathe, surround, envisage, relax, bubble distortion, concentration, clarity contained, stretch, blow, hypnotic thrashing, stretch, muted flotation, cool, introspective absorption, reflection, deep transient light, mind and body … gasp ripple flow, thrashing meditative awareness, breath bubbles … gasp, breath bubbles … blow …
Drawing with Traditional Media

Drawing commenced with graphite and/or charcoal on paper, marks were created in response to the recalled memories of the identified experience. Initial drawings contained the presence of repetition, directional flow and light within the marks upon the surface. The media was applied to the surface using a variety of bodily movements, sweeping, rubbing and scoring the surface of the paper; an eraser removed areas of tone to draw the light back into the drawing (Figure 1).

Various parts of the hand and arm were initiated in the drawing process, altering the tone, depth and texture of the marks. These first series of drawings identified and addressed the physical qualities of light, reflecting and shimmering through the water. As the series progressed the sensation of movement and directional flow became part of the mark making, developing the sense of immersion and the hypnotic repetition that generates states of fusion and flow (Figure 2).

Part of the repetitive action experienced during the identified experience - alongside the movement of the limbs - is the rhythmical breath, systematically inhaling and exhaling in equilibrium with the movement of the body. The physical presence of this breath appears through bubbles in the water carrying the expelled air to the surface. The bubbles, created by the exhaling breath, have a tactile and sensory quality, they rush past tingling the sides of the face, leaving a distinctive and audible trace as they travel. The completion of this momentary event signals the necessity to surface and inhale. The breath bubbles have the potential to represent presence and life within the immersed world and for these reasons became a recurring motif in the drawings. Within the visual image of the breath bubble is contained a sense of weightlessness, light and freedom of movement, connecting the visual image with the sensory experience and recognition of its sound as it rushes through the water to the surface. These properties, it is suggested, are contained within this repeated motif.

Several drawings were created to explore the effect of multiple breath bubbles. Circular motions of varying pressure were created with the graphite onto the paper’s surface engaging the rotation of the wrist or the entire arm to vary the size and density of the breath bubble. An eraser was vigorously rubbed across the surface creating its own marks through the smudges and revealing of the white surface. Traces of the breath bubbles’ brief existence remained discernible in the indentations and residue graphite on the surface. Over this layer a further series of breath bubbles were created.

Figure 1. Deborah Harty. Charcoal on paper. (© 2011, Harty. Used with permission).

Figure 2. Deborah Harty. Charcoal on paper. (© 2011, Harty. Used with permission).
and erased again building a surface reminiscent of past and present exhalations. Experimentation with this process continued with consideration to the ephemeral nature of both the bubble and the breath; the drawing process replicating the continuous creation and expiry of the breath bubbles (Figure 3). The repetition of the flow of breath also has resonance with the sense of meditative calm and introspection generated through the repetitive action and focused awareness of self, experienced during the activity of swimming. Csikszentmihalyi and Csikszentmihalyi (1988: 43) states, “In some flow activities, perhaps in most, one becomes more intensely aware of internal processes.”

The breath bubble motifs continued to be incorporated into the subsequent series of drawings alongside considerations of immersion, flow and transient light qualities experienced during the activity of swimming. Water is transient in both its fluidity and visual quality; it is affected and takes on both the shape and light quality of its environment. As Strong (2004: 51) states “… the eye is presented with a luminescent image it cannot ‘hold’. Instead, it must simply absorb all of the rhythms of movement and the tiny shifts and changes.” Whilst swimming these qualities are altered and manipulated by the movement of the body; the body to some degree therefore determines and becomes a part of the environment.

The bodily movement causes the water to ripple, affecting the light quality and directional flow of the water. In much the same way when drawing with graphite or charcoal the movement of the body also determines the appearance of the drawings. In response to this, in addition to the layers of graphite bubbles, tonal directional marks were vigorously drawn onto the surface to capture the flickering dappled light and gliding movement through the fluidity. Compressed charcoal was drawn into the surface, smudged and blurred with the fingertips, side and palm of both hands. Directional marks were added and erased to allude to directional flow and immersion. Pockets of light appeared through the revealed areas of the erased drawing. The breath bubbles appear to float in a light filled directional flow; there is a sense of flotation, calm and absorption. The directional marks are drawn out to the paper’s edges suggesting expansion and continuation beyond the drawing, alluding to a continuous repetition of action (Figure 4).

**Drawing with an Apple iPad**

Using an Apple iPad and the apps Sketchbook Pro and Brushes, digital drawings were created alongside the drawings with traditional media. The drawings commenced with the same recalled

---

*Figure 3. Deborah Harty. Charcoal on paper. (© 2011, Harty. Used with permission).*  
*Figure 4. Deborah Harty. Graphite and charcoal on paper. (© 2011, Harty. Used with permission).*
experiences of the activity of swimming repetitive strokes. Initially the same motifs appeared in the drawings, the use of light and flow and eventually the breath bubble (Figure 5). At these early stages rather than draw within the capabilities of the media attempts were made to replicate the process of drawing with traditional media. This was naturally not very successful; the device has two features, which make this particularly awkward. For a start if more than one pressure point is applied to the iPad’s screen, then the drawing moves rather than creating two marks, there is also the potential to zoom in and out by using two points of pressure. So when attempting to engage the hands, arms etc in the process of drawing, rather than creating a variety of marks the drawing endlessly jumped around. Clearly this is due to tacit knowledge of drawing processes trying to be replicated rather than any fault with the Apple iPad. It was, however, challenging to override the natural instinct to immerse the body in the process of drawing.

Furthermore, when using Sketchbook Pro, to create marks of differing size, density, or texture, tools have to be selected from the menu. Several attempts were made to use different parts of the hand to make a mark and naturally the marks stayed constant and really highlighted the fact that whatever part of the body became involved, the mark would stay as programmed. It was interesting to consider why you would enter into this type of behaviour with a different medium to traditional drawing media; you do not pick up a piece of clay and expect it to move across a surface as a piece of charcoal. The point was, whilst the tactile quality of the medium differs from that of traditional drawing media – there is no gritty residue dust or chalky smell - the visual quality was such that at times it was difficult to remember you were working on a digital interface; the drawing apps gave a sense of drawing with traditional media. The tools you can draw with do have the resulting mark that can be found when using graphite for example. Using the Brushes app, Hockney (in Grant 2010) states, “… sometimes I get so carried away, I wipe my fingers at the end thinking I have got paint on them.” The marks on screen become believable as charcoal, graphite or paint, whatever tool you have selected and therefore familiar visually but unknown behaviourally. The tactile nature of drawing with an Apple iPad is very different to that when drawing with traditional drawing media. The screen has the same tactile quality whether the tool chosen is charcoal or pen. This again interrupts with

Figure 5. Deborah Harty. Digital drawing. (© 2011, Harty. Used with permission).
the expectation of what is seen - a charcoal mark, and what is felt - a smooth screen.

To alter the qualities of a mark you have to think what kind of mark you wish to make and select the tool, width and density accordingly to suit. The process of drawing is altered as the thought processes and pre-selection of mark rather than an interaction of body, tool and surface determine the drawing. The completed drawings still have the potential to appear as a traditional drawing on the screen, however the process is quite different. The Brushes app does have the capability of responding to the speed and pressure of the movement across the screen. So there is a sense of response to bodily movement through the corresponding mark. This again, however is altered; it does not matter what you used to make the mark, speed reduces the thickness of the mark, pressure increases or decreases the transparency of the mark. Therefore whatever you chose to draw with does not affect the resulting mark. This was a disorientating experience; being use to utilising different parts of the body to vary the mark, it was hard to re-programme the self not to behave in this way.

After the production of several drawings discoveries of the possibilities and limitations of the apps began to affect the appearance of the drawings. One discovery was of a blur tool that in some ways had a similar quality to smudging with the added benefit of the backlit screen, which alluded to luminosity. When the blur tool was used the drawing had the appearance of luminous fluidity reminiscent of the flickering changing environment experienced during the activity of swimming (Figure 6). Familiarity with the apps eased some of the earlier difficulties of bodily engagement and the process of drawing settled into a pattern of thought, choice of tool and movement of the middle finger.

Continuing to work within the capabilities of both the drawer and apps, several drawings were made that attempted to draw together the elements experienced during the activity of swimming. Similar marks and process to those created during drawing with traditional media were at times influencing the Apple iPad drawings, however the process became reciprocal. There was a point in time where discoveries made whilst drawing with the Apple iPad apps began to initiate approaches and experimentation when returning to draw with traditional media.

This is in evidence in Figures 4 and 7. Figure 7 was produced first as an experiment in combining the breath bubbles with the qualities of immersion, luminosity and directional flow. This influenced experimentation with the same qualities when drawing with traditional media. The appearance

Figure 6. Deborah Harty. Digital drawing. (© 2011, Harty. Used with permission).
Figure 7. Deborah Harty. Digital drawing. (© 2011, Harty. Used with permission).
of the drawings is distinct to the media used, however it is arguable that the drawing in Figure 4 would not have been made without the presence of the drawing in Figure 7.

A further capability of Sketchbook Pro app was the potential to incorporate text into drawing; in affect with this app you can use text to make a mark. Series of drawings were created to experiment with this potential. Words from the passage of phenomenological text, detailed earlier in the chapter, were incorporated into the drawings. Considering the text as marks with which to draw, the phrases and individual words were repeated, layered and inverted. The text suggestive of the physical and psychological elements experienced during the activity of swimming adding a further possibility to the drawings to incorporate phenomenological elements of the experience of the activity of swimming with repetitive strokes (Figure 8).

**Drawing is Phenomenology**

Drawing with traditional media is an immediate and intimate activity. The marks appearing on the paper directly respond to the thoughts and subsequent bodily movements through the trace on the paper’s surface. When an eraser is used traces of the medium and indentations in the paper’s surface remain leaving a residue of both the process of creation and the drawer’s thoughts. Fisher (2002: 222 in Newman & De Zegher 2003) states,

... the act of drawing makes possible the magical identity between thought and action because to draw is the quickest medium and can therefore protect the intensity of thought. To draw is never a transcript of thought (in the sense of writing) but rather a formulation or elaboration of the thought itself at the very moment it translates itself into an image.

Drawing through response to the identified experience is made manifest in the marks upon the surface, as the memories are recalled and simultaneously translated into drawing. This process is immediate, thoughts and bodily movement working as one, recording the experience in the drawing. As Rosand (2002: 110) states, “Drawing records what has been seen and is known, but not after the fact – it is simultaneous with, and, for the draftsman, identical to perception.”

Merleau-Ponty (1964, 2004) suggests the artist is able to communicate his specific mode
of being-in-the-world through his art, revealing the world through the trace left on the canvas or paper. “It is by lending his body to the world that the artist changes the world into paintings […] that body which is an intertwining of vision and movement” (Merleau-Ponty 1964: 162). Merleau-Ponty (1964) suggests that the artist is able to recreate in his artwork the specific phenomena of the world, rather than a reproduction of how it is presumed to appear, through the mediation of his body. As Rosand (2002: 16) states, “The gesture of drawing is, in essence, a projection of the body …” the body that is mediator between mind and world.

As discussed earlier the embodied process is somewhat altered when drawing with an Apple iPad. The process is immediate, in terms of the marks appearing in direct correlation to the movement of the finger. However, there is a pause in the process as media are selected from the menu. Consideration was given to how/whether this pause interrupted the relationship between thought and action and subsequently the phenomenological process. Initially, the pause to choose or alter the drawing tool appeared to interrupt the process as the usual spontaneity experienced during drawing with traditional media was diminished. As a consequence this affected the continuity of recall and embodiment of mind and body, thought, and action. Initial reflections then conceded that drawing with an Apple iPad could not be considered phenomenological as it interfered with the mind/body engagement and embodiment with the process.

However, as familiarity with the apps menus and the subsequent marks grew, so the pause to choose or alter the mark was reduced. As the tool selected made a mark determined by its settings, over time awareness of the vocabulary of marks enabled a more fluid and spontaneous process of drawing. Furthermore, as familiarity with the tactile nature of drawing on the interface increased the movement of the fingers became more sensitive to the capabilities and limitations of the device. Once this level of understanding of the device was reached, the process of drawing appeared to be spontaneous and immediate, attributes ascribed to drawing with traditional media. As Hockney (in Weschler 2009) states, “There’s this wonderful impromptu quality, this freshness to the activity …” Therefore, it could be argued that when the process of drawing with the Apple iPad became intuitive the process, whilst altered, became phenomenological and capable of recording the experience of the activity of swimming in the drawing.

When considering the potential of drawings created with the Apple iPad to be phenomenological, that is, to record their own making, once more the process differs from that when drawing with traditional media. As when drawing with charcoal or graphite, layers of marks can be built up and overlaid when drawing with the Apple iPad apps. Through the use of the transparency tool there is the potential to use the various chosen tools with greater transparency to reveal the under layers of the drawing. In this respect it is possible to create a drawing with the sense of its own history built into the surface. However, it is equally possible to erase marks, layers and even an entire drawing without a single trace or residue of its existence. In this respect, without the physicality of the indented paper to reveal the initial layers, the final drawing does not necessarily hold the essential information to reveal its own making. Therefore it is reasonable to assert that a drawing created with an Apple iPad is not phenomenological.

However, in contradiction with this statement, the Brushes programme has a ‘playback’ feature that enables you to view the whole process of drawing. When the playback feature is utilised, the screen goes blank and replays the marks as they were drawn, albeit at a greater speed. In this sense the drawing’s entire history is revealed including anything erased and no longer discernible in the final drawing. Therefore rendering a drawing created in the Brushes app to be phenomenological.
CONCLUSION

The chapter has discussed experiences of water during the activity of swimming repetitive strokes in a swimming pool, highlighting the physical and psychological elements experienced. This included a feeling of weightlessness, fusion, transient light and meditative calm induced by the repetition of the action. It was suggested that the experience of swimming had resonance with feelings of immersion, fusion and security experienced whilst in the protection of the womb. The discovery of the mark of the breath bubble whilst drawing, aided understanding of the experience of transience, hypnotic repetition and directional flow experienced during the activity of swimming.

In conclusion, drawing with traditional media does have the potential to record the phenomenological experience of the identified activity of swimming in the marks on the surface. Also, due to the impossibility of complete erasure drawings created with traditional media do have the potential to record their own making, in this sense the drawings are phenomenological. With these considerations in mind, it is argued that drawing with traditional media is phenomenology.

In comparison, once the process of drawing with the Apple iPad apps becomes intuitive, the drawings also have the potential to record the phenomenological experience of the identified activity of swimming. The intuitive process, which allows for continuous drawing, is important in maintaining the embodiment of mind/body/drawing. This in turn initiates the same qualities of immediacy of mark, and intimacy between the mind, body and screen, as experienced during drawing with traditional media – a decision initiates the movement of the body, which in turn leaves a mark. Whilst the apps determine the mark made this did not restrict experimentation and discovery through the drawing. As discussed previously, there were discoveries made whilst drawing with the Apple iPad that influenced decisions when drawing with traditional media; drawing with the Apple iPad therefore furthered knowledge and understanding of the identified experience.

It could be said that the process of drawing with the Apple iPad apps is not phenomenological as the completed drawing does not contain all the evidence of its making; the drawing can be erased and redrawn without trace – unlike drawing with charcoal or graphite, erasure is complete. However, the Brushes app has a playback option where you can watch the process of drawing from start to finish, revealing the process in detail through the virtual playback. Therefore, there is the potential to record and view the drawings own making albeit not present through visual indication in the final drawing.

With all these issues considered the conclusion is that drawing is phenomenology and whilst the use of the Apple iPad may alter the process of drawing, ultimately it is still pertinent to state that drawing with the Apple iPad apps is phenomenology. However, the final digital drawings as they appear on screen are not phenomenological – they do not reveal the marks of their own making – and this is arguably what is considered distinct about drawing, setting it apart from other creative processes.

FURTHER RESEARCH

The chapter has discussed a particular experience of the activity of swimming repetitive strokes in a swimming pool. It would be interesting to consider alternative experiences of swimming and water to gain further insight into the physical and psychological experiences of this life sustaining fluid.

The chapter has also discussed a particular device for drawing, the Apple iPad, and two apps – Sketchbook Pro and Brushes. Further research could be investigate other drawing interfaces and what affect they may have on the premise that drawing is phenomenology.

It was not within the remit of this chapter to discuss whether there was a benefit to the use of
an Apple iPad over or alongside drawing with traditional media, therefore it would be interesting to carry out research that aims to discover the advantages and disadvantages of the use of both traditional and digital media for drawing.

REFERENCES


**ADDITIONAL READING**


**KEY TERMS AND DEFINITIONS**

**Experience**: An experience, as opposed to experiencing, is clearly defined by having a beginning and an end and contains all that appears to consciousness during the time of the experience – elements of both the physical attributes of the phenomenal world and what is experienced internally.

**Fusion**: Refers to a state of consciousness that generates a feeling of being part of, not separate to, the environment; a fusing of both internal and external elements in consciousness.

**Immersion**: Refers to the state of being fully immersed in water, in this context during the activity of swimming.

**Phenomenal World**: Relates to the world as it actually appears to us as human beings.
Phenomenological Process: The process can be two-fold: firstly, a process that aims to uncover the nature of a thing – in this case an experience – as it appears to consciousness in order to gain understanding; secondly, a process that has the potential to record the progression of the process – i.e. a drawing that records its own making.

Phenomenology: An approach that necessitates the study of experiences as they appear to consciousness, without the frame of social constructs and expectations.

Process of Translation: The process of drawing to gain understanding of the experience through reflecting on the finding of equivalences in drawn marks to elements of the experience.

Repetition: A repetitive action carried out with the body; the repetitive action initiating a rhythm due to the impossibility of absolute repetition generating variation in the repetitive action.

Swimming: The activity of repetitively moving through water; repeatedly submerging and surfacing in rhythm.

Traditional Drawing: Drawing with media considered to be part of traditional processes of drawing. In this instance, paper, charcoal and graphite.