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Digital gardens with *real* toads in them: the place of heritage media in a digital art and design education.

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Abstract: *At a time when digital media is regarded as orthodoxy in education, in advanced global economies there is a pressing argument to review the lessons of the past and reflect on whether they are still applicable. This paper will enquire into today's issues with digital practices in art and design education using relevant, historical examples from the main changes in approach of the last century. It will also explain how the changes of approach to art and design education has affected the choice of materials, the stress on different skills and the values of different creative arts within the subject. From a position as a practitioner in the moving image, and in response to this autoethnographic research, the author puts forward a pluralist approach to teaching design, through a hybrid of particular aspects of 'heritage' and digital practices.*

Keywords*: design education, drawing, digital, hybrid practices.*

INTRODUCTION

When Dick Field wrote his landmark study "Change in Art Education" (1970) the debate on the relevance and place of art, design and craft education was as strenuous as it is today (Addison, Burgess et al 2010; Steers 2009). This paper seeks to contextualise today's issues with the combination of digital and heritage practices in art education, and disseminate the pertinent changes of the last century in order to explain how the changes of approach to art and design education has affected the choice of materials, the stress on different skills and the values of different creative arts within the subject. In this research of teaching and learning practice in digital art and design, the author uses autoethnographic methodology to look at the significance of storyboarding, and argues for the importance of learning by hand through drawing.

THE PLACE OF DRAWING AND CRAFT PRACTICES IN THE CURRICULUM AND THE ECONOMY

In their "A Manifesto for Art in Schools" Art is defined as referring to Art, Craft and Design (Swift and Steers 1999). The disappearance of the words "Design" and "Craft" have caused significant anxiety amongst "Art" educators for many years, and indeed there has been increasing concern that art would also lose its place as a distinct subject within the school curriculum (Hughes 1989; Peers 2011). "Craftsmen are being made to feel inferior fellows, instead of the salt of the earth as Morris and Gropius believed. Art and Design are being separated" (NSEA Journal editorial 1981 in Hughes 1989, p.126). The concern remains that art, as a subject would be marginalised unless it could justify its position by providing employability, economic value and literacy (Hughes 1989; Peers 2011), and it could be argued that this is where the relationship with art and technology is critical, "failure to familiarise children at school with the use of such technology inhibits their imaginative potential" (Warnock in Hughes 1988, p.132).

In Australia a similar concern exists, Peers argues that the dropping of "art" from the "National Review of Visual Education" (2008) is a symptom of the neo-liberal politics that encourages market forces to dictate curriculum provision and further commodifies the human capital of children: "in educational terms, it no longer matters whether knowing

is authentic so much as whether the performance can be capitalised" (Peers 2011, p.420-1). Technical skills appear to have economic value, expanded consciousness and creative thinking seem harder to quantify and therefore value. Measuring the value of art and design education against economic human capital has been an aspect of industrialised societies in the twentieth century (Wood 1996), as Field also illustrates: "throughout the thirties there were complaints from industry and commerce that the schools of art were failing to produce designers of much practical use" (Field 1970, p.57).

Good teaching practice aspires to combine critical thinking and technical skills in order to develop individual creative expression. Many design courses at universities and art colleges are firmly grounded in a practical creative ethos that is relevant to industry's present and future needs. "The fusion of technology with the creative and digital industries is as vital to the UK"s economic growth as that of science, engineering and manufacturing" (Council for Industry and Higher Education 2010).

Art and design pedagogy and the teaching of the use of materials and technologies of creative practice are taught continues to be informed by the work of Dewey (1934), Bruner (1960) and Polanyi (1964). An analysis of current teaching practice also reveals remarkable similarity to Field's experiences over forty years ago.

LEARNING THROUGH MATERIALS

Over the last century there have been various challenges that have impacted on the provision of materials, but while war years brought scarcity, more recently budget cuts and government policy have made an impact (Facer 2011). Sometimes scarcity is the mother of invention. Field describes it as a "revolution", because the utilisation of new materials changed the working processes and assessment culture in art education.

The Bauhaus and Modernist approach was to re-educate the student to be more individual and sympathetic with their materials, and it changed the relationship between artists and technology (Itten 1963). The response of the teacher and the child in 1950 is still relevant to the digital age today, because both the teacher and the child had to "start from the same base; both had to invent or discover, to respond to the material, to find ways of using it, to accept the thing made" (Field 1970,

p.14). Working and learning with new materials and technologies brought "a clarity of vision with respect to the material, a sincerity of response" (Field 1970, p.14). This differed from the response to traditional materials through "the conventional way" because new concepts of skill had to be developed "while actually doing the job" (Field 1970, p.14). The process became as important as the finished artifacts. But what really stands out as a parallel to today is that "many teachers soon realised that new media might serve as a stimulus for failing interest or as a compensation for lack of success in other directions" (Field 1970, p.15). This echoes Wood (2003) who claimed similar success with digital media in modern artrooms. The 2009 OFSTED (The Office for Standards in Education, Children's Services and Skills) report on art education in England and Wales found that digital media was making a positive impact on pupils" attainment and the exploration of abstract concepts. The report found that students (particularly boys) improved in art classes when ICT was provided. Students who struggle with traditional media find recognition as competent manipulators of digital media (Wood 2003), which "is often supported by considerable home use" (Davies and Worrall 2003, p.92).

In 2004 Scottish primary schools in the Angus district took part in a four-year pilot with Scottish Screen (now Creative Scotland). The Moving Image in Education initiative was a programme that used literacy, numeracy and visual skills to make short films and animations. Bazalgette (2009) reported that this pilot had provided previously failing or excluded learners with access to the curriculum, and built bridges between "home "and "school" cultures and knowledge, a view shared by other recent reports (Wood 2003; Lord, Jones et al 2007). Other key findings were that moving image offered different routes into concepts of literacy, and it gave learners a sense of agency and autonomy that supported self-confidence. I would argue that this is possible through the collaboration and nonlinear line of imaginative inquiry associated with digital making. For Sullivan (2010) this is evidence of motivation and engagement on a deep emotional level rather than an organised division of labour.

> As such, concepts of collaboration are grounded less on notions of expert systems that divide up roles in terms of ends and means, or design and delivery, but more like shared wonder that requires new

> ways of thinking about visual and virtual systems of inquiry. (Sullivan 2010, p.158)

Younger children still approached physical materials with the same elastic and flexible approach that Field (1970) acknowledged, but using a hybrid practice they also synthesised them into a digital world as collages became scenic art or 3D models became characters.

Dewey and Bruner argue that the availability of the tool affects the thinking and creative problem solving ability of the learner. “The pupil operating as artist must “think” in his (sic) medium; his subject matter is, in Dewey’s words “the qualities of things of direct experience” (Dewey 1934)” (Field 1970, p.45). Bruner (1960) sees the culture of what tools are available and how they are organised as also being fundamental in how cognitive ability develops, which arguably have special relevance to design. “Design is a compound of artistic, social and technological elements” (Field 1970, p.61).

> During modernist times, the prevailing construct was “to *see* is to know”. This was grounded on empirical understanding based on direct experience and it was mostly achieved by participation in the grand tradition of cultural tourism…During postmodern times, we live in a mediated visual world where there is little distinction between the real and the virtual. If we understand the constructions that shape what we see, then “to *know* is to see” (see Rose, G. 2001 Visual Methodologies). (Sullivan 2010, p.171)

Sullivan (2010) brings the subject to the mediated world of contemporary postmodern times and the importance of moving image in art education to increase learner literacy, in both text and visual modes, by thinking and learning through this media. Wells, Hardstaff and Clifton (2008) argue that animation teaching must be flexible enough to maintain the evolution of a robust critical methodology.

> All arts education should be about incitement, not about complicity, and this is something that the freedoms of expression in animation can readily accommodate. (Wells, Hardstaff and Clifton 2008, p.21)

Moving image offers stimulating opportunities for screen-based digital skills, 3D modelling and drawing to develop together, allowing contemporary modes of creation to be taught in a structured programme in an arts context. Within the craft there is freedom to critically interpret and think while doing.

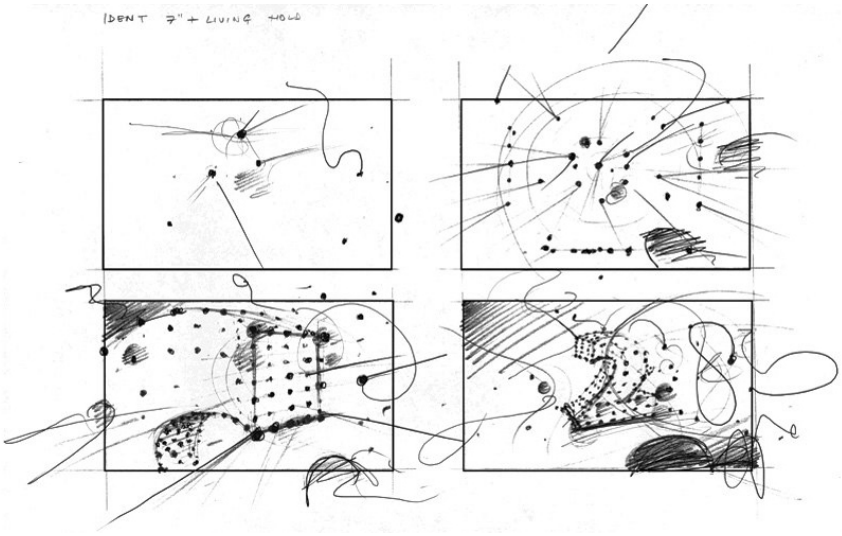

Figure 1. Storyboard for BBC 2 ident. Source: Gouldie 2005.

STORYBOARDING- PRAXICAL KNOWLEDGE

There are several reasons for learning to draw in a digital age. Krcma (2010) argues that drawing can be given new visibility and purchase, re-energised as it enters a transformative relation with other visual technologies. Hanna (1998) argues that drawing with pencil and paper has been superseded in design by computer-aided design (CAD) and the digital pen and tablet technology. In architecture "the uniqueness of sketching as a design tool…is an outdated and inaccurate concept…CAD is not a tool; CAD is a medium" (Hanna 1998, p.39). Architects may well be able to visualize 3D space more rapidly with the building blocks and tools CAD offers on screen, but for the motion graphic designer and film director the process of drawing a storyboard (see figure 1.) offers an immersion into the visualisation of 2D, 3D and 4D space (Wells 2008).

> Drawing is considered the most intellectual of the visual art disciplines …because it is the primary means by which artists and designers initially depict three-dimensional form, conduct inquiry and conceptualise their works. (Addison & Burgess 2007, p.204).

The contemporary art practice of William Kentridge provides an example of a creative approach that uses drawing to find new ways of thinking. Both Bolt (2011) and Krcma (2010) use Kentridge to illustrate the particular theoretical understanding of creative practice that comes from our "concernful dealings with our materials" (Bolt 2011, p.94). Krcma (2010) gives a similar account of how Kentridge comes upon aesthetic or narrative problems within his drawn films, which become opportunities where he finds new ways of thinking through the act of drawing. It is "the contingency of circumstance and the "interference" of material process, which encourage what art historian Barbara Maria Stafford has called "nonformalizable moments of flexible insight" (Krcma 2010). According to Montgomery-Whicher drawing appears to be "marginalised by new image-making technologies" (Montgomery-Whicher 2001, p.10), but the significance of drawing will endure because of its very difference to dominant practices and media.

In broader theoretical terms, Heidegger directs us to experience the world, by being-in-the-world as Dasein, in order to understand it. Practical knowledge is not atheoretical, because "handling is not blind, but produces its own kind of sight" (Bolt 2011, p.96). Our theoretical understanding allows us to use materials, tools and processes with care, "handling as care produces a crucial moment of understanding, and that understanding is a revealing of possibility in its very possibility (Bolt 2011, p.97). Discovering a Heideggerian praxical knowledge through our skill, Bolt (2011) sees Kentridge"s account of his practice as "material thinking", referring to Carter (2004) who suggests that materials have "their own intelligence that come into play in interaction with the artist"s creative intelligence" (Bolt 2011, p.163). This has pedagogic relevance in the teaching of students in the creative arts. Students themselves can recognize that they can best learn through actually handling a material or "doing it" (Macdonald 2012). Montgomery-Whicher (2001) also takes a Heideggerian view to explain how drawing can counter an enframing of the world, by expanding and increasing the detail of our vision, and through a focal practice that brings contemplation it can centre our lives.

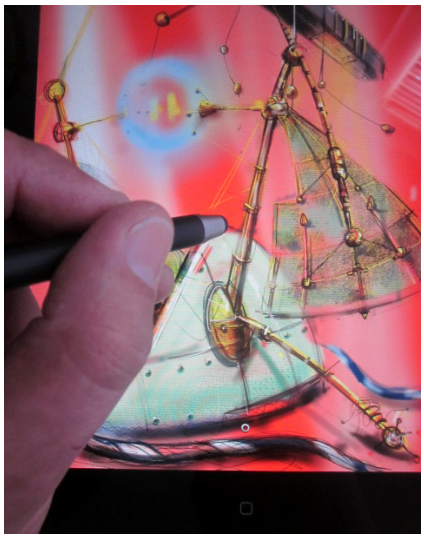

Figure 2. Drawing on an iPad. Source: Firth 2013.

When I am working at a storyboard, as I draw I am visualizing the movie in my mind. I immerse myself in the setting and the narrative; my pencil becomes part of me as I think through the sequence in a series of frames. It is a similar approach to the word association drawings of Marion Richardson, the pioneer of progressive art education in the New Education Movement of the 1920s, to let the inner imagination express itself (Holdsworth 1988; Smith 1996). I am only conscious of the material when the lead in the pencil breaks. Heidegger reminds us that it is only at these moments of technical failure that we become aware of the being as equipment (Heidegger 1954). Our helplessness without the presence of useable equipment becomes apparent. The product designer and lecturer Richard Firth, recognises the difference in the digital and analogue materials when it comes to making mistakes. Firth draws directly on a digital screen using an Apple iPad (see figure 2.), but finds that the drawing "lacks the scars of the thinking process" (Firth interview conducted by author 2011) which would normally be evident in a drawing on paper. These scars represent points of learning, and act as reference points of thinking and mark the living experience with the medium.

The artist David Hockney, a vocal advocate for drawing, most recently exhibited a series of digital drawings, created on his iPad, at the Royal Academy, London (2012). These drawings, made by using the side of his thumb and sent electronically to friends to share, are described as "as delicate as a Turner, luminous as stained glass and as hi-tech as any art

being made in the world today" (Gayford 2010). It is over ten years since Raney (2001) wrote of her Palm Pilot study with an artist in school intervention, now that digital hand drawings have been elevated to public display at the Royal Academy, children may not find the experience of drawing on an iPad as levelling and as less self conscious as on the far cruder Palm Pilot. Gombrich (2002) explains how representational drawing depends on schemata that is learnt culturally. In some of the new media, such as the Palm Pilot in 2001, there is not an established schemata to conform to. Further research exploring whether technology achieves greater sophistication to mimic traditional media should be explored, taking into account traditional schemata, and expectations of traditional drawing skill transferred to the new media.

When teaching moving image I begin with taking the students through my own storyboards. The storyboards provide a learning tool, a drawing that represents my creative thinking and visualisation of a script or brief. Adams (2001), the coordinator for the Big Draw, the education programme for the Campaign for Drawing, defines three functions of drawing. These can be applied to storyboarding. The first is drawing as "perception", for personal pleasure or insight. In my practice a director can begin an idea with the crudest outline sketch, as the legend has it "on the back of a fag packet" or "napkin". Secondly it can be worked up into greater detail for client presentation: a drawing as communication. Thirdly, drawing as "manipulation" it can allow the director to reflect, refine, discard and develop a sequential narrative of images or scenes that illustrate a moving image film. By visualising camera angles, arranging the elements in the shot that need to follow the script or idea, a mosaic of shots can be laid out (see figure 3.). Often it is useful to photocopy and cut them out to allow more fluid thinking. Each frame can represent either a significant point of different action or another shot entirely. It can represent a fraction of a second or many seconds.

Conceivably, because it can be read as a comic strip, many filmmakers and advertising agencies commission storyboard artists with a graphic comic book style. However, the idiosyncratic drawing style of an individual designer or director can communicate just as well and it allows a more intimate and personal involvement with the project, which can be communicate a compelling visual understanding of the film. For some students it can be a challenge to visualise different angles and depth of action, so I may suggest that they find suitable secondary picture references to trace and collage rather than draw from imagination.

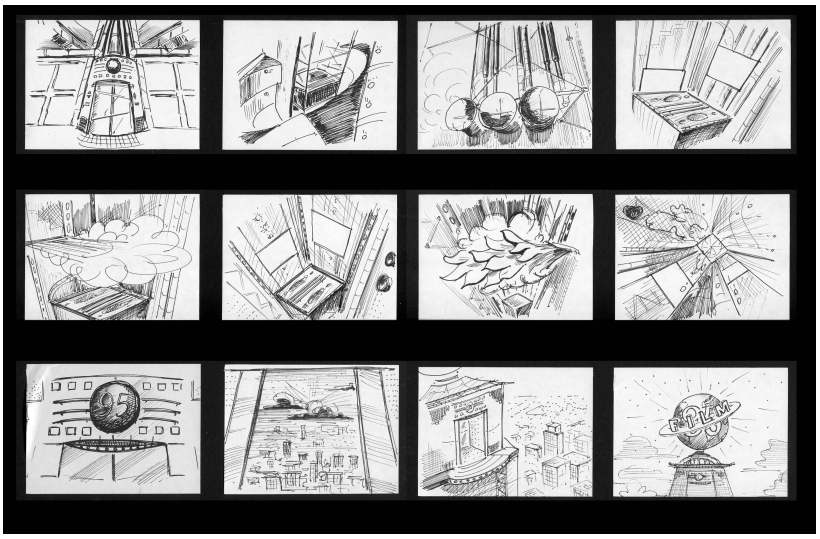

Figure 3. Storyboard for BBC 'Film 95'. Source: Author 1994.

Unfortunately, some clients can only read a storyboard when they see it moving, and this can be especially true with motion graphics, which can often have a more abstract composition and compressed duration than a commercial. Many of my television clients had a literary arts education rather than a visual arts one and often when discussing a brief I was relied on to translate their script into images, whereas in advertising an art director would begin a creative discussion with their sketched storyboard. This was expanded and developed with my own creative input. With camera technicians, set designers and props my storyboards were read literally as a builder would follow an architect's plans, or used suggestively if required. Filmmaking is a team effort and often there can be a better outcome from embracing colleagues" suggestions as a result of offering them creative breathing space. This can be replicated to some degree in the classroom with small group tutorials that allow the student to present their storyboards to their peers for feedback and evaluation of the means and content of what is being communicated.

In this study, the storyboard's validity in the digital age is questioned. There still appears to be a high demand for someone who can draw, but also someone with the expert knowledge and experience of a director who can visualise a script for a client, be it in advertising or feature films (Wells 2008). Within the motion graphics industry creative directors still regard drawing as a highly desirable, if not essential, skill to have when looking to employ new graduate trainees (Wormleighton interview

conducted by author 2010). Designers and directors need to be able to express and think their ideas through their hands, and as Kentridge demonstrates in his work, drawing can be a process of thinking as well as learning.

HYBRID FUTURES IN ART EDUCATION

In "Why throw the negs out with the bathwater?" (Macdonald 2012) it is argued that there is a digital orthodoxy, especially within education, in response to the anxiety to prepare children for a digital future in a global workplace. By focusing on lens based media within art education the paper revealed sites of resistance and alternative pedagogic practices that provided a more pluralistic learning environment. Contrary to public opinion not all young people are "techno-geeks", some find heritage media not just "cool", but more tactile and real – qualities that they value in the digital mediated world that they grow up in (Macdonald 2012). There are several advantages, it could be argued, to a hybrid of heritage and digital approaches to education in the visual arts.

The first advantage could be to bring art and science closer together. Current thinking on the future direction of education as whole suggests that there should be greater convergence of skills across the arts and science. In the 2011 MacTaggart Lecture at the Edinburgh Television Festival Dr. Eric Schmidt, CEO of Google, called for an end to the pigeonholing of "luvvies and boffins" and that tomorrow's graduates should not see themselves segregated in such narrow definitions (BBC 2011). Sullivan argues that new digital technologies can provide the bridge between art and science:

> It is the development of newer technologies sparked by the digital revolution that is forging links between the arts and the sciences. And for Wilson (2002), the arts are crucial to this enterprise as they "can fill a critical role as an independent zone of research, in which artists integrate critical commentary with high-level knowledge and participation in the worlds of science and technology" (p.35). (Sullivan 2010, p.163).

John Maeda, Director of the Media Lab at the Massachusetts Institute of Technology, argues that education should enable people to become

"humanist-technologists" through a "post-visual arts education". Art and technology "compliment each other in a necessary union of relevant vision united with relevant construction" in a purposeful learning environment (Maeda 2000, iv). This approach is not as new as it may seem. Maeda (2000) acknowledges the tradition of the Bauhaus and the art educational research of Josef Albers and Moholy-Nagy to find an appropriate pedagogy at a time of unprecedented technological advancement and mechanization during the 1920"s.

Other American East coast academics, such as Lupton and Phillips (2008) at Maryland Institute College of Art (MICA) in Baltimore, also draw on Bauhaus approaches that combine a humanistic (individual rather than machine centred) approach to using technology to describe and interpret visual forms in design thinking. At The Cranbrook Institute of Art in Michigan "the messiness of human experience is warming up the cold precision of technology to make it livable, and lived in" (McCoy & McCoy 1990, p.14). In a reaction to the rational, systematic approach of Modernism they have embraced expressive rule breaking and deconstruction since the eighties. Cranbrook would argue that they offer students a pluralist approach to suit the individual rather than the singular philosophy of the Bauhaus.

There are other voices that suggest "algorithmic thinking requires an analytical bent of mind" (Vidwans 2008, p.152), and that we need to "develop technological intuition without losing aesthetic intuition" (Huang 2008, p.167). Huang (2008) suggests a more Eastern philosophical approach using Wu-Wei to develop a mastery of technology in harmony with artistic practice. This is contrary to Western thinkers such as Heidegger who would advocate that we work with technology rather than attempt to master it.

It is significant that some of the most radical and highly reputed art and design education institutions are using new technology to bring art and science together, but retaining a pluralistic approach that accommodates heritage practices to interrogate and often subvert the original use of new technology. Kittler (1999) describes a world that will only be conceived and experienced through digital media where cables connecting computers form a human bypass, removing us from the information highway loop and so "computers themselves become subjects" (Kittler 1999, p.258). This is surely a dystopia we must avoid.

Another advantage of a hybrid approach to visual art education is linked with literacy. Futurists such as Alvin Toffler acknowledge the continuing technological change necessitates that people must continue to educate themselves, otherwise the 21st century illiterate will be "someone who cannot learn, unlearn, and relearn" (Toffler 1971, forward). Illiteracy at its most basic level of reading and writing is a central concern across the world so Toffler warns us of the potential for greater social and economic inequality. In the UK and other developed countries the rapid increase of digital processing power at a corresponding falling cost has allowed a democratization of digital media and communication. (Moore's Law follows that £1000 of memory today will be worth £1 in twenty years time (Facer 2011).) While some contested the assumption that the use and availability of digital media was universal with UK children (Hall in Stanley 2009), it is evident that each year it becomes a reality. The impact of this is that "those children with access to digital technologies outside school, such resources have the potential to intensify the impact and reach of their informal learning" (Facer 2011, p.19). Within this there will continue to be inequalities.

> Importantly, some of these augmentations will have the function of empowering and extending children's agency, others may be administered to limit, and control them, and these different patterns may play out along lines of wealth, ethnicity and gender. (Facer 2011, p.54)

Wildermuth (2010) argues that education should focus on empowerment rather than digital inclusion. There are striking imbalances across the globe where the vast majority of humankind is without the physical resources or skills to be a digital citizen. In India, the Sarai research project in Delhi has challenged the cultural Western hegemonies and the digital divide by bringing together artists, activists, urbanists, theorists and critics on a hybrid mission to share learning (Lovink 2005). Nations such as Brazil, India and China are rapidly growing economically and have enormous resources of people. These nations, increasingly, will bring innovation and a resourcefulness, which includes heritage and digital practices, to education. Having taught recently in China I have witnessed the appetite to adapt and embrace new educational research, to involve handcrafts and digital skills to model and develop 3D designs.

As digital technology develops it seems to mimic more analogue experiences and so bring a whole new dimension to education. Haptic literacies that grow through heritage skills and analogue processes are likely to be developed in digital technologies that have motion sensors, for example those technologies found in the Wii. Information and experimental designs could be felt and navigated through in a virtual simulation. The speed of reflection and action is further accelerated; the plasticity of a design process becomes greater. It "bridges the divide between the academic and vocational knowledges, between knowing "that" and knowing "how", between reflection and action" (Facer 2011, p.65). Of course endless plasticity and a faster cycle of action and reflection may have a bewildering and overwhelming effect to less competent and literate artists.

> To be "literate" in this environment, is to be able to model, to experiment, to visualize, to verbalize, to write and to film (among many other things)…Educators will need to engage with the materials by which representations are produced, with the ways in which the hardware and software, the networks and biology of our modes of communication also serve to structure our possibilities for representation, modelling and comprehension. (Facer 2011, p.71)

The world is more mediated and so the experience of the learner, both young and old, is also more inter-textual (Darley 2000). "Nothing is finished, nothing is complete, nothing cannot be modified" (Facer 2011, p.75). The creative opportunities online allow for people to "mash up" music, video, text and image to create individual compositions and products. These can be found on fansites, which provide opportunities to create, disseminate and engage discourse far beyond the classroom. This heavily mediated experience may be creative, but it is far removed from Richardson's approach that viewed children's art with a Romantic purity of vision, or Heidegger's argument for unmediated authenticity. It is questionable whether authentic creative expression can ever be found or taught if the technology and media used allows for content to be easily so fluidly inter-textual. This may be the boundary between art education and media studies.

CONCLUSION

This paper has endeavoured to contextualise the challenge that faces art and design education in contemporary digital art and design. There are perennial similarities over the last hundred years on how the choice of materials has an affect on the relationship between art and technology. The changes that Industrialisation and American commercialisation brought to art education at the beginning of the twentieth century has resonance with the digital revolution in the early twenty-first century. Yet it can be argued that the place of drawing as a means of thinking through the medium remains a vital and immediate as it has no economic or social constraints. Whatever the label given to visual art education, the challenge remains to defend its purpose and role in education. The emphasis will change with the language used in its defence, depending on the audience it seeks to influence. Western Governments look to the economic value of the arts as a commodity, a workforce that can generate prosperity and economic growth. Within academia there is also the opportunity to bring art and science closer together through technology, and following Heidegger, a means of continually questioning the authenticity of the inner vision in creative expression.

Many art colleges and universities continue to support heritage and analogue facilities that attract and are appreciated by students. Digital monoculture can be found in higher education, but if it were to become the mainstream it would mark a significant threat to heritage processes that could atrophy and be lost forever. It is particularly important in my field of moving image and animation.

Pluralist approaches should embrace all visual arts education, to allow individual expression, a critical questioning and thinking using a choice of media and cross-curricula cooperation and exposure through new sites of public engagement, both physical and virtual: digital gardens with real toads in them.

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