**Distributed e-learning in Art, Design, Media: an investigation into current practice**

**Research commissioned by the Art Design Media Subject Centre – Higher Education Academy (ADM-HEA)**

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2. Introduction to the research context and review of relevant literature

**Context**

The project was commissioned by the Higher Education Academy Subject Centre for Art, Design and Media, and involved a national inquiry into distributed e-learning**.** For the purposes of the project and in this report a simple definition of e-learning was adopted, that is -

'Learning facilitated and supported by the use of information and communications technology.' (JISC, 2004*, Effective Practice with e-Learning*).

This definition supports the point made elsewhere that "e-Learning is fundamentally about learning and not about technology. Strategic development of e-learning should be based on the needs and demands of learners and the quality of their educational experience." (Joint SFEFC/SHEFC e-Learning Group, 2003); this focus on the learning experience was a key value in the research.

The project was intended to contribute to the identification of good practice in the development and use of virtual learning environments (VLE's) and in the use of learning and teaching technologies in art, design and media. Although the approach was one committed to allowing the views, values and meanings of respondents to emerge in the course of the inquiry, it had some broad outcomes in mind. The specific aims of the project were to:

- enhance the learning experience in art, design and media through an investigation of the potential of new technologies
- consider the ways in which IT allows for enhancement of the spaces in which learning occurs
- investigate the development of virtual learning environments and the potential offered by digital formats for interactive and distributed learning activities
- provide development-oriented advice based on research findings that can benefit all stakeholders in the subject areas of art, design, media, history of art and history of design in higher education

As this report indicates, most of these aims have been met at least in some degree.

The research rationale was based on a perspective that is relatively new in education; this involves the idea of 'distributed learning', or that knowledge is 'distributed' and shared across contexts, tools, persons and resources. It is very different from more traditional views that see knowledge as existing in isolation and out of context (e.g. in someone's 'head', or formally written down in a book). In other words, it involves ideas about learning that have been called 'social' and 'situated', so thinking about knowledge as constructed 'in situ' is the best way of considering this idea. This perspective on learning is a good match for practice-oriented areas like art, design and media which have a long tradition of creating knowledge and learning 'in situ', for example in hands-on situations in workshops and studios. In the contemporary context there is the potential of new technologies to expand the resources, tools and environments (or 'situations') in and through which learning occurs. The interactions between learners and new technologies are significant in this regard, as are the relationships built within e-learning contexts – for example, between learners and their tools and between members of similar or diverse learning communities. The potential for faster circulation of information through communication technologies is another feature of our distributed knowledge environment, bringing its own advantages and disadvantages.

It had been anticipated prior to undertaking the research that data would be forthcoming on the spatial and physical rearrangements taking place in teaching areas such as these to accommodate new, technology-assisted ways of working. In practice, this did not emerge as a major theme for respondents and they tended to discuss it only in passing; reporting on this aspect is therefore subsumed within the document rather than emerging as a significant sub-theme. Overall, though, there was plenty of evidence on the potential of e-learning to change existing practices; it was also clear that the process of transferring learning activities to digital forums could offer particular challenges to this sector.

**Insights from the literature**

Theories of learning and knowledge that are in themselves complex tend to be even more demanding when we attempt to consider their relevance to the field of e-learning or technology assisted learning. Discussions in the available literature help to clarify some of the issues that we need to bear in mind and although extensive literature reviewing will not be attempted here, it worth mentioning some texts that provided insights of relevance. These will be considered under five headings:

- Theories and models of learning and ICT
- Collaboration
- Teachers and Learners: views, needs and attitudes to e-learning
- The impact of ICT on specialist skills and processes
- Theories and models of learning and ICT

As yet, models of e-learning itself are still in development. However, some theorists have considered how technology can be used to enhance learning – for example, by achieving better learning outcomes, enabling more effective assessment and supporting efficient access to learning environments and resources. Mayes and de Freitas (2004) have conducted a valuable review of existing theories that offers a framework for understanding e-learning and attempts to map theory to pedagogical practice. A key aspect of pedagogy that they identify is the alignment principle in educational design, (Biggs, 1999), which they regard as crucial in securing coherent design for e-learning activities and approaches. This theory of 'constructive alignment' proposes consistency in the curriculum taught, the teaching methods used, the choice of learning environment and the assessment procedures adopted. This perspective promotes principled questioning of our underlying assumptions about learning, which in the contemporary context will include questioning

and uncovering implicit assumptions about the role of technology. It will also include a critical focus on the ability of diverse technologies to aid learners in achieving specified learning outcomes.

In discussing 'constructive alignment' of learning and teaching activities, Mayes and de Freitas (op. cit.) note that the adoption of a theory of learning is central to good pedagogical design. They examine the main perspectives on learning derived from psychological theory, and consider how e-learning might be conceived of from these approaches. While most contemporary debates about learning centre on the differences between the *cognitive* and *situative* perspectives, another view – the *associationist/empiricist* - was extremely influential in earlier forms of computer training within organizations. The pedagogy derived from this, known as instructional systems design, is based on the learner undertaking tasks in sequences of increasing complexity so that the teaching of knowledge and skills is 'from the bottom up' (op. cit., p.8). This approach has been sidelined by the recent prevalence of constructivist thinking, but the authors point out that it is still influential –

'Much of what is termed e-learning is still based in the training departments of organisations within a training philosophy that is traditional instructional design …[which] consists of principles that are widely accepted within the organisational training culture." (op. cit., p. 14)

The *cognitive* perspective envisages learning as achieving understanding and has a strong focus on conceptual development. However, mainstream cognitive approaches to learning have increasingly emphasised *constructivist* assumptions that understanding is gained through activity, usually construed as 'intellectual' activity. This is partly a reaction to traditional didactic models of teaching, which have become discredited due to strong evidence that they do not produce the understandings that they seek to 'transmit' to learners. Nonetheless, a transmission-based didactic approach has persisted in many fields (although it has been less prevalent in art, design and media) because of the '… strong folk tradition that compelling explanations will lead to better learning." (ibid., p. 15). Mayes and de Freitas note that there is a crucial point here for e-learning, which often tends to adopt an approach based on providing similar 'explanations' albeit in an enhanced, multimedia format -

'… the presentation of subject matter using multimedia is based on a discredited idea – that more vivid and naturalistic representations of knowledge would lead to better learning – a misconception responsible for much of the disillusionment that resulted from computer based learning in the 1980's and 90's' (ibid.)

This raises the problem of how to bring new knowledge to learners, and the research in this field indicates that it must be built on the foundations of already existing frameworks, though problem solving activity and feedback. Mayes and de Freitas describe how, in a constructivist view of learning, activities that build understanding have two main features. They comprise:

Interactions with material systems and concepts in the domain
Interactions in which learners discuss their developing understanding and competence

In terms of fulfilling these precepts, the characteristic pedagogies associated with many fields of art, design and media appear to provide a good match; what immediately comes to mind is both the materiality of studio/workshop practice and the specialist discourses in use in these subject communities (see Logan, 2007). Such attributes are not necessarily a 'given' of all art, design and media learning, but are likely to exist in domains which (whether practically or theoretically oriented) are predicated upon interactions with material cultures and their related conceptual frameworks.

Other constructivist ideas enable us to consider how e-learning works; for example, rather than giving us the individual learner as the unit of analysis, *activity* theory leads us to see learning as an activity system. It therefore involves consideration of the connections between participants and purpose, and the mediation of this by tools, which make activity possible. Tools can be both

physical (networks, books, software) and cognitive (concepts, language memory) and they can both enable and constrain activity. In this perspective learning is 'distributed', with thought and intelligence being stretched across the larger structures of activity. Learners need support (or 'scaffolding') as they embark upon areas of activity in which they as yet lack competence. If web-based learning environments are in use, for example, tutors will need to be able to support students by their pedagogical use and monitoring of email, management of discussion forums and deployment of synchronous communication tools. The idea that e-learning will release teachers from responsibility for their students' learning is misconceived when considered from this perspective; the high resource demands involved in making pedagogically-informed arrangements for e-learning also need to be recognized.

The third approach to learning scrutinized by Mayes and de Freitas is the *situative* perspective. This characterizes learning as 'social practice' with an emphasis on the development of disciplinary practices of discourse and representation, collaborative learning outcomes and the development of learning relationships with peers. The writers bring out two aspects that are of particular relevance to the current research – the embedding of learning within the immediate social context of the educational setting *and* the opportunities that situated approaches acknowledge for learners to become participants in wider 'communities of practice.' In the vocationally-referenced areas that constitute much of the art, design and media sector both of these opportunities are significant, with learners centred on their course programmes but oriented towards professional destinations. It is therefore useful to hear of innovations with ICT informed by this approach, and Mayes and de Freitas describe some of these. They describe Goodyear's (2002) account of networked learning as involving knowledge-sharing and a phased learning cycle. The various phases of this cycle cover externalization (of tacit knowledge), sharing, discussion, refinement and then internalization of understanding, with online tasks designed to promote each aspect. Goodyear has also developed practical applications informed by both constructivist and situative principles; the CSALT networked learning model is an outcome with a strong focus on building the communities of practice that act as a powerful condition for learning (Goodyear, 2001).

Their review of the implications of these varied learning theories allows Mayes and de Freitas to conclude that most implementations of e-learning will include blended elements from all three approaches i.e. learning as behaviour, as the construction of knowledge and meaning and as social practice.

A review of constructivist approaches to conditions for learning is undertaken by Land and Hannafin (2000) in the light of new technological innovations. However they do not take a narrow theoretical view, and their main argument is that we give full consideration to the implications of all our ideas about learning in attempting to design learning environments. Although they are not only concerned with VLE's, their ideas obviously have implications for these. The key point made is that we need to find ways to align pedagogies, psychologies, technology and culture in designing learning environments, in a process of 'grounded design'(op. cit, p.3). The authors refer to the way that technological input 'can control the pace and chunking of information' (p.4), enabling more flexible approaches to learning. They conclude that in practice most pedagogical arrangements involve a blend of learning approaches, noting that constructivist learning environments also draw on theories of situated cognition. An element of the situated approach that they consider particularly useful is the aspiration for 'authentic contexts' for learning, which also supports constructivist tenets that privilege 'personal over canonical perspectives' on knowledge (op. cit, p 6). It is interesting that the writers' description of the main functions of technology in such environments appears to replicate an activity that has traditionally been central to art, design and media learning, that is –

'Technology enables learners to represent their thinking in concrete ways and to visualise and test the consequences of their reasoning' (op.cit., p. 15)

The same central concerns preoccupy Barab and Duffy (2000), whose work considers how best to import the ideas derived from situative theories into formal educational environments. This has always been problematic, as some of the most influential theorists in the field have formulated their ideas outside of formal educational settings (see Lave, 2000; Wenger, 1998), with which they sometimes seem to offer a poor fit. Barab and Duffy take up the situated theory relating to communities of practice and modify it for formal education into the concept of 'practice fields'. These are not the learners' destined communities of practice (such as television production, graphic design and so on in the context of art, design and media) but a learning environment in which they can 'rehearse' participation as they actively engage in domain–related practices. Leaving aside the theoretical problems that this might involve for committed situative theorists (and we are perhaps justified in doing this as there is rather more coherence in art, design and media higher education between practice communities and 'practice fields' as defined here than elsewhere; see Logan, 2006), this account provides details of one practical attempt to provide a technology-assisted learning environment replicating practice fields. This is the Special Multimedia Arenas for Refining Thinking (SMART) project, and a key feature is that it positions learners as community members rather than isolated participants. The lack of links to external professional communities within the programme is seen as a weakness of the project, but it makes some significant progress in designing technology assisted learning based on the principles of authentic activity and learner engagement in problem solving tasks.

The work of Laurillard (1993) on e-learning has been extremely influential in British higher education in recent years. Adopting a constructivist perspective, Laurillard considers how to reconfigure university teaching for a contemporary context of mass higher education, and how technologies can help us to maintain the best of current practices in this situation. She reflects on the role of technologies in assisting us to develop and maintain the 'conversational framework' with learners that can assure inclusion of essential aspects of learning, such as apprehending, exploring, discussing, experimenting, articulating (this is not Laurillard's full list). A great deal of this text involves precise discussion of the potential of different types of learning technologies, and directs university teachers towards the media that will foster specific learning outcomes that they may have in mind. In a situation of rapid change it is unsurprising that many have adopted Laurillard's precepts, especially as similarly thorough descriptions are provided of the infrastructure needed to create dialogic learning environments in universities and turn them into 'learning organizations' (op. cit, p. 221).

Despite Laurillard's stated aim of aligning cognitive and situated standpoints on learning, there are some features of her approach that sit less well with situative views. For example her view of university learning as involving 'the process of abstraction' (p. 19) and her characterization of academic knowledge as decontextualized informs her approach to 'mediated learning' (p. 4), in which undergraduates do not learn about the world directly but about others' descriptions of the world. This mediation forms the substance of the dialogic relationship that contributes to the 'conversational framework' for learning, which thus becomes a 'second order' (p. 21) experience of the world. Laurillard's ideas on e-learning are better matched with some areas of art, design and media education than others; the second order experience involved in the 'conversational framework' challenges a key expectation in some practice-based activities that students' will enjoy extensive and personal 'first-order' engagement with learning, notably through making. However, both here and in fields such as media and cultural studies and art and design history, the analysis of descriptions and representations of the world made by others is a fundamental activity.

The examples cited by Laurillard are drawn from other fields, with no instances from art, design or media courses, which is unsurprising as empirical evidence on e-learning in general is still emergent rather than widely disseminated. However, Laurillard does say in discussing 'productive' IT media that such courses have always found creative channels through which to demonstrate learning, although it is unclear whether she regards these as 'products' of learning or means of learning. One significant conclusion that she draws is that –

'… improvements in university teaching are more likely to be achieved through 'multiple media' appropriately balanced for their pedagogic value, then through reliance on any one learning technology.' (op. cit., p. 174)

She thus argues for the introduction of 'balanced media' (p. 175) into higher education contexts, a precept that has been supported by recent recognition of the benefits of 'blended' learning.

- **Collaboration**

The potential of ICT to improve collaborative learning in design and technology education is considered by McCormick (2004), who reviews the current research to find out what has emerged on the ability of ICT to improve achievement in learning. This is a comprehensive international review with regard to design and technology education, so most of this section will be devoted to describing its results. McCormick begins by saying that evidence on the potential of ICT to make learning more effective is mixed in general, and almost entirely unproven in design and technology education. His view is that in order to realize the potential of ICT we need to pay more attention to learning issues, so he explores the available literature on a number of themes. The first relates to evidence on improved achievement, and here the problem of under-use of technologies is highlighted. The research that McCormick reviews is based on large scale studies in the USA , which highlight the lack of use of computers, even those in the classroom context. In design and technology education CAM (Computer Aided Manufacture) and CAD (Computer Aided Design) were found to be the most usual uses, other than general purpose use (i.e. non-design, but word processing, recording work via digital camera, internet searching and so on) There is little current evidence of ICT *extending* the capabilities of students, although there is recognition in the literature of its transformative potential; in particular electronic multimedia seem to hold the promise of both transforming the subject and the means of studying it.

The second area of research examines the professional design context, where the educational focus on the individual designer is not replicated in industry. The industry context is thus contributing to perceptual change, with the '… idea of collective generativity … beginning to replace individual creativity.'(McCormick is quoting from Sandes, 2000, p. 11). The use of ICT in creating collaborative environments is reported to be a major development in professional design. The higher education context is well covered in the research literature that describes what universities are doing to aid collaboration for students with design profession destinations, as this was a key focus for research from the 1990's. McCormick cites Wojtowics (1995); Maher, Simoff and Cicognani (2000); Turner and Cross (2000) and Garner (2001) amongst others and notes that there are also attempts being made to develop a good theory of collaborative design.

A third field of research that the literature describes is that of collaboration and learning, with different stances on this deriving from different views of learning. A (Piagetian) constructivist account would focus on individual knowledge construction, versus the joint creation of knowledge that would be privileged in social constructivist or situated accounts. McCormick highlights Rogoff's (1990) description of 'intersubjectivity' as a central concept in collaboration and her view of the three elements that create this - shared problem space, shared objects, shared or distributed cognition. Rogoff and others (see Maher et al. op. cit) perceive that what emerges is more than the sum of the thinking of those involved. Drawing on situated approaches, this field also emphasises the cultural authenticity of learning, the tools and physical conditions involved and the effect on thinking of the structures provided by tools. The significance of appropriate introduction of ICT is emphasized when we recognize that tools, including software, will frame the way a subject considers the design space; when this incorporates a collaborative element it is likely that it will add another dimension to student thinking. The processes involved in learning will also be significant, whether individually or socially oriented, and there are implications for assessment – '… measuring individual learning is somewhat problematic in the collaborative context.' (McCormick,

ibid., p.165). Where collaboration is sought there will be the need for the task to enable or even require collaborative activity, and McCormick notes that tasks are often cooperative without being collaborative; true collaboration requires shared thinking, and there must be negotiation at the interface between parts of the task for collaboration to be involved.

McCormick points in conclusion to several issues that we need to recognize if we are to realize the potential of ICT. Firstly, it is clear that in some cases ICT adds very little to learning; it is also clear that we don't yet have pedagogic techniques for the new situations that collaborative technologies offer us, and that our network technologies are still not sufficiently easy to use and robust enough to guarantee smooth-running lessons enough of the time. We also need to consider how to make pedagogic interventions without intruding into the tasks of designing and making, and how to assess joint work in a system traditionally favouring individual assessment. Teachers also need to be flexible and be prepared to meet new challenges; for example, university students in one study (Garner and Hodgson, 2002) found video conferencing ineffective for joint designing, but were happy to use mobile phones to supplement meetings, individual CAD working and file sharing.

A different kind of collaboration is explored in Salomon, Perkins and Globerson's (1991) paper on the potential of ICT and human subjects to become 'partners in cognition' in 'mind-machine collaborations'. This discussion describes the way in which computer tools have the potential to extend the user's intellectual performance, but it depends on not only *what* students are interacting with but also *how* they do it. The paper's conclusions rest on a view of knowledge as distributed, and the authors note that the idea of mind-machine partnerships challenges our traditional notions about human ability, which we usually regard as a property of the individual and their mind. However,

'… once we couple intelligent technologies with a person's ability, the emphasis might shift to examining the performance of the joint system … the system, not the individual alone, carries out the intellectual task." (op. cit. p. 5)

This problem of determining what humans gain from such interactions is resolved to some degree by focusing on the achievements or 'cognitive residue' (ibid.) that accrues from the activity, which could be seen as similar in outcome to a learner engaging in activity with a more capable peer. However, the authors note that if positive effects are possible so may negative ones be. These could include 'deskilling', which could result from working with intelligent tools that render previously valued skills redundant –

'In our eagerness to produce ever more intelligent tools, we might inadvertently deskill skills we would want to retain.' (op. cit., p. 7)

There is, however, an inevitability to this, for 'If you have a technology … you are likely to use it.' (ibid.). Moreover, new technologies redefine old activities and new ones emerge that give new roles to the human intellect. The paper therefore predicts that the impact of ICT on education will be profound, changing its whole culture. However, it is argued that it is not the technology alone that has the potential to affect minds, but a combination of '… technology, activity, goal, setting, teacher's role, culture – exerting their combined effect.' The paper concludes that the benefits that technologies may provide to human thinking will only emerge through their purposive use, by being cultivated –

'… through the appropriate design of technologies and their cultural surrounds.'(op. cit., p. 8)

- and warns that we may need to rethink what we mean by human intelligence in the future.

- **Teachers views, needs and attitudes to e-learning**

It had been hoped to include research literature reflecting the views of learners in this section, but it proved difficult to access empirically based research on this issue; only one article was found and it was based in a cultural context that appeared to be so removed from the British one that it shed little light on the concerns of this project. The research sources drawn on here will therefore clarify what we know about the views of e-learning held by teachers. Shaw, R. et al. (2002), address the ways in which staff development can take account of the specialist context and traditions of learning and teaching in art, design and related disciplines – 'The thrust of the tradition is to celebrate individuality and creativity with a considerable emphasis on practice-based learning' (p. 1) and overcome obstacles to ICT for lecturer use. The authors use empirical evidence from a survey of tutors in Scottish art schools to back up their points, and are able to provide pragmatic recommendations based on the findings. They argue that the distinctiveness of the domain involves a number of factors militating against ready acceptance and use of technology, including –

- tutors' overall unease about the role of computers in art, design and related fields
- the employment of large numbers of part time staff
- lack of computers in studios and workplaces
- historic underinvestment in technologies such as data projectors in seminar and lecture rooms
- absence of an appropriate, co-ordinated and intensive programme of staff development

The paper also lays down a number of principles for staff development in relation to ICT use for the subject context. For example, it is recommended that staff development programmes focus on: peer coaching, which makes learning more relevant to the environment in which individuals operate; modelling, enabling lecturers to observe expert performance; providing reward and recognition for successful adoption of best practice; sustaining staff development through ongoing and systematic training; highlighting the needs of Mac users, which are often neglected; linking of technology and educational objectives; introducing flexible schedules to enable staff to practise what they have learned. The paper also makes recommendations for changes in institute infrastructures that are needed to support the above – e.g. personal/sole use of computer for each staff member, appropriate equipment for lecture theatres, seminar rooms and studios etc.

Wood (2004) draws on data from two national qualitative studies, involving over 200 art & design teachers in schools. Nearly all of the teachers complained about lack of resourcing for their subjects; they also noted that other areas were privileged in this respect, despite their own needs being more specialized and more expensive than those of 'academic' subjects. For example all used professional design software as they couldn't find much software targeted to students, and they often found that site licences were unavailable and products very expensive. They also complained about lack of training, especially as 'technology is redefining art itself – its themes, tools and vocabulary … changing the subject of art, not just the way it can be taught or learned …' (p.180) as well as 'displacing time-honoured skills' (ibid.). Significant changes that they had noted included their perception that draughtsmanship is on the decline, that the emphasis on collaborative classroom work means an art student's personal vision may count for less and that students seem to have an altered sense of what they observe – that the act of observation itself appears to be changing. The latter point is elaborated in the paper's discussion of the way that students are saturated with 'mediated' imagery, while teachers tend to prefer engagement with 'real' experience. An interesting point about potential cognitive and skills outcomes is made –

' … in art and design, the computer shifts the emphasis from the left hemisphere of the brain to the right – i.e. allowing more focus on the message, less on the execution.' (op. cit., p. 189)

- a situation which suggests that the mode of learning that operates *through* processes of making might be downgraded in these circumstances. In fact, the opinion is offered that the digital age 'rewards a different sort of student …' and that our specialist disciplines will lose the 'human touch' that has always characterized them.

- **The impact of ICT on specialist skills and processes**

There is a growing body of literature that considers the impact of ICT on specialist art, design and media domains. Coyne et al. (2002) reflect the technological change of the last ten years in graphic design in their discussion of the impact of digital drawing, showing how design devices are sublimated in and act as catalysts for changing the practice, understanding and self-identity of designers. They consider the potential for new technologies to change relationships in the educational practicum and provide new signifying metaphors generated by the digital environment. The role of drawing in contemporary design curricula is reviewed by Schenk (2005), and she attempts to ascertain what forms of drawing ability are needed today and how this has been influenced by technological change. She derives evidence from interviews she conducted with academics (deans and programme leaders) and with senior design researchers, a high proportion of whom were from fine art backgrounds. Schenk found a substantive reduction in the importance attached to drawing now compared to the mid-1980s, but it was still considered important by two thirds of respondents in her study. The development of newer, art and design related disciplines was found to change the importance of drawing for application and entry to university courses. For applicants to interactive digital media design, product and industrial design programmes less drawing experience was deemed acceptable, with other disciplinary knowledge increasing in importance – for example, maths and computer studies. There also seemed to be more importance placed by academics on 'intellectual' over 'practical' skills, and a growing importance afforded to the business and computing aspects of the curriculum.

It was felt by Schenk's respondents that ICT can support the presentation of ideas for those with weak drawing skills; they recorded that they also felt the need to establish the educational criteria appropriate to the digital environment, as many said their attempts to ban the computer for the 'idea' stages of design had to be abandoned. They had reluctantly accepted that student designers need familiarity with use of computers throughout the whole process of design, despite continuing worries that software tended to over-influence the production of visuals and that it was too easy to produce outcomes in a technology-influenced 'house style'. An important point that emerged was that students now had little access to the kind of designers' drawings previously seen on industrial placements. There were two aspects to this, though, as students were spending less time on their own drawing as well as having less access to those of professionals. It was felt that this resulted in the limiting of conceptual freedom and that the modelling of 'process' was becoming more unavailable for students to learn from. Schenk notes that academics displayed a commitment to maintaining the place of drawing in design curricula, as well as specific tuition for the particular skills associated with professional practice, including tuition for 'industry norm' drawing software. She concludes by commenting on the need for a new canon of drawing that equates the roles of both traditional and digital methods; this has yet to be fully developed and integrated into the curricula of art and design courses, but the basis for an informed debate has commenced.