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SPECIAL ISSUE

This special issue of the Journal of Learning Design, led by Jill Franz and Lindy Osborne, from the School of Design in the Creative Industries Faculty at the Queensland University of Technology, is grounded in Design Education. Its papers are drawn from differing fields of design: digital media, architecture, and environmental design. Each makes use of technologies in differing ways but all share the singular purpose of achieving enhanced learning outcomes from students.

Technology: A mobilising force for a radical design pedagogy

As expressed in the provocation and call for papers for this special edition, our aim was to provide a collection of papers that explored the use of technology as a catalyst for radical change in the teaching and learning of design. The interest in doing this was prompted by a growing belief reflected in scholarly discourse that the discipline of architecture (and as we suggested possibly other design disciplines) needed a new *modus operandi*; one that, according to Beatriz Colomina (2012), might be delivered by "revolutionising the way it is taught, specifically through radical strategies of architectural pedagogy that question, destabilise, undermine or even destroy current traditions" (p. 3).

The papers presented here are significant in their revelation of and response to what it is that concerns a group of academics across the design disciplines in relation to technology and design education. They are in fact, in their own way, "tiny revolutions." As Fleming (2013) writes: "ultimately big changes are made by thousands, if not millions of small decisions, subtle shifts in attitude and seemingly small every day actions" (p. 217). Rather than a fully-formed radical design pedagogy, they collectively represent meaning-making and effective models of how the affordances of technology align with effective and creative learning experiences in Design disciplines.

The issue of major immediate action versus smaller scale staged responses underpins our first paper which refers to *Big Bang technology* and asks *What's next in design education, radical innovation or incremental change?* Situated within the digital media design discipline, a discipline known as a major player in the information technology revolution, Fleischmann explores the implications for an undergraduate digital design major. As she explains, graphic design and communication design were impacted by the introduction of the Macintosh computer in 1984, which, in the education context, involved only a change of tools. More revolutionary, she argues, was the emergence of digital media, which "brought a paradigm shift requiring new ways of thinking, [and] the development of new design knowledge and skill" (which in themselves could be regarded as new technologies). The challenge for educators was how to incorporate additional content to do with web design and interactive multimedia into existing curricula. The response at Fleischmann's university was to mirror what was happening in practice by implementing a multidisciplinary collaborative framework which she argues represents a radical change to the existing delivery of the design curriculum. By comparison - and what she regards as not so radical - is the gradual transition of social media into the design curriculum because as she states: "Clearly, more research is needed in how design education can take advantage of social media's potential to reconstruct a present-day design studio." With respect to this latter statement, the second, third and fourth papers in this issue focus on the design studio and attempts by educators to respond to emerging technologies and their potential to enhance teaching and learning.

For example, the second paper by Crowther (from the Queensland University of Technology) "interrogates" the architectural design studio "for its advantages and shortcomings, and to identify opportunities for the integration

of new technologies and to explore the affordances that they might offer." Crowther's emphasis on the design studio stems from his acceptance of its traditional significance in design education. Rather than question its underlying signature pedagogy, Crowther prefers to map "the dimensions and qualities that define the signature pedagogy against a range of delivery modes and technological media forms." To facilitate this, Crowther employs a framework proposed by Laurillard (2002) for analysing education media and their relationship to modes of delivery. The outcome is a pedagogical framework that identifies opportunities for technological enhancement for a design project to be undertaken by students in a design studio environment. Technological advancement is understood in relation to the form of media desired, for example, narrative, interactive, adaptive, communicative, productive (Laurillard, 2002); and, appropriate methods and technologies which for interaction might be certain Web resources. It is interesting to note that appropriate methods and technologies also include more traditional forms of technology such as printed material and DVDs. As also noted by Crowther, the framework does not include the full range of new and digital technologies (as it "would be outdated as soon as it were published") but rather it offers generic guidance and translation to other disciplines that have retained the design studio as a 'signature' pedagogy.

One such discipline is interior architecture, which forms the focus for Rodrigo and Nguyen (University of New South Wales) in the third paper of this edition. While Crowther's paper contributes through its provision of a broad theoretical framework with minimal detail regarding emerging technologies, this third paper reports on research and teaching that is specifically concerned with social media and Web 2.0 technologies such as blogs and wikis and how they might facilitate more inclusive learning through social networking. As described by Rodrigo and Nguyen, "this paper presents a qualitative case study of socialised blended learning, using a social network platform to investigate the level of literacies and interactions of students in a blended learning environment of traditional face-to-face design studio and online participatory teaching." What they found is that while the social network "appears to have the potential to influence and change students' interactions and behaviour" there are implications included but not restricted to issues of privacy, creative disclosure and intellectual property that for Rodrigo and Nguyen will demand further consideration and understanding of the learners occupying the higher education landscape in the 21st century.

Our fourth paper by Pak and Verbeke (Faculty of Architecture, KU Leuven University, Brussels) also describes an initiative involving Web 2.0 and social media but, in this case, it is in relation to the urban design studio at masters level and its combination with geographic/geospatial technologies "to remediate and extend the reflective conversation between teachers and students in the design studios." The authors designed and conducted two international experimental studios "In order to explore the potential, possible contributions and challenges of Web 2.0, social media and geographic technologies in learning and participation in design studios." Both design studios were conducted in Brussels, with the first in 2012 and the second in 2013. Both involved online and offline face-to-face activities and focussed on how the social geographic platform with social media acts "as an extension of the existing representational space [enabling] multiple modes of communication." As with the experience of Rodrigo and Nguyen, these authors reported positive outcomes in terms of student performance and experience but, as they put it, " the direction of causality is still a question mark" prompting the comment that "more research on students' individual learning and design styles is needed."

Moving away from the university situated design studio to the community and a service-learning program, our fifth paper by Cushing and Love (Queensland University of Technology and Omni Institute, Denver, Colorado) describes a project where students in environmental design worked with Latino youth in the use of photovoice and digital story telling techniques to reveal their community experiences. Underlying this was the perceived need for environmental students to develop cultural responsiveness and to learn how to understand and help address challenges experienced by marginalised groups in society. In this way, technology was understood to be complicit in facilitating transformative experiences that would potentially motivate and equip students as graduates to challenge the status quo; as a mobilising force for radical change. Student feedback however emphasised the need for "the technology to be seen as a means to an end, and used as a tool for encouraging the interactions and communicating the youth stories without overshadowing the transformative relationships that often developed." Technology, in this instance, affords the development of affective outcomes, an empathy made possibly by seeing the world through another's eyes.

Our sixth and final paper by Conti (King Mongut University of Technolgy, Thonburi (KMUTT), Thailand) provides a fitting conclusion to this special edition's collection through its attempt to use technology to radicalise a key undergraduate learning instrument (the thesis) within universities in Thailand. As expressed by Conti: "With a new set of forces ever more in play (social media, mobile devices, interactivity), the current climate mocks a previous equilibrium between openness and constraint established by traditional instruction;" a process whereby "a new learning subject is being constituted." Motivated by the desire to generate a critical discussion, the paper focuses on a thesis project conducted by an interior design student (Polly) over a two-year period that sought to shed institutionalised values "in pursuit of a widening student role." Starting with the original intention of developing an interior strategy for a stray dog's home, Conti describes the implications of Polly's realisation that the underlying issue was more than this and of her preparedness to move beyond traditional expectations of the thesis. Various technologies were instrumental in this, such as a phone app, a computer game, a Facebook blog, a dedicated web site. Like a "contagion," other disciplines and people were "infected" and became involved in various ways producing outcomes, such as a registered company, that were more far reaching than ever originally imagined. This project, according to Conti, invites a re-definition of "thesis" to what he labels *iThesis*. Through the *iThesis*, learning and instruction gain empowerment rather than remaining institutionally domesticated.

In conclusion, we can see that the papers selected for this special issue have collectively shown how technology can be used to transform teaching and learning. This can be done in radical ways but, as indicated in this issue, is more likely to be subtle, progressive and embedding into practice over time. Some of the authors here have looked for new and transparent ways for students to collaborate and to make the design process transparent. Others have noted how technology can change everything; the kinds of change that Neil Postman referred to as "ecological" – explaining that:

> What happens if we place a drop of red dye into a beaker of clear water? Do we have clear water plus a spot of red dye? Obviously not. We have a new coloration to every molecule of water. That is what I mean by ecological change. A new medium does not add something; it changes everything. (para. 17)

We, and the authors who have shared their work in this issue, believe that technology, like the spot of red dye bringing immutable change to the water in the glass, has the potential to be a mobilising force or change agent for radical design pedagogy. But although the traditional structures of the "crit" and the "thesis" need to change along the way to make the transformation to a more radical pedagogy complete, the collaborative and open nature of the design studio lends itself well to technologically-mediated environments.

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