

Design and Technology Education: An International Journal Special Edition

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This special issue of the Design and Technology Education Journal showcases a number of papers from the Design Research Society's Biennial Conference for 2014. It was the DRS's 7th Biennial Conference and it was held in Umea, Sweden from 16 to 19 June. As Umea is at a very northerly latitude even by Sweden's standards, this meant that it was the time of year when the sun did not dip below the horizon, and so there was perpetual daylight. This was just one of many ways in which the conference was memorable. It was very well attended with over 400 delegates. Entitled 'Open by Design' it was generally regarded as friendly, innovative and efficient in a typically Swedish manner. It was sub-titled 'Design's Big Debates' and its most original feature was the unusual presentation. In addition to the conventional papers, workshops, and doctoral symposia, there were innovative open debate formats. The most prominent were three 'Big Debates' which featured two presenters, one for each side. They replaced the keynote speeches which are a feature of most conferences. (The debates are still available online from the conference website). They were followed up by 'Conversations', as arenas for further discussion.

However for the journal our concern is with the high-quality academic papers which were also a feature of the conference. They had been selected from full papers rather than abstracts, and then subject to peer review. At the conference their presentation was in thematic groupings. For a number this aligned them with one of the six Special Interest Groups of DRS. Of these the most relevant is the Design Pedagogy SIG which was incidentally also contained the largest number of papers at three times the size of the next largest SIG. It is from these papers that the selection for inclusion in this issue has been made.

The contributions are from a good geographical spread. As might be expected Scandinavia is well represented with papers from Denmark, Norway and Sweden. The origins of the remaining three are more widely dispersed with Turkey, Australia and the UK with Botswana. This is a modest but good reflection of the international character of contemporary design education research. The first featured paper is by three authors from different establishments in Denmark, Anne Louise Bang, Silje Alberthe Kamille Friis and Anne Katrine Gøtzsche Gelting. Entitled 'Designerly Ways to Theoretical Insight' it covers visualisation as a means to explore, discuss and understand design theory. It is based on teaching experiences from an MA course in design methodology at Design School Kolding in Copenhagen. The authors

discuss a number of reasons why the educational approach where design students read, analyse, and visualise theory, appears to be beneficial to the students' learning process. They argue that their experiments with integrating visualisation as a tool for exploring and making sense of theory can be of value to design education as a whole. This is because it applies a type of practice that the students are familiar with, and supports the construction of new knowledge, by allowing them to express information and concepts in ways that are personally meaningful. They both make sense of it and synthesise it through sharing the representations with other groups, supporting each other and creating an overview. The use of several smaller groups with shared use of the same texts helps to even out understanding and discuss perspectives on the material.

The second paper also features visual thinking. By Marianella Chamorro-Koc, Andrew Scott and Gretchen Coombs from Queensland University of Technology in Australia, it is engagingly entitled 'Bombs Away: visual thinking and students' engagement in design studios contexts'. It is based on the curricula of first and third year industrial design students and focuses on design studio sketching or visual thinking as part of processes that assist students to achieve final design solutions. The authors engage in a variety of teaching pedagogies from which they identify 'Concept Bombs' as instrumental in the development of students' visual thinking and reflective design process, and also as a vehicle to foster their positive engagement. The approach can employ a range of different scales of intensity from 20-minute projects to more complex team activity. They report consequential improvements in the intensity of the teaching experience through the use of a technique, which is robust, flexible and worthy of more widespread adoption within their program.

The third paper also makes significant use of visual material. By Koray Gelmez and Humanur Bagli from the Istanbul Technical University in Turkey it is entitled 'Learning from Students: Reflections from Personal Magazines in Basic Design Course'. It is concerned with the use of reflective processes. The study focuses on reflections captured from students via two different media – personal magazine and an online questionnaire. On the basis of written and visual diaries the basic design course students created personal magazines. These provided very useful feedback and assisted in inculcating a reflective approach more generally. The personal magazine became a tool of free expression, which served as mediator,

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facilitator and also a translator as a way of understanding students' dialects. It was also a strong emotive and cognitive link between student and tutor, student and his/her learning process, tutor and the course design.

The fourth paper looks at novice designers in different contexts. Jointly authored by Nicole Lotz, Helen Sharp, Mark Woodroffe and Richard Blyth of the Open University in the United Kingdom, and Dino Rajah and Turugare Ranganai from the Botho University in Botswana, it is entitled 'Framing behaviours in novice interaction designers'. Framing problems and solutions is well recognised in design studies as a central designerly activity, with expert designers relating such practices to problem-solution co-evolution and analogy use strategies. The paper reports an analysis of data gained from protocol studies with novice interaction designers in the UK and Botswana. Within these observations the authors found both similarities and differences across the cohorts, in such areas as the numbers of co-evolution episodes or opening analogies. The implications are discussed in the light of adopting appropriate design pedagogy for novices in different cultures.

Our fifth paper is also concerned with interaction design, this time in Sweden. Its two authors, Ylva Fernaeus and Anders Lundström are from the Royal Institute of Technology, KTH, in Stockholm, and their paper is entitled 'Practicing Design Judgement through Intention-Focused Course Curricula'. They identify four examples of alternative motivating forces which can propel a design activity: to serve users, to generate profit, to explore a new concept, or to trigger reflection and debate. However it is not always clear how such intentions can be addressed concretely in education, and in specific design domains. In an area such as interaction design, they might easily get lost among course content related to specific methods and technologies. The authors explore these issues through a number of examples of each type of design developed with an advanced course. Although it was created originally for practising professionals, the framework seems to have utility in an educational context allowing time to be spent on complicated issues and mapping underlying intentions. This could be transferrable to other areas.

Our final selected paper is also concerned with an area of design education, which overlaps the commercial world. Its two authors, Nenad Pavel and Arild Berg, are from Oslo and Akershus University College of Applied Sciences in Norway and it is entitled 'Complexity in Design-Driven Innovation: A Case Study of Knowledge Transfer Flow in Subsea Seismic Sensor Technology and Design Education'.

The authors focus on design-driven innovation and its occurrence in design education through two case studies. The first is an example of design practice which includes observation and cooperation process maps in an offshore project. The study demonstrates how a company innovates through a design-driven process with complex knowledge transference and systematic planning and improvisation. The second is an example of product design education which includes observations of teamwork, team member interviews and archival studies. The study shows students managing their design processes through concept generation in a less complex trial and error process. Through the criteria of network paradoxes, knowledge exploration as a part of design activity was analyzed. Based on the case study, and externally based on other design practices and design research a pedagogic concept has been synthesized and validated as Knowledge Transfer Flow [KTF]. The KTF concept can help to orient design students within the information-saturated design processes integrated within complex innovation systems.

These six papers illustrate the range and depth of design education research which is being pursued, and give some indication of the wide spread of countries in which design is an established discipline at university level. We can be fairly confident that it also has a presence in various forms at other levels in the education system in many of those countries. The design pedagogy strand was not the only area of the conference where the papers had emerged from an academic setting. The majority of the delegates were from places of education and much of what was presented had relevance to design education.

The long established series of Design Research Society Biennial Conferences has now been joined by a second series which occur on the years which alternate with the main series. These have emerged from the DRS Special Interest Group in Design Pedagogy and were initiated by DRS in collaboration with the CUMULUS organization. They are wholly devoted to design education research, with the first taking place in Paris in 2011, and the second in Oslo in 2013 (see issue 19.1 for details). The third in this series is now scheduled for later this year on June 28 - July 1, 2015. It will be held in Chicago in the USA. Entitled 'Learn x Design, The 3rd International Conference for Design Education Researchers' will be hosted by the School of the Art Institute of Chicago SAIC. This journal is a formal partner and further details of the conference can be found on <http://www.learnxdesign2015.com>