Editorial

This issue of the journal is the first of two linked issues that derive from a call following the CAADRIA 2019 Conference held at Victoria University of Wellington in April 2019. The theme of the conference, and this issue, is *Intelligent and Informed* (I&I). We talk, these days, of smart technologies, such as the application in smart cities. However, the papers submitted to these linked issues respond to the broader idea that, through the well-understood development and application of computational techniques and tools, we are able to foster new and productive design processes and outcomes. These derive from well-informed research that blends human and machine intelligence. Increasingly, we are seeing the development of more refined, and somewhat more open and flexible tools; alongside that we are seeing intelligent exploitation of them in both research and practice.

The first two papers in this issue address issues related to the potential for the development of intelligent, adaptive buildings – adaptive in the sense of buildings being able to respond to particular external environments. In the first paper, the focus is adaption in response to wind loads on buildings; in the second, it is a response to heat and light. In both cases, the intelligence derives from a common intention to work harmoniously with these fundamental natural forces.

The second and third papers address the ideas around more I&I computer-mediated ways of working. In the third paper, the scale increases and the authors look to issues of intelligent process that lead to improved urban planning; so, it is the city as a whole or sections of the city that is the focus rather than individual buildings. Developing better informed and intelligent multi-disciplinary team working and the associated workflows are the foci of this paper.

The final paper in this issue returns to the more fundamental issue of how the designer interacts with the computer. Human–computer interaction has had substantial interest in the past. In a design discipline, perhaps more than most, it is effective and appropriate (i.e. intelligent and well-informed) interaction that is vitally important if we are to interact most productively with affordances that computational design offers us. Here, we have a contemporary investigation of traditional and new forms of interaction.

As a collection of papers, the two issues that form this response to the CAADRIA initiative '*Intelligent and Informed*' can be linked to the short seminal paper by Maver.[1] Here, Maver implored us to ensure that we take care in our research to avoid a set of seven potential criticisms; aspects such as failure to validate, unsustainability and failure to criticise. The CAADRIA theme was, in effect, a re-invigoration of that call, and to show that researchers in the field have taken heed of the criticisms that were articulated, somewhat provocatively, by Maver.

In a little more detail in relation to the papers in this issue, in the first paper by Kabošová, Foged, Kmet and Katunsky, the authors integrate the effects of wind loads on a building with an architectural morphogenetic process. The work takes in geometric and material properties resulting in a tensegrity-membrane structural element that is able to respond in an intelligent way to the wind loads that it experiences. Using a three-stage process, the authors have been able to reduce the surface wind suction on the face of the building and enhance the local wind microclimate. The authors note that the particularly intelligent part of their work is the advantage of the proposed responsive system in that 'the movement is not caused by

additional, externally applied energy. On the contrary, the cause of reducing the building surface wind pressure is the wind itself'.

The study that follows, by Foged and Pasold, deals with the design of an intelligently responsive adaptive building envelope that responds to heating and lighting performance. Using data collection from sensors and observations, the authors identify adaptive response patterns that are based on subjective, human-mapped sensations, 'rather than prescribed environmental comfort, numeric-based sensor values'. The research aims to go beyond conventional thermal comfort response, but the work has revealed that developing adaptive envelopes has proven multifaceted and there are significant aspects of unpredictability. Interestingly, their work is underpinned by a full-scale experimental demonstrator.

Improved planning support systems is the focus of paper number three by Alva, Janssen and Stouffs. The research aims to deliver an improved spatial decision support framework through rethinking workflows and tool chains. The decision-making system that has been developed uses a weighted decision tree to drive the process in a more intelligent way. In sum, the work identifies and aims to improve the interplay between the tool and the workflows in planning practice.

The paper on human–computer interaction by Erdolu traces the historic work on interface for computational design and then considers the more recent innovations in interaction. The work looks in detail at four groups of interaction techniques. The first is hand-mediated systems that involve gesture- and touch-based techniques; the second multimodal systems that combine various ways of interaction including speech-based techniques; the third looks at nascent innovative systems such as brain–computer interaction (BCI) and emotive-based techniques. The final area of consideration is virtual and augmented reality-based systems. The study leads to a key aim, which is to 'help generate richer questions, considerations, and avenues of investigation' as we continue to evolve and adapt the computer interface, and our interaction with it, for architectural design and associated discipline areas.

To close this first editorial in the pair of CAADRIA response editions of the journal, it is instructive to note the paper by Kvan[2] who reflected, 10 years later, on Tom Mavers CAAD's seven deadly sins paper. He interpreted Maver's writing in the context of the dual heritage of our field in science and creative arts. Kvan noted that in good research in CAAD 'these sins are counterbalanced by a like number of virtues'. The theme of the CAADRIA issues, I&I, aims to collect together, and further foster, ideas and research that are grounded in well-informed contexts and that also bring together human intelligence and machine intelligence to deliver advancement in our field of research.

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