

Keynote presentation

Sustainability: Real or Virtual?

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Sustainability in the built environment is difficult to define but easy to recognise. We can observe it in those buildings which have been with us for many decades, centuries, even millennia which have survived because they have proved to be fit-for-purpose(s), cost beneficial, environmentally friendly and culturally significant.

The past's relatively slow rate of change in building technology and social need allowed the evolutionary survival of buildings which are now our sustainability icons; but what of the future? How can we design for the future in a period of accelerating social, economic and technological change to secure a sustainable built environment which will be recognised and acknowledged by following generations.

This keynote presentation reinforces the notion (advanced some 30 years ago) that computers, as amplifiers of the intellect, can, in the service of sustainability:

- allow us to *anticipate* future physical reality by simulating form and function, cost and performance, impact and import.
- allow us to *adjudicate* on predicted outcomes by making the simulated future as understandable and meaningful as the present, for clients as well as professionals.
- allow us to *articulate* the relationship between real and virtual environments and, importantly for the next generation of architects, integrate the two.

Anticipating: The extraordinary level of verisimilitude which can now be achieved in visual simulation is widely reported and widely deployed in architectural practice. Less well known and used are the major advances in models for the simulation of the thermodynamic and acoustic aspects of the built environment, simulation of the movement of people and goods in normal and emergency conditions within the building, and simulation of the building structure under exceptional stress. Painful but palpable progress is being made towards integrated modelling systems which make explicit the wide range of cost, performance and formal and contextual characteristics which, arguably, should inform the design decision process.

Adjudicating: In the best of all possible design worlds, when modelling systems deliver metrics and visuals for any and all design alternatives, there remains the vexed question of adjudication. Attempts by the Design Methods Group in the 1960/70s to deploy aggregative (weighted) formulae were deservedly (and as far as DMG was concerned, disastrously) discredited. The notion, promoted by the Design Research Society, was that of participatory design – the professionally uncomfortable concept that, armed with the clear comprehensive and comprehensible information about design alternatives, those who will own, occupy and husband buildings can, and will, make good design decisions. The evidence piloted in the 1970s, despite dreadful difficulties in interfacing, is being rapidly reinforced in communes from Rome to Rio, thanks to multimedia.

Articulating: The most sustainable building is one which never existed and never will exist. The wonderful challenge facing the architectural profession is what should exist in reality and what could and should exist virtually. Academics and Students of Architecture, in the more progressive Schools, have engaged this extraordinary notion.

Their keynote presentation will exemplify the state of the art in these three key areas and argue that together, they offer us the appropriate tools for a sustainable future.