Editorial

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The papers in this issue were all presented to the Fifth Symposium of the International Urban Planning and Environment Association in 2002. The theme of the conference was *Creating Sustainable Urban Environments: FutureForms for City Living*. The main aim of the conference was to share knowledge and good practice in order to advance the implementation of sustainable urban forms. Papers were invited under six themes: the environment; society; transport; land use and re-use; economics; future sustainable city forms. The 160 presentations brought together academic research and practice-based knowledge and were overwhelmingly positive in offering new theoretical approaches and practical guidance. The fusion of academic knowledge and practice knowledge has always been essential to the discipline of urban design – but now more than ever as its most fundamental principles are being challenged by the emergent demands of the sustainability agenda. If we are to develop the discipline of urban design as a sustainable practice it is essential that we understand the impacts and implications of configuration on the performance of built and open spaces. We must learn to do this across a range of key indicators of resource efficiency and must become adept at making the link between research, emerging policy and the physical design and arrangement of cities.

All four of the papers selected for this issue are distinguished in their accounts of ongoing research and their clear applications to the practice of urban design. They range across some of the key dimensions of sustainability – time and resilience, thermal performance, social sustainability and the microclimatic effects of building enclosure. They have been reviewed and updated since first presentation in 2002 and a further selection of papers from the conference will be published in a later issue.

The first two papers address the issue of thermal performance of urban form, de Schiller's at the scale of the transforming city grid and Sinou and Steemers at the localised scale of semi-enclosed urban space. Silvia de Schiller's paper presents the results of tests carried out to evaluate the environmental impact of a new urban sector proposed by the Municipal Government in Buenos Aires, Argentina. Buenos Aires, like many other Spanish colonial cities in the region, was originally laid out in the late 16th century on an orthogonal urban grid of 100 × 100 metre blocks, and is now an immense metropolis of over 10 million inhabitants. The city is in a process of transformation from a low-rise compact city to a high-rise 'open' one as global influences and trends induce and produce changes in building typologies and technologies. However, current urban regulations support this transformation from continuous low-rise street wall to high-rise, free-standing towers. The requirements of these new building types were analysed at The Research Centre Habitat and Energy, University of Buenos Aires using data gathered from both numerical and physical simulations of environmental conditions. The tests of the proposed development involved the use of a heliodon, a low speed boundary layer, wind tunnel and an artificial sky. Traffic noise levels were also estimated and modelled in relation to a number of factors. De Schiller argues that many of these buildings are inappropriate to the cultural, climatic and technological context: they are difficult to incorporate into the existing urban grid and plot subdivisions; they disrupt the skyline and the street façade; and they make increased demands on energy for cooling, heating, lighting and ventilation. The resulting transformations negatively affect environmental quality at both the microuban scale of public and private spaces and at the building scale. In conclusion, the paper stresses the importance of user-friendly and accessible methods for predicting the urban

design quality and resource efficiency of proposed development, particularly where controversial projects are being reviewed in a process of public consultation.

The second paper, by Sinou and Steemers, also contributes to the debate on urban form and sustainability. It examines the effects of spatial and building configuration on aspects of environmental performance, in this case on thermal performance of the local urban environment. The authors suggest that the urban microclimate should not be considered as a homogenous environment but as a variety of particular conditions that support diversity of occupancy. They distinguish between environmental diversity and spatial diversity. Environmental diversity is defined by the differences in microclimatic conditions created, with specific reference to temperature and air movement. Spatial diversity is defined by differences emerging from architectural characteristics, such as the degree of enclosure, building proportions and orientation, the positioning of the semi-enclosed space in the landscape, and the historical urban context. Their paper identifies major types of semi-enclosed urban spaces and uses case studies in Cambridge, England and Kastro, Greece to monitor thermal performance in these settlements in northern and southern Europe. Their pilot and subsequent studies demonstrated the existence of thermally diverse public spaces within small urban areas and verified this to be the result of differing degrees of enclosure. Their study further demonstrated that the orientation of openings of semi-enclosed spaces to be a major determinant of their thermal conditions. Their work established that the impact of direct solar radiation on temperature and therefore on overall thermal perception and comfort was significant in the test locations and their study has developed a new approach to understanding the relationship between temperature fluctuation and degree of spatial enclosure. To do this we need to understand better how spatial configuration creates climatic as well as other experiential diversity.

Mark Childs' research focuses on the significance of one particular public space type – the town square or common – in the western United States of America. Childs' central argument is that vibrant public squares, plazas and other town commons are critical components of sustainable settlements. Although the western United States

has a large percentage of its population living in small towns, depopulation and sprawl have reduced the vitality and viability of town centres as well as occupying prime agricultural and other ecologically important land. The aims of his paper are: first, to review the history of central town commons in New Mexico, from Pueblo Indian and Spanish plazas to courthouse squares, main streets and railroad depot squares; second, to report on efforts undertaken by The School of Architecture and Planning at the University of New Mexico to revitalise central spaces in small New Mexico towns; and last to outline an approach for developing a strategic plan to develop advocacy centres in these towns. In promoting this initiative Childs hopes that the rich traditions of town commons can be revived and re-incorporated into current patterns of development.

Little is understood about the processes that lead to clustering and mixing of different land-use functions, or about the way that people move through and use the urban landscape to support their living requirements. In the final paper of this issue, Alan Penn and Alasdair Turner report on their current research into the relationships between settlement morphology and land use pattern, and they describe their new experimental approach to the analysis of urban morphology. They describe the methodological and theoretical advances that have enabled them to develop a way of linking together space syntax analysis with multi-agent simulation methods. They argue that urban systems are highly complex objects that emerge from the interactions between many different actors and agencies, each making decisions which are often contingent on those made by others, and which emerge from the interactions of different social, economic and physical systems. Against this background, Penn and Turner's research is designed to increase our understanding of how different interacting systems, composed largely of independent decision takers making numerous day to day decisions come together to influence this process, and how best to intervene in and guide what is essentially a 'distributed' decision taking process. The experiments described in the paper are set up initially with a simplified grid-like environment, in which the location and degree of aggregation of the 'shops' is varied. The process is repeated using a version of the grid, which is 'misaligned' to give an apparently less ordered overall pattern. This

sets up a model with which to investigate a simplified kind of shopping behaviour and to ask questions about the relationship between spatial configuration, location of 'attractors' and the efficiency with which agents with long distance 'vision' can search in a complex environment. The attraction of their results, however abstract the method may seem, is that they make intuitive sense. They conclude that what matters in urban space is not shops as 'attractors', but 'shopping' as a human activity, and that the effect of an attractor on patterns of movement is not in its own immediate vicinity, but in the spaces and alignments that lead to and away from it. Cities have evolved, perhaps, to optimise these relationships between retail location and spatial configuration, using both clusters and linear shopping streets to locate retail uses. In the light of the simulation experiments, the simple mechanism of search by agents with vision leads to certain locations and forms of aggregation affording greater efficiency of search and movement. If we are to try to

control urban development and to create cities that are both vital and viable then we need to understand how it is that distributed processes of decision taking can lead to apparently coherent outcomes.

Understanding urban growth and change processes over time is vital if we are to secure sustainable pathways for sustainable development. More pragmatically and more immediately, if we are to turn the mixed-use master plan that is the brand image of urban design into a reality then we must learn quickly to absorb the research knowledge described in these papers into practice knowledge. This theme, of research knowledge, practice knowledge and urban design education, will be developed later in the year in the final issue of this volume of the journal.

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