

# EMERGING ISUF NETWORK: AUSTRALIA AND NEW ZEALAND URBAN MORPHOLOGY NETWORK (ANZUMN)

## ABSTRACT

While there are extensive publication accounts of Australasian planning history, little direct focus on urban morphology had occurred until the late 1990s when Arnis Siksna undertook comparative town plan analysis revealing the close relationship of block size and related form of several Australian and American city formations. Over recent decades several scholars have developed relevant studies in both Australia and New Zealand that suggest timely consolidation as a regional group. Indeed, as a counterpoint to the centric dominance of urban morphology in the northern hemisphere, the ISUF 2013 conference was hosted in Brisbane and explored the ideas of ‘urban form at the edge’ and ‘off centre areas’ that have produced innovative approaches to the study of traditional, as well as post-colonial and contemporary morphologies. This viewpoint will expand on the emerging themes within the research field.

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## KEY WORDS

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## OVERVIEW

A brief review of the territory confirms a scarcity of research relevant to ‘classic’ urban morphology and its three schools of thought,<sup>1</sup> but an acceleration in the application of morphological concepts to applied research challenges across the built environment disciplines. Knowledge of the physical fabric of the city is obviously critical to an understanding of urban function in all its variety. Urban morphology provides a valuable scaffolding to underpin the application of methods from other fields of research and practice.

The first real work in the field was initiated by Arnis Sikna through his comparative town plan analysis (ground plan comprising site, streets, plots, block plans), he observed that until that point ‘The study of urban form in Australia is a relatively recent, undeveloped field and consists mainly of unco-ordinated efforts undertaken by individual researchers.’<sup>2</sup> The studies are diverse in nature and range widely in their scope and depth’.<sup>3</sup> Sikna provided an overview of morphology studies in Australia, grouping them around: country towns, capital cities and their CBDs, residential areas and studies of more detailed urban forms.<sup>4</sup> This research confirmed that few studies were systematically dealing with the evolutionary urban forms and patterns.

We can identify two main drivers of contemporary urban research: the development and diffusion of new, predominantly digital technologies; and the need to find solutions to the plethora of sustainability-related challenges linked to rapid urbanisation. Nearly two decades later, the diversity of topics, scope and depth has significantly grown, while the need for coordination of the research remains.

## URBAN MORPHOLOGY IN AUSTRALIA

Urban Morphology in Queensland has been evolving since the 1980. The Queensland University of Technology (QUT) pioneered teaching and research in Urban Design led by Juris Grete who was tasked with gaining experience about urban design and urban form in Europe, before returning to Brisbane and establish the first urban design course in the state. Over the years, urban design has developed in Queensland through the example of leading experts and practitioners such as John Byrne, Peter Richards, and Malcolm Middleton. At QUT, Urban Morphology has gained momentum in the 2000s, where systematic research projects on urban form have shaped a strong cluster of researchers.

Paul Sanders’ research in urban morphology stems from his doctoral study at QUT which culminated in a thesis titled *Consonance in Urban Form; The Architectural Dimension of Urban Morphology*. The work extended the established techniques of morphological mapping into a new application of recording diachronic changes in streetscape form through a single case study in Brisbane. The key illustrated plate from this research has been published

in the journal *Urban Morphology*,<sup>5</sup> and was also featured by Peter Larkham<sup>6</sup> in the book *J.W.R. Whitehand and the Historico-geographical Approach to Urban Morphology*.<sup>7</sup> Sanders further applied strategies to apply these research approaches as a tool to guide the form for appropriate urban architecture,<sup>8</sup> thus contributing to the evolving discussion on the relationship of research to practice within urban morphology.<sup>9</sup> Sanders has served as a council member of ISUF between 2012-2015.

Urban Morphology at QUT is now led by Mirko Guaralda whose specific approach to urban morphology is informed by phenomenology, social justice, and sustainability, enquiring the complex relationship between building types, user experience, and meaning of place. Cities are approached as complex and integrated ecosystems, to understand how they evolve and morph, in particular to respond to current challenges, such as climate adaptation, pandemics, deep changes in our economic paradigms, migration, or socio-cultural dynamics. The research has a dual focus, it analyses the physicality of the city, spatial relationships, recurrent building types and morphological patterns. The research also deals with intangible factors, such as culture, identity, heritage, as well as structured and unstructured interaction with the urban form, in particular public spaces. Current projects deal with the idea of adaptable urban environment. It is recognised that, especially in the Australian context, densification is strategic to produce sustainable and inclusive cities. Medium density, medium rise, mixed used developments are an underexplored morphotype in Australia, especially in regional areas. Research explores adaptability of different building types to the Australian context, their impact on urban form, lifestyle, and society.

### Technologies

Regarding *technologies*, remote sensing, defined by the US Geological Survey<sup>10</sup> as ‘the process of detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance (typically from satellite or aircraft)’ is clearly well-suited to urban morphological investigations. See for example the special issue of the journal *Remote Sensing* (2022) on ‘Remote Sensing-Based Urban Morphology Analysis’,<sup>11</sup> edited by Carlos Bartesaghi Koc (University of Adelaide) and Paul Osmond (University of New South Wales, UNSW), which includes comparisons of various parameters between cities and between neighbourhoods within cities. Related technologies with increasing application to the study of urban form in Australia include the use of LiDAR (light detection and ranging) to generate 3D representations of urban places, and the creation of urban ‘digital twins’, virtual objects designed to accurately represent their physical counterparts.<sup>12</sup>

The neighbourhood or precinct – however defined, and there are many definitions – has been a consistent locus of Australian morphological research. Recent examples from local researchers (but not necessarily relating to local projects) include Sala Benites et al,<sup>13</sup> He et al,<sup>14</sup> and Deng et al.<sup>15</sup> Morphological analysis at the scale of streets and street segments has also occupied Australian

researchers, particularly in the exploration of walkability and ‘bikeability’, matters of practical concern for Australia’s largely car-dominated cities.<sup>16</sup>

### **Interface typologies**

The micro-spatial analysis focuses on the interface spaces between private and public domains in the city to generate a new typology and understanding of the city as urban production, exchange and innovation.<sup>17</sup> Thwaites, Simpson, and Simkins further developed the idea of the interface as socio-spatial assemblages.<sup>18</sup>

### **Morphology and multiplicities**

The morphology explorations in the broadest sense in Australia include tendencies of exploring the possibilities deriving from a broad discussion around assemblage theories and how they might be affecting urban morphology. Wood and Dovey discuss how and why creative industries in Australian cities are emerging within certain kinds of urban morphologies.<sup>19</sup>

Pafka and Peimani are developing a multi-scalar approach to mapping, combining micro-, meso- and macro-scales with a particular focus on the transit-orientated urban neighbourhoods in Melbourne and Chicago, observing them as assemblages.<sup>20</sup> Milica Muminovic develops a focus on intensity mapping to build a non-essentialist approach to urban morphology at the example of block sizes and clustering methods.<sup>21</sup>

More recently, Mancini and Glusac presented a study of Perth and questions of the continuity of identity within transformations of the inner city, referring to a need for a more integrated view of the morphological process of urban formation.<sup>22</sup> Osmond and Fard explore the transformation of the main campus of the University of New South Wales in Sydney through space syntax.<sup>23</sup>

### **Climate change / Health and Wellbeing**

Australia is especially vulnerable to the effects of climate change although as a wealthy nation it is arguably better positioned than most to address these impacts.<sup>24</sup> How Australia’s city dwellers will cope with a hotter world – and what can be done to mitigate and adapt to the combination of higher baseline temperature, more, longer and hotter heatwaves and an enhanced urban heat island effect – has emerged as a major focal point for urban form-related investigation. As well as conventional academic research, this work has increasingly involved contract/consultancy projects, often conducted with industry partners, to provide planning and design advice to state and local government agencies and property developers. For example, members of the High Performance Architecture group at UNSW and Urban Management and Planning researchers at Western Sydney University have prepared urban overheating mitigation and adaptation guidance for local governments in Sydney, Melbourne, Darwin and Alice Springs, the government of the

Australian Capital Territory, as well as for state planning agencies and individual development projects in New South Wales and Victoria. Much of the evidence base for these applied projects emerged from two Cooperative Research Centres active in the 2010s, the CRC for Low Carbon Living, based in Sydney, and the CRC for Water Sensitive Cities, in Melbourne.<sup>25</sup>

The capacity to disaggregate urban form into a set of morphologically defined *Local Climate Zones*<sup>26</sup> has provided the scaffolding for a number of Australian studies,<sup>27</sup> and in particular several studies by Bartesaghi Koc and co-workers to derive a complementary typology for *green infrastructure* to support urban climate research.<sup>28</sup> More generally, the expediency of integrating urban morphology and urban ecology has sparked more theoretical explorations in Australia as elsewhere.<sup>29</sup>

Human health, wellbeing and overall ‘liveability’ has emerged as a significant driver of both research and practical intervention around urban form,<sup>30</sup> with an emphasis on the quantity and quality of urban green space. Topics have ranged from thermal comfort<sup>31</sup> and loneliness,<sup>32</sup> to private open space<sup>33</sup> and urban acoustic comfort.<sup>34</sup>

## URBAN MORPHOLOGY IN NEW ZEALAND

Although the study of urban form is a relatively underdeveloped field in New Zealand, in comparison with Australia, it has long been an interest in architecture, planning, history and urban geography. Studies have considered urban form in relation to urban transportation,<sup>35</sup> urban socio-economic history,<sup>36</sup> urban and architectural history,<sup>37</sup> urban conservation<sup>38</sup> and the history of surveying and mapping.<sup>39</sup> New Zealand geographer L.L. Pownall was trained in the University of Wisconsin and influenced by Richard Hartshorne.<sup>40</sup> His work is particularly reliant on field survey, and focuses on urban site, form and function, with particular reference to contemporary changes.

The Conzenian school of urban morphological thought has been little represented in New Zealand until recently. The early application of Conzenian ideas in New Zealand was actually undertaken by MRG Conzen himself during a visiting professorship in the University of Canterbury in 1968.<sup>41</sup> More systematic morphological research on New Zealand towns and cities was only developed by a research group at the University of Auckland in the past 15 years led by Kai Gu, a prominent member of the ISUF community and past Secretary-General of the ISUF Council between 2010-2018.

Like many towns and cities in other countries, intensifying pressures for changes to the urban environment in New Zealand have created challenges to planning and urban design. In relation to urban conservation,<sup>42</sup> land-use planning,<sup>43</sup> and urban waterfront redevelopment,<sup>44</sup> these research projects reveals urban morphology as a significant analytical framework that clarifies urban problems and informs

decision taking about future built environments. In the examination of the changing urban environment in Auckland, Wellington, Hamilton and Mount Maunganui, our projects particularly focus on the critique and development of methods of urban landscape characterisation and management.

Urban morphology has been integrated into the teaching of planning and urban design studios at the University of Auckland.<sup>45</sup> An evident advantage of the morphological approach is that it provides a clear logic for urban form analysis and the process of reasoning. Students frequently commented that ‘urban morphological theory and method are intellectually stimulating’ and that ‘the morphological field workshops have demonstrated the importance of ‘ways of seeing’ and they are particularly intriguing and inspiring.’ To strengthen the link between planning and urban design studios and other planning courses concerning policy and governance, students are expected to make sense of the morphological ‘footprints’ on the ground and proposed ‘blueprints’ based on their knowledge of local plan making and implementation processes. Urban morphology has diversified and complemented the teaching program in planning at the university.

Similar to the work of other urban morphology networks, the Auckland group strives to develop a theoretical, technical and practical basis that is expected to improve morphological research, while contributing to more effective urban planning and management. Two current research projects are noteworthy. Wang and Gu seek to relate urban morphology to planning for spatial justice.<sup>46</sup> The project examines the changing processes of social and physical reconfiguration of social housing areas in Tāmaki, Auckland. It is expected to contribute to the development of spatial justice through articulating how such a conception can be related to analyses of cases of uneven developments and (in)justice in planning practice.

An examination of the epistemology of the landscape concept reveals three salient aspects of landscape relevant to multiple domains of urban planning – the unifying, morphogenetic and socialised. Although landscape research has translated into urban management, its full potential has yet to be realised. Among the three landscape dimensions, morphogenesis is relatively neglected. By foregrounding morphogenesis, the three epistemological orientations of landscape can be rebalanced and reintegrated to form the basis of a new planning framework for more continuous, harmonious and sustainable urban development.<sup>47</sup> Our research activities are expected to complement and diversify established contributions of international urban morphologists.

## TWENTIETH ISUF CONFERENCE IN BRISBANE, 2013

Despite the apparent disaggregation of research content, sufficient focus resulted in the hosting of the Twentieth ISUF Conference in Brisbane, 2013, which provided timely attention to the scale of regional interest. Urban morphology

as a field of study has developed primarily in Europe and North America, and more recently emerging as a recurrent topic in China and South America, as a counterpoint to this centric view, the ISUF 2013 conference explored aspects of ‘urban form at the edge’. In particular, the conference examined ‘off centre areas’ such as India, Africa, Middle East, Central Asia and Australasia which require innovative approaches to the study of traditional, as well as post-colonial and contemporary, morphologies. Broader interpretations of urban form at the edge stimulates a focus on minor centres and suburbia, with their developing and transilient character; edge cities and regional centres; and new technologies and approaches that are developing alongside established methods, tools and theories of urban morphology. Sub-themes for the conference were:

- Cities on the Edge – cities on edge conditions, such as natural limits or political boundaries
- Off centre – urban form in emerging economies and postcolonial countries
- On the Edge of the City – peripheral areas and urban form in suburbia
- Edge Cities – new urban conditions
- Regional centres – cities and towns with local importance, but at the edge of national or regional urban networks
- Pushing the Edge – new technologies and new techniques.

Although Australia has historically been considered at the edge of the world due to its location, the conference took advantage of its relative proximity to Africa, India and South East Asia, especially targeting the seminar to these geographical areas, and directly addressing the challenge for ISUF to develop into these continents. Two volumes of conference papers were published including full double-blind peer reviewing of submitted conference papers,<sup>48</sup> furthermore, the conference was reviewed in a report written by Pierre Gauthier and published in *Urban Morphology* 17(2).<sup>49</sup>

#### OPPORTUNITIES FOR A REGIONAL NETWORK.

Australia has some of the fastest growing, and at the same time, fastest sprawling cities today. A discussion on the urban form of Australian cities is strategic to secure that our urban settlements are prepared to face the challenges of a changing economic, social and environmental outlook. Australian cities and regions are extremely diverse and variegated, exchange and integration of knowledge across different local research groups is necessary to build a strong urban culture and a strong awareness of the strategic role our cities have in facing the major issues of a declining industrialised society. The body of work that is represented in this paper suggests the volume and substance of urban morphological research in Australasia can be consolidated into a coherent network of ISUF.

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# A B S T R A C T S : S E R B I A N

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NASTAJANJE ISUF REGIONALNE MREŽE URBANE MORFOLOGIJE:  
AUSTRALIJA I NOVI ZELAND (ANZUMN)

**Paul Sanders, Kai Gu, Mirko Guaralda, Milica Muminovic, Paul Osmond**

Za razliku od velikog broja publikacija na temu Australazijske istorije planiranja, fokus na urbanoj morfologiji je bio gotovo nezastupljen do kasnih devedesetih godina kada je Arnis Siksna sproveo komparativnu analizu planova grada otkrivajući blisku vezu veličine bloka i pripadajućeg oblika nekoliko australijskih i američkih gradskih obrazaca. Tokom poslednjih decenija, nekoliko istraživača je sproveo relevantna istraživanja kako u Australiji, tako i u Novom Zelandu koje sugerišu na blagovremeno formiranje regionalne grupe. Naime, kao kontrapunkt centralnoj dominaciji urbane morfologije na severnoj hemisferi, ISUF konferencija 2013. godine je bila organizovana u Brizbejnu i sa temom “Urbane forme na ivici” i “van centralnih područja” koje su proizvele inovativne pristupe proučavanju tradicionalne, kao i post-kolonijalne i savremene morfologije. Ovaj rad će proširiti teme razvijene unutar ovog istraživačkog polja.

KLJUČNE REČI: URBAN MORFOLOGIJA, AUSTRALAZIJA, ISUF REGIONALNE MREŽE, URBANA FORMA

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