



Melbourne *Public sustainability*
Transportation Access **Design** *Rivers Architecture Analysis*
social role cities **2015**
Oculus
city form energy **urban** *Construction*
MSD *Space Planning*

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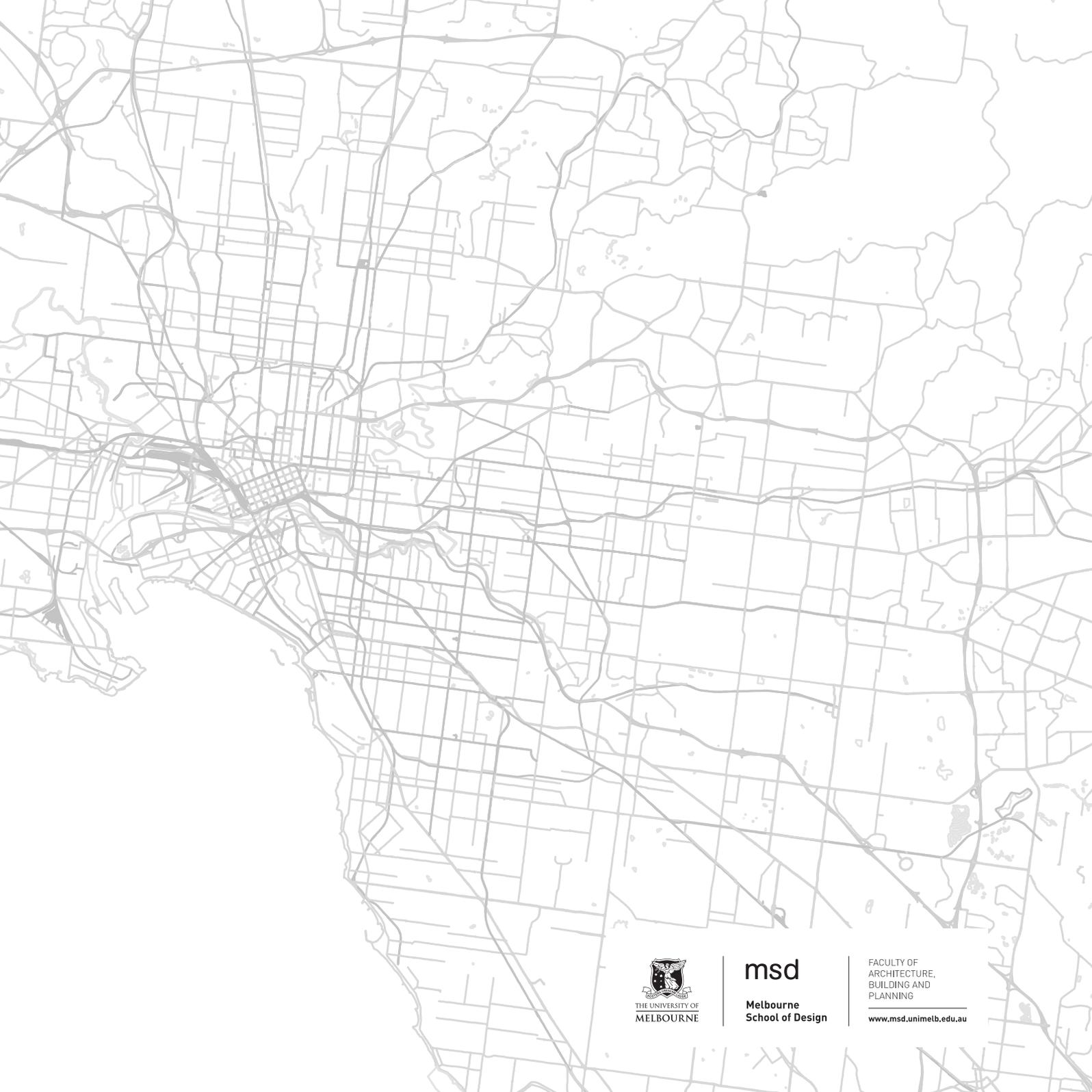
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Foreward

PROF. HANNAH LEWI

ABP DEAN OF RESEARCH

It is a great pleasure to introduce the publication of the 2015 edition of Oculus.

The Faculty of Architecture, Building and Planning is very privileged to host such a vibrant mix of disciplines, approaches, professional and international outlooks. And nowhere is the benefit of this mix more apparent than in our PhD and Masters cohort.

One of the really positive aspects of becoming fully at home in the MSD building this year is to have staff, researchers and students reunited in one space so that conversations and the exchange of ideas can occur more fluidly.

I often walk past the RHD Pods in the upper levels of the building and feel the intellectual activity (and sometimes the frustrations too...) inherent in the arduous road towards completing a long and intense research degree seeping out into the corridor. And I know this level of activity and commitment extends well into the twilight hours, weekends and holidays! So a publication and event like Oculus is a great way to step back, take stock and mark the important research work that has been happening in 2015.

The range of topics included in Oculus 2015 is impressive in its breadth, innovation and timeliness in tackling many important and interesting challenges. The research encapsulated here promises so much new and valuable knowledge that needs to be disseminated widely and listened to carefully so as to better reconcile the past and future of our cities and environments.

Congratulations and thank you to the team who have edited this volume and all the contributors.



Foreward

DR. AJIBADE AIBINU

ASSISTANT DEAN, RESEARCH TRAINING

It is my great pleasure to welcome you to this third edition of the Oculus, the digital publication organised by the graduate researchers of the Melbourne School of Design in the Faculty of Architecture, Building and Planning. The Oculus is a showcase of research undertaken by our PhD and MPhil researchers.

At the Melbourne School of Design, we provide our graduate researchers with a supportive and intellectually engaging environment to explore their ideas, develop new knowledge and solve complex problems and challenges facing our society and our ever-changing world. There is no doubt that developing sustainable solutions to address the problems and challenges require multiple perspectives as well as dynamic and trans-disciplinary approaches. As I reflect on this need, I am glad that the themes for this edition of the Oculus are multidimensional, diverse and complementary ranging from history, performance, people, health, planning, risk, structures, and energy to ecological issues. They closely align with the University of Melbourne three broad research areas for institutional focus: understanding our place and purpose; fostering health and wellbeing; and supporting sustainability and resilience.

This third edition of the Oculus reflects the strength, richness and the uniqueness of our research training at the Melbourne School of Design. The research topics are from a variety of disciplines such as architecture, landscape architecture, construction, property, urban design and urban planning. The topics address issues that enable us understand the past, present and future of our built and natural environments in various contexts and at different scales. Many are fundamental research; some are creative while others are applied.

I would like to thank all the contributors as well as the organising committee for their hard work, motivation and commitment which made this edition unique and a reality. Finally, I say "Well done Raul and Monique!" You have done a great job putting this edition together.

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Introduction

MONIQUE FOUCHÉ

PHD CANDIDATE

Welcome to our Oculus 2015 publication. This publication, compiled by the Melbourne School of Design PhD students, aims to provide a brief snap shot of the incredible range of research projects being completed by this world renowned institution. The diverse range of projects demonstrates the interest and skill harnessed by the esteemed research cohort of 2015.

The publication has been divided into the following key themes: Ecology; Energy; Health; History; People; Performance; Planning; Risk and Structures. Within each theme a range of research areas are prevalent stemming from specific key research trends. The word cloud, as illustrated on the left, illustrates the range of key words prevalent in this year's publication. The greater the size of keyword, the more prominent it features within this publication due to frequency of use. Thus this publication will not only demonstrate the culturally diverse and contextually rich research enquiries, but also highlight key research trends taking place at present.

As each theme unravels to present its own individual complexity and assortment of research projects, the links between each theme will become apparent as research areas start to collide and integrate. This interconnectedness is further emphasised by the map provided on page 94 that illustrates the sheer extent of each themes dependency on another.

We hope you enjoy our research snap shot and look forward to sharing our prospective research and academic contributions with you into the ongoing future.



Mitigating the urban heat island effect with urban greenery in Australian cities: policy, governance and communication

JUDY BUSH - SUPERVISOR: DR. DOMINIQUE HES; A/PROF. LU AYE (FACULTY OF ENGINEERING)

KEYWORDS: URBAN HEAT ISLAND EFFECT, URBAN GREEN SPACE, GREEN INFRASTRUCTURE, URBAN POLICY, SUSTAINABILITY TRANSITION THEORIES, AUSTRALIAN CITIES

The urban heat island effect, in which city areas are significantly hotter than surrounding rural areas, can affect cities' liveability and productivity. During heatwaves these impacts are exacerbated. Heatwaves impact urban liveability and productivity, and disproportionately affect vulnerable urban dwellers; the elderly, young children, socio-economically disadvantaged residents and those with pre-existing illnesses. Urban greenery can mitigate the urban heat island effect, as well as providing many other benefits for the urban dwellers and biodiversity in cities. However, urban sprawl and densification processes can contribute to reductions in urban greenery cover. In most cities in Australia, the development of policies for retention and maximisation of urban greenery in the context of urban heat island effect is still in its early stages.

The aim of this research is to investigate how policies, policy processes and communication contribute to the retention and maximisation of urban greenery for mitigation of the urban heat island effect, and to broader liveability objectives. The research takes an interdisciplinary approach to qualitative policy evaluation research, that spans urban ecology, governance, and transdisciplinarity.

The research reviews the inclusion of urban greenery elements and urban heat island effect mitigation in policies, identifies policy mechanisms, and evaluates the 'effectiveness' of these policies and their policy mechanisms in retaining and maximising urban greenery. The analysis framework brings together theories of 'urban sustainability transitions', with research on policy analysis, to structure the criteria for analysing policies. Case studies of three municipalities within metropolitan Melbourne will focus on the adjoining Cities of Melbourne, Moreland and Hume; these municipalities represent inner, middle and out suburban contexts respectively. These will be supplemented by research of selected international cities, including London UK. The research aims to develop understandings of what makes policies effective [a focus on policy process]; and which policies are effective [a focus on policy mechanism or instrument, and output or outcome].



Urban cultural ecosystem service flow, an indicator to inform planning for better understanding and practice of social-ecological sustainability in a city



JINLONG LIU - SUPERVISORS: PROF. CHRIS RYAN & DR. OLE FRYD

KEYWORDS: CULTURAL ECOSYSTEM SERVICE; URBAN GREEN SPACE; SOCIAL-ECOLOGICAL SUSTAINABILITY; CITY OF MELBOURNE



The concept of urban ecosystem services, defined here as the direct and indirect goods, functions, as well as aesthetic and cultural values within urban areas, are heavily drawn upon by a group of theories of resilience and sustainability, which not only regards ecosystem services as one of the main qualities of but also a way to improve resilience and sustainability in cities. Compared with the other tangible bio-physical ecosystem services, the research of cultural ecosystem services is still in an immature stage, though they are widely recognised as an essential component in the ecosystem service classification framework. The objective of this project is to explore the application of directly quantified cultural ecosystem service flow as an indicator to inform planning and management practice of urban green spaces in a city area. To achieve this goal, the research will address the following three questions: a) what is the spatial pattern of cultural ecosystem service flow within a city; b) what are the variables controlling the flow of cultural ecosystem services in urban areas, and; c) how can the flow of cultural ecosystem service be assessed based on the physical characters and spatial attributes of urban green spaces.

The first aim of this project is to know the spatial pattern of the values/benefits received by city residents in using urban green spaces. These intangible values/benefits, or cultural ecosystem services in the terminology of this project, can be achieved from many physical activities in green spaces like parks. From this project, the researcher would like to know what specific value/benefit people receive from what kind of activity during their visits in certain parks. The key questions are: How to use urban green space use frequency as the indicator to quantify the flows of the intangible values/benefits? What is the spatial pattern of different types of the intangible values/benefits actually used by the residents living in the case study area?

A new classification of cultural ecosystem service in the built environments will be developed based on a recent survey data of Open Space Strategy and a proposed field survey of selected urban green spaces in the City of Melbourne. This classification will be established according to the type of activity and the relevant value/benefit from the survey of users, and the flow of cultural ecosystem services will be quantified based on the frequency of visiting and number of visitors for each green space. From the literature review, this research first

Figure 1. Hierarchy of open spaces in the City of Melbourne. The Capital City, State and Regional open space is not necessarily based on size given that these roles can be fulfilled by any size of open space. The other hierarchy types of Municipal, Neighbourhood, Local and Small Local open space are more closely linked to size. Data source: City of Melbourne

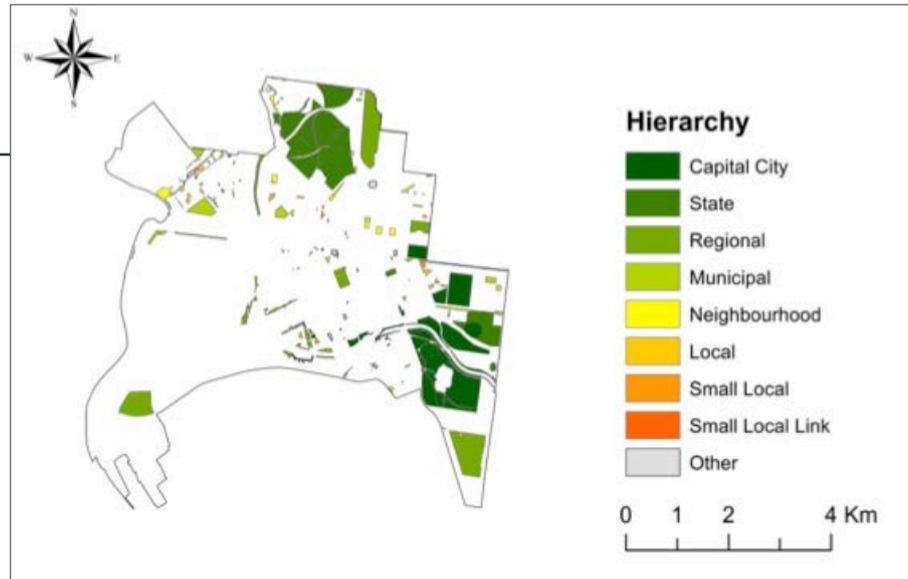
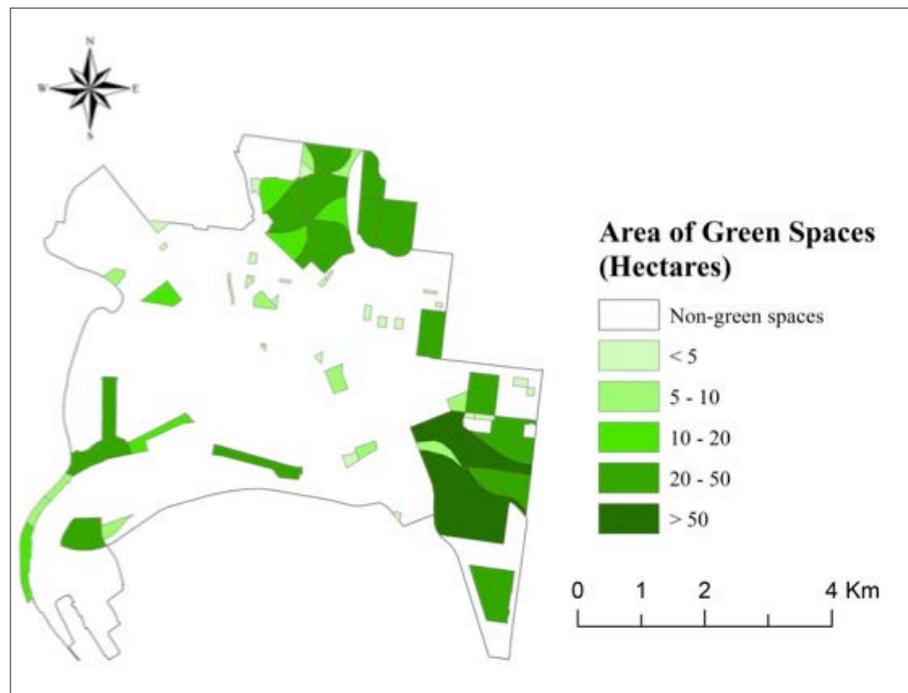


Figure 2. Area of green spaces (in Hectare) in the City of Melbourne. The concept of “urban ecosystem”, or “urban green space”, refers to any publicly owned continuous, unsealed, and accessible parks, gardens, reserves, water bodies, and the adjacent public squares above the urban ground (City of Melbourne Open Space Strategy, 2012).



categorizes cultural ecosystem services into seven types: recreation, heritage appreciation, environmental education, relaxation, spiritual amenity, social relation, and sense of place. In this new survey, the respondents visiting the selected public green spaces are expected to answer four major questions:

- What do you usually do in this place?
- What do you value about this place?
- Where else do you visit for the same value?
- What kind of value/benefit do you get from certain activity?

The results are expected to link physical activities with cultural ecosystem services, which will further benefit urban planning by better understanding the roles of different types of green spaces in the City of Melbourne. In the year of 2010, a household survey with questionnaires investigating the information of open space use within the City of Melbourne was implemented. A total number of 1,776 questionnaires, which represents approximately 4% of the entire households, were completed and returned. According to the City of Melbourne Open Space Strategy, 86 kinds of “reason to visit” are synthesised into 18 physical activities. The physical activities will correspond to the identified values and benefits, from which the result will be mapped with the help of GIS (Geographical Information System), and compared with the traditional modelling using public green space area as the proxy of cultural ecosystem service provision.

Secondly, multivariate logistic regression will be applied to examine the relationship between urban green space type, distance, area, canopy of trees, demographic characters of respondents and their frequency of visits. The results will inform decision makers what are the controlling variables in the flow of cultural ecosystem services.

Finally, the methods applied for cultural ecosystem service quantification in previous research will be evaluated. The outcomes will be compared with the results of mapping based on the open space survey data. Further, the validity of Bayesian Belief Network recently applied in the ecosystem service flow analysis will also be tested and compared with traditional models. Employing the available data like spatial distance, type of urban green spaces, the indicator of cultural ecosystem service flow is expected to be transferable into where survey data are deficient.

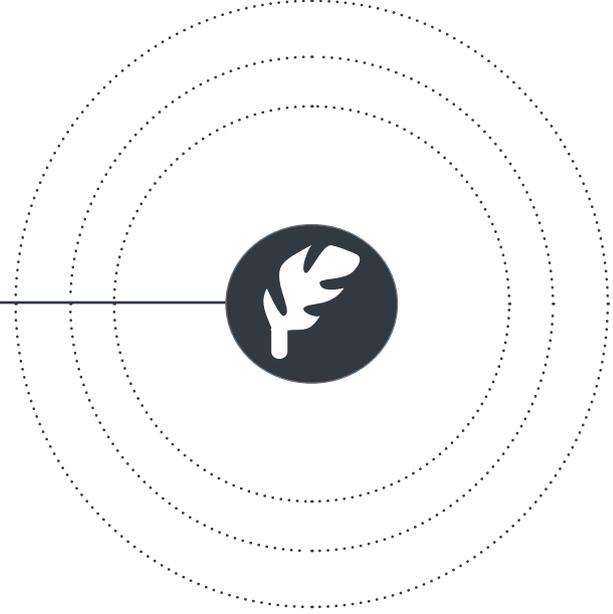


Figure 3. People participate in different physical activities in different green spaces in the City of Melbourne, and potentially receive a flow of "cultural ecosystem service" as defined in this project. Photos taken by the author.



Social-ecological transitions for urban pathways

ANDRÉANNE DOYON - SUPERVISORS: DR. DOMINIQUE HES & DR. OLE FRYD

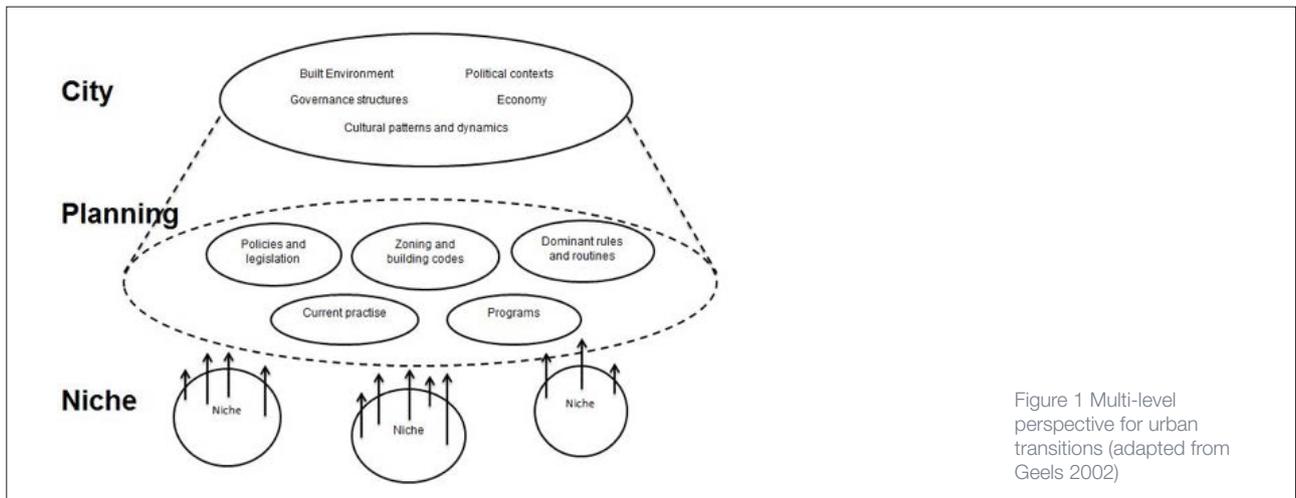
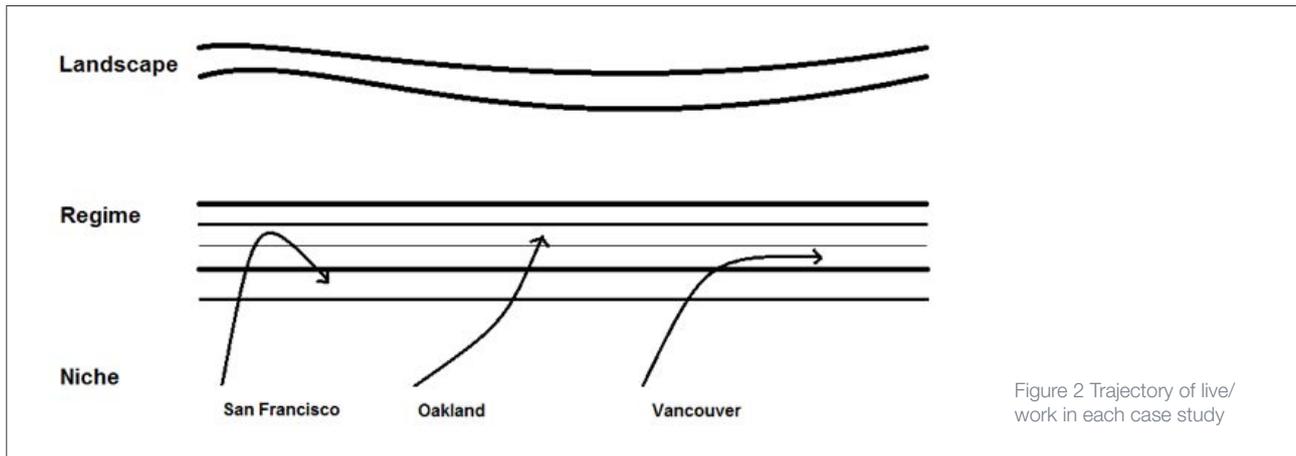
KEYWORDS: URBAN PLANNING, SUSTAINABILITY TRANSITIONS, RESILIENCE, SOCIAL-ECOLOGICAL SYSTEMS, LIVE/WORK

The aim of my PhD is to explore the role of niches in urban resilience, and to discover what can be learned from investigating the trajectory of a niche innovation within different geographical, political, and cultural contexts. As well as which governance contexts, approaches to planning, and actors influence the process. Two theoretical foundations support the research: resilience and sustainability transitions. By combining an urban resilience framework with sustainability transitions' multi-level perspective (MLP), the research proposed a different way to study urban transitions from a bottom up perspective. To do this, the MLP was adapted to investigate transitions in cities; the three levels have been modified to reflect a city: the landscape becomes the city, the regime urban planning, and niches vary depending on the city and context, but the focus of this research is on live/work, see Figure 1. Live/work is a land use and a building typology, which refers to combined dwelling and workplace in a single unit or property.

My PhD used live/work policies and projects as a niche innovation within the context of urban planning in San Francisco, Oakland, and Vancouver to investigate an example of a sustainability transition. The research used an embedded multiple-case study approach with a theoretical replication design, and policy research, interviews, and observation for data collection. This research is interested in how sustainability transitions accelerate, and which policy-mixes, institutional changes, or governance contexts influence those processes.

The trajectories of live/work in the different cities demonstrate how a particular niche accelerates, and which policies or governance contexts influence the process. Live/work in San Francisco accelerated and joined the regime, only to be discarded when it could not be fully controlled. The trajectory of live/work in Oakland was slower than in San Francisco, but live/work was finally incorporated into urban planning and continues to grow within the city. Live/work in Vancouver accelerated and joined the regime, but is currently in a state of stagnation due to barriers from the federal and provincial governments. The different transition pathways of live/work policies in the three cities, as illustrated in Figure 2, can be understood by examining the regime conditions and rules.

The different structures of governance and approaches to planning highlight the significance of the landscape level and regime actors in analysing transitions from a niche perspective.



The case studies suggest that landscapes which are less political and more collaborative are more open to change; although, political top-down landscapes have the most influence on the other levels. Strong landscapes prefer to move forward in a more calculated way, than allow the regime level to be responsive and adaptable. If niches win the favour of a strong landscape, then they may have a fairly fast trajectory into the regime. However, they can just as easily be rejected if they fall out of favour. Open landscapes are more influenced by the regime and niche levels, and are less prescriptive in their plans. This has implications for urban resilience and planning for resilience. As climate science evolves, demographics change, and markets fluctuate, a city's adaptive capacity will play a major role its ability to prepare for, and experience the future.

Research on sustainability transitions to date has focused on applying the theories to sustainability transitions in energy systems (e.g. Loorbach 2010; Rohracher and Spath 2014; Dóci et al 2015), water and sewer systems (e.g. Geels and Schot 2007; Fryd et al 2012), and zero emission housing (Moore et al 2014), which fit easily within a socio-technical conceptual framework. My PhD investigates live/work as a niche innovation within urban planning, which was more suited to a social-ecological systems framework. Resilience, which is situated within a social-ecological framework, can help to understand broader transition processes. In this sense, resilience can be thought of as a boundary concept to bridge research traditions between social-ecological systems and socio-technical systems. This approach can benefit research on urban transitions because resilience understands the world through a systems perspective, and embraces change.

This research's application of sustainability transition theories to analyse policy innovation in social-ecological systems has demonstrated that the theories are relevant beyond the boundaries of socio-technical systems, and beyond solely singular or bi-functional technical innovation transition processes. Cities, regions, and countries are complex social-ecological systems that include humans and their social and cultural institutions, as well as their infrastructures and built form, within the larger biophysical and ecological context when viewed within an ecological worldview. This re-framing may be useful for conceptualizing bigger issues such climate change, politics and power, and financial systems.





Where the rivers run dry: an inquiry into the design of dryland rivers

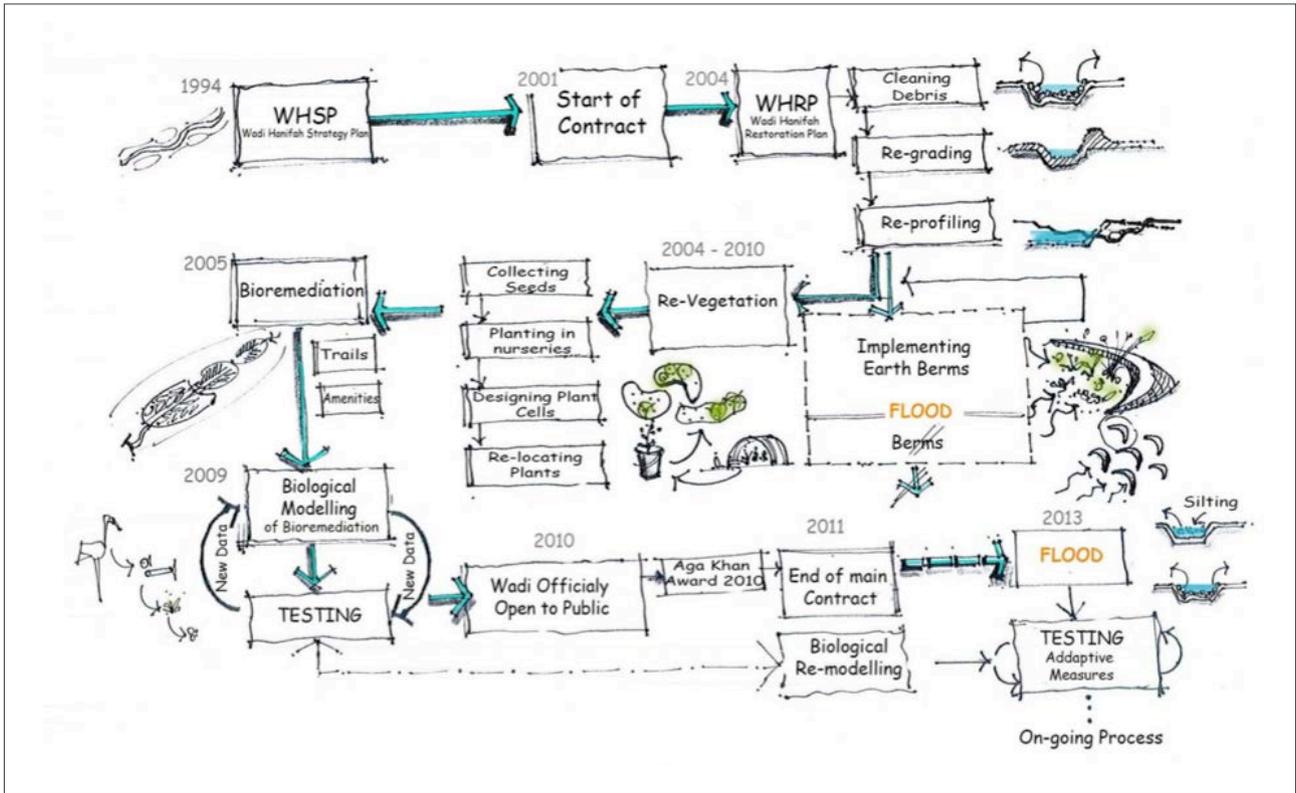
SAREH MOOSAVI - SUPERVISORS: DR. MARGARET GROSE & DR. JILLIAN WALLIS

KEYWORDS: DRYLAND RIVERS (WADIS), FLUX, ECOLOGY, CULTURE, MIDDLE EAST

Booming economies in the Gulf Region of the Middle East have led to extensive urban growth in major cities or what is known as oil urbanisation, with little regard for public open space. In the last two decades cities such as Dubai, Doha, Riyadh, and Muscat, have recognised the need for parks, plazas, waterfronts and other forms of public open spaces. Dry wadis or valleys running through the urban areas are being considered as potential spaces for public use because they often run dry, and provide a large linear area of fertile land within the dense urban fabric. However, designing dryland rivers or wadis, is often overlooked because of their complex dry/wet cycles, uncertainties and safety issues. Yet rejuvenating these landscapes can address the lack of public open spaces in the region and restore their natural and cultural values.

My research addresses the complexities inherent with designing public spaces in wadis integrating both ecological and cultural dimensions. It aims to break away from current tendencies of using generic concepts of ecology in designing landscapes, and rather focuses on particular aspects. Three projects in Oman and Saudi Arabia are studied to assess different scales and approaches to design.

Results from a cross-analysis of case studies show that hydrological dynamics or flux in wadis is a challenging ecological feature to engage with in design, and a responsive engagement requires context-specific solutions that are based on performance rather than static notions of site. Nevertheless, the most significant aspect to address in designing public spaces in wadis is the peculiar socio-cultural structure of the region, notably in terms of religion, gender segregation and politics, considering the shifting socio-cultural conditions.



Articulating the on-going processes involved in rehabilitation of the Wadi Hanifah project including major events and iterations.

Source: Authors own

Public use of a recreational
Lake in Wadi Hanifah in
Riyadh, designed by MTP
Planners.

Source: Arriyadh
Development Authority, 2010





Towards a more comprehensive and context-specific environmental assessment of cities: a multi-scalar analysis of energy, water and materials urban flows



ARISTIDE ATHANASSIADIS - SUPERVISOR: DR ROBERT CRAWFORD

KEYWORDS: URBAN METABOLISM, INDUSTRIAL ECOLOGY, URBAN ECOSYSTEM, URBAN INFORMATICS, SPATIAL ANALYSIS

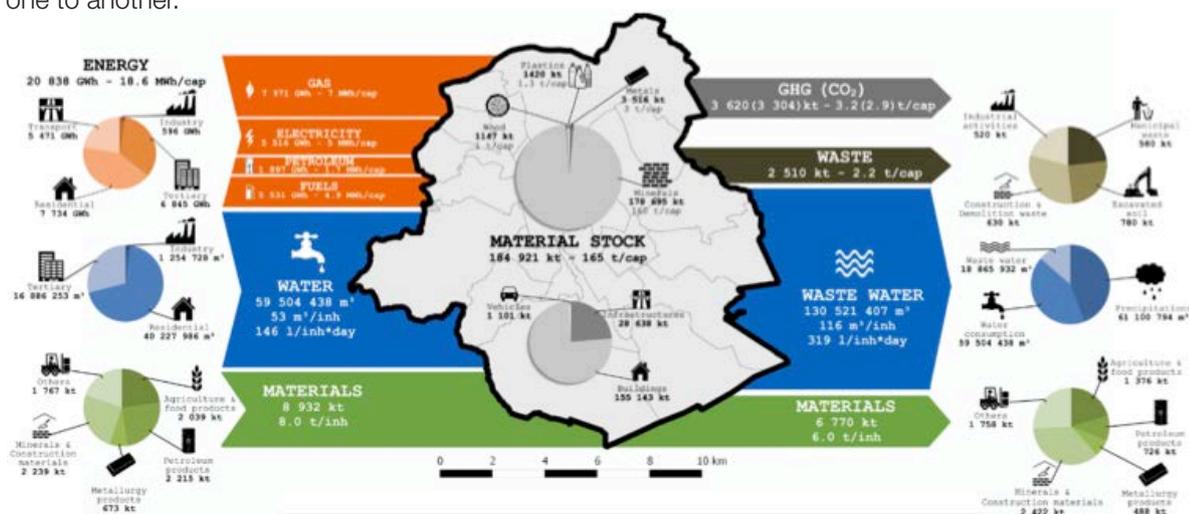
While urban areas cover only 2% of the Earth's land surface, they now host more than 50% of the global population and are estimated to account for 71-76% of CO₂ emissions from global final energy use and between 67-76% of global energy use. In fact, cities can be seen as the complex expression of a global-local articulation in an ever globalising world and economy. Cities are the nexus of global and local challenges ranging on the one hand from climate change, degradation of ecosystem services, global financial crises and global conflicts due to resource scarcity; and on the other to unemployment, city cleanliness, and housing affordability. In environmental terms, cities are hotspots of resource consumption, that mobilise material and energy flows from around the world in order to match its inhabitants' needs. Considering that global urban population is likely to continue to increase, especially in developing countries, it can be expected that cities will continue to be created and expanded. This creation and expansion of cities in the near future will require a considerable amount of new urban infrastructure, resulting in significant demand for natural resources and further exacerbating existing environmental pressures. In order to mitigate existing and future direct and indirect environmental pressures resulting from the functioning of cities, it is necessary to investigate and better understand how resource flows are associated with the urban system. Urban Metabolism (UM) is an urban environmental assessment framework that measures resource and pollution flows that enter and exit the urban system.

This research proposes to establish comprehensive framework for expanding the urban metabolism approach adding four additional layers, namely, the temporal evolution, spatialisation, the assessment of indirect environmental effects, and the identification of metabolic drivers. Thus, this research will provide a context-specific and spatio-temporal analysis that will attempt to shed some light on the complex behaviour and environmental effect of an urban system. This complex analysis is not only necessary to propose coherent and comprehensive environmental policies but is also useful in order to model and forecast the future metabolic state of the studied urban system. In practice, this research will attempt to answer questions at several spatial scales such as: "How much are we consuming?",



“Are we heading toward a more sustainable state?” but also “Who is consuming? And Why?”. In fact, before proposing any environmental policy it is necessary to identify most consuming sources and drivers of this consumption.

The framework developed in this research will be applied to Brussels and Melbourne studying two very different case studies. This will allow to compare the findings of the metabolism of two cities at different scales (region/state, municipality/city council, neighbourhood/SLA, etc.). This comparison will attempt to do an in-depth analysis that goes beyond the usual macroscopic conclusions which find general indicators such as income or density as proxies for resource use. Indeed, this research will take into account a greater amount of indicators and metrics (what type of density? population density, built-up density, buildings floor area density) using a great number of (open) datasets and observe if there are similar drivers in the two cities. This can ultimately help discuss if there are some common behaviours between urban (sub-)systems and therefore if urban environmental policies can be transferred from one to another.



Source: Authors own



Transit-based urban assemblages: designing the intensive low-carbon city

MILENA DURIC - SUPERVISOR: PROF. KIM DOVEY

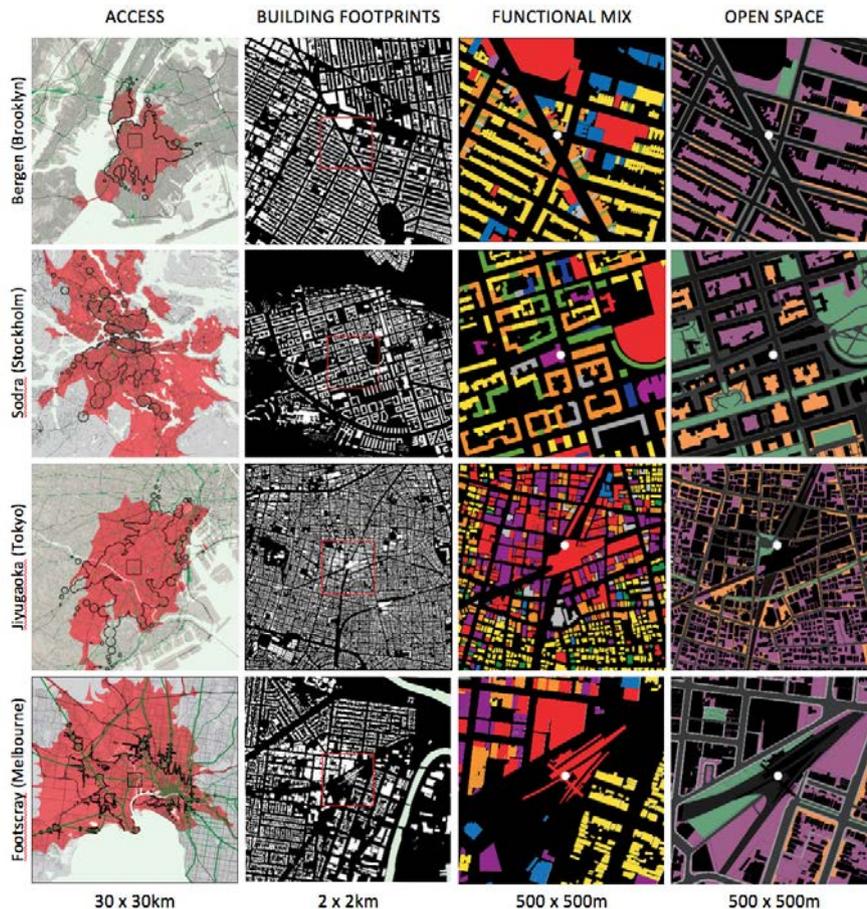
KEYWORDS: URBAN MORPHOLOGY, TRANSIT-ORIENTED DESIGN, URBAN INTENSIFICATION, ASSEMBLAGE, COMPLEXITY.



Cities worldwide and particularly Australian cities are facing the imperatives of population growth and low-carbon future. Re-thinking low-density, mono-functional, car-based urban morphology through transit-orientation has shown to be the essential step for effective public transport, social, economic and environmental performance. However, the paradigms of 'sustainable city' and 'transit-oriented development' are shown to be underpinned by multiple inconsistencies. These primarily include a disciplinary compartmentalization to urban planning and urban design, and an epistemological divide to quantitative and qualitative research. A set of questions remains unanswered in transit-orientation discourse as follows. How do these places work? How can we analyse transit-based development without scalar, disciplinary or epistemological reductionism? How to intensify places in a way that accommodates and encourages their complexity, dynamism and self-organization? While the theory does show that the superficially exclusive ideas in transit-orientation overlap and co-exist, there is a need for a conceptual design framework for re-thinking and assembling these relations.

This thesis aims to develop and analyse a set of three urban design scenarios for a case study in Footscray. These scenarios focus on the key themes of transit-based urban design – connectivity, co-functioning and concentration. Connectivity is the degree to which the place is inter- and intra-connected and accessible in terms of road, public transport and walking networks. Co-functioning includes different types of a mix: functional mix, a mix of forms, types, and grain sizes. Concentration stands for various indicators and measures of density: building heights, floor area ratio, coverage and dwelling density. These three C's of urban morphology are argued to be interlinked and interdependent.

The empirical exploration of the international transit-based case studies in Stockholm, Brooklyn and Tokyo denotes a framework for exploring the intensification capacities in Footscray. These places are of different urban morphologies that have been argued to work well in relation to high volume public transport. These international morphologies are not ideals, but aspirational models for low-density car-dependent places such is Footscray. This thesis distils a range of approaches to transit-oriented development and explores the way in which they may be adapted to an Australian case.



Source: Authors own

These images are a selection of morphological mapping conducted for the three international case studies (in Brooklyn, Stockholm and Tokyo) and a local one in Melbourne. The morphological analysis is a pursuit for synergies between densities, functional mix, open space, networks, accessibility, activities and flows across multiple scales

The urban design scenarios look into the way in which functional mix, density, permeability and access may improve the socio-spatial performance of this case study at multiple scales. The 50km scale of the proposals explores the improved conception of public transport in terms of network morphology, frequency and the way in which lines operate. It will be shown whether and to what degree do different levels of network intensification affect the accessibility on public transport. The medium scale explores the extent to which the proposed public transport networks and mixed-use corridors and nodes improve the diversity of choices, opportunities and access for residents, workers and visitors of Footscray. The 500m by 500m scale investigates in more detail the pedestrian permeability, land-use mix, transportation options and pedestrian amenity.

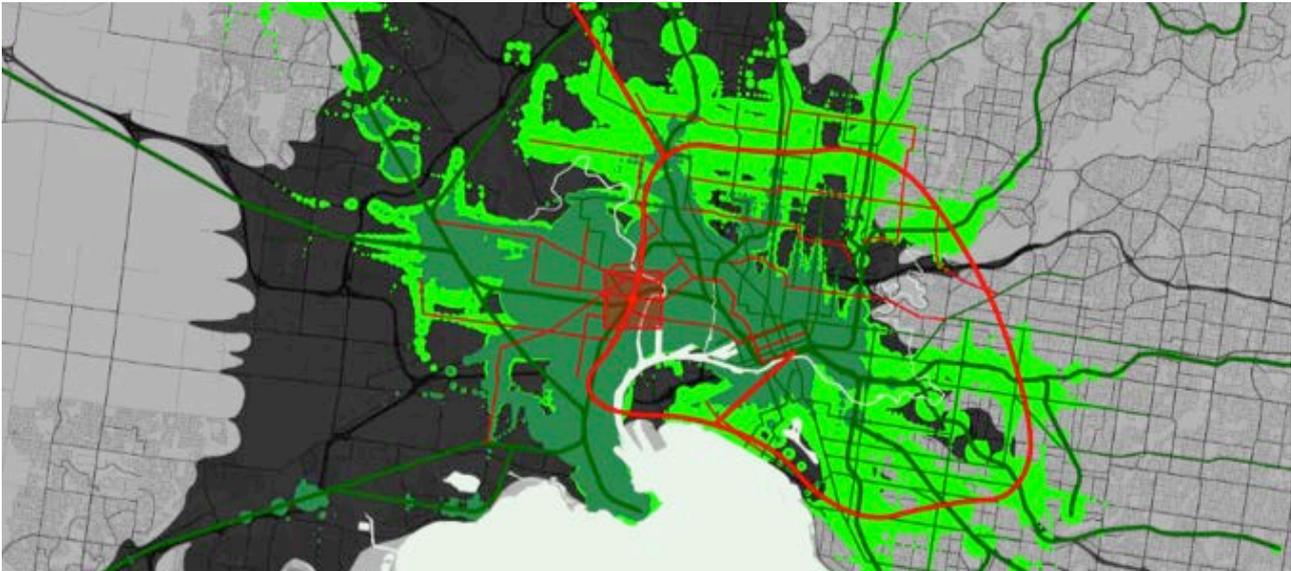
These urban designs are conceived within theories of urban complexity, self-organization, generativity and assemblage thinking. In this sense, urban diversity, amenity, flows and processes emerge from connections and interdependencies between different aspects of urban morphology. The specificities of each of the proposed design scenarios are analysed and cross-compared. These scenarios are not a pursuit for an ideal urban design in Footscray. The aim is to explore the redevelopment potential of this place and to foster the understanding of how its environmental, social and economic performance might improve. The outcome of this research contributes to better understanding of the potentials for the transit-based urban design of the Melbourne case study and beyond.

These images are a selection of morphological mapping conducted for the three international case studies (in Brooklyn, Stockholm and Tokyo) and a local one in Melbourne. The morphological analysis is a pursuit for synergies between densities, functional mix, open space, networks, accessibility, activities and flows across multiple scales.

This image shows the way in which the proposed public transport extensions for Melbourne affect thirty-minute accessibility isochrones in morning peak. Driving catchment is represented in grey, while public transport ones are shown in green (dark for the existing accessibility isochrones, and bright for the proposed one). It has been shown that public transport has the capacity to compete with cars and even proves to be a more convenient mode in multiple directions. This would be a result of the proposed orbital railway that would provide express lateral connections between middle-ring suburbs. Not only does this proposal improve the connectivity on the city scale and locally, but it also creates the potential for further growth,



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Source: Authors own

Towards a civil commons of open access information technology for transportation analysis and planning



PATRICK SUNTER - SUPERVISORS: PROF. NICHOLAS LOW & PROF. JUDY MCKAY

KEYWORDS: PUBLIC PARTICIPATION GIS, OPEN SOURCE SOFTWARE, PUBLIC TRANSPORT PLANNING, INFORMATION SYSTEMS, ACTION RESEARCH.

My research study is motivated by the Australasian Centre for the Governance and Management of Urban Transportation's (GAMUT's) concern with the problem of path-dependence of transport policy in dispersed, car-oriented cities such as Melbourne, and the possibility of society envisioning alternative transportation futures based on an enhanced inter-modal public transport network.

Conceiving of Geographic Information Systems for Transport analysis (GIS-T) as powerful 'knowledge technologies,' the research project investigates the potential of contemporary Free and Open Source Software (FOSS) for transport analysis as a platform for increasing the ability of Civil Society Organisations (CSOs) to engage in the policy-making process.

The project's core research question is:

What is the potential and implications of greater use of Open Source transport informatics software by Civil Society Organisations in their efforts to develop, communicate and advocate for alternative transport policies at the metropolitan scale?

Four subsidiary research questions are:

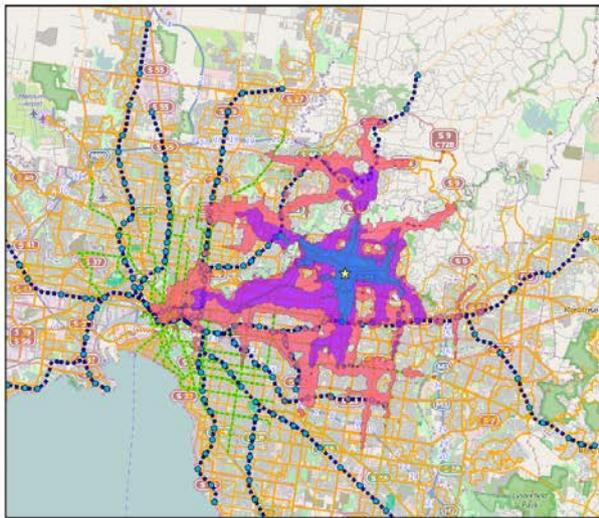
1. In what ways can supported access to Open Source GIS Transport Informatics tools increase the capacity of CSOs to develop and communicate transportation reform proposals?
2. What are the major resourcing and organisational issues regarding Open Source GIS tools that shape the ability of CSOs to utilise such software in the medium to long term?
3. In what ways might CSOs who extensively utilise Open Source transport and GIS tools modify their practices, structure, and planning as a result?
4. What are the implications of the answers to the above questions for how state institutions could manage and provide key data and other resources relevant to transport systems analysis?

I am pursuing the research using an Action Research method that involves directly collaborating with two policy-engaged Civil Society Organisations in Melbourne: Beyond Zero Emissions

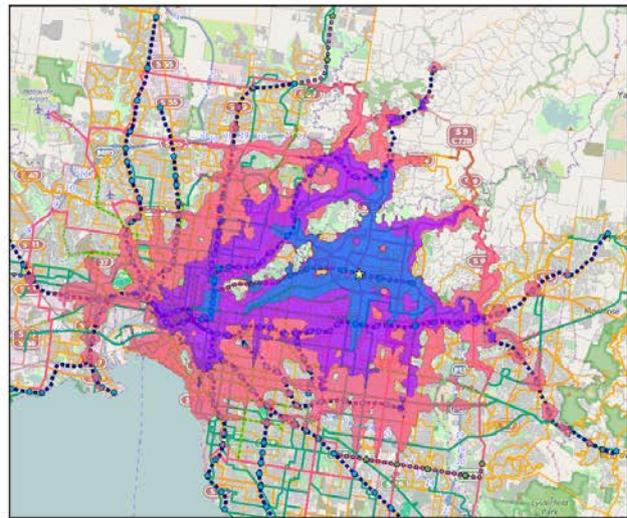


Isochrones comparison: travelling to Doncaster Shopping Town, Saturdays, 9PM.

Existing June 2014 timetable



Proposed PTUA network & timetable



Legend

- | | | |
|---------------------|-----------------------------|----------------------------------|
| ☆ Isochrone Centers | Existing train lines | • Existing train stops |
| Isochrones | Existing tram lines | • PTUA New rail stations |
| Blue 0 - 30 mins | PTUA train extensions | Red Smartbus routes (upg. freq.) |
| Purple 0 - 45 mins | PTUA tram extensions | Green Bus routes (upg. freq.) |
| Red 45 - 60 mins | | Orange exist. bus routes (2014) |

0 5 10 15 20 km



Map produced by Patrick Sunter, based on collaborative work with the Public Transport Users' Association (PTUA). Isochrones generated with the OpenTripPlanner software tool.

Underlying base map tiles (c) OpenStreetMap contributors, used under the CC-BY-SA 2 license (see www.openstreetmap.org/copyright). Melbourne train, tram and bus network geometry (c) The State of Victoria, Public Transport Victoria 2015, used under the CC-BY 3.0 AU License (see creativecommons.org/licenses/by/3.0/au).

Map produced by Patrick Sunter, based on collaborative work with the Public Transport Users' Association (PTUA). Underlying base map tiles (c) OpenStreetMap contributors, used under the CC-BY-SA 2 license (see www.openstreetmap.org/copyright). Melbourne train, tram and bus network geometry (c) The State of Victoria, Public Transport Victoria 2015, used under the CC-BY 3.0 AU License (see creativecommons.org/licenses/by/3.0/au).

(BZE), and the Public Transport Users' Association (PTUA). In both action-cases, I have worked with staff and volunteers at the organisations to analyse and communicate their proposals for transportation reform using open source software such as OpenTripPlanner and Quantum GIS, as well as develop custom code in the Python scripting language. I have simultaneously utilised a range of qualitative research data gathering approaches such as interviews, focus groups and research reflection journal to support critical reflection about the projects and connecting them to the broader research concerns.

I completing the Action cases during 2014-2015. With Beyond Zero Emissions, we were able to develop a 'Virtual Journey Planner' based on their proposed redesign of the metropolitan bus network, and assess the resulting changes in travel times of millions of metropolitan journeys. An example changed trip is shown in Figures 1 and 2. With the Public Transport Users' Association, we developed a modified intermodal virtual public transport network and timetable that included several of the PTUA's proposed rail and tramway extensions as outlined in their 'Every 10 Minutes to Everywhere' policy proposal, as well as upgrading the frequency of selected bus routes. The primary analysis and communication technique we utilised for this work was developing Isochrone maps of travel time to and from selected activity centres around the metropolitan region at different times of day, produced by OpenTripPlanner's Analyst extension and then post-processed using other open source tools. Figure 3 shows one of these maps. We also performed an impact analysis upon a set of journeys developed based on the Victorian Integrated Survey of Travel and Activity (VISTA), managed by the Victorian State Government.

While I am still completing the interpretation of the action-cases in light of my research questions, several preliminary findings are worth highlighting at this stage. Firstly, while the ecosystem of open source software tools for this kind of work is rich and capable, it still requires significant expertise and time to utilise them effectively. One of the outcomes of this study will be a fuller description of these requirements, and how they may be possible to address in the context of civil society organisations. Secondly, obtaining access to the necessary information and data to support these kinds of projects by CSOs remains a challenge, despite changes to the governance practices and policies for sharing such data by Australian governments during the study. Finally, one of the realisations from the project work is a greater appreciation of the multi-faceted nature of open source tools and open data regarding public transport and other infrastructure, and the way they are responsive



to the goals and practices of the organisations utilising them. This includes the concept that their most influential role may be in facilitating new communication patterns between actors in the 'policy ecosystem', as compared to being employed directly in advocating for alternative plans and policies.

OpenTripPlanner

Trip Planner

PLAN A TRIP VALLEY LAKE BOU

Time	Transfers	Duration
11:04am - 12:16pm	2 transfers	72 mins
11:14am - 12:26pm	2 transfers	72 mins
11:24am - 12:36pm	2 transfers	72 mins

Start at Valley Lake Boulevard

- Walk to B226**
About 23 minutes - 1.86 km
- Bus R14 to B27->B26**
11:28am Depart B226
2 minutes
11:30am Arrive B1095
Service run by Melbourne Bus - Upgraded.
- Walk to N56**
- Bus M3 to N201->N69**
11:37am Depart N56
19 minutes
11:56am Arrive N65
Service run by Melbourne Bus - Motorways.
- Walk to B1108**

The map shows a route starting at Valley Lake Boulevard, walking to bus stop B226, taking bus R14 to B27 and then B26, walking to N56, taking bus M3 to N201 and then N69, and finally walking to B1108. The route is highlighted in red on the map.

Base map tiles shown in this map (c) OpenStreetMap contributors, used under the CC-BY-SA 2 license (see www.openstreetmap.org/copyright)



Assessing the impact of urban form on the energy consumption and GHG emissions in Metropolitan Melbourne

RAUL ALBERTO MARINO ZAMUDIO - SUPERVISORS: A/PROF. ALAN MARCH, PROF. CHRIS PETTIT & DR. GREG FOLIENTE

KEYWORDS: ENERGY MODELLING, TRANSPORT ANALYSIS, BOTTOM-UP MODELLING, URBAN FORM, BUILDING TYPOLOGIES

Urban areas are the main consumers of energy resources, and the use of fossil fuels to generate energy for dwelling and transportation is one of the main factors behind the increase of carbon emissions and climate change (IPPC, Intergovernmental Panel in Climate Change, 2007). These agglomerations exacerbate existing urban challenges and bring new ones, especially related to the accommodation of new population and reduction of energy consumption. The nature and diversity of stakeholders' decisions to address the increasing population and housing density and the changing demand for, and patterns of, human mobility have a significant impact on resource consumption, particularly energy, and on the environment, particularly through the greenhouse house gas (GHG) emissions caused by human activities (Jenks & Burgess, 2000).

The term 'urban form' is used typically to describe the physical characteristics of the city's built form, or as the 'morphological attributes of an urban area at different scales. At the city or regional scale, urban form has been defined as the spatial configuration of fixed elements. Features of urban form at this scale would include urban settlement type, such as a market town, central business district or suburbs. In a broader sense, urban form generally encompasses a number of physical features and non-physical characteristics including shape, size, density, scales, land uses, building types, urban block layout and distribution of green space. At a very localized scale, detailed features such as a building's materials, façades and windows may be considered important for some purposes, in addition to street types and their spatial arrangement, or layout.

The relationship between urban form and its residents' energy consumption and GHG emissions have been on the urban research agenda for many years (Kentworthy, 2006; Grosvenor, 2011; Shimoda, 2006). In Australia, one of the main early studies, led by CSIRO (Newton et al. 1997) for the Australian Housing and Urban Research Institute (AHURI), explored the link between alternative urban forms and the air quality, energy consumption and GHG emissions in the Melbourne Metropolitan area. In this report, six alternative scenarios of future urban form in Melbourne, on the basis of a population increase from 2.5 million in the mid-1990s to 3.0 million by 2011, were examined: Business as usual, Compact city, Edge city, Corridor city, Fringe City and Ultra city (Figure 2).

Based on their overall impacts on air quality, energy consumption and GHG emissions from 1997, and using the available data and modelling approaches at the time, the most

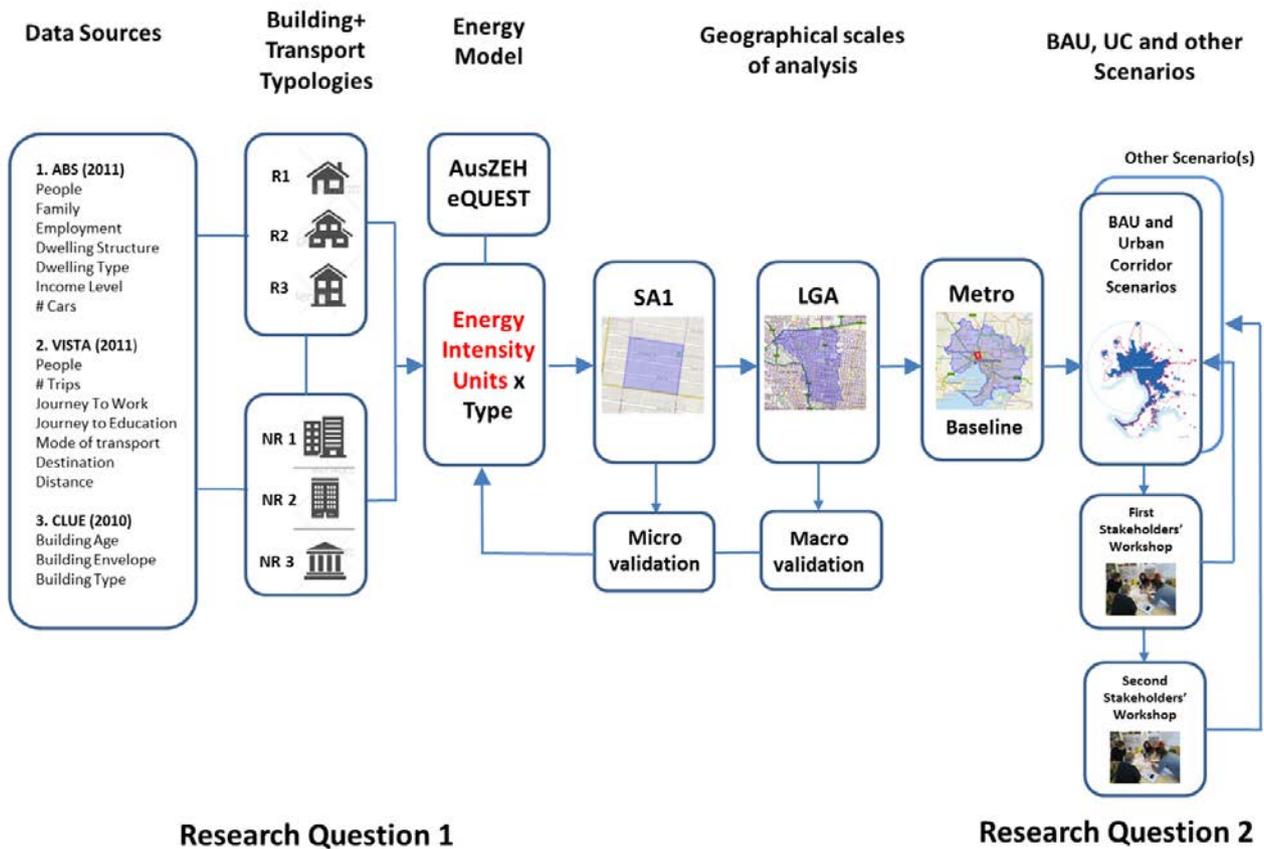


Figure 1: PhD methodology overall scheme

Source: Authors own

favourable was identified as the Compact City Scenario. The difference between the most favourable urban form out of the 6 (Compact City) and the least favourable (BAU or Low density suburban development) were very distinctive, as the Compact City had a 30+% reduction in energy use and GHG emissions compared to low density sprawl. The discussion on compact vs. dispersed city have dominated the agenda over the last years, with arguments and supporters from both sides on which of these urban forms deliver the greatest environmental protection and what form affords the greater energy efficiency (Holden & Norland, 2004).

In order to support important urban planning and policy decisions across different planning horizons – i.e. short, medium and long terms – and different geographic levels – i.e. neighbourhood to metropolitan scale – there is a critical need for an intermediate bottom-up approach that builds on disaggregated data and/or use detailed physics-based modelling and simulation results but meets the need to quickly evaluate the integrated impacts of alternative urban form-related decisions on the energy consumption and GHG emissions of urban dwellers.

The cross-typology bottom-up building stock energy assessment framework proposed by Foliente and Seo (2012) to assess the impacts of different technology, investment, policy instruments and actions by different stakeholders into the future, provides a starting platform for this type of intermediate approach. This approach provides a systematic and detailed classification (or sub-typologies) of variables that impact the total energy consumption and GHG emission of building stock in a given area (e.g. building characteristics, space conditioning system, lighting, hot water system, plug-in appliances, occupancy type and pattern, and local energy supply system); different options and level of details at these sub-typologies can be assessed (i.e. multi-level).

Urban form and structure – especially the characteristics and distribution of residential and non-residential buildings in an urban area (e.g. compact city vs. dispersed city) – have a strong impact on urban energy and GHG emissions. In order to support the environmental impact assessment of alternative urban forms based on these two indicators – from metropolitan policy level to local urban development proposals – this research aims to develop and validate an integrated bottom-up approach to modelling the energy consumption and GHG emissions related to building operations and household transport in metropolitan Melbourne.



This approach will be based on sets of building and household travel typologies with the basic residential household as the common element of analysis. The energy unit intensities and related emissions intensities for each building and travel typology will be calculated based on physics-based modelling and data sets available for the selected household types. The different distributions of these building and household travel types across specified areas will result in different energy consumption and emissions profiles for each urban form option (Figure 3). Data from previous census surveys, state reports and industry sources will be used to validate the methodology. Its application to practical planning options assessment (e.g. a business-as-usual scenario vs. an intensification alternative such as corridor city) will be explored through a stakeholders' workshop and a semi-structured interview method (Figure 1).

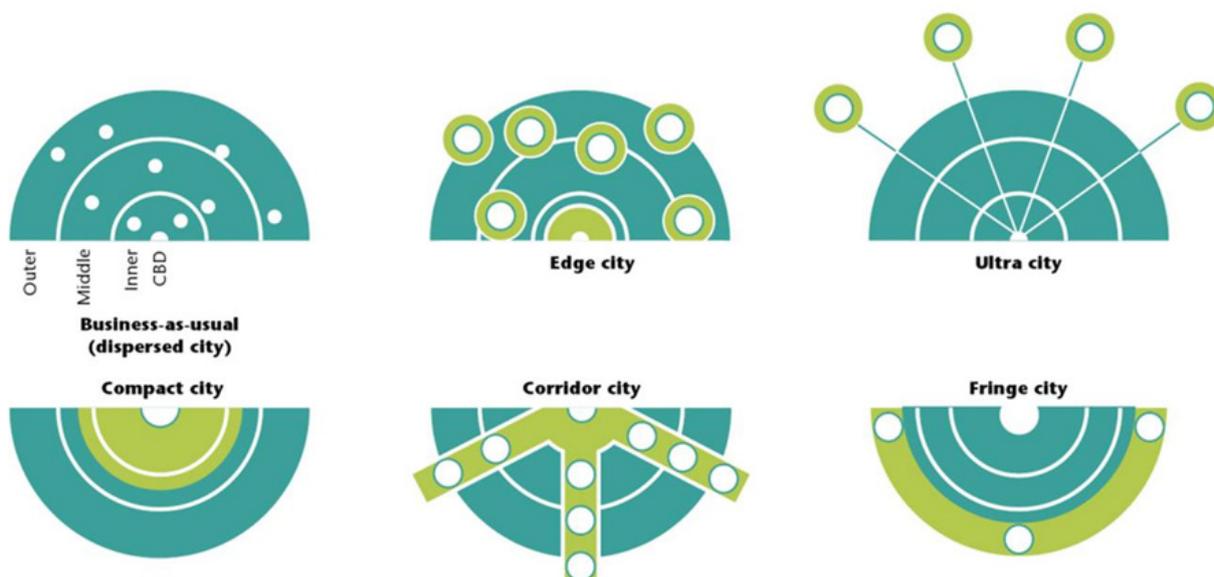
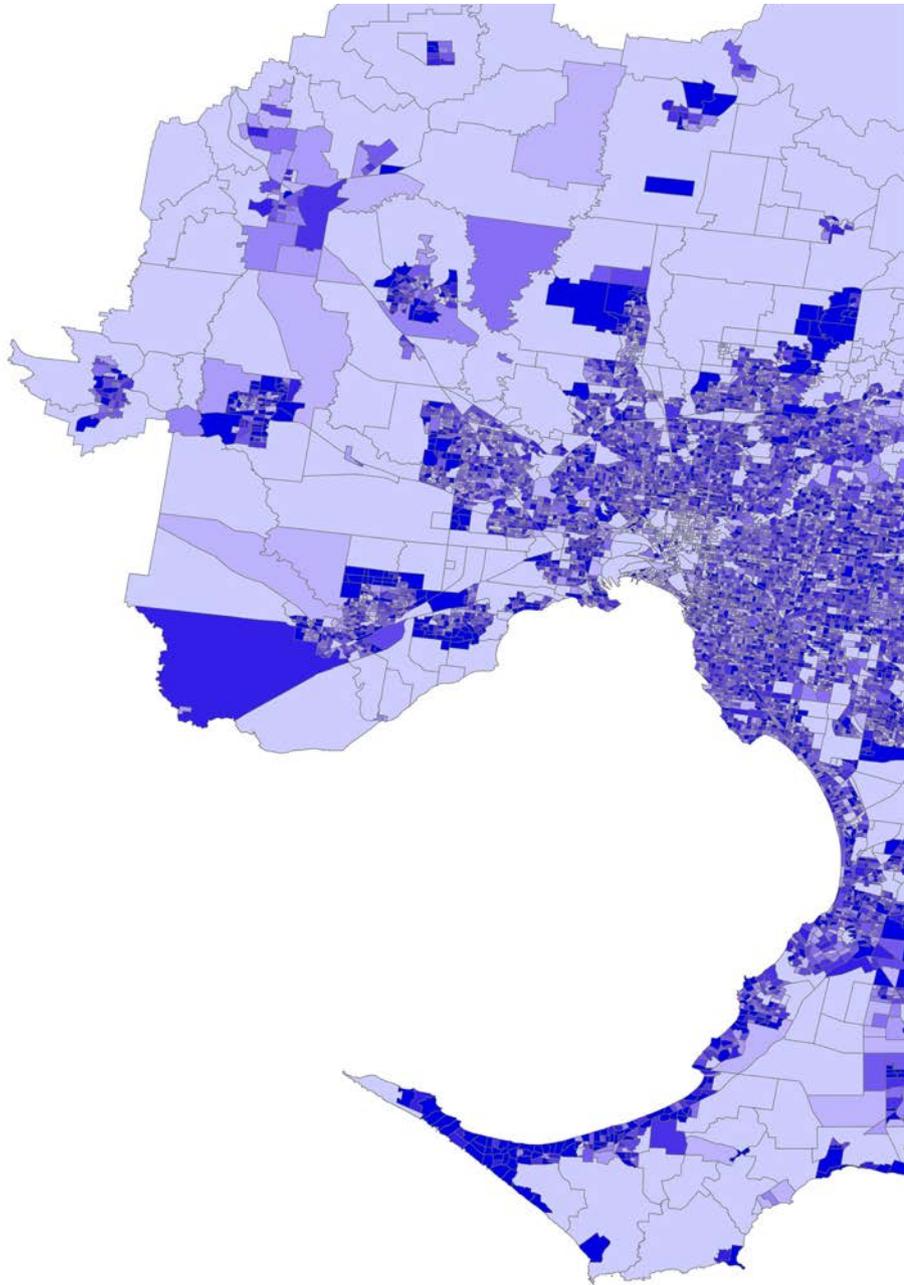


Figure 2: Archetypal urban forms (Newton, 1997)



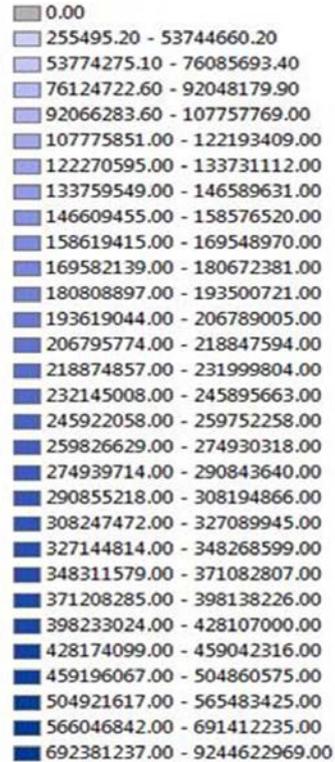
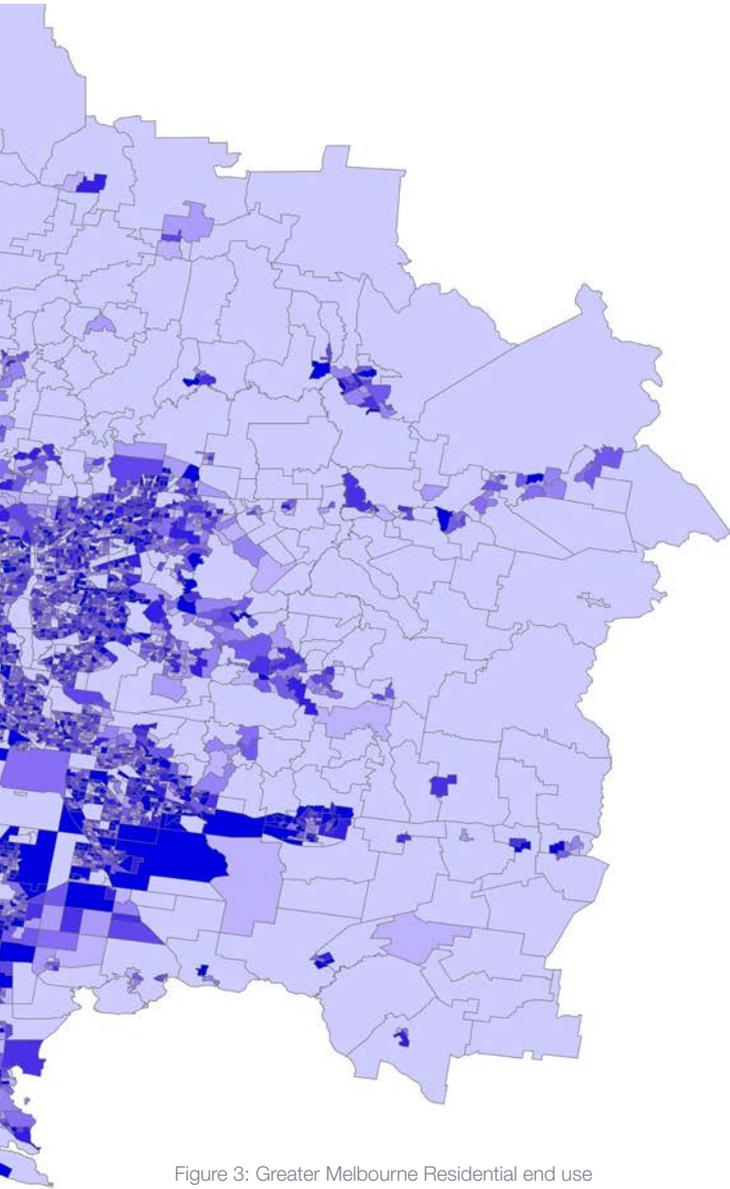


Figure 3: Greater Melbourne Residential end use energy consumption SA1 scale. (in kWh x year)

The map shows the end-use Residential Energy consumption at SA1 level for Greater Melbourne Metropolitan Area, using the Bottom Up Typology based energy modelling proposed by the research, which combines Dwelling Type, Household Type, Building Age, Occupancy Scenario and Energy Source databases. The distribution is made using a Python code that integrates all the variables, distributes the 288 Residential typologies at SA1 level and calculate the total end use residential energy consumption at SA1 level (Statistical Area Level 1 , ABS).

Credit Map: Raul Marino

Software: ArcGIS and Python.



Walking city. The role of walkability in supporting liveability in large cities

SILVIA CHAKAROVA - SUPERVISOR: DR. DAVID NICHOLS

KEYWORDS: WALKING, WALKABLE URBAN ENVIRONMENT, LIVEABILITY, STREET LIFE, URBAN POLICY

Walking was the first mode of city mobility and the most common one for ages. Cities before the Industrial revolution were mainly shaped around people moving on foot. Functions, densities, urban morphologies complied with the needs and abilities of the pedestrian. During the 20th century, due to the increased urbanisation of industrial centres and influenced by modernist and technocratic ideas, urban planning and design practice often neglected the human scale and gave a dominating role of machines and infrastructure over people in cities. Such processes happened in different time and with different scale and intensity around the world and had a broad range of impacts on people's lives and mobility patterns.

In the recent decades, however, there is again a shift in the field of urban planning and design towards people-oriented and walkable cities. There is nowadays a growing amount of research and theory works exploring and highlighting the importance and benefits of walking for variety of social, cultural, physical, economic and environmental reasons. Yet, the challenge of making our cities, and especially the large cities, walkable still remains a relevant question. Decisions and policies supporting car-oriented development and environments are still evident in many urban planning and design projects. These could be due to number of political and economic reasons, but also to the lack of empirical evidence and knowledge about the benefits of walking in cities and the ways to support more walkable environments through urban policies and design. The current study addresses this gap in contemporary urban knowledge.

The research aim is to propose a set of principles of a context sensitive approach in order to support pedestrian-friendly and liveable urban environments. This is done through combining theoretical knowledge from literature with empirical findings from three case studies: Melbourne (Australia), Vienna (Austria) and Sofia (Bulgaria). Three aspects of walking in the selected case study areas are investigated and compared: (1) planning and design framework - active urban planning and design plans and policies for improving walkability in the central parts of cities; (2) street life and urban environment - number and type of pedestrians correlated to urban morphology, functional mix, physical conditions and



quality of the built environment; and (3) social perception - people's walking experience and opinion about the built environment. The case studies of Melbourne, Vienna and Sofia are selected to provide perspectives on walking in cities of different cultural, historical, and planning context, and would enable interpreting principles of general validity for providing walkable and liveable urban environments.

Research methods used in the research are: document analysis and comparative study on strategies, policies and practices related to walking in Melbourne, Vienna and Sofia; semi-structured interviews with people using public spaces; semi-structured interviews with urban planning and design professionals working on topics related to walking; public space public life survey; photo survey of selected public spaces; and mapping of selected urban environments.



Melbourne

Source: Google Maps. (2015). [Melbourne CBD, Australia], [map]. Retrieved from [https://www.google.bg/maps/@-37.8137805,144.9623118,2509m/data=.](https://www.google.bg/maps/@-37.8137805,144.9623118,2509m/data=) Modified by Nurhan Redzheb and the author.



Vienna

Source: Google Maps. (2015). [Vienna City Centre, Austria], [map]. Retrieved from [https://www.google.com/maps/@48.2094214,16.3727852,2450m/data=.](https://www.google.com/maps/@48.2094214,16.3727852,2450m/data=) Modified by Nurhan Redzheb and the author.



Sofia

Google Maps. (2015). [Sofia City Centre, Bulgaria], [map]. Retrieved from [https://www.google.bg/maps/@42.6968094,23.3236998,2781m/data=!3.](https://www.google.bg/maps/@42.6968094,23.3236998,2781m/data=!3) Modified by Nurhan Redzheb and the author.



Architecture and the design of therapeutic environments

**STEPHANIE LIDDICOAT - SUPERVISOR: A/PROF. GREG MISSINGHAM; DR. KAREN BURNS
PROF. LYNETTE JOUBERT (SOCIAL WORK)**

KEYWORDS: BUILT ENVIRONMENT, INTERIOR DESIGN, THERAPY, MENTAL HEALTH



This PhD research aims to examine the spatial constructs and perceptions of individuals who self harm, with the view to analysing ways or approaches in which architecture and the built environment might contribute to the success and efficacy of treatment. Self harm¹ has become increasingly prevalent in society and across cultures and although it is now widely accepted that it is separate from suicidal intent, it still remains a very ambiguous mental health condition. Initial findings of the research include the consumers' relationship to the built environment through spatial layouts, notions of the home, and the significance of environments beyond the counselling workspace². For individuals who self harm, the rearranging of a spatial layout³ is found to be confronting, and is avoided in order to circumvent having to face personal issues and concerns which are brought to the surface by this rearranging of physical space, yet may also be a platform for therapeutic healing. Several research threads from clinical literature are discussed and posed as potential explanations for why these particular users have such an experience relative to the built environment, and why the built environment can also be a catalyst for change and healing for thus become part of a therapeutic process. A key finding is the ambivalence of spaces that provoke, confront and heal simultaneously. The PhD research also explores the relationship between the built environment of the home⁴, therapeutic methodologies and individuals in treatment for self harm. Through three key therapeutic underpinnings, the fostering of communication, the quelling of dissociation, and the evolving sense of self, the home is analysed as a potential contributor to therapeutic processes, improved consumer outcomes and consumer experience for individuals who self harm. This is undertaken through aspects such as spatial layouts, territories and personalisation. Therapeutic implications are discussed, including how engagement with the home may form part of a self help methodology to occur in conjunction with therapy. Finally, spaces beyond those of counselling are also found to be significant. Using literature of therapeutic practice, each of these spaces is analysed to show the reasons behind its significance to individuals in treatment for self harm. Conclusions are drawn and implications for clinical practice and architectural design are outlined. Thus, the purpose of this PhD research is to investigate what particular spatial constructs and perceptions might be common to individuals who self harm, with the view to analysing if



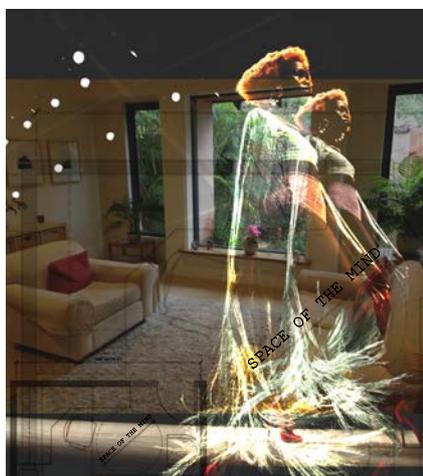
and how architecture might be applicable in the treatment of self harm and what ways, approaches or spatial encounters might be employed.

1 Self harm is defined within this research as the physical harming of the body without suicidal intent. Self harm usually involves self-cutting or burning of the skin, but may include other methods of injuring the body tissues. More broad definitions of what may constitute self harm, such as eating disorders, tobacco smoking, alcohol abuse, or some forms of tattooing, are correlated but clinically separate conditions, also conditions such as depression, are not included in this research.

2 Within this research, the counselling workspace is defined as the space where a therapeutic/counselling session occurs. This is typically an interview room/office type space, and is inclusive of physical items such as a table, chairs, bookshelves and similar; physical aspects such as ceiling height, colour, lighting levels and similar; and other aspects such as control, personalisation, territories, interpersonal distances and similar, all forming what Stanley Law describes as 'the therapeutic situation'.

3 'Spatial layout' in the context of this research is defined as the physical layout of an interior space, inclusive of non-fixed objects and items of personalisation which may also be present.

4 Within this research, the term 'home' is used as inclusive of the physical aspects of a dwelling, such as bedrooms, kitchen, room layout, furniture, possessions, privacy afforded, and so on, as well as psychological aspects such as territories related to one's dwelling. As it is developed within this research, the home may become a mirror and a platform for the understanding of an inner psychological self.





Tell him he's dreaming: the architect's drawing in postwar Melbourne

YVETTE GRACE JOHNS PUTRA - SUPERVISORS: A/PROF. GREG MISSINGHAM & A/PROF. HANNAH LEWI

KEYWORDS: ARCHITECTS' DRAWINGS, MELBOURNE MODERNISTS, MELBOURNE POSTMODERNISTS, ROBIN BOYD, FOUR MELBOURNE ARCHITECTS



On the possibilities of the architect's drawing:

Architects are bound to treat as real that which exists only in an imagined future, and to specify the ways in which the foreseen things can be made to exist. In doing so they must predict the future nature of an artifact and that it will work as expected. In other words, the drawing process is a cosmopoiesis that can help to invent better futures and make potential worlds.

(Marco Frascari)

Although there is much written about architect's drawings from critical, curatorial, historical, pedagogical, and theoretical standpoints, there has not yet been any significant discussion of these ideas in relation to the drawings which were produced by architects in Melbourne in the decades following World War II. This absence is all the more evident because the architectural scene in postwar Melbourne was dynamic, experimental, and polemical, and saw the flourishing of many icons of Australian architecture. Therefore, the drawings which were produced by architects in this rich and unique milieu are in need of a contextual analysis, in order to consider the role of the architect and practice in the production of the drawings; the shifts in the viewership of the drawings, from client and competition, to publication and exhibition; as well as the corresponding shifts in the status of the drawings, from communication and marketing tools, to cultural artefacts.

Furthermore, the drawings which were produced by architects in postwar Melbourne need to be analysed through an interpretive lens, so that their compositional and experiential aspects, such as the use of diverse projection techniques and media, in addition to their depictions of the architecture and their environment, may be examined. This research aims to address these aspects, by using, as case studies, Robin Boyd and the architects from the Four Melbourne Architects exhibition, who represent, respectively, the Modern and Postmodern architectural movements in Melbourne. Therefore, the drawings by these case studies during the postwar years form the focus of this research. Boyd is overwhelmingly the most iconic architect of Modern Melbourne, and known for his writings as much as his architecture. The Four Melbourne Architects, namely Greg Burgess, Peter Crone, Norman Day, and (Maggie) Edmond and (Peter) Corrigan, exhibited together under that appellation in 1979 at the Powell Street Gallery in South Yarra, and continue to practice in Melbourne.



This research focuses exclusively on architects' drawings in traditional media, such as ink, pencil, and watercolour. In addition, it applies existing theoretical methodologies for the reading and perceiving of drawings; in particular, the theories of Robin Evans, Marco Frascari, and Nelson Goodman. It is anticipated that this research will not only contribute to knowledge of the architecture of postwar Melbourne, but will also underscore the capacity to understand the architecture of a particular place and time, along with its wider context, through an analysis of its architects' drawings.



Source: Photographer unknown, Bourke Street, c.1960, postcard, 8.8 x 13.8 cm. approx., State Library of Victoria, Melbourne [this work is out of copyright]; Photographer unknown,



Source: Collins Street, c.1960, postcard, 8.8 x 13.8 cm. approx., State Library of Victoria, Melbourne [this work is out of copyright].





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The western impact on Iranian public architecture, 19th and 20th centuries

FARAMARZ HASSAN POUR - SUPERVISORS: PROF. MILES LEWIS & PROF. QINGHUA GUO

KEYWORDS: IRANIAN ARCHITECTURE, WESTERNISM, QAJAR, PAHLAVI, ISLAMIC REVIVALISM.

This study analyses the ways in which Iranian architecture has been transformed by interaction with the West over the past two centuries. The main questions are how Iranian architecture has interacted with the West, and how Iranian government has affected this process of change.

Due to breadth of the topic, this study is selective in the buildings and architects chosen for discussion, and the main criterion has been the strength of the relationship to the West. Another aim is to focus on those topics which have not been previously studied in depth or which have been misunderstood by previous scholars. This study does not examine the roles of Iranianity, Islam and the West in shaping Iranian architecture. This study examines how the West has become one of the three main streams by which Iranian architectural development has been significantly affected in the last two centuries. The focus is on the role of the West.

Misconceptions in the literature are challenged by checking them against the primary sources. The majority of western orientalists in Iran had a notable enthusiasm and a considerable interest in studying Iranian art and architecture rather than any deep knowledge about the social and cultural background of Iranian life, so the role of ancient cultural beliefs of Iranians in shaping their architecture was partly neglected. On the other hand, the coincidence of the sophisticated reuse of Achaemenid and Sassanid motifs with the rise of the modern



Iranian Embassy in Ankara, 1930, M J Aggiman.



A photograph showing the Persian section at the Brussels International Exhibition, 1897. Howzkhaneh Museum, the Golestan Palace, Faramarz Hassan Pour, 22 September 2013.



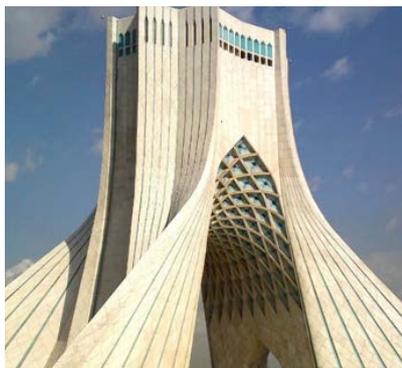
Iranian state under the first Pahlavi government has led some Iranian architectural historians to conflate Iranian nationalism and the tastes of government decision makers with main architectural tendencies during this period. Though it is true that political power has a significant role in the majority of public buildings in Iran, the correlation between various Iranian architectural movements and the formal ideology of the state deserves to be examined. Both Iranocentrism and Eurocentrism would equally mislead architectural historians, if their works were founded upon romantic, biased approaches of nationalist or westernist ideologies.

Archives, westerners' travelogues and other historical documents were used for further analysis. Government and institutional buildings are also studied as primary sources. To ensure a reasonable coverage of western influenced architecture in Iran, a number of building types are chosen as examples.

In the chapters, chronological order is utilised to project how the process of the transformation from eclectic Irani-Islamic buildings of the early nineteenth century to abstract concept-based ones of the late twentieth century came about and to demonstrate how western influence distorted Iranian architecture during this transition. It is also argued that western influence was exerted through the will of the rulers, through developments in architectural education, and through the operations of western trained architects within Iran.



Police Headquarter, Tehran, 1936.
Faramarz Hassan Pour, 21 September 2013



Azadi Monument, Tehran 1971,
Hossein Amanat. Faramarz Hassan
Pour, 13 February 2010



Details of Iranian Archaeological Museum, Tehran.
Faramarz Hassan Pour, 21 September 2013

The authorship of space: the role of key individuals and the projects that transformed Melbourne



JANE HOMEWOOD - SUPERVISORS: A/PROF. ALAN PERT; DR. DAVID NICHOLS

KEYWORDS: MELBOURNE, TRANSFORMATION, RADICALS, CROWS, 1970'S AND 1980'S

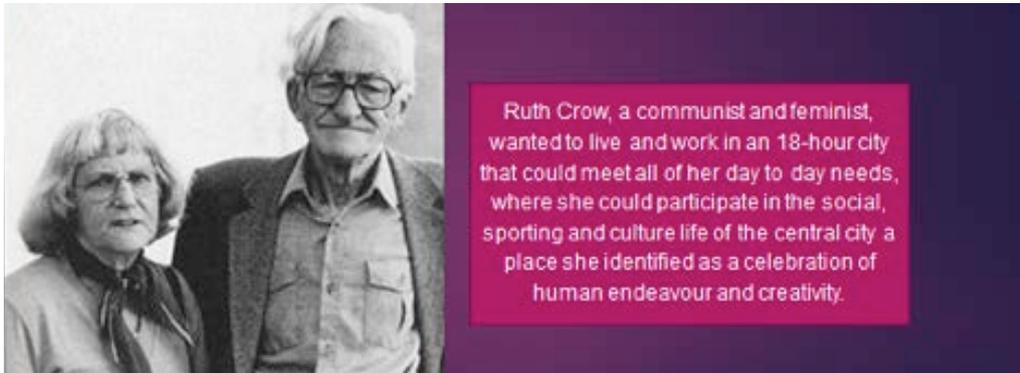
This research provides new knowledge in the area of urban regeneration and transformation by studying the early influence of key leaders, projects and politics over a 30-year period in inner Melbourne. The thesis research has found that the transformation of inner Melbourne from the late 1960's until the 1980's was significantly influenced by a diverse and highly active group of radicals, social reformers and academics whose beliefs and planning ideas were incorporated into the key design led planning policies, strategies and urban design frameworks and projects that established the physical framework from which inner Melbourne has developed and thrived over the last 50 years. These policies, strategies and frameworks reflect much of the earlier work led by Ruth and Maurie Crow outlined in Plan for Melbourne Parts 1, 2 and 3 and the publication, Irregular.

The newly elected state governments 1984 Central Melbourne Framework for the Future: Land Use and Development Strategy, and the City of Melbourne's 1985 Strategy Plan with Grids and Greenery (1987) established a program of public works that preserved the character forming elements of inner Melbourne while accommodating growth and attracting people to live, work and recreate in inner Melbourne. The general principles of the City's future development included the opportunity for social interaction with the full spectrum of society, self-expression in cultural and recreational activities and enabling participation in decisions that vitally affected individuals' lives. These key principles reflect principles of a socially just and civil society and leadership in the public interest, principles promoted by the Crows in the late 1960's. When considering the influences of the community activists, including the Crows, in concert with the sequence of design led planning policies, plans and urban design projects undertaken across the city in the 1970's to 1990's, there is a richer and more complete story of inner Melbourne's authors of space and its transformation.

This detailed case study of inner Melbourne will be compared to Barcelona, Chicago and Glasgow, cities under similar pressures to modernize at the same time as Melbourne. Understanding lessons of successful transformation in Melbourne compared to these other cities will give greater depth and comparative context and greater understanding of the complex processes of transformational change in Cities.



A richer and more complete understanding of inner Melbourne's successful transformation may assist future city activists, planners, urban designers and bureaucrats - future authors of space, plan and design cities to adapt to the challenges of the day while maintaining the qualities and characters that are essential to a civil society – a key driver of Ruth and Maurie Crow.



Modernism in late-mao china, 1969-76: a critical analysis on the design of key public buildings and the dynamic relations between form and politics



KE SONG - SUPERVISORS: A/PROF. JIANFEI ZHU

KEYWORDS: MODERNISM, POLITICS, CHINA, 1970S

The research aims to focus on the modernist design in the key public buildings in late-Mao period in China, specifically from 1969 to 76, which in my opinion was overlooked in many ways: 1) the shifting politics and its impact on architectural form, 2) the prevailing, confident and distinctive architectural style formed in this period, 3) the global communication and flow of architectural knowledge of modernism before and within this period, between China and the West and between China to the Third World countries.

After the end of high Cultural Revolution (1966-69), China's state politics changed dramatically, shifting from the extreme leftist ideology to the more pragmatic approach, starting to communicate and collaborate with the West, although it was still in Cultural Revolution (1966-76). Coping with the increasing foreign diplomats, business men and tourists, Beijing, Guangzhou and many other cities started a new wave of construction of the key public buildings which adopted a modernist style to convey the image of modernization to both the foreigners and the Chinese people. In the entire 1970s, this modernist style was prevailing from the South to the North, from the coast to the inland, from big cities to the smaller cities, evident in almost all the key public buildings in local or state level.

This style is of great importance for the Chinese architects as they had gone through a lot of confusion, suppression, hesitation, or even persecution, ups and downs in the architectural and political movements in previous years in Mao era, including Three-Antis and Five-Antis (1949-54), the promotion of Socialist Realism/ National Style (1954), Anti-Waste movement (1955), Anti-Rightist Campaign (1957), Great Leap Forward (1958-1961), the construction of Ten Great Buildings (1959), Design Revolution (1964-66), high Cultural Revolution (1966-69), without achieving a resonance between design knowledge, construction techniques, formal aesthetics, and state identity and intention. Into the 1970s, this style was gradually adopted and accepted by a series of state-level key public buildings after some adaptation, especially in two privileged cities, Beijing and Guangzhou, the political centre and the opening-up front respectively. In Beijing, the cases include Beijing International Club (1972), Beijing Hotel East (1974), Apartments of the Foreign Diplomats (1974). In Guangzhou, Guangzhou Railway Station (1973), Lihua Hotel (1973) and White Cloud Hotel (1976) are prominent examples. There are also great examples in other cities including Shanghai, Nanjing, Guilin, and other smaller cities.



If we track the knowledge flow of modernism which contributed to the formation of this style, we cannot ignore the global communication in the postwar decades from the 1950s to 1970s. Two streams, namely America Populism and Tropical modernism was introduced to the Chinese architects through different channels. Among others, the aid projects in the Third World countries designed by the Chinese architects provide them the most direct chance to confront the American and European postwar modernism. They not only learned these latest trends but also demonstrated an alternative way of modernism serving the modernization of the Third World countries.



Image 1: [International Club, 1972] Photo provided by Beijing Institute of Architectural Design (BIAD). Courtesy BIAD.

Image 2: [White Cloud Hotel, 1976] Drawn by Lin Zhaozhang. Lin Zhaozhang, Lin Zhaozhang Jianzhu Chuangzuo Shougao (Lin Zhaozhang's Architectural Drawings) (Guoji Wenhua Chubanshe, 1997).

Image 3: [Bandaranaike Memorial International Conference Hall (BMICH), 1973] You Baoxian, Zhujian Zhongsi Youyi Zhi Mingzhu (Build the Friendship of China and Sri Lanka) (Beijing: Zhongguo Jianzhu Gongye Chubanshe, 2012), 23.

Image 4: [TAZARA Terminus, Dar es Salaam 1976] The Third Design Institute of Ministry of Railway, "Tanzan Tielu Daleisi Salamu Kezhan Jianzhu (Dar Es Salaam Railway Station of Tazara)," Jianzhu Xuebao (Architectural Journal), no. 01 (1976): 32-4



Contributive design processes: defining, demonstrating and practicing

ANGELICA ROJAS GRACIA - SUPERVISOR: DR. DOMINIQUE HES; DR MICHAEL TRUDGEON

KEYWORDS: DESIGN PROCESS, NESTED SYSTEMS, FLOWS, NODES, CONTRIBUTIVE PRACTICE, LIVING SOCIO-ECOLOGICAL SYSTEMS



This research explores the role that the architectural design process can have in creating a positive impact on the Living socio-ecological systems. There is a growing body of research that shows that the social and ecological impacts of the built environment are increasing (CESV, 2013; IPCC, 2014; WWF, 2012). Yet this is not only through architectural design as “[architects directly affect a very small percentage of only 2-5% of all what is finally built in the world]” (Fisher, 2008:9). Further, globally only 10% of the population accesses architectural design services and these are generally the people in the highest socio-economic status (Fisher, 2008; Lepik, 2010; Sinclair & Stohr, 2012). Yet it is through design and its ability to implement systems thinking that there is the potential to reconcile the development, ecological and social potential of a project (Reed & 7group, 2009). This combined with the growing low socio-economic population (UN, 2013) and the pressures of climate change (IPCC, 2014) has led to the call to expand the coverage and accessibility of design services.

The complexity of those global challenges and the little influence of the designer continually raise questions about the actual capability of design practitioners to create any difference. Scientific studies and media have been useful in rising awareness on large scale issues. However, the magnitude of the problems can also be overwhelming leading to paralysis and/or avoidance (Hes & du Plessis, 2014). In response to these complexities, there is an increasing number of architects and other built environment professionals, that are focusing their efforts on providing design services to low socio-economic groups. They are doing this through small-scale interventions that intend to address the humanitarian and ecological challenges that the world is facing today by working within localized environments (Fisher, 2008; Sinclair & Stohr, 2012). A number of these projects have resulted in benefits beyond the provision of physical infrastructure and are considered to have been beneficial to the communities and their environment. However, there has been little research conducted as to how this was achieved and the role the design process had.

This thesis proposes to do the research that will go towards filling this gap. As such it explores the role that the architectural design process can have in creating positive social and ecological impacts. It seeks to introduce, define, demonstrate and practice ‘Contributive design processes’ as methods in which the process can support and generate positive system effects. The aim is to explore, test, identify and inform significant aspects of the



design processes that have created benefits to the Living socio-ecological systems in which the projects are embedded despite the small sizes of the projects. Further it intends to reveal the strategies or actions that can be implemented by practitioners and other decision makers involved in similar future projects.

The research adopts a mixed method approach combining case study (Yin, 2014) and design research (Allpress, Barnacle, Duxbury & Grierson, 2012) It investigates the design process of four successful learning facilities designed for children that are considered best practice through the winning of awards and/or as documented in the literature. These case studies also need to have both the ecology and the local communities as significant parts of the design agenda. Then the lessons from this will be applied to a real design project to test the practicality and the potential implications of applying the lessons of the case studies in future projects. The researcher aims to undertake design research by participating in the initial part of the design process of a real project.



Credits: Photography: Ivan Quiñones



Credits: Boris Unterer basehabitat.org



The Venny. Architectural Design: City of Melbourne Photography: Andrew Wuttke





Glitterosophy: the celebratory integration of spontaneous process in Melbourne's public open space

BRENT GREENE - SUPERVISORS: DR. HEIKE RAHMAN (RMIT); DR. JILLIAN WALLIS; DR. MARGARET GROSE

KEYWORDS: LANDSCAPE ARCHITECTURE, URBAN DESIGN, URBAN ECOLOGY, URBAN SYSTEMS, NATURE / CULTURE



This study explores the spontaneous performance of urban landscapes in Melbourne. In this research, spontaneous plants, or weeds, have been selected as typical of this phenomenon. As a design material, spontaneous systems perform independent of cultural considerations such as aesthetics and ecology. Opposed to being 'controlled' through acts such as maintenance, systems are driven through biocentric processes that can stand in opposition to what is considered a 'valuable' landscape condition. However the notion that spontaneous plants are 'valueless' shifted in the 1990s when landscape architects and ecologists argued for the inclusion of spontaneity through design. The research will test this position, through design, in Melbourne's public open space.



Source: Authors own



The social logics of integrated planning in Melbourne and Buenos Aires

HAYLEY HENDERSON - SUPERVISOR: PROF. BRENDAN GLEESON

KEYWORDS: INTEGRATED PLANNING, MELBOURNE, BUENOS AIRES, DISADVANTAGE, INCLUSIVE CITIES, URBAN GOVERNANCE, ETHNOGRAPHIC SENSIBILITY, PRACTICAL KNOWLEDGE



This thesis investigates urban planning practices that aim to reduce disadvantage. It explores different experiences of ‘integrated planning’ from two contexts between the mid-1990s until 2015: North West Metropolitan Melbourne (NWMM) and North West Metropolitan Buenos Aires (NWMB). Broadly, ‘integrated planning’ can be understood as an approach to strategic planning that ‘integrates’ diverse actors and activities to address complex urban challenges. It involves the “management of cross-cutting issues that transcend the boundaries of established policy fields” (Holden 2012, p.306) and has been pursued to tackle a wide range of challenges, including health inequalities, environmental sustainability and integrated transport and spatial planning. In both case contexts, overcoming disadvantage has been a central rationale for improved integration in planning policy.

The north and west region of both metropolitan contexts studied present areas of relative socio-economic disadvantage in relation to the rest of the metropolitan areas (Figure 1). This research focuses on programs and places across both contexts that have adopted integrated approaches in planning to address quality of life improvements in comparatively disadvantaged communities. Both contexts face ongoing challenges in engaging different sectors, jurisdictions and portfolios, and the project examples demonstrate a concerted effort to overcome some of the challenges to integration for the purpose of addressing relative disadvantage in specific places.

In Melbourne, integrated planning is studied through the lens of three initiatives: growth area planning in the peripheral metropolitan area, planning for ‘health and wellbeing’ driven by the state government’s VicHealth department and neighbourhood renewal programs, which provide “area-specific interventions to address disadvantage and social exclusion” (Shield et al., 2011, p.4). In Buenos Aires, three types of initiatives are also examined. Firstly, the Environmental Urban Management Plan for the Reconquista River Basin which involved regional level planning and infrastructure delivery. Secondly, the neighbourhood improvement programs run by the provincial government in collaboration with local governments and civil society groups that seek to “improve the quality of life and contribute to urban and social inclusion of the poorest groups” (PROMEBA, 2014). Lastly, a national government initiative is examined that focuses on inter-ministerial and multi-level governance for social development in particular neighbourhoods, called ‘Plan Ahi’ (See Figure 2).



In both policy settings, there is a commitment to the social dimension of planning to combat disadvantage and regional inequality. In Buenos Aires, many communities have experienced a significant reduction in households with unmet basic needs over the last decade and in Melbourne neighbourhood renewal strategies have generally proven to be “effective in improving trust in government, perceptions of community participation, influence and control over community decisions; improved services; (...) and addressing area-level determinants to improve social inclusion” (Shield et al., 2011, p.4). While there have been some evaluations undertaken of project and policy interventions across both regions (inter alia Subsecretario de Desarrollo Urbano y Vivienda various; Department of Human Services various; AHURI, 2014; Shield, Graham & Taket, 2011; Brotherhood of St Lawrence, 2010), as well as ongoing measurement of changing quality of life outcomes, the everyday practices and settings that drive and shape integrated planning in directions that seek to reduce disadvantage and inequality have not been closely examined. My research explores this practice reality of integrated planning where there has been a particular focus on reducing disadvantage.

In order to improve critical understanding of everyday practices in integrated planning, this research explores and explains how different strategies and tactics are used to implement and shape social norms in planning. Social norms are broad working principles applied in planning to advance socially just outcomes in cities. The theory of social logics developed by Fincher and Iveson (2008) is employed to frame the study of the social norms of planning with reference to redistribution, recognition and encounter. The research also draws on an understanding of practical knowledge and Realrationalitat (Flyvbjerg 1998) in planning to enable explicit consideration of the real ‘strategies and tactics’ required to advance social norms in planning. Overall, this combined conceptual framework helps elucidate both the ‘rules of thumb’ and the ‘rules of the game’ to advance social norms in planning.

An ethnographic case study approach is taken involving content analysis of policy and other planning instruments, in-depth interviews with key informants from diverse planning sectors and non-participant observation of key events and meetings. Each phase of the research is framed by the theory of social logics and a view of practical knowledge. Overall, by employing the TSL developed by Fincher and Iveson (2008) with a view of practical

knowledge in planning, the research uncovers, critically interrogates and explains the real strategies and tactics needed to implement and shape social norms in integrated planning throughout the case contexts.

Lastly, the research focuses on two concrete experiences of integrated planning that provide some of the building blocks for further exchange of knowledge and collaboration between Argentina and Australia in comparative urban studies. Selecting two cases studies from the 'North' and 'South' expands the possibility for generalisation relating to common 'planetary urban transformations' (Brenner, Marcuse, & Mayer, 2011) and responds to calls for comparative urban research (Dear, 2005; McFarlane, 2010; McFarlane & Robinson, 2012; Robinson, 2004, 2006) that can "blast open theoretical geographies, to produce a new set of concepts in the crucible of a new repertoire of cities." (Roy, 2009, p. 820).

At the time of publication of *Oculus 2015*, the research findings were still under development. Tentatively, the research indicates varied and opaque understandings of integrated planning as a concept and process across both case contexts. Generally, strategic planning's genealogy across both contexts highlights a growing interest in two main forms of integration: the spatial aspirations of land use planning and organisational interplay. There are also holistic conceptions that combine both dimensions (see Figure 3).

Then, within the context of integrated planning, there are both formal structures and informal practices that support social norms. The informal strategies and tactics that drive social norms are varied, they range from different ways that actors use knowledge of contextual factors to inform action and counteract regressive claims, to undertaking political action – like lobbying- or improvising and experimenting with different approaches. Some of these informal practices appear to drive formal political processes. Initial findings also highlight the significant role of informal institutions and actions in planning to reduce disadvantage.



Figure 2. Plan Ahi, projects examples of integrated planning (Source: Nacional Resistencia (www.nacionalresistencia.com.ar) and Radio Claridad)

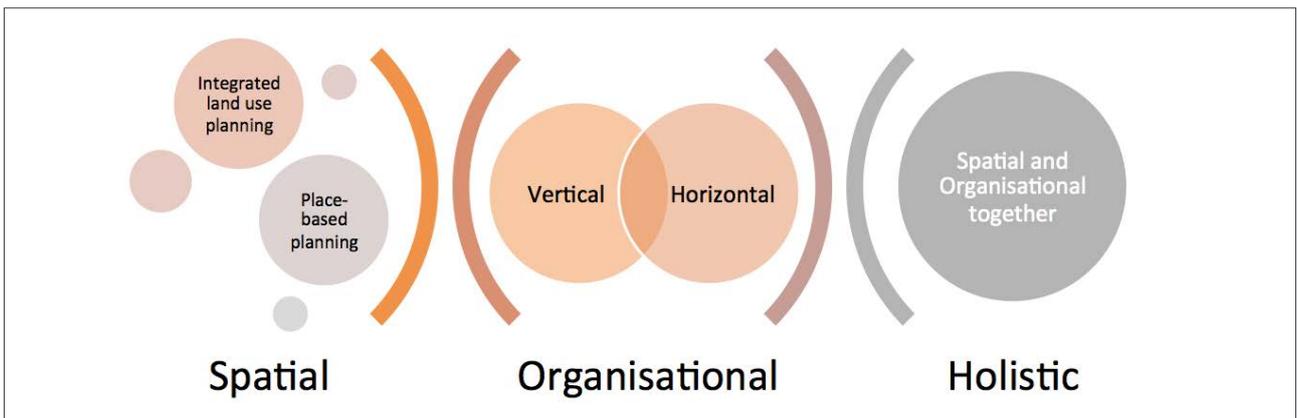


Figure 3. Conceptualisations of Integrated Planning (author)



Welcome to "Patio Provincial"
authentic native folk music
(if you are going to listen taking photos,
dancing). Please collaborate with
musicians, be generous, they deserve
FREE ENTRY

Guardaropa

Escena
ESTERBA
MARA

San
Elmo
Buenos Aires





Critical (re)presentation of design and inhabitation

ISUN AISAN KAZERANI - SUPERVISOR: A/PROF. HANNA LEWI & DR. HEIKE RAHMANN

KEYWORDS: (RE)PRESENTATION, INHABITATION, OBJECTIFIED VS. UNVOLUMETRIC DESIGN STRATEGY, PERFORMATIVITY, PUBLIC SPACE



My thesis explores the connotation of implementing a spectrum of design strategies on the actual inhabitation experience of public spaces. This spectrum ranges from objectified and formal to more un-volumetric and programmatic design approaches. Four contemporary international public spaces are selected to represent the variety of the identified strategies, accordingly. These projects include Ballast Point Park in Sydney, Australia; Olympic Sculpture Park in Seattle, US; Copenhagen Superkilen, Denmark and Turo De la Rovira, Barcelona, Spain. The core motivation behind development of this spectrum is to identify designer's perspective towards the notion of object and site in consideration of form, volume, material and programming. Moreover, due to the engagement of different disciplines including architects, landscape architects and urban artists in the selected public spaces, the disciplinary approach toward the notion of site and object is also examined. The turning point in this research is the study of the connotation of the identified design strategies in the actual inhabitation experience of the public spaces. Here, the notion of inhabitation refers to active performativity in the space as opposed to the passive concept of 'use'. The inhabitants' performativity is explored both at the individual's sensory and bodily interaction with the space as well as their collective sociocultural and political engagement.

As a case study research, the methodology takes a sensory ethnographic approach in investigating the core themes of the thesis, the design process and inhabitation, in order to critically (re)present the public spaces. In order to investigate the design process, interviews with the designers are undertaken and the design documentation is studied. Representational practices throughout the design process in recording the site (pre)condition and projecting the atmosphere is a major focus of this study. Moreover, inhabitation in terms of the sensorial as well as sociocultural performance is also investigated through documenting my own as well as the 'others' interaction with the site. For this purpose different senses are recorded via multiple mediums, such as embodied photography, site-citing, site-drawing and sound recording. Moreover, The other inhabitants are also inquired about their narratives and memories of the site. The excavated material is the used to (re)present a critical image of design and inhabitation in the selected public spaces. The notion of (re)presentation can be looked at as a multi-vocal mode of criticism, projecting the voices of the designer, the inhabitant a well as the critic. The proposed (re)presentation finds written as well as visual format and aims at revealing the invisible implications of the implemented design strategies on performative inhabitation of space.

(Re)presenting Copenhagen
Superkilen, Denmark: BIG
architects, Topotek 1 Landscape
architects



**(RE)PRESENTING THE RED-SQUARE: THE ACTUAL RAT EMBODIED EXPERIENCE
OF WALKING ON THE LINEAR SURFACE ABOVE THE GRAPHICALLY REPRESENTED
LEVELLED PATTERNED SURFACE.**



Source: Authors own

RE)PRESENTING THE BLACK SQUARE: THE WELL-
AND PATTERN LEAVE A DISSIMILAR PERCEPTION
BODILY MOVEMENT



INTEGRATED OBJECTS WITHIN LANDSCAPE USING THE ILLUSIONARY IMPACT OF COLOR OF ROTATION AND FUZZINESS WHEN COMBINED WITH MOVEMENT OF THE EYES AS WELL AS

Understanding the role of urban form and third places with social interactions of older adults in Melbourne neighbourhoods



PIRET VEEROJA - SUPERVISORS: PROF. CHRIS PETTIT (UNSW); DR. GREG FOLIENSTE (CSIRO)

KEYWORDS: URBAN FORM, THIRD PLACES, SOCIAL INTERACTIONS, OLDER ADULTS.

Australian population is ageing due to rising life expectancy, declining birth rates and ageing 'baby boomers'. Older adults are often related with reduced energy- and mobility levels; and empirical evidence confirms that neighbourhood facilities (for example footpaths and local destinations) are very important for this age group. Moreover, a higher number of social neighbourhood contacts reduce older adults' perceptions of loneliness and stress; and increase their well-being and quality of life (QOL).

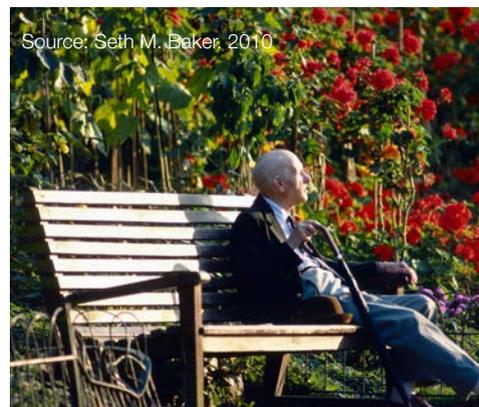
Urban form and neighbourhood characteristics have been linked to social interactions and individual wellbeing but there is currently no common agreement about the strength and nature of this relationship. My research aims to better understand this relationship and to develop a model that relates the quantitative measures of urban form to social interactions of older adults in Melbourne neighbourhoods. People aged 55 years and above are defined as older adults in this research.

The social interactions dataset from the CSIRO Community Functioning and Wellbeing survey in Melbourne is the primary source of data. The survey was carried out in June – July 2015 at 6 metropolitan Melbourne Local Government Areas (LGAs) that represent different urban forms and levels of urban growth. My research studies survey participants at the individual level, and will not draw comparisons for LGAs, this can be done, because the survey responses are geo-coded. Use of the geo-coded data is approved by University of Melbourne ethics committee. Overall, 478 participants were aged 55 years and above. The survey measured participants' self-reported social interactions, - socio-demographics; and importance of neighbourhood third places. The research follows Ray Oldenburg's division of places to first places as homes, second places as work and third places as community places.

Neighbourhoods and measures of urban form – including third places- are obtained through Geographic Information Systems (GIS) using data from government agencies, and the Australian Urban Research Infrastructure Network (AURIN) including the geo-coded national address files from PSMA Australia. Neighbourhoods are defined as 400 m, 800 m and 1600 m road network boundary from each geo-coded residential address data point.



Nonlinear regression modelling will be used to develop the model – to connect social interaction data with urban form - including third places- and socio-demographics data. The final model will be selected from a candidate set using a number of statistical goodness-of-fit tests. The model will be face-validated through focus group interviews and thematic analysis.



Ecoscenography: the paradigm and practice of ecological design in the performing arts (phd by creative works)



TANJA BEER - SUPERVISOR: DR. DOMINIQUE HES & DR. ALYSON CAMPBELL

Contemporary ecological concerns bring with them an opportunity for innovation; to rethink traditional practices and forge new approaches that not only strive for sustainability but also push intellectual and creative boundaries. My PhD research investigates the emerging paradigm of ecoscenography – a movement that seeks to integrate ecological principles into all stages of scenographic thinking and production in the performing arts. The thesis explores the potential of ecoscenography through a series of creative works projects that incorporate ideas of ecological thinking, community engagement and contributive practice.

A major focus is the notion of ‘positive legacies’ Moving beyond recycling and efficiency, my research seeks to investigate a more hopeful paradigm, one where scenographic practices are capable of generating positive and far reaching rewards. In my thesis, I ask: 1) how might designers engage with communities to play a central role in social and environmental advocacy and celebration?; 2) how can stories of place be communicated through scenography?, and; 3) can we create designs that not only enrich our audiences, but our communities and environments as well?’.

Since starting my candidature, a selection of my creative works have developed under the banner of The Living Stage – a global project that combines stage design, permaculture and community engagement to create recyclable, biodegradable and edible performance spaces. Part theatre, part garden and part food growing demonstration, The Living Stage considers ecological principles and environmental impact as opportunities rather than constraints: ethics that can illuminate, and be integral to aesthetics. At the end of the performances, my living stages are returned to the communities that helped grow them. Physical structures become garden beds and community spaces; plants become healthy food; and waste becomes compost. As each living stage evolves out of a direct response to the localities of site, ecology and community, no project is ever the same.

Since making its debut at the 2013 Castlemaine State Festival, The Living Stage concept has travelled to Cardiff and Glasgow (UK) and continues to generate interest and inspire other projects around the world. New creative teams have emerged, taking local ecological ideas to engage communities and create positive legacies. Each project is unique, but share clear commonalities: the celebration of multisensory elements, effective and multi-level engagement with audiences, and a legacy that exceeds the celebration of the project through performance. Through projects like The Living Stage, the investigation of ecoscenography has provided me with the opportunity to embark on a new course – to reimagine and cultivate stronger relationships with communities and ecosystems, and to invest directly in their future.



Source: Authors own

LEAFY GREENS

H. FRANKLIN
MARICOUNT
VICTORIA

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Source: Authors own





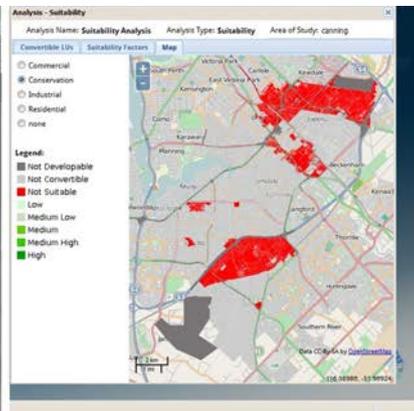
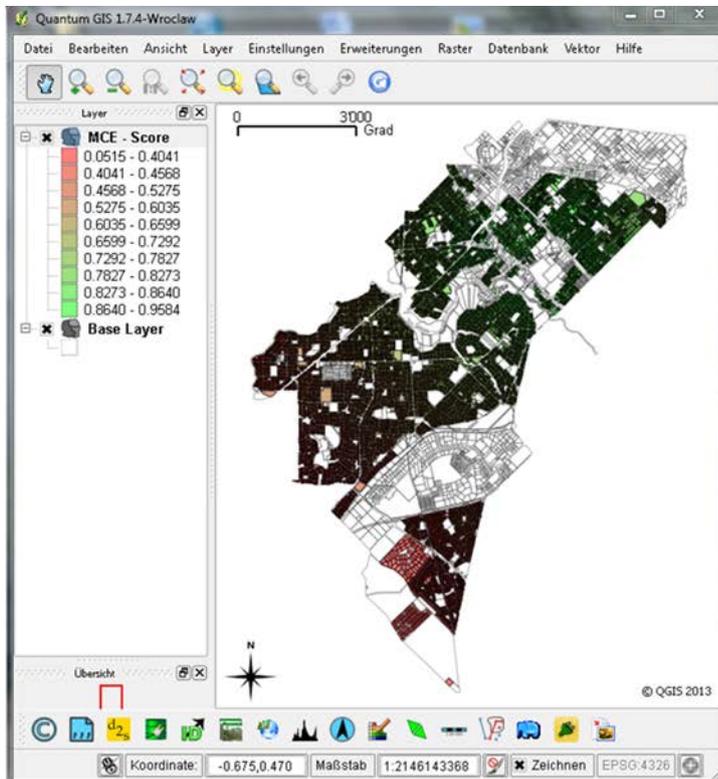
Investigating usability of planning support systems and improving their adoption and use by land use planners

PATRIZIA RUSSO - SUPERVISORS: PROF. CHRIS PETTIT ; DR. ANDY KRAUS

KEYWORDS: PLANNING SUPPORT SYSTEMS, USABILITY, USER EXPERIENCE, STRATEGIC PLANNING, EVALUATION

Planning Support Systems (PSS) refer to a set of software tools that incorporate different functionalities such as spatial analysis, modelling and visualisation, and that are designed to support planning professionals in dealing with the complex nature of planning tasks. Much potential is attributed to these tools. However, both literature and field experts indicate that their adoption in planning practice is very limited so far. This is remarkable, considering the extensive and wide range of available PSS (<http://docs.aurin.org.au/projects/planning-support-systems/>) and therefore the resources put into their development. To date, research has identified the factors that hamper the adoption and use of PSS. One of the most important factors has been identified in the low usability of PSS. In particular, evaluating and improving PSS usability has been considered a priority in recent research. It is worth remarking that conducting usability evaluation requires specific skills that PSS designers usually do not possess. While there are many books and websites that describe evaluation methods, novice evaluators actually need more guidance on how to plan and perform the overall evaluation. As long as the use of PSS connotes frustration and bad experiences, it is likely the adoption and use of PSS to stay relative low.

This thesis is dedicated to advancing the research on PSS usability and user experience (UX) in the endeavour to contribute towards improving PSS adoption and use. For achieving this, amongst other things, this research developed a framework, called PSS_EvalF (short for PSS Evaluation Framework), in collaboration with usability experts that provide the necessary guidance for non-expert evaluators on how to plan and carry out evaluations. Furthermore, a user test following PSS_EvalF has been carried out with a small group of land use planners working in Australia to evaluate three PSS that perform Land Suitability Analysis tasks. The user test allowed identifying usability problems and usable characteristics of the three PSS as well as planners' mental models and requirements. Based on this outcome, recommendations for designing more usable PSS were defined.

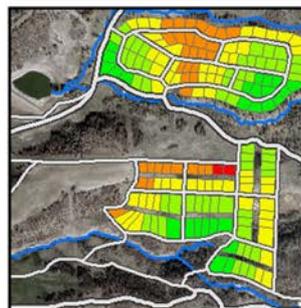


Analysis - Suitsability

Analysis Name: canning C Analysis Type: Suitsability Area of Study: canning Download Reports... Compute Analysis

Commercial LULU Suitsability Factors Map

Suitsability Factor	Commercial	Conservation	Industrial	Residential
Factor				
Access to water	40	30	20	10
Within 400m of Bus Stop	60	0	20	10
Within 400m of Bus Stop	30	60	0	0
Within 100m of Bus Stop	20	0	30	10
Access high school	30	0	0	100
Within 400m of high School	0	0	0	100
Within 400m of high School	0	0	0	30
Within 100m of high School	10	0	0	70
Access primary school	20	0	0	100
Within 400m of primary School	0	0	0	100
Within 100m of primary School	0	0	0	40
Within 400m of primary School	0	0	0	40
Within 100m of primary School	0	0	0	40
Access railway station	30	0	0	100
Within 400m of Railway Station	20	0	20	20
Within 400m of Railway Station	40	0	0	40
Within 400m of Railway Station	40	0	40	40



GreeningTheCityMetrics

Introduction | Review | MCE tool | Market / Redevelopment Tool | Zoning / Capacity Tool | Housing Typology / Design Tool

Property attributes

Age of dwelling: 10 | Strata title: 10

Area: 10 | Vacant land: 10

Development efficiency: 10 | LGA owned: 10

Lot exposure: 10 | Sensitive area: 10

Demographics

Age 0 - 19: 10 | Age 65 - 74: 10

Age 20 - 29: 10 | Age 75+: 10

Age 30 - 54: 10 | SEIFA: 10

Location

Dist to primary centre: 20 | Dist to primary school: 10

Dist to neighbourhood centre: 10 | Dist to secondary school: 10

Dist to local centre: 10 | Dist to tertiary school: 10

Dist to train station: 10 | Recent nearby densities: 10

Dist to bus stop: 5 | Relative density: 10

Dist to main road: 10 | Not increased: 10

Dist to park: 10 | FPM/DRAINAGE: 10

Walkability: 10 | Slope: 10

Relative extra land: 10

Variables selected: 2 Total Points allocated: 25 Title for analysis layer: Score Run MCE Reset Values



An urban form response to disaster vulnerability: improving tsunami evacuation in two Chilean cities

JORGE LEON - SUPERVISORS: A/PROF. ALAN MARCH & PROF. RAY GREEN

KEYWORDS: URBAN FORM, 'WHAT-IF' SCENARIOS, TSUNAMI, EVACUATION, AGENT-BASED MODEL

Globally, the number of nature-originated catastrophes has steadily increased during the last five decades. At the same time, cities have become 'hot-spots' of disasters, due to factors such as overpopulation, fast expansion of informal settlements, and lack of governance. To face these challenges, the role of built environment disciplines such as urban planning and urban design in disaster mitigation is increasingly recognised. Nevertheless, much of this potential remains focused on long-term risk reduction policies, such as land-use regulations and building codes. The role of physical urban form in other disaster management activities, such as recovery, preparedness, and especially response, has not been rigorously analysed.

This research suggests that built environment disciplines provide opportunities for the integration and development of a wider set of tools for the improvement of response capacities of disaster-prone communities. Specifically, it is argued that integrating response capability approaches into the urban design of public space is especially important in the case of rapid onset disasters. With this purpose, this research examines the case of near-field tsunami evacuations in two Chilean cities, Iquique and Talcahuano (the latter severely affected by a tsunami in 2010).

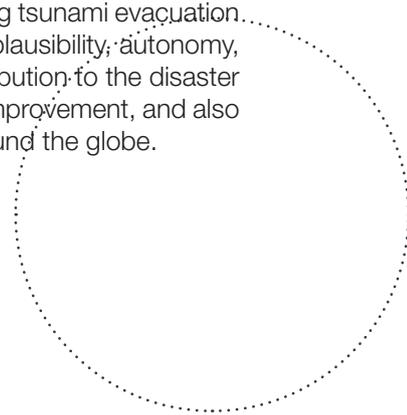
In each of the case studies, this research undertakes three phases of analysis, using a mixed-method approach (including a literature review, computer-based modelling and fieldwork). Firstly, it analyses the existing conditions for evacuation (e.g. the identification of the most suitable urban spaces for sheltering, the required times for clearance, and the critically hazardous areas). Secondly, the research proposes macro- and micro-scale urban form changes to improve these conditions (e.g. the creation of vertical evacuation points, changes in the urban street patterns, and streetscape improvements). Thirdly, it assesses the possible impacts of the macro-scale changes by using a quantitative tool, an agent-based computer model. This research then undertakes a cross-case analysis of the case studies' outcomes, enhanced with relevant lessons learnt from other tsunami-prone contexts around the world.

This research's findings demonstrate that Iquique and Talcahuano remain significantly vulnerable to near-field tsunamis, as large parts of their populations and essential urban activities are located in flood areas. Moreover, an emergency evacuation of these cities could not be completed during the expected available time of 20 minutes. This research



exposes the antecedent conditions that have cumulatively contributed to this vulnerability: geophysical characteristics of tsunamis, urban development patterns, urban form characteristics, cascading consequences associated with tsunamigenic earthquakes, and social and institutional characteristics.

The research's findings also show that the proposed macro-scale changes might significantly reduce the total evacuation times (up to 22%). Furthermore, the suggested micro-scale changes to urban space could increase safety and liveability. Lastly, this research proposes a set of seven urban design principles for improving tsunami evacuation in the public space: proximity, expeditiousness, safety, redundancy, plausibility, autonomy, and memory. These principles provide an original and valuable contribution to the disaster risk reduction field of study, as they bring about a real-world tool for improvement, and also a framework for future research in other tsunami-prone contexts around the globe.



Source: Authors own

Removal of ele
hanging wires



Change to ped
usage/
Improved
pavements

ctrical

Solar-powered street lighting

estrian

Tsunami signage



Coping with uncertainty in a changing community landscape: negotiating risks and opportunities of the arctic meltdown



JULIA LOGINOVA - SUPERVISORS: DR. OLE FRYD & PROF. SIMON BATTERBURY

KEYWORDS: RISK, GOVERNANCE, INSTITUTIONAL LEARNING, RESILIENCE

In my research I am looking at the negotiation of development and practices of change arising from environmental and human security concerns. These concepts bring to the forefront the questions of rights and values in the face of complex challenges. Information and knowledge play a key role in understanding and communicating risks and opportunities and fostering positive changes. In turn, it determines transparency, accountability and validity of decision-making process. Uncertainty in this context is considered as an issue of governance.

Visions of governance are conceived on different scales and by different groups. They often entail incompatible and conflicting interests between various levels of decision-making by the state, corporates, NGOs and local communities. The involvement of many actors influences the information provisioning and use of knowledge. These processes can become contested when they conflict with normative principles such as social justice and cultural values defined by the actors locked in their own mode of thinking and acting. Local communities face the challenge to reconcile individual and collective values and rules in situations characterized by uncertainty and ambiguity in order to stay resilient to the changing landscape.

The case studies address the incremental changes of formal and informal institutions in the Russian Arctic. Several studies highlighted environmental and human security concerns in the region associated with expansion of resource exploration and climate change. In my first case study I look at local communities facing anxieties about the risks and opportunities of oil development, as well as issues of how to engage effectively with the companies to ensure that oil and gas development provides sustainable local benefits. Second case study highlights the community responses to inadequate infrastructure for energy and food provision to remote settlements, affected recently by climate change. Both cases show how the changing landscape is a subject to shifting values and rules, which structure community existence, their legal status and the future prospects of development.

The data collection strategy is based on a mixture of non-participant observations, community experiences, key informants for the trends in local, state and corporate institutions and qualitative information on policy documents. I analyse how communities seek to legitimize and retain their power over decision-making and their very existence, while implementing adaptation to the evolving physical, economic, social and political environment.



The primary findings illustrate how collaborative processes, institutionalized relationships, such as governance networks, and knowledge are necessary to develop learning capacity for managing changing environment. As illustrated by case studies, the authority is partly replaced by informational resources, flows, and processes in governance arrangements and networks. These modes of governance pose critical questions related to power constellations, access to knowledge and informal rules, and structural uncertainties following multiple knowledge.



Source: Google maps





Source: Authors own

Computational morphogenesis to digital fabrication: inflatable membrane technology applied to form-resistant structures



ALESSANDRO LIUTI - SUPERVISORS: DR. ALBERTO PUGNALE & DR. TOON-KHUAN CHAN

KEYWORDS: FORM-RESISTANT, GRID SHELL, SHELL, STRUCTURE, DIGITAL FABRICATION

Form-resistant structures have been widely studied in terms of form-finding, optimisation and conventional construction techniques. Membrane action behaviour provides these structures with an optimal stress distribution state, providing effective resistance for the full cross section and allowing material minimisation.

Shell structures are form-resistant structures made of a curved surface supporting loads by compression, shear or tension in its own plane but no bending stresses. Despite a wide literature shows advanced solutions in design, construction still relies on traditional techniques such as formworks and scaffoldings, causing their construction to be highly waste-producing and costly.

Gridshells are doubly-curved form-resistant structures made of a grid instead of a solid surface. These structures have been widely studied in terms of form-finding and optimisation by designers such as Frei Otto and three consolidated construction techniques can be outlined: the “pull-up”, the “push-up” and the “ease down” (see Fig.1).

This research aims to apply a fourth construction technique to form-resistant structures based on inflatable membrane technology. Inspiration is taken from the “Binishell” and “Binistar” systems by Architect Dante Bini; using pneumatic inflatable membranes showed a promising potential for improving form-resistant structures’ construction in terms of automation, speed and standardisation.

A first case study application is made by re-implementing the construction phase of the the 7.75x7.75x3.6m post-formed Accoya timber gridshell built at the University of Melbourne in October 2014 (see Fig.1). First, numerical models are developed in Rhinoceros / Grasshopper / Karamba / Kangaroo and refined in Abaqus (see Fig.2); the purpose is to determine first the most suitable membrane geometry that can be used for erecting the gridshell into its final position and second the theoretical aspects of the problem. Second, a 1:7 scale model is fabricated to understand, on one hand, the overall behaviour of the system and, on the other hand, the technological issues related to joints, connections and materials (see Fig.3). After a process of trial-and-error, a system of pulleys and cables allowed to solve the issues of: transforming a vertical push into a horizontal traction; ground-restraining the free edges of the gridshell during the whole erection; precisely controlling of the final joints position; having



an initial stress-free configuration. Further developments: refining the numerical before developing a 1:1 scale prototype; expanding this system to different gridshell geometries; studying different technical solutions regarding membrane and cable system.

A second case study application is to be developed on applying inflatable membrane technology to a complex shell structure.

Inflatable Membrane Technology has never been used nor for lifting post-formed gridshells nor for constructing complex shells; to prove the robustness and cost-effectiveness of this system would help a comeback of shell and gridshell technology. A further gain would be to provide form-resistant structures with a method of construction which features precision and standardisation.



Fig. 1. Accoya timber Gridshell construction; an example of "push-up" technique applied to a small scale structure. Top: flat configuration; middle: the push-up phases performed by means of cables and rods; bottom: the final configuration with the diagonal bracing and the shear blocks applied.

Source: Authors own

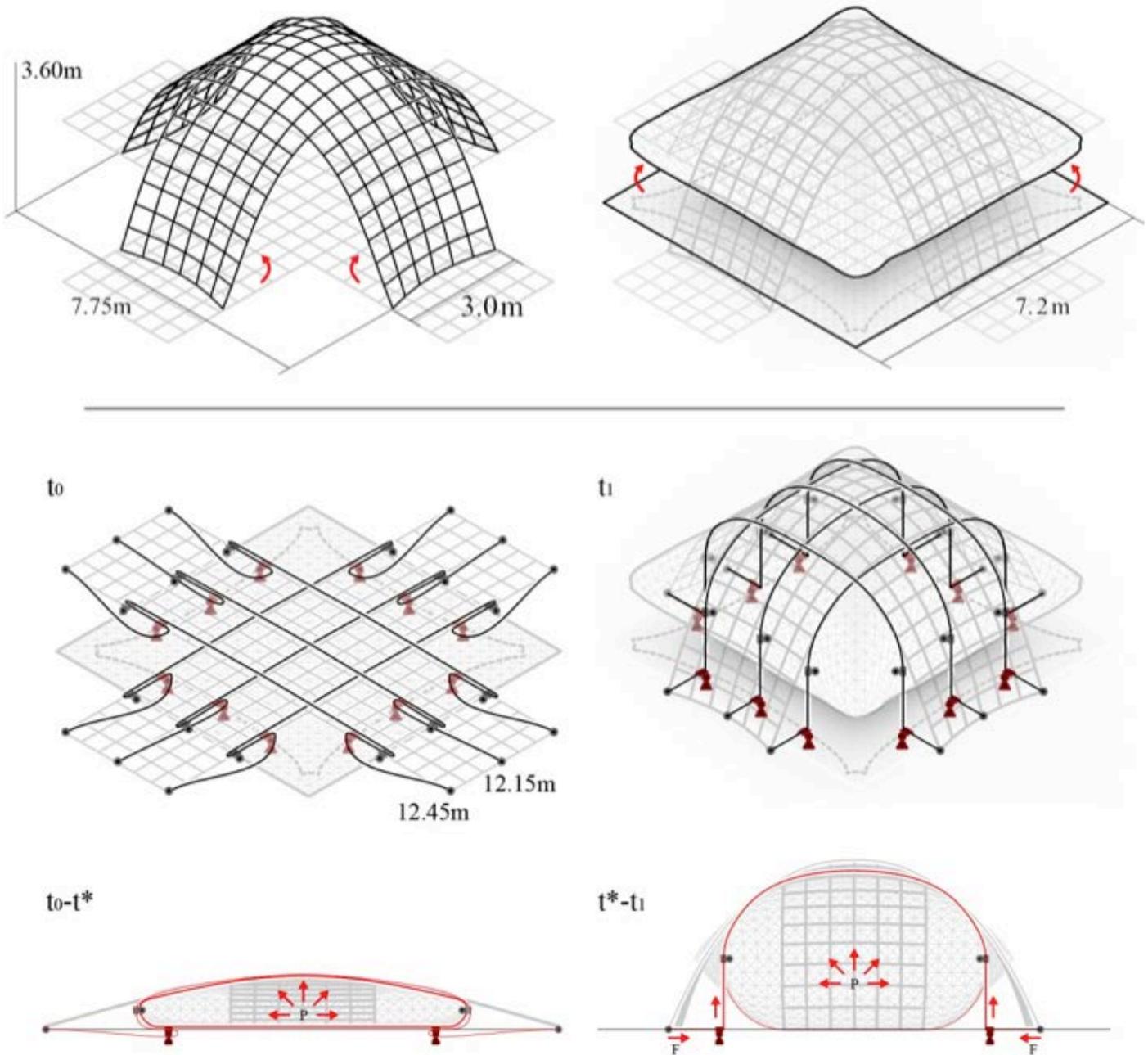


Fig. 2. Top: Gridshell lifting phases t_0 to t_1 . Middle: Gridshell and membrane initial state and post-formed state. Bottom: cable system before (t_0) and after (t_1) the inflation process. Cables get tensioned at moment t^* . The displayed structure and membrane are implemented in a framework designed in Grasshopper, Karamba and Kangaroo. Abaqus is used to verify such system with further accuracy.

Source: Authors own

Investigation of construction management practices to improve productivity of building construction projects



ARGAW GURMU - SUPERVISOR: DR. TOONG-KHUAN CHAN; DR. AJIBADE AIBINU

KEYWORDS: MANAGEMENT PRACTICES, PRODUCTIVITY, BEST PRACTICES, COMMERCIAL BUILDING PROJECTS.

Previous studies confirmed that management practices and technology are among the most important factors which have a potential to improve the productivity of construction projects. For builders which are mainly involved in the management of the works of specialist subcontractors, management practices play a vital role in delivering the project within agreed time frame than technology. Commercial building projects in Melbourne are managed by one main builder that employs numerous specialist subcontractors. Thus, the way such commercial projects are managed by the main builder influences their productivity. The management practices vary from project to project and from company to company and adopting best management practices will help to enhance productivity. This research will identify those best management practices in the context of commercial building projects in Melbourne, Australia.

An extensive literature review is conducted to identify best management practices in the context of other developed countries. Accordingly, management practices that have a potential to improve the productivity of industrial and infrastructure projects in North America are identified. The management practices implementation indexes called BPPII infrastructure and BPII industrial were developed and validated for North America projects by a team of researchers at Construction Industry Institute of USA. There are no other management practice indexes developed for building projects in other developed countries and in Australia. Thus, this research is designed to fill the knowledge gap by identifying and prioritizing those best management practices, and developing a tool to measure the level of their implementation for commercial building projects in Melbourne.

According to previous studies, the best management practices are categorized under materials management, equipment and tools management, execution approach, human resource management, construction methods, and safety and health practices. There are elements under each category. However, these elements might not be used as best practice for commercial and other building projects since the practices are developed for infrastructure and industrial projects. For instance, the use of onsite tracking technology was found to be among the best practices for infrastructure and industrial projects. However, for commercial building projects in Melbourne the practice is not applicable as materials are not stored on a site due to the unavailability of space at construction sites. Moreover, as projects are unique



in nature, other best practices identified for North America projects might not be best in Australia and need further research. Thus, this study investigates specific best construction management practices that can be applied in a context of Melbourne, Australia.

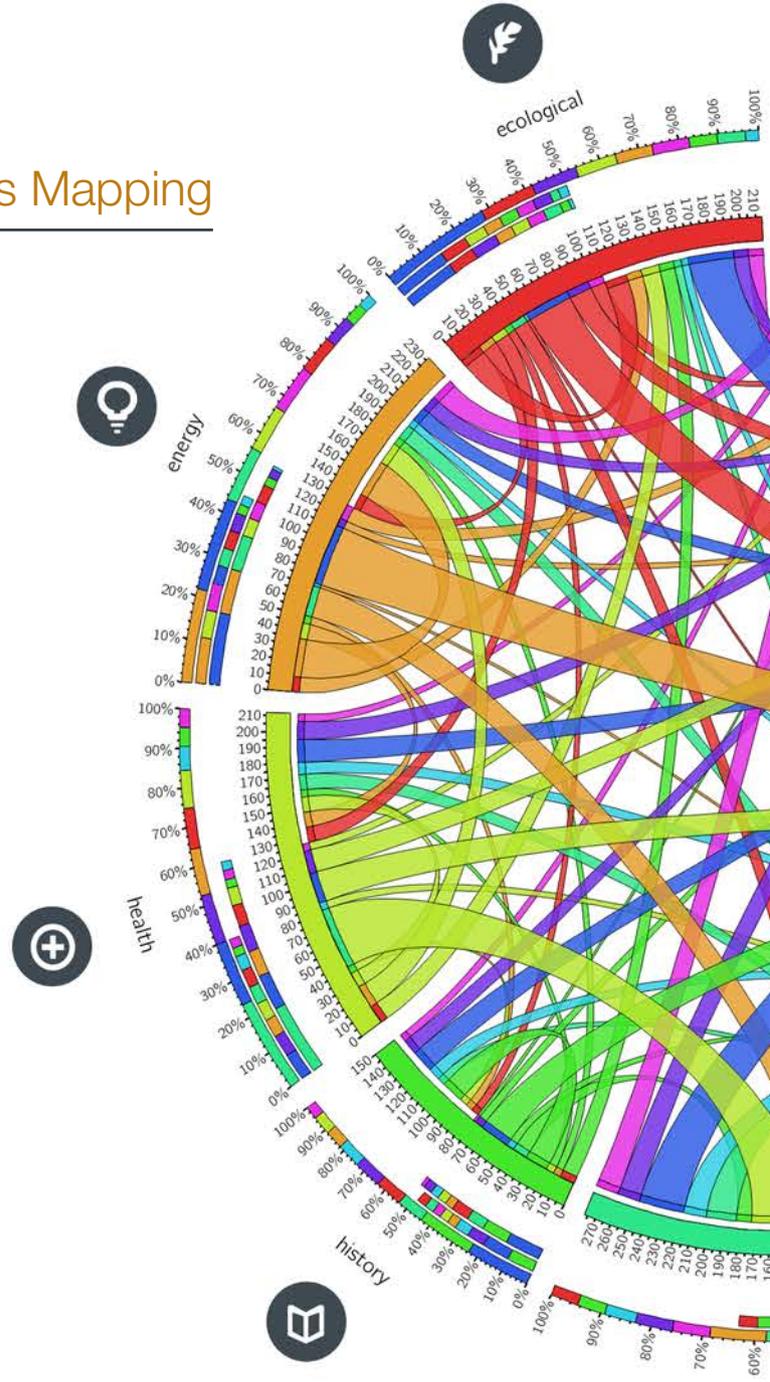
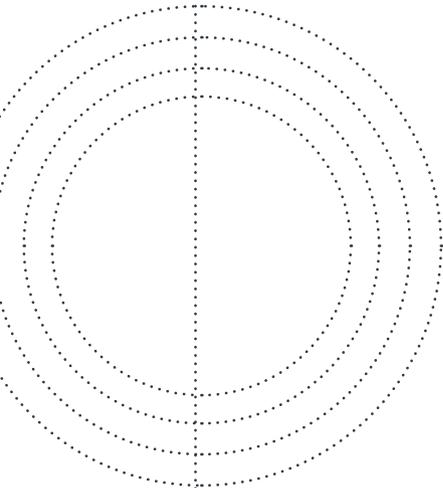
This research is designed to be conducted in two phases. During the first phase, the best practice elements are identified by conducting an interview with local construction experts. They are asked whether the practices which are obtained from the literature are best for commercial building projects, how these practices are implemented locally, whether other practices exist and which of them are best. The experts are selected based on their experience in managing commercial projects in Melbourne. Eighteen experts who have been involved in the construction of commercial building projects and having construction industry experience ranging from 5 to 40 years are interviewed. The interviewees have been working as General Manager, Construction Manager, Project Manager, Project Coordinator/Engineer, Project Planner, Contract Administrator, Site Engineer, and Supervisor. Detail discussion on the management practices and their suitability for commercial building projects in Melbourne are conducted. Finally, lists of best practices which are used as an input to the second phase are identified.

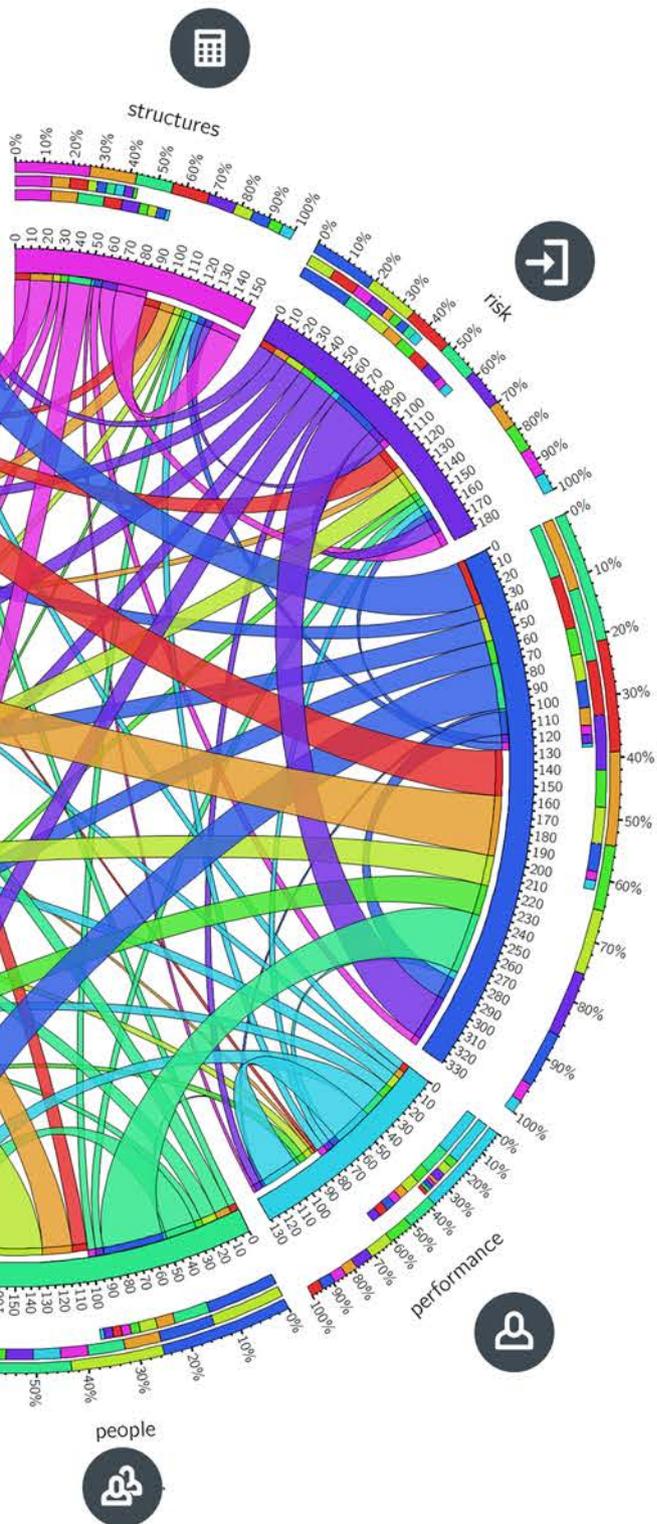
During the second phase of the study, industry-wide data will be collected via questionnaire survey. List of registered commercial contractors is obtained from the registry of the Department of Treasury and Finance of Victoria. Using statistical analysis sample size of forty-nine projects is estimated, and questionnaires will be distributed and collected from these projects. The questionnaire comprises of the best management practices which are identified during phase one of this study and their levels of implementation, as well as the construction project productivity metrics. Finally, analysis will be conducted to prioritize the best practices and develop a tool to measure the implementation level of these practices (BPPII building Melbourne) which is best productivity Practice Implementation Index (BPPII) for commercial building projects in Melbourne. This index is a contribution to the field of construction management on top of the two existing indexes, the BPPII Infrastructure, and BPPII Industrial which helps to score the management practice of a commercial building project.





Circular Matrix Topics Mapping





This circular plot shows the relationship between the topics covered in our publication (energy, people, planning ect.) displaying in a visual way the sometimes hidden links between different agendas in architecture and urban issues. For example, in the mapping we can see that the energy research being developed in the MSD is more related to planning and to some extend to people and ecological issues. This mapping is elaborated in the CIRCOS software, used to map the links of the human genes in the Human Genoma Project.

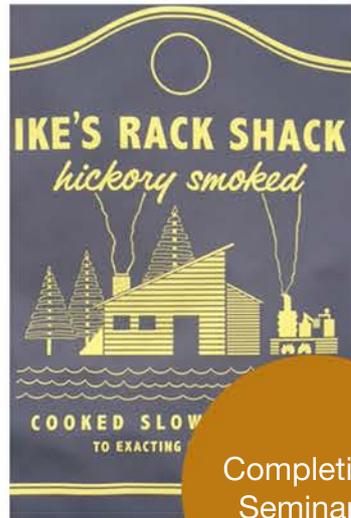
Mapping credit: Raul Marino. Software: CIRCOS Circular plot Mapping ®

URBAN
Membrane MELTDOWN COPING
CHANGING COMMUNITY DESIGNING Walking
ARCTIC LOW-CARBON Authorship Mitigating Postwar
Drawing UNCERTAINTY ASSEMBLAGES Inflatable water
Buildings Environments understanding Information cultural
Improving individuals Social-Ecological TRANSIT-BASED indicator
Access supporting vulnerability Process consumption Building
Performing context-specific Analysis multi-scalar Aires flows
GHG Re)presentation interactions social transformed flows
Modernism walkability Space Planning Investigating Defining
adults Inhabitation Open energy role Ecoscenography disaster
Chilean Morphogenesis Design role Productivity Support
Western form-resistant Key Clitterescophy tsunami
Projects Buenos neighbourhoods Public structures
Melbourne better inform Towards Transitions third
CITY flow service cities policy
Processes Digital
Planners applied
Politics Dryland
Architect Improve
Iranian practice
large groenery
places effect environmental Demonstrating Rivers Ecological
China Celebratory form urban sustainability projects
Spontaneous impact liveability Contributive Investigation emissions
Usability Commons Architecture Construction response
Form Fabrication governance Critical city Construction integrated island
Run Practicing Transportation two social-ecological Computational Practices
ecosystem communication Technology Integration Practice
Inquiry OPPORTUNITIES Understanding NEGOTIATING materials
Assessing Therapeutic comprehensive assessment Pathways
Adeption Australian Melbourne's evacuation Dreaming
Dry LANDSCAPE Management INTENSIVE heat
RISKS late-Mac improving Paradigm
Systems Dynamic Impact





Monthly
Social
Events



Completion
Seminars



Potluck
Dinners



Research Assemblies

This is a call out.

WE NEED TO MSD Research Assembly (MRA) .TALK.

What
The ABP Research Students Association invites all PhD students - yes, you! - to express interest in presenting at the first MSD Research Assembly (MRA), which provides a platform for academics to present work in response to:

Application Process
All interested research students are to submit an expression of interest. This must contain:
1. Abstract that focuses on current research;
case study; theoretical framework; previous paper
2. Keywords.



Movie Nights



The MSD Research Students Association invites to the Dialogue:
In pursuit of an ethnographic sensibility in urban research

Research Dialogues



Graduate Research Cohort 2015

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FACULTY OF ARCHITECTURE BUILDING AND PLANNING
UNIVERSITY OF MELBOURNE**

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Beyerle, Ammon
Biggs, Che
Bunster Milnes, Victor
Bush, Judy
Carter, Simon
Chan, Hoi Ling Anne
Chen, Feng
Choi, Sung
Cookes, Simon
Cruz, Camilo
Czerniakowski, Isabella
Dangol, Neeraj
Davidge Tania, Louise
Davis, Michael
Daws, Karen
Doyon, Andreanne
Duric, Milena
Easson, Michael
Fajl, Marcus
Fouche, Monique
Georgiou, Jim
Godfrey, Ann Beatrice
Goldswain, Philip
Greene, Brent
Gurmu, Argaw Tarekegn
Gurr, Victoria
Halls, Jonathan
Hassan Pour, Faramarz
Henderson, Hayley

Homewood, Penelope
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Houweling, Haes
Huang, Xiaoran
Hunter, Sarah
Ivankovic-Waters, Jela
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Johns Putra, Yvette
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Kamalipour, Hesam
Kazerani, Isun
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Lovell, Jonathan Paul
Marino Zamudio, Raul Alberto
Marshall, Adrian John
Maudsley, Ann
McGirr, Pamela Maree
Miller, Claire Eleanor



Miller-Yeamon, Renee
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Murray, Andrew Marshall
Musgrave, Elizabeth
O'Boyle, Claire
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Palipane, Kelum
Patel, Dhara
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Peimani, Nastaran
Pope, Margaret
Rao, Fujie
Rao, Jyoti
Rauf, Abdul
Richardson, Elizabeth
Robertson, Hannah
Rohman, Mohammad Arif
Rojas Gracia, Angelica
Russo, Patrizia
Sadek, Ahmed
Shafer, Sharon
Song, Ke
Sourani, Yalda
Sunter, Patrick
Teu, Lay
Ullal, Andre
Veeroja, Piret

Walls, Wendy
Warner, Annette
Weretka, John
Willingham, Allan
Xie, Ziming
Yang, Xin
Yon, Alicia
Zhang, Lu

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