

Optimisation of shared spaces that offer movement and place

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Outline

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- Summary of Key Findings from Stage 1
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- Optimising for Movement and Place
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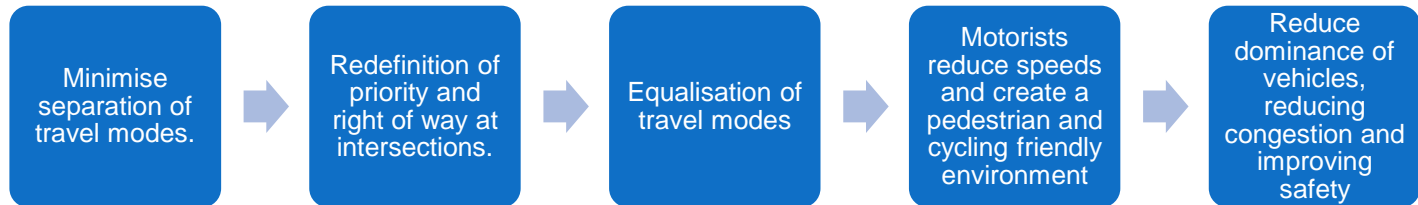
Source: (<https://99percentinvisible.org/app/uploads/2017/11/shared-space-design.jpg>)

Research Context

- What are shared spaces?



Poynton England, Source: <https://ericvery.wordpress.com/2013/02/10/better-streets-fountains-place-poynton/>



Shared Space Theory (Hamilton-Baillie, 2008)

Perhaps a potential solution to create places across our road network....

Research Context

Department for
Transport

Local Transport Note 1/11
October 2011

Shared Space

Environment and Planning A 2012, volume 44, pages 2260–2277



doi:10.1068/a445295

Auto-disabilities: the case of shared space environments

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Received 31 October 2011; in revised form 22 February 2012



The Canopy (Birdwood Lane, Lane Cove, NSW, Source: Google Maps Street view)



Planning and
Environment

Source: <https://www.dpie.nsw.gov.au/premiers-priorities/great-public-spaces/streets/streets-as-shared-spaces-program>

Preliminary Questions

- Is the current shared space design guidance clear for practitioners? **Are shared spaces safe and valuable for the community?**
- How are “shared spaces” defined and evaluated in Australia? Can this be improved?
- What are the processes required to implement shared spaces locally?

→ **Research is necessary.**

Project Background

- A multi-disciplinary team was formed to conduct the necessary shared space research.



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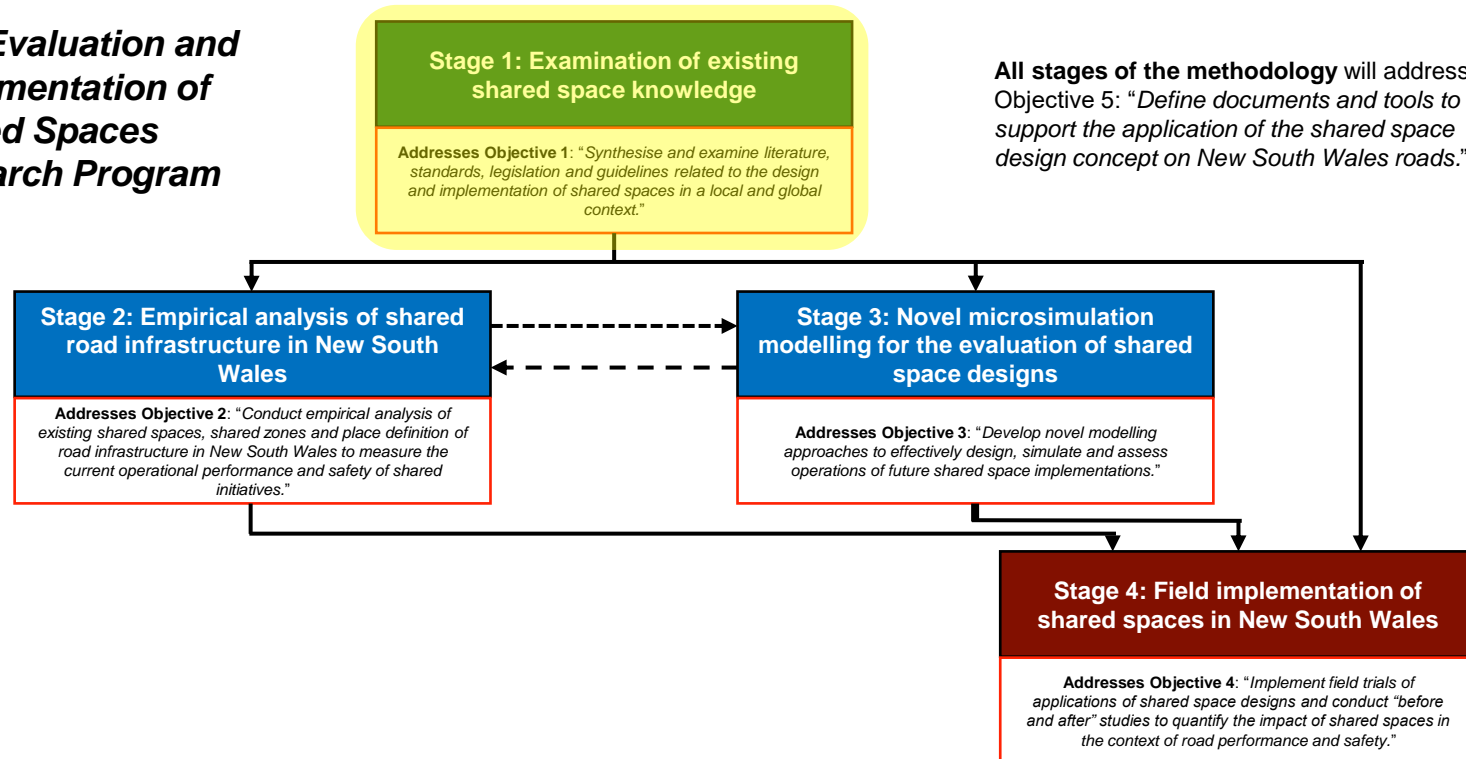
Dr Michelle Zeibots
(Transport Planning Expert
– Project Advisor)

Research Students:

- **Delilah Slack-Smith (PhD Candidate):** *Optimising multimodal transport: Sharing the Road Space*
- **Nafisa Nishandar (Capstone Student):** *Shared Spaces: A review of the feasibility of shared spaces in the New South Wales road network*
- **Amy Tran (Capstone Student):** *Evaluation of shared spaces within an Australian context*
- **Nicholas Bradbury (Capstone Student):** *Place: Empirical measurements in shared space context*

Project Background

UTS Evaluation and Implementation of Shared Spaces Research Program



Summary of Key Findings from Stage 1



1) Shared spaces offer a spectrum of design solutions

- Removal of separating infrastructure is one option of many that transport professionals can use to create a shared space that can deliver a successful place



2) Shared space guidance is complicated and limits application

- In NSW, practitioners are overwhelmed with a number of standards and guideline documents to propose and deliver innovative shared solutions. **Holistic guidance is key to making shared space options accessible for implementation.**



3) Adopting shared spaces requires relating design parameters with performance metrics

- In general, literature has focussed on design features or performance evaluation without defining clear relationships between the two. **Consistency in guidance can be achieved through robust empirical research to clearly define these relationships.**

4) Shared spaces lead to positive impacts and have enhanced places

- Though **evaluation methods require improvement**, the review of case studies have revealed that overall, when implemented, shared spaces have had positive impacts and improved places on the road network.



Shared spaces offer a spectrum of design solutions

Given the need to develop inclusive shared spaces, the definition has broadened to capture a “spectrum of shared space” design options.

Shared Space Definition:

A public local street or intersection that is intended and designed to **be used by all modes of transport equally in a consistently low-speed environment.**

Shared space designs aim to **reduce vehicle dominance** and prioritise active mobility modes.

Designs **can utilise treatments that remove separation** between users in order to create a sense of place and facilitate multi-functions.



Walworth Road, London, UK



Gosford Street, Coventry, UK



Leonard Circus, London, UK

Enhanced Streets

- Conventional street design with features that enhance place.
- Decluttering
- Reduction of signage
- Variation in paving materials

Informal Streets

- Absence or reduction of traffic control
- Defined carriageway
- Reduced-height kerbs to create a more levelled environment.
- Inclusion of formal crossing points.
- Variation in paving materials

Pedestrian Priority Streets

- Absence of traffic control
- Limited or no carriageway definition
- Levelled/Flush surfaces
- Similar paving used throughout the site

SEPARATION

NO SEPARATION

Formed using Karmdacharuk, Wilson & Dunn (2014) and Local Transport Note 1/11 – Shared Space (2011)

Formed using CIHT Report (2018)

Shared spaces lead to positive impacts and have enhanced places

Case studies regarding shared spaces are limited and most face the following constraints:

- **Small sample size data sets**
- **Focus on post implementation analysis without correctly evaluating “before” and “after”**

The CIHT Report (2018) presented 10 case studies of UK shared spaces and provided qualitative ratings

Site	Indicators (Performance classified as: Insufficient Information (II), Positive, Neutral, Negative)				
	Inclusive Environment	Ease of Movement	Improved safety and public health	High quality of Place	Economic Benefits
Elwick Square	II/Neutral	Neutral	Neutral	Positive	Positive
Exhibition Road	II/Neutral	Positive	Positive	Positive	II/Neutral
Holbein Place	II/Neutral	Positive	Neutral	Positive	II
Leonard Circus	II/Neutral	Positive	Neutral	Positive	II/Neutral
Fountain Place	Neutral	Positive	Neutral	Positive	Positive
Gosford Street	Negative	Positive	Positive	Positive	Positive
Kimbrose Triangle	Negative	Positive	Neutral	Positive	II
Fishergate	Negative	Positive	II	Positive	II
Hamilton Road	II	Positive	Neutral	Positive	Positive
Walworth Road	II/Positive	Positive	Positive	Positive	II
Borehamwood	II	Positive	Positive	Positive	Positive

Shared spaces lead to positive impacts and have enhanced places

Detailed analysis for the following case studies were conducted:

Site	Purpose of Shared Space	Traffic Condition	Design Features	Key Defining Findings	Reference
Horseshoe Common, (UK, 2014)	Promote sustainable travel and improve safety	4800 veh/day 5 casualty collisions per year	<ul style="list-style-type: none"> • Roundabout + Pedestrian crossing removed • Introduction of tactile pavements + flush kerbs 	<ul style="list-style-type: none"> • 38% reduction in casualty collisions. • Footfall increased by 126% • Positive feedback overtime. 	Pearson et al. (2019)
Acorn Road (UK)	Create a better environment for walking and cycling	4000 – 4500 veh/day, 25km/hr, 300 people/hr	<ul style="list-style-type: none"> • Conversion to 1-way street • Shared raised platforms • Reduction of parking 	<ul style="list-style-type: none"> • Reduction in vehicle volumes (30%) and speeds (19%) • Positive attitude and more cooperative travel behaviour. 	Clarkson (2017)
Elliott Road, (NZ)	Reduce vehicular dominance, and encourage community interactions	1800 veh/day	<ul style="list-style-type: none"> • Introduction of pavers, flush kerbs, street furniture • Removal of bollards 	<ul style="list-style-type: none"> • Reduction in daily vehicle volumes (45%) and speeds (20%) • Quality of place improvements measured (significant and positive) 	Karndacharuk et al. (2014b) Karndacharuk et al. (2016)
Fort Street, (NZ)	Create a distinctive public space to increase footfall.	6000 veh/day, 29km/hr	<ul style="list-style-type: none"> • Introduction of pavers, flush kerbs, street furniture • Removal of line marking and parking 	<ul style="list-style-type: none"> • 54% increase in pedestrian volumes, 45% reduction in vehicle volumes, 47% increase in economic activity 	Auckland Council (2012) Karndacharuk et al. (2016)

Current research and next steps

Gaps identified in Stage 1

Closing the gaps

Inconsistencies in definition and implementation of shared spaces (complex approval processes)

Stakeholder Consultations

A series of workshops with transport practitioner and community end-users can help further **clarify definitions, objectives, potential design options and approval process solutions.**

Disparate data with no consistent database of shared infrastructure

Shared road infrastructure database development

Undertake comprehensive data collection and mapping process **to develop a database of shared infrastructure**, allowing for greater consistency in evaluation.

Limited reporting of local case shared space studies

Local case study analysis

Conduct a detailed assessment of a variety of shared space infrastructure sites to **quantify impacts of current implementations.**

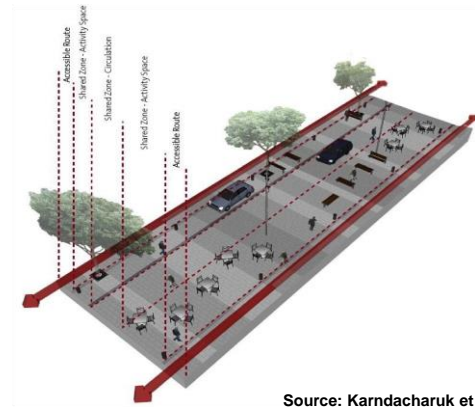
Fragmented performance evaluation that does not connect design parameters with performance metrics.

Statistical Modelling

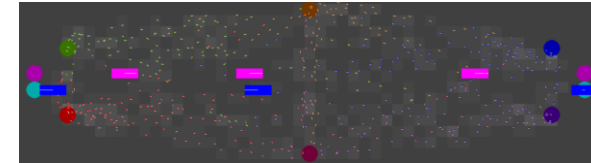
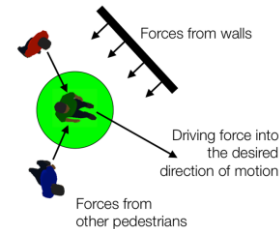
Apply findings of the stakeholder consultation, empirical data collation, and Stage 1 learnings to perform statistical analysis and modelling to **quantify relationships between design parameters and performance metrics.**

Optimising for Movement and Place

- Road networks are conduits for the community to undertake productive activities, therefore **optimisation of the network must take into consideration both “movement” and “place” considerations.**
 - Shared space designs can potentially optimise “place” aspects of the road network and surrounding infrastructure.
- Challenge is to ensure **efficient and safe movement** (especially for vulnerable road users) whilst also **maximising place outcomes (social/economic) from a transformation.**
- Currently being developed: **Novel modified social force models** to better quantify and forecast “place” metrics as well as testing a number of design options



Source: Karndacharuk et al., 2011



Source: Slack-Smith, 2022

Source:
<http://futurict.blogspot.com/2014/12/social-forces-revealing-causes-of.html>

Benefits of Shared Space Research

- Clarified definitions to **develop holistic guidance** for easier shared space implementation.
- Enhanced **comprehension of the relationship between design features and shared space performance**.
- **Database** of existing “shared spaces” to help future local government implementation.
- Discovering processes to **account for movement and place attributes in the optimisation of road infrastructure**.
- Simple **quantification tools** to evaluate existing and future shared spaces.



Intersection of Moore Street/Macquarie Street, Liverpool
(Source: Wijyaratna, K.P. 2021)

Thank you for listening



For further information and access to the Stage 1 report please visit
- <https://www.transport.nsw.gov.au/shared-spaces-in-nsw>