OCULUS

An annual publication of graduate student research from the Research Students Association Melbourne School of Design and Faculty of Architecture, Building and Planning at The University of Melbourne

2024

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by

Melbourne School of Design Research Students Association
in the Faculty of Architecture, Building and Planning
at The University of Melbourne

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Raed Yahya AlBanna. (2024). *Woven into Learning: Clothing as Culture in Everyday Spaces* [illustration]. https://doi.org/10.26188/27245883. Reproduced with permission from the artist.

Foreword

Welcome to the 2024 edition of Oculus!

What a wonderful initiative that showcases and celebrates the high quality, innovative, and exciting research being led by the graduate researcher community in the Faculty of Architecture, Building and Planning.

For another year, I have had the honour of learning directly from this community about the areas of research that matter to them, and what inspires graduate researchers to do the research they do. From addressing global multi-crises such as climate change to place-based research that connects with land and people, the research conducted by graduate researchers show how place, biodiversity, communities, policy-makers and built environment professionals are vital in our collective efforts to generate new ways of knowing and being in the world.

Oculus is led by graduate researchers. It is an initiative that represents their commitment to fostering a research culture that is passionate about the research one does, and bold in ensuring that this research has an impact: changes the world! Certainly, research has the power to change minds, to herald in new ways of knowing and to honour the diverse places we conduct our research on and reflect with.

This edition of Oculus includes contributions that explore facets of the multi-crises we face, from understanding colonial legacies of place to assessing political risk in construction. Some contributions showcase methodologies such as sensory ethnography, while others consider pathways forward such as moving beyond mass consumption. Specifically, the epistemological, place-based and relational knowledge exhibited reflects the diverse contributions the graduate research community is making and the depth of analytical insight their research offers.

There is much about this edition of Oculus that is worth celebrating!

Might I start by first congratulating the editors and authors of this edition. Each year a group of graduate researchers convene to inspire their community to contribute to Oculus. I want to say a special thank you to them as that commitment, energy and passion to showcase the work of your peers is vital to academe, and to building community. I am grateful for your work. I also want to thank the contributors. Without you there would be no edition to celebrate, and I acknowledge you for sharing your work, and for your provocations.

I am grateful to the graduate researcher community in the Faculty of ABP. Your research is important, powerful and inspiring. I cannot wait for the conversations this edition will inspire. Congratulations to you all.

A/Prof. Crystal Legacy
Assistant Dean (Graduate Research)
Faculty of Architecture, Building and Planning
The University of Melbourne

October 2024

Opening remarks from the RSA President

It is a great pleasure to present to you the 2024 edition of Oculus!

Oculus is a publication of the Melbourne School of Design (MSD) Research Students Association (RSA). It serves as a venue for sharing research among the MSD graduate researchers and beyond. This year, we feature 20 contributions exploring a diverse range of topics in architecture, landscape, planning, construction, conservation, and their intersection with the society, environment, technology, politics, and so on.

The journey of pursuing a PhD is filled with challenges, hardships, discoveries, and personal growth. Each contribution in this book reflects the passion and resilience of our graduate researchers as they navigate through this heroic journey. I would like to express my gratitude to each of the contributors, for dedicating their time and energy to sharing their research and stories.

My special thanks go to the RSA Research Committee—Rebecca Roberts, Amelia Leavesley, Damilola Olalekan, and Yuan Lu—for their commitment that has made this publication possible, and to Loren Adams, for countless hours spent beautifully presenting the works of our cohort.

Please feel free to reach out to the contributors if you would like any further discussions or information. I hope you find enjoyment in delving into the papers, inspiring you to share and have insightful conversations.

Định Huỳnh
MSD RSA President 2024

Contents

Contributors

Loren Adams is a disciplinary-promiscuous-feminist-architect(ish)-roboticist-and-computational-dominatrix from Mandjoogoordap, Western Australia. Trained in architecture and public policy, she explores the murky ethics of ownership and entrepreneurship by planning hypothetical heists, hacks, hijacks, hoaxes, and other socio-spatial exploits. Previously, Loren led the Australasian computational design team at Grimshaw Architects, and was the inaugural coordinator of the Melbourne School of Design Robotics Lab. She began her career working as a ghost artist in Los Angeles.

Raed Yahya AlBanna is a PhD candidate at The University of Melbourne. Raed's research focuses on embodiment, multisensoriality, and emplacement theories, providing insights into how students experience learning with their bodies. He examines how ongoing changes in the school environment influence the 'feel' of spaces, exploring how students use their senses to interact with their surroundings and continually shape their learning experiences. His work contributes to developing a framework that deepens our understanding of these experiences, including collaborative methods and interventions that can be applied in learning environments and research networks. Raed holds a Masters in Multimedia Design from Monash University (Australia) and a Bachelor of Architecture from Imam Abdulrahman bin Faisal University (Saudi Arabia).

Laurie Aznavoorian is an architect, researcher, and educator with extensive experience in innovation, strategy, and helping organisations to unlock drivers that help individuals and businesses thrive. Her experience spans Asia, Europe, and the United States working with topics relating to contemporary work styles, technology, social trends, community attitudes, and the ever-changing global impact of geopolitical events on workplace design. She is also a member of the SHE Lab (Sustainable and Healthy Environments), a team at the University of Melbourne that develops applied research aimed at understanding how the built environment can improve sustainability and health through the design of high-performance spaces.

Tanya Burdett is a registered planner (Planning Institute of Australia), licensed International Association for Public Participation (IAP2) trainer in the Global Learning Pathway, and former sessional member, Planning Panels Victoria (2018-23). With multiple degrees (MEnvSt; BAppSc (Planning)) and more than 30 years of experience in planning, impact assessment, and community

engagement, Tanya is now a PhD candidate at the University of Melbourne. Her research brings her practical experience together with theory. Tanya has led national-level strategic environmental assessment in the UK (transport, planning, and wastewater sectors) and has extensive experience throughout the UK and Asia-Pacific region.

Asep Darmana is a landscape architecture scholar with a background in architecture and practical experience in the field. His passion for design and digital technology has led him to focus his research on data-informed design driven by digital technology. Specifically, he explores the potential benefits of utilising social media data in landscape architecture.

Jennifer Fowler is an architectural historian. She completed a BA (Hons) and a Master of Arts in architectural history at Monash University during the 1980s, tutoring at both Monash and Deakin Universities. In the decades that followed, she worked as an interior decorator. Returning to study in 2019, Jennifer completed a Master of Urban and Cultural Heritage in the Faculty of Architecture, Building and Planning at the University of Melbourne. She was included in the Dean's Honours List and awarded the Richard Falkinger Scholarship in 2020. Jennifer is now researching Melbourne's 1880s commercial architecture as a PhD candidate, supported by an Australian Government Research Training Program Scholarship.

Sarah Hunter is a landscape architect and interdisciplinary designer with experience working in Australia and the UK. She was educated at the University of Melbourne, Edinburgh College of Art, and L'Université de Perpignan in France, as well as an urban design workshop at the Ecole Nationale Superiéure d'Architecture de Bordeaux. Much of Sarah's current research relates to work on her own farm in the Nillumbik Green Wedge (Wurundjeri country). Outside of her research, Sarah is heavily involved in social and environmental justice advocacy and is convinced that design can play a critical role in solving the wicked problems of the world. Sarah is interested in understanding and leveraging subjective experience, emotion, and perspective to achieve change and make the world a better place.

Osama Jamil is an architect and researcher dedicated to visual storytelling. Through his work, he explores innovative approaches to understanding historic narratives in architecture. His interdisciplinary creative practice research lies at the intersection of media technology, architecture, history, and digital arts.

Kebir Jemal is a graduate of architecture currently pursuing his PhD at the University of Melbourne. His research explores the implementation pathways of circular business models in the construction sector. As a researcher, Kebir has authored academic papers centred around the critical theme of circular economy in the architecture, engineering, and construction (AEC) sector.

Amelia Leavesley is an urban sustainability scholar who is passionate about healthy cities and good governance. Her PhD research explores multilevel waste

governance in Australia, focusing on the role of local governments in scaling action on municipal waste.

Yuqian Lin is a PhD candidate at Faculty of Architecture, Building and Planning, University of Melbourne, an educational technologist at the University of Melbourne Student and Scholarly Services (SASS) Learning Environments (LE) Accessibility Team, and a research assistant at the Urban Ecology and Design Lab (UEDLAB). During her time studying and practising design, architecture and environments in Australia and China, Yuqian became interested in interdisciplinary design, scarred landscape socio-ecological regeneration, human-environment relationships, and creative storytelling methods in research and design practices. She is passionate about unveiling the unseen in urban riparian post-quarry-landfill (URPQL) landscapes through creative works and methods. Through her research, she hopes to contribute to inclusive and accessible citizen knowledge-sharing hybrid environments for co-designing and co-planning a resilient and adaptive URPQL future for the generations to come.

Ruoxin Liu is an innovative urban planning and design scholar and PhD student at the University of Melbourne. With degrees in architecture and urban planning, she has previously practiced in China and taught at Shanghai Jiao Tong University. Ruoxin has expertise in urban design theory, urban regeneration, and sustainable development, blending academic knowledge and practical experience. Her current research interests include riverfront redevelopment, inclusive public spaces, urban form, and socio-ecological approaches to urbanisation.

Sahra Mohammadi is a construction project management scholar specialising in risk management and contract administration within the construction industry. Her research focuses on legal and contractual risk management in Building Information Modelling (BIM), emphasizing the critical role of contracts in effective liability allocation and risk mitigation. Sahra is currently a PhD candidate in construction at the Faculty of Architecture, Building and Planning, University of Melbourne, where she was a recipient of the prestigious Miegunyah International Fellowship. She holds a Master of Science in Civil Engineering and Construction Management and a Bachelor of Architecture from the Middle East Technical University (METU).

Sam Neave is a graduate researcher interested in the intersection between construction and policy. His PhD research focuses on the insolvency crisis in the construction sector. Previously, Sam studied construction management and international relations at the University of Melbourne and the Australian National University, respectively. Sam is eager to contribute to knowledge-building in the construction sector.

Damilola Olalekan is a PhD candidate at the Faculty of Architecture, Building and Planning, The University of Melbourne. Her research focuses broadly on urban studies and sustainable management with specific interest in social justice, gender equity, pro-poor development, and sustainability. Currently, her PhD

research investigates gender inequity in infrastructure provision in low-income communities in Lagos, Nigeria. She aims to contribute to more equitable and inclusive city planning practices in the Global South.

Yasodhara Ranasinghe is an architect, educator, and researcher. Her diverse research interests range from intricate building details to humanitarian architecture. Yasodhara holds a Bachelor of Architecture (Hons) from the University of Moratuwa (Sri Lanka), where she has been a Lecturer in the Faculty of Architecture since 2017. She also has six years of industry experience, including four years as an individual practitioner. Since 2020, Yasodhara has been completing a PhD the University of Melbourne, where she focuses on community inclusion in post-disaster resettlement.

Rebecca Roberts is a conservation stonemason, heritage project manager, and doctoral fellow with the Faculty of Architecture, Building and Planning, University of Melbourne. Her PhD research draws on over twenty years' built heritage experience and includes international fieldwork with conservator-restorer craftspeople in Australia, the United Kingdom, and France. Rebecca's project explores the role of tacit skills and embodied knowledge in maintaining enduring, adaptable, and resilient cultural identities through historic built environments. Using diffractive ethnography, she gently choreographs a collaborative wayfinding towards conceptualising traditional craftsmanship as intangible cultural heritage.

Domenic Trimboli is a third-generation, settler-Australian raised in Western Australia and recipient of the Nell Norris Fellowship for a PhD in Architecture. This research, developed through theoretical enquiry and speculative design, asks us to consider our relationship towards cemeteries in Australian cities and to also (re)think how we might envisage creating new ones during the 21st century. Domenic is also a registered architect, writer, and experienced tertiary educator of architecture and urban planning. His work has been published across several design-based journals.

Daniel Vasconcelos is a PhD candidate and academic tutor at the University of Melbourne. Holding a Masters degree from Peking University and a BA in Politics and International Relations from University of Brasilia, his current research deals with the many facets involving work and urban environments. He is particularly interested in the intersection of policy, innovation, creativity, and the built environment.

Zhehao Wang is a first-year PhD candidate with a landscape architecture background. He is enthusiastic about designed ecologies, climate-resilient design, urban biodiversity, and Chinese classical landscape architecture. His hobbies include gardening, drawing, novel writing, bushwalking, handcrafting, music, sports, reading, and travelling. Zhehao's research focuses on urban greening mangroves across climate gradients in the Asia-Pacific.

“It was a stupid mistake and we had a lot of fun doing it”

Loren Adams

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Key words: gold, heists, fakes, fraud, corruption, Western Australia, Perth Mint

The third time I meet Avon Lovell in person, he surprises me with a freezer bag of research paraphernalia from his personal archive, plonked on the table between our matching mugs of flat white. We are at our usual meetup spot—a nondescript café in the centre of a small suburban shopping centre on the northern outskirts of Perth—and I am delicately unwrapping crudely wrapped plastic to reveal a stack of red-and-yellowing photographs and two reddish rubber fingers.

I begin to look through the stack of photographs, one-by-one, front-and-back. They are numbered but incomplete and out-of-order. The edges are burnt, peeling, and occasionally thick with an indeterminate stickiness. Still, I handle them like museum artefacts, worrying aloud about whether the table and my hands are clean enough, and whether I should be wearing gloves. Avon does not share my worries.

A moustached man and his hands are recurring characters in the photos. They appear in and out of focus alongside tools and chemicals and documents and globs of goldish metal, sometimes in a backyard shed, sometimes against a backdrop of lawn or a grey drop-sheet. In two photos, an open book shows

a map of the United States. In another, there is a hand-drawn outline of the state of Texas. Some of the globs of gold are roughly the shape of Texas too. So, this moustached man, his hands, and (presumably) a cameraman have been in a suburban backyard casting gold into Texas-esque nuggety forms, over and over again, photographing each step along the way. (My inner monologue starts meme-making, a TikTok-generation tic: "Not a cell phone in sight," I think. "Just bros casting gold, living in the moment.")

I shift my attention to the fingers.

There are two fake fingers in the freezer bag: a full finger from tip to (metacarpophalangeal) knuckle and the same finger shortened from tip to DIP (distal interphalangeal joint, or the joint closest to the fingertip). They are both ruddy rubber recreations of fleshy phalanges, grubby with dust, a little springy to my touch. I slowly rotate the full finger between my thumb and forefinger like a rotisserie sausage. The swirls of fingerprint are blackened with old ink.

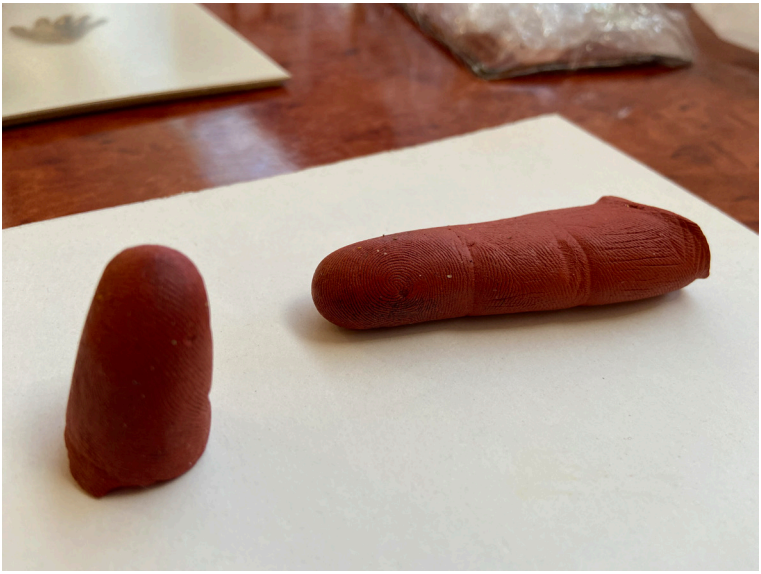
Avon tells me that these are replicas of Ray Mickelberg's right index finger; duplicates of the fakes police used to plant prints on a stolen cheque to frame Ray and his brothers for the theft of 49 gold bars from the Perth Mint in the early 80s. Ray is also the man with the 'stache and the hands making all of those real-gold-fake-nuggets in the photos, he confirms.

For a moment I sit, awestruck, alongside a mundane parade of shopping trolleys and grocery shoppers, holding two rubber replicas of Ray Mickelberg's right index finger under fluorescent lights. I put the fingers on the table, snap a quick pair of pics with my phone (Figs. 1-2). Behind me, someone orders a loaf of sliced white from the Bakers Delight.

This was the day Avon gave me the finger.

*

Between 1985 and 2010, journalist Avon Lovell (b.1945) authored three books about the 1983 wrongful conviction of the Mickelberg brothers for the Perth Mint heist: *The Mickelberg Stitch* (1985, 2002), *Split Image* (1990), and *Litany of Lies* (2010). For his efforts, Avon was threatened, prosecuted, and persecuted. A bullet was fired through the window of his office, his books were removed from shelves by uniformed police, and police wages were tithed to fund his prosecution for libel (Whish-Wilson, 2015, p. 156; Kerr, 2009, p. 71).



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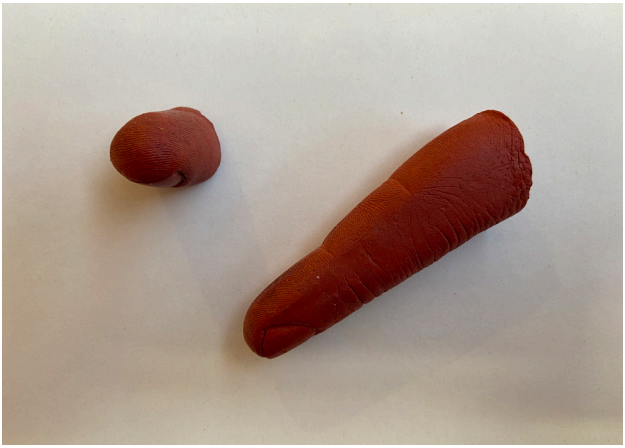

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Figs. 1-2: Loren Adams with Avon Lovell, *The day Avon gave me the finger* 2022. Photographs by Loren Adams.

It is no surprise, then, that the tone of Avon's books escalates from matter-of-factness to exasperation to indignation. In the final chapters of *Litany of Lies*, barely contained rage spills across the pages.

None of this rage is evident in person, though. Avon is affable, a little cheeky. I like him immediately; I have to remind myself that I am a researcher.

Another researcher, Aaron Freundschuh, once followed the 1911 theft of Da Vinci's *Mona Lisa* from the Louvre Museum through the archives (2006). Like Freundschuh, I want to uncover "the historical relation between crime storytelling and the myriad local struggles for spatial control that animate urban life" (p. 274). So, I am meeting with Avon to learn about the Perth Mint heist and its companion crime: the manufacture and fraudulent sale of a real-gold-fake-nugget called the Yellow Rose of Texas.

*

In 1980, three brothers and their buddy opportunistically defrauded a corporate fraudster by casting real gold into a nuggetty form that was roughly the shape of Texas. Ray, Brian, and Peter Mickelberg shared a new aerial gold prospecting business in Western Australia with Ray's mate, Brian Pozzi, and they had intended to perform the 'discovery' of this real-gold-fake-nugget as a PR stunt.

On the evening news, their mother—Peggy 'Ma' Mickelberg—stood in a wig before a light aircraft hangar with a man in a suit and offered the Yellow Rose of Texas as the second largest gold nugget ever found in Western Australia. Not long after, the nugget was authenticated as 'unrefined' by the Perth Mint (Lovell, 2002, p. 169). It helped that Ray was a talented fabricator, who made bronze and rubber casts of his family's hands for fun. In fact, "so perfectly had the nugget been cast, with chemical and metallic additives, that the Mint officials felt compelled to describe it as a natural wonder" (Lovell, 2002, p. 173). Together, these three brothers, their mother, and their buddy had "successfully manoeuvred Perth's media [and the Perth Mint] with one of the most effective publicity gimmicks for years" (Lovell, 2002, p. 86).

Brian Mickelberg would later insist that this "manufactured nugget" was "never meant to be sold, except back to the Mint," and only to recoup the cost of real gold used in the cast (Lovell, 2002, pp. 174–175). But the Yellow Rose of Texas was now the biggest and best in the west, so Alan Bond had to have it.

At the time, Alan Bond—'Bondy'—was a boisterous businessman-around-town, a Perth-onality with a portfolio of property developments, newly minted as Australian of the Year and busy building an empire by collecting debt and State government ears. He had not yet won the America's Cup sailing race (1983), nor had he sort of stolen a Van Gogh (1987) or stood at the helm of Australia's largest corporate collapse (1990)—but he had begun redeveloping the former Palace Hotel on St Georges Terrace into a sleek glass tower for his corporate headquarters.

Early the previous year, Bondy had paid AUD $18,500 for a 56-ounce gold nugget found by two part-time prospectors in the Kalgoorlie goldfields—the biggest nugget to be found in WA for more than forty years. Bondy's biographer, Terrence Maher, tells us that "the plan was for 'Kalgoorlie's Pride' to take pride of place in Bond's Palace Hotel… while Bond awaited development approval for the construction of Perth's tallest tower behind it" (1990, pp. 206–207). Bondy did not like that another nugget had now been discovered, eight times the size of his newly acquired Kalgoorlie's Pride. He had to buy it.

He offered $300,000, and then $350,000.

The Mickelbergs and Pozzi resisted, and then relented.

And so, in November of 1980, rough-and-ready moulded gold in roughly the shape of Texas was sold to Bondy for roughly twice the real-market value.

Two years later—just post-Perth Mint heist—police would search Brian Pozzi's Tuart Hill home on an unrelated matter and discover photographs documenting the manufacture of the Yellow Rose of Texas (Buti, 2011, p. 39).

"I am in a scholarly situationship with the ghost of Alan Bond."

*

I arrive at the story of the Perth Mint heist through Bondy via the Yellow Rose of Texas. I am in a scholarly situationship with the ghost of Alan Bond. He has become a slippery subject of my research, both mentor and tormentor, always straddling the entrepreneurial and the criminal, an exemplar of the murky ethics and excesses of the eighties. Bondy is also a famously unreliable

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Fig. 3: [Opposite Page Top] Installation view, Loren Adams with Avon Lovell, *It was a stupid mistake and we had a lot of fun doing it* 2024/1980 (detail), in *This Hideous Replica*, First Site Gallery, Melbourne, 2024. Photo by Christian Capurro.

Fig. 4: [Opposite Page Bottom] Installation view, Loren Adams with Avon Lovell, *It was a stupid mistake and we had a lot of fun doing it* 2024/1980 (foreground), *The day Avon gave me the finger* 2022 (background right) and Debris Facility Pty Ltd, *PlasticCorpUs* 2024 (background left), in *This Hideous Replica*, First Site Gallery, Melbourne, 2024. Photo by Christian Capurro.

Fig. 5: [Top Left] Material experiments for artworks by Loren Adams with Avon Lovell in *This Hideous Replica*, First Site Gallery and RMIT Gallery, Melbourne, 2024. Photo by Loren Adams.

Fig. 6: [Top Right] Installation view, Loren Adams with Avon Lovell, *Not a cell phone in sight! Just bros casting gold, living in the moment...* 2024/1980, in *This Hideous Replica*, RMIT Gallery, Melbourne, 2024. Photo by Loren Adams.

narrator, a master of charismatic deceit. In my research data, truth and rumour are impossibly intertwined; myths gather momentum and are memorialised through repetition; tall tales are trivialized into tidbits for pub trivia quizzes.

And so, it is fitting (and a little funny) that these three brothers and their buddy defrauded this corporate fraudster by selling him a real-gold-fake-nugget they had made in their backyard. Less funny is that the Mickelberg brothers were later convicted—not only of this nuggety fraud (which they did) but also for heisting 49 gold bars from the Perth Mint using stolen building society cheques (which they did not do). Their participation in the Yellow Rose of Texas fraud was used in the heist trial to secure conviction.

It took two decades and seven unsuccessful appeals to prove that a few corrupt police officers had conspired to fake a confession and plant fingerprints on a stolen cheque using rubber moulds Ray had made of his own fingers for fun. Goldfingered, indeed.

> "It was a stupid mistake and we had a lot of fun doing it," says Ray, who had his left pinkie bitten off in a prison brawl.

*

It is 2024 and I am revisiting my archival data to prepare for an exhibition, with Avon's blessing (Figs. 3-6; Adams & Lovell, 2022, 2024/1980a, 2024/1980b). In a 2012 episode of *60 Minutes*, Ray and Peter Mickelberg are interviewed by Channel 9 reporter Brady Halls to promote a made-for-television movie—a hideous cinematic replica of a real-life ordeal (Grimshaw & Halls, 2012).

> *"Falsely imprisoned. Fake confessions and fingerprints.*
> *Corrupt officials. The nation's biggest ever gold theft.*
> *And all of it… [dramatic pause] ...true."*

Halls is in the Mickelbergs' kitchen, slowly rotating Ray's ruddy rubber replica finger between his thumb and forefinger like a rotisserie sausage, just like I did

on the day Avon gave me the finger. He presses faux-fingertip to faux-timber countertop, rolls it across the veneer in a single viscous motion.

"And it wouldn't take much effort to get a bank cheque and go *like that*, would it?"

"That's right," says Ray.

Halls' disembodied voice then tells the story of the Yellow Rose of Texas, atop snippets of a silhouetted Bondy in the new fictionalised film and stock cinematography of liquid gold.

"It was a stupid mistake and we had a lot of fun doing it," says Ray, who had his left pinkie bitten off in a prison brawl.

At the end of the segment, the brothers reenact this finger-biting brawl with the Channel 9 reporter, who is not amused. ■

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Political risk analysis:

A theoretical framework for understanding the links between politics and construction

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Key words: *political risk analysis, construction industry, political factors, political shocks*

Politics and construction are inextricably linked. Infrastructure Australia's *Assessment of Australia's Infrastructure Needs* (2019) report confirmed this, identifying political risk as the most inhibiting factor in delivering projects. This is due to several reasons. For example, on one hand, the industry is a key voting constituent with roughly 1.3 million eligible voters (Jobs & Skills Australia, 2024). On another, the industry relies on government, as the largest consumer of construction services, for a pipeline of work (Richardson & Gardiner, 2014). This is further complicated when industry peak bodies and trade unions contribute to the formation of policy, representing their distinct and often conflicting interests (Wonka, 2024). Given this, how are industry stakeholders and policymakers expected to make reasonable decisions?

The answer to this question may lie within the theoretical framework of political risk analysis. While the framework of political risk analysis only emerged in the post-war period, risk posed by political action was present in ancient economies and subsequent literature (Halkos et al, 2022). However, modern trends of globalisation have increased the depth and intensity of this

Fig. 1: CFMEU members rally in Melbourne's CBD prior to the 2019 Federal Election. Image source: Wikimedia Commons

phenomenon. As Chunling Wei et el (2021, p.191) noted in their bibliometric review, political risk can be defined as 'the risk of adverse consequences due to political events (Root, 1972), government actions (Aliber, 1975), and the negative consequences of political interventions (Zhuang, 1998). In short, any factor that may stabilise or destabilise a country (Bremmer, 2005).'

What underpins political risk analysis?

Political risk analysis can be categorised in two ways; by factors and by shocks. Following the Treaty of Westphalia in 1648, the concept of state sovereignty has characterised the international system (Farr, 2005). Underpinned by Jean Bodin's theory of the state, sovereignty is power that is 'absolute, perpetual, and undivided' (Andrew, 2011, p.77). This is not to be confused with government, which, according to Bodin, could be a democracy, aristocracy, or autocracy; all still displaying sovereignty (Andrew, 2011). This is critical given that the international system continues to display several forms of government (Mansfield et al., 2000; Hyde & Saunders, 2020). Thus, sovereignty provides a theoretical base upon which factors of political risk can be analysed and compared. Within this context, political risk factors are attributable characteristics of a nation. In Australia, these characteristics include the Rule of Law, institutional quality, and trade unionism. Political shocks, conversely, are events that prompt responses and risk reassessment from political and business leaders (ZIG, 2017). A positive shock can reduce perceived political

risk and have an expansionary effect on the economy (Hoke, 2019). Intuitively, negative shocks can narrow political decision-making into sub-optimal policies and heighten volatility (Aisen & Veiga, 2011).

Political risk analysis in the Australian context

Copeland (2015) argues that the interconnectivity and interdependence between globalised nations is inherent in the contemporary international system. Thus, it may be difficult to differentiate the Australian experience from the rest of the world. However, within a political risk analysis framework, Australia's unique characteristics may determine outcomes that are unique to its context.

A salient example of this emerged in mid-2024 with the allegations of criminality within the Victorian branch of the Construction, Forestry and Maritime Employees Union (CFMEU). The CFMEU represents 'over 30,000 members' on key workplace issues, such as health and safety, training, and pay conditions (CFMEU, n.d.). The CFMEU has been subject to severe criticism, including allegations of 'motorcycle gang members acting as delegates', and inflating the cost of labour on Victoria's Big Build (Remeikis & Kolovos, 2024, p.1). Since 2000, the CFMEU has been charged 2,600 times amounting to $24 million in fines.

This is important to political risk analysis in several ways. The mounting media and political attention suggest that trade unionism, as a principle, is deeply (yet somewhat controversially) embedded in Australian discourse (Bramble, 2008). This is partly due to their relationship with the Australian Labor Party (Bramble, 2008). Comparatively, trade unionism, as a political risk factor, is less prominent in the U.S. as suggested by Newman & Skocpol (2023, p.3) as union members are 'turning away from the Democratic Party'. Thus, it could be suggested that shocks, like the aforementioned CFMEU, may not disrupt the political and construction sectors as it did in Australia. This emphasises the contextuality of political risk analysis. Specifically, local characteristics are informed by social context, history, and cultural values. When these characteristics conflict, perceived political risk mat increase. In turn, this theoretical framework is critical for understanding the complexities of a nation, in particular the nuances of how industries and politics interact.

Concluding remarks

Political risk analysis may well be pertinent to understanding the complexities of the relationship between the construction sector and politics. Recent examples, such as the 'embattled' CFMEU (Roe, 2024), demonstrate this complexity and the need for theoretical evaluation. ■

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Gender, colonial legacy, and the future of African urbanism

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Key words: gender, urban planning, colonialism, Africa

Prologue

In the heart of an African village, nestled between vast expanses of savanna and forest, there was a river. It wasn't a mighty river, not like the Nile or Congo, but it was the lifeblood of the village. It was where the women came every morning, balancing pots on their heads, to collect water for cooking, washing, and drinking. The river was a place of gathering, of laughter, and of whispered conversations. But it was also a place of division, where the legacy of colonialism cast a long shadow over the lives of the villagers, especially the women.

Long before the village had a name, before it was marked on any map, the river flowed freely. The people who lived along its banks, the ancestors of the villagers, had a deep connection to the land and the water. They were farmers, fishers, hunters, and gatherers, and they lived in harmony with their environment. The men and women worked together, each contributing to the well-being of the community. The women had their own fields, their own markets, and their own ways of managing their lives. They were respected, and their voices were heard in the councils of the elders.

But everything changed when the colonisers arrived.

Colonialism and gender inequity in Africa: Impacts and legacies

The colonial legacy in most African cities has significantly shaped the socio-economic and political landscape of the continent, with lasting impacts on gender relations and infrastructure development. The colonial rule, which began in late 19th and early 20th centuries (Parker & Rathbone, 2007) brought profound changes to the social fabric of African societies. Traditional African communities often had systems in place that, while patriarchal to varying degrees, allowed women a measure of autonomy and influence. In addition to domestic roles, women were active in public domains—politics, military, agriculture, trade and governance (Maogi & Mtombeni, 2020).

However, the arrival of colonial powers disrupted these indigenous systems, imposing Western patriarchal norms that systematically marginalised women. The introduction of colonial land policies is one of the most significant ways in which marginalisation was institutionalised. Colonial authorities frequently seized control of land and reallocated it in ways that favoured men, thereby disempowering women economically and socially. In British-ruled Nigeria, for instance, the colonial government vested land ownership and control primarily in the hands of male chiefs, which not only sidelined women from decision-making but also severed their economic ties to the land (Mba, 1982).

The colonial disruption of gender roles extended beyond land ownership to labour and economic production. Under colonial rule, African economies were restructured to serve the needs of the colony, with men being drawn into cash crop production and wage labour, while women were relegated to subsistence farming and domestic duties. This reallocation of labour not only entrenched gender disparities but also laid the groundwork for the economic disempowerment of women that continues to this day as women are predominant in the informal economic sector and majority are living in poverty (Lawanson, 2006).

The colonial education system further reinforced gender inequalities, as schools were established and primarily designed to produce a male elite who could serve in the lower echelons of the colonial administration. Education

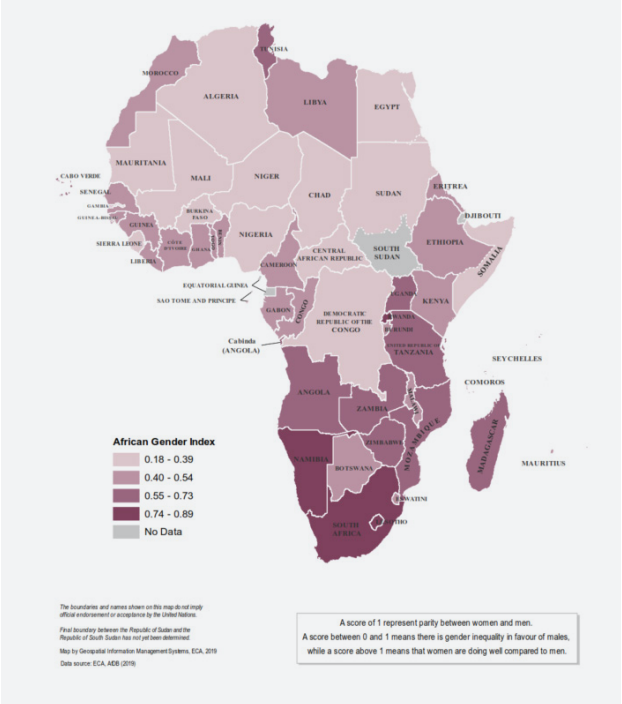

Fig. 1: Africa Gender Gap Index 2019

for girls, where it existed, was typically focused on preparing them for roles as wives and mothers. This gendered approach to education curtailed women's opportunities for social mobility and reinforced their exclusion from formal economic and political spheres.

The end of colonial rule in the mid-20th century did not erase the gender inequities that had been entrenched during the colonial period. On the contrary, many post-colonial African states inherited and perpetuated the colonial socio-economic structures that disadvantaged women. According to UN Women (2022), more than 60% of women in Sub-Saharan Africa are living in extreme poverty. Furthermore, the legacy of colonial infrastructure planning is evident in the neoliberal development projects in the different cities (Adama, 2020) with limited considerations of meeting the need of the most vulnerable

and marginalised groups, including women. Studies have shown that women in low-income communities in megacities like Lagos have significantly less access to water, transportation, healthcare, housing, sanitation facilities and other services compared to men, exacerbating their marginalisation. The persistence of gender inequity in infrastructure provision is a result of the continuation of colonial economic models in the post-colonial era. Many African governments, eager to develop their economies, have focused on megaprojects modelled after the colonial approach to modernisation. These projects, while often touted as engines of economic growth, have frequently neglected the specific needs of vulnerable groups, including women (Olajide & Lawanson, 2021).

The level of patriarchy in most African cities often relegates women in decision making processes. Traditionally in Nigeria, women have been primarily responsible for managing household duties, whether as mothers, sisters, wives, or daughters, with certain religious beliefs reinforcing the notion that women should remain confined to the domestic spheres (Ghazali, 2017). These gender norms and the marginalization of women are perpetuated across generations through socialisation and cultural practices, often with women themselves passing these expectations onto their daughters (Oriaku-Emordi, 2020). Hence, the voices of women are often absent from the planning and implementation stages of development projects, leading to outcomes that fail to address gender-specific concerns and further entrench existing inequalities.

"The level of patriarchy in most African cities often relegates women in decision making processes."

The hindrances to women participating or leading in the society include colonial influence, custom, religious beliefs, stereotypes, godfatherism, lack of access to finance, and religious barriers. Furthermore, women are underrepresented within the arms of governance—judiciary, executive, and legislative- across Africa, despite ongoing efforts to secure equitable participation. According to International IDEA (2021), women constitute 7% of the executive positions in Africa; 22% of the Ministerial positions; 21% of the

Speaker of House position; 12% of the leadership in political parties; 24% of the seats in parliaments; and 21% in the local government offices.

Despite these challenges, there are opportunities for change. In recent years, there has been a growing recognition among international development organisations, global agendas, and some African governments of the urgent need to achieve gender equity. This shift in awareness is translating into concrete actions, paving the way for a more inclusive future. For instance, Rwanda has emerged as a global leader in promoting women's participation in governance, with women holding over 60% of the seats in its national parliament, the highest in the world (International IDEA, 2021, p.158; Sirleaf, 2022). This remarkable achievement is not just a statistical victory; it represents a deliberate and sustained effort by the Rwandan government to integrate gender considerations into its policies and governance structures. There are African countries among the top 20 nations, globally for high women's representation in parliament and cabinets (Sirleaf, 2022). The efforts of the civil society organisations have also been in instrumental in advocating for gender equity and decolonisation. While these examples illustrate progress, the path forward requires even more indigenous, grassroots, community-based, and inclusive policies, and practices to achieve gender parity in Africa. The fight for gender equity must go beyond top-down approaches; it must be rooted in the lived experiences of women, particularly those in marginalized communities. The path forward must involve not only rethinking the way cities are developed but also ensuring that women's voices and needs are central to the decision-making processes that shape the future of the continent. Only by embracing this inclusive approach can Africa build cities and societies that truly serve all its people, breaking free from the legacy of colonialism and building an equitable future.

Epilogue

But the story of the river and the village is not just a tale of the past. It is a reminder of the ongoing struggles faced by women across Africa, as they continue to fight against the legacy of colonialism and the gender inequalities that it entrenched. The infrastructure that was built to serve the interests of the colonisers still exists in many places, limiting access to resources, opportunities, and power for women.

Yet, like the women of the village, African women today are organizing, resisting, and reclaiming their rights. They are demanding that infrastructure be built to serve their needs, that their voices be heard in the halls of power, and that their contributions be recognized and valued. They are drawing on the strength of their ancestors, the wisdom of their traditions, and the solidarity of their communities to create a future where gender equity is not just a dream, but a reality.

The river that divides is also the river that unites, a symbol of both the challenges and the opportunities that lie ahead. The story of the village is not over; it is still being written, by the women who refuse to be silenced, by the men who stand with them, and by the communities that are determined to build a more just and equitable future for all. ■

Fig. 2: Africa Speaks for Africa, 2017.

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Urban sustainability?

The story of the Melbourne Urban Growth Boundary

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Key words: urban sustainability, growth boundary, public participation

Introduction

Planning is a complex endeavour of competing objectives and interests. This research explores these tensions through the Melbourne Urban Growth Boundary (UGB), and specifically, how narrative frames influence the integration of social, environmental and economic objectives (or logics) in strategic spatial planning, as components of urban sustainability. The research uses a single study approach to explore policy processes that brought the UGB into Melbourne's strategic planning lexicon, including the initial formalization of the UGB (Department of Infrastructure, 2002). The UGB changed location four times in its first decade of existence, providing a useful illustration of the ways strategic planning is influenced by complex institutional and governance settings, and pressures of urbanization, whilst overtly attempting to ensure growth and development is undertaken in a contained, considered and sustainable manner. A strong critique by McLoughlin (1992), reiterated decades later argues that the "effective abandonment of the UGB" amounted to "serious failure" (Buxton, Goodman, & Moloney, 2016, p.91). These assessments suggest a persistent lack of awareness of city dynamics and research insights; citizen needs, interests and desires; and the private sector dominance in planning.

Research questions and approach

This research centers around a key question: "Why did the UGB change so much within the first decade of its establishment?." Supporting questions examine how different logics are articulated at critical decision points, whose logics are prioritised, and ultimately what this reveals about the normative values of planning and urban sustainability. The research focusses on the effects of the dominant growth-dependent paradigm, and the ability of planners and other professionals to navigate uncertainty, acknowledge and negotiate value judgements, and address power imbalances expressed at key decision points and among different stakeholders and communities.

Following Flyvberg's deep dive into one case study (1998), the research employs frame analysis (Schön & Rein, 1994) to examine how competing perspectives are articulated through implicit and explicitly stated values, behaviours and ideals, rendering assumptions and logics more visible as units of analysis. The research provides a macro lens on urban consolidation policy, and meso/micro lens through forty-five stakeholder interviews of those involved in the spatial planning process for Melbourne's UGB. Stakeholder views are triangulated against frames evident in policy and regulations, to build on academic thought and practice related to urban sustainability and governance. Reflexive thematic analysis helped structure the approach.

This research aims to deepen the understanding of how narrative frames influence contemporary spatial planning practices and the integration of sustainability logics. Furthermore, it aims to articulate how values/claims are made in the spaces between rational planning, and dialectical/dialogical forms of decision making. Lastly, it aims to generate new knowledge about integration of sustainability principles in early strategic decisions through strategic assessments; and to inform cross-departmental and governance approaches that aim for 'partnership' and collaborative approaches, through documentation of a practical example.

Key findings and takeaways

Findings highlight contradictory narratives about the success and implementation of the UGB, the planning controls and tools utilised to embed the UGB in spatial planning practice, and the equity of outcomes. The research

Fig. 1: City limits? View from the Dandenong Ranges west towards the Melbourne CBD, across the valleys with many settlements and activity centres in between. Photograph by the author.

questions the explicit statements of planning policy, how different stakeholders understand these, and whether they serve as objective measures to review policy implementation. Insights are provided into the nature of those involved in decisions, the decision points, the logics used to advise decision-makers on the need for urban expansion, and the role of governance, public participation, and sometimes unseen political imperatives.

Importantly, the research offers insights into the use of strategic assessment to address conflicting values, regional planning, and related governance implications. It raises new issues, such as who takes the strategic

view of 'sustainability'? Which level of government, which decision makers, advisors or broader voices? Who gets to influence such processes? This case study highlights the power and central role of a few key actors and planner agency, with some voices heard clearly, while others were dismissed. The prevalence of developer and landowner pressure, the struggle to integrate sustainability logics at different governance levels, and the ways uncertainty and the 'unforeseen' (e.g. rapid population growth) are navigated reiterate the complexity of urban governance, particularly in the very early stages of strategic planning.

Emerging approaches such as strategic thinking for sustainability (ST4S) (Partidário, 2021), which focus on critical decision factors and different pathways for sustainability, offer an alternate or supplementary approach to Commonwealth-level strategic assessment, which is itself advocated through recent reviews as needing to be utilised more regularly (Samuel, 2020). There is scope for further research to understand how these approaches can embed sustainability thinking in a holistic way throughout the planning process. Such approaches and research could have broader implications as other cities continue to grapple with the ongoing challenges of managing and containing growth in a sustainable way. ■

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Boundaries and borders:

Exploring the typomorphology of urban river edges

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Key words: urban river, waterfront redevelopment, urbanity, typomorphology, edge concept

Urban riversides can be vibrant public spaces that promote social encounter, but can also be restrictive edges that act as barriers that separate and segregate. This duality reflects scholarly discussions of urban "edge" spaces. Lynch (1964) proposed "edges" as one of five key elements of the "image of the city". Sennett (2018) questioned the social effect of various "edges" and highlighted two contrasting conditions: "borders"—open edges that facilitate interaction between different groups and "boundaries"—closed edges that separate different areas. Sennett implies that a key task for urban design and planning is to change boundaries into borders. This can be viewed as a means of bringing different people together, of facilitating connections and transactions. Such edges may exhibit flexibility, permeability, and inclusiveness, thus contributing to the creation of urbanity. Urban rivers may serve as a compelling testing ground for Sennett's notions of urban "edge" conditions.

Since ancient times, urban rivers and their surrounding environments have played a crucial role in shaping urban form and providing essential public spaces. During the industrial era, many rivers became focal points for urban transformation, leading to the development of harbors, docks, embankments,

riverside trails and so on. However, these interventions often created barriers between water and land, such as railways and highways, disconnecting rivers from the urban landscape. In some instances, urban rivers were even buried underground to serve functions like sewage and drainage systems (Copas, 1997). As cities underwent deindustrialization, the intrinsic natural and historical features of urban river landscapes began to be restored, reviving vibrant public spaces. Nonetheless, many urban rivers remain boundaries within dense urban environments.

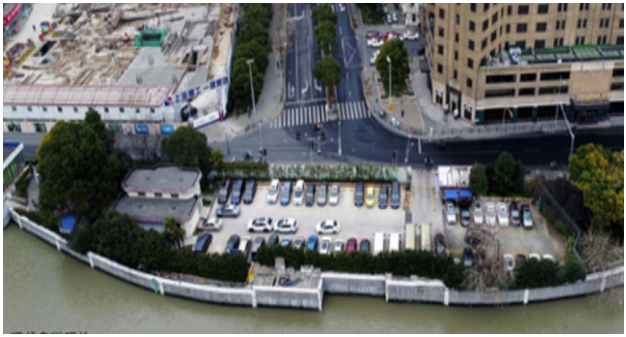

Fig. 1: Former Shanghai Suzhou Creek. Here, the best viewing platform was given to the parking. Image by the author.

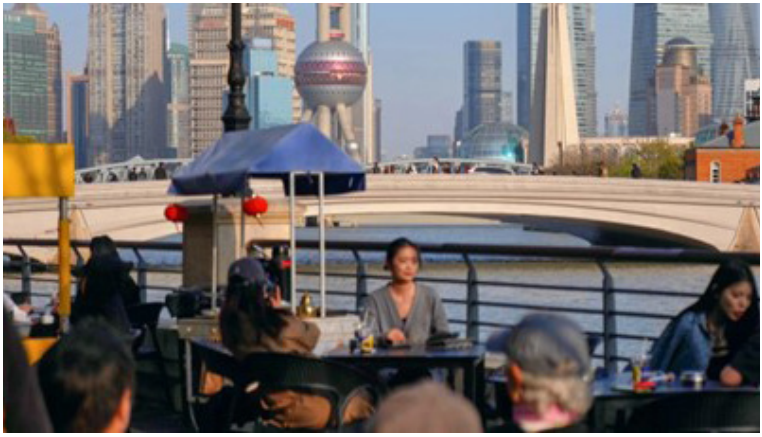

Fig. 2: Current Shanghai Suzhou Creek. The riverside was only for pedestrians consuming in the nearby stores. Image by the author.

Despite the recognized importance of urban rivers, scholarly focus has predominantly been on capital, governance, and ecological perspectives, with relatively little research on urban river typomorphology with social concerns (Chen, 2022; Dovey, 2005; Khairabadi et al., 2023). Additionally, while the concept of "edge" is widely discussed in political geography, it is seldom applied to urban rivers. Studies related to urban river edges mainly focus on connectivity, but the definition of social connectivity along urban riversides remains under explored (Kondolf & Pinto, 2017; May, 2006).

Given these gaps, this research aims to explore the relationship between the morphological characteristics of urban rivers and the formation and transformation of borders or boundary edges. This research will adopt an interdisciplinary approach with assemblage thinking (Dovey et al., 2018), integrating perspectives from urban sociology, landscape architecture, urban design and urban planning to ensure a better understanding of the factors influencing urban river edges. This research will also employ case studies and a multi-scale approach to examine urban river edge conditions. Data sources will include online open data platforms and on-site field research. By addressing these research gaps, this research hopes to broaden knowledge of restrictive boundaries and inclusive borders condition, enhancing urban vitality and connectivity. ■

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How do urban constructed mangroves differ across climate gradients?

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Key words: *mangroves, coastal parklands, water sensitive urban design, ecological design, climate change*

Constructed mangroves have proliferated since the 2000s across Asia-Pacific as urban greening strategies. From Melbourne in temperate climates to tropical cities in China, designers are utilising these brackish forests for their estuary urban waterfronts. Each site of these brackish woods in each city has unique origination stories, hydrological conditions, design intentions, and functions. My research focuses on these designed mangroves to reveal their similarities and differences across climate gradients. The research outcome will inform urban greening's climate adaptation and help to unify knowledge of urban greening mangroves (UGMangroves) in different climates.

What are urban greening mangroves and where do we find them?

The definition of mangroves varies from place to place. Mangroves are one loosely defined category of plants with around 70 species capable of completing their life cycle within saline intertidal zones (Saenger et al., 1983) (Tomlinson, 2004). Most mangrove species are woody, with a few herbaceous species. The majority of mangrove species occur in tropical climates, with some

cold-tolerant species being found in temperate zones (National Ocean Service, 2024; Sea Search et al., n.d.). Mangroves rely on ocean currents to disperse their propagules and seeds (Tomlinson, 2004), which means mangrove forests across Asia-Pacific share similar flora and therefore comparable (Saenger et al., 1983; Atlas of Living Australia, n.d.).

Across Asia-Pacific, most UGMangroves are found in coastal cities in China and Australia, as well as Singapore. Chinese UGMangroves are mainly found in tropical and subtropical climates, across Hainan, Guangdong and Fujian provinces' coastal parks; In Australia, UGMangroves are scattered across its eastern coast from tropical to temperate climates, such as Townsville, Brisbane, Sydney and Melbourne. Within these cities, most UGMangroves are found on the waterfront in coastal and estuary parks. Some UGMangroves are also located in inland lakes, with some surprisingly growing in freshwater (Gardens by the Bay, n.d.; Z. Fang, personal communication, July 26, 2024).

How do UGMangroves differ across climates?

Temperate-grown UGMangroves differ from their tropical counterparts. The differences include mangrove species, mangrove morphologies (Sea Search et al., n.d.), vegetation structure, associated wildlife species, parkland design focus, patterns of visitor use (if accessible), and other additional factors. Many of the same species can exist across climate gradients but they are morphologically distinct. UGMangroves' species compositions also vary in different climates.

Temperate and subtropical UGMangroves are rare. They typically support a low diversity of mangrove species and smaller mangrove stature. Ecosystem restoration drives the design process, and there is a tendency to design mangroves as planting zones that coexist with naturally adjacent ecosystems (such as saltmarsh). Temperate UGMangroves utilise less than three species, and they grow shorter as large bushes or small trees. Saltmarsh and other indigenous ecosystems on the higher ground are likely to co-exist with mangroves in these sites. This creates more comprehensive urban greening vegetation of the coastal ecosystems. Most of UGMangroves in cooler climates are designed with a focus on reconstructing pre-urbanisation indigenous mangrove ecosystems and protecting remnant mangroves instead of creating novel ecosystems.

Fig. 1: An example of UGMangroves in a temperate climate at Stony Creek Reserve, Melbourne, illustrating spontaneously regenerated mangroves and saltmarsh adjacent to West Gate Bridge. Photo by the author, 7 September 2023.

Most UGMangroves exist in the tropics. Roughly 29 sites exist across cities including Shenzhen, Maoming, Haikou, Sanya, Singapore and Townsville. Tropical UGMangroves are featured with a higher number of mangrove species, distinct mangrove morphologies, mangrove ecosystem-focused design, designed novel ecosystems, and a thermal-comfort dominated parkland usage pattern. Tropical regions have more indigenous mangrove species occurring (Sea Search et al., n.d.), and this is reflected in the planting design of UGMangroves. Mangroves in the tropics are morphologically distinct from temperate mangroves, such as more likely to have straighter and more visible trunks. From the author's site reconnaissance in tropical China, it appears that designers are more focused on mangrove ecosystems alone when designing parklands and tend to ignore other indigenous adjacent ecosystems. Tropical UGMangroves are designed with more flexibility as novel ecosystems instead of aiming to reconstruct indigenous mangrove communities. This includes UGMangroves growing in freshwater or non-tidal lakes, which rarely occur

Fig. 2: An example of UGMangroves in a tropical climate at Egret Park, Sanya, Hainan Province, China. These mangrove forests are grown on islands surrounded by buildings in the backdrop. Photo by the author, 9 June 2024.

without human interference. When it comes to parkland usage pattern, the author observed more extensive use of tropical UGMangrove sites during the summer evenings: during the author's site visits in cities such as Haikou and Sanya during June 2024, the UGMangroves are almost empty in the steaming daytime but become crowded with visitors after sunset. This is likely due to thermal comfort.

Why is it important to understand the influences of climate on UGMangroves?

By understanding the distinctions between UGMangroves in different climates, designers can gain insights into how to design these ecosystems to suit specific climates. This knowledge will help designers advance their skills in retrofitting UGMangroves for a changing climate. The current UGMangroves need appropriate design retrofits to be climate resilient and provide ecological and social services in the future. This is because global warming will alter many

coastal regions' climates and soil conditions with increasing temperatures, rising sea levels and subsequent groundwater salination (Mazhar et al., 2022). This means designers must equip themselves with sufficient knowledge to support the coastal urban ecosystems (such as UGMangroves) in adapting to the changing environment.

Apart from climate adaptation, my research outcome will advance the application of UGMangroves in different climates. Most of the UGMangroves are found in the tropics, with fewer patches found in sub-tropics and very few patches of temperate sites. By understanding the differences of UGMangroves on climate gradient, designers can translate the knowledge from different climates to each other. This sharing of knowledge and techniques could advance the design of UGMangroves, especially in sub-tropical and temperate regions. ■

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See the unseen through a creative lens

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Key words: landscape architecture, landscape architecture history, community actions, activism, collective knowledge, storytelling, creative methods

The term urban riparian post-quarry-landfill (URPQL) landscape, newly defined, describes a type of landscape that carries dual identities as both quarry and landfill, spanning past, present, and future. Quarries are bustling centres of extraction that supply the raw materials for urban development and infrastructure. These sites bear the scars of intensive human activity, yet their historical and ecological significance often fades into obscurity as urbanization spreads. Similarly, landfills, repositories of society's waste and discarded materials are concealed beneath layers of soil, capping, vegetation, and construction. These landscapes, though integral to the narrative of human progress and environmental impact, pose a daunting challenge for those seeking to document and understand their complex histories and contemporary roles.

Reimagining, caring, and healing these scarred landscapes offers pathways to address both environmental and socio-cultural challenges—from managing greenhouse gas emissions and conserving biodiversity to enhancing groundwater resilience and mitigating pollution—while also revitalizing community connections, collective history and cultural heritage preservation. This article reviews the challenges of researching and understanding the URPQL

landscape, before considering newly emerging research methodologies. It then discusses how these will be applied in locally situated PhD research at Darebin and Merri Creeks in Melbourne.

In the complex layout of urban and suburban areas, many landscapes often go unnoticed. These areas, including quarries and landfills, reflect human industry, consumption patterns, and the changing relationship between cities and their outskirts. Despite their significant impacts on both the physical environment and the socio-economic fabric of their surroundings, quarries and landfills remain largely unseen and under-documented, posing unique challenges for researchers, designers, planners, communities and decision-makers. These challenges include difficulties accessing scattered information and knowledge around the site, obstacles in gaining a comprehensive understanding of the landscape's past, present, and future, and environmental challenges like leachate, methane, and other contamination issues. However, in response to these unique challenges, local communities have collaboratively mobilized to undertake remarkable initiatives, transforming the case study landscapes into their current forms.

These community efforts are evident in the layers and versions of changes in many URPQL sites, such as CERES Community Environment Park (CERES) and Darebin Parklands. The community actions and their stories have given the landscape more layers of meaning and identity. It is more than a post-quarry-landfill; it is also a place of excavation and burial, where all flows come and go, grow and decay. Understanding what has happened, what is taken, what is buried, what is hidden, what efforts have been made, what is valued, what is hoped to achieve, and what is to be celebrated is crucial to the contemporary URPQL design and planning. These stories and knowledge are hidden in the minds and hearts of local knowledge and story holders. Except for some historical photos and newsletter articles, most of this information is not recorded in any database. Unveiling these often-unseen aspects of the typological landscape has the potential to break current trajectories and create transformative strategies and guidelines for future URPQL landscapes.

Archival research challenges

Victorian datasets are used in archival research in GIS mapping and site identification. For landfills, the EPA compiles information from landfill licenses,

Fig. 1: An unknown art piece created with waste at CERES. Photograph by the author.

post-closure pollution abatement notices (PCPANs), regional waste and resource recovery implementation plans, and historical records. However, there are key limitations for archival research due to the scarcity of recorded landfill and quarry data. Prior to the 1970s (and the *Environment Protection Act 1970*), there was no overarching environmental protection legislation or regulatory framework to control what materials were disposed of in landfills, or the design and operation standards for landfills. The data available on Victoria Unearthed is noted as "limited, incomplete, and may be inaccurate" (DEECA, 2023). Many areas that used to function as landfills have been classified under other categories. An active landfill that serves a population of 5,000 or fewer is exempt from licensing and is categorised as 'Active-Unlicensed'. A closed landfill, 'Closed-Unregulated', is no longer receiving waste, was exempt from licensing when active and EPA has not issued it with a remedial notice (Victorian Auditor-General's Office, 2014). EPA Victoria (n.d.) states that 'The register does not capture all possible, historical landfill sites. Many landfills are undocumented,

such as those on private property'. Potential historical sites where EPA has low confidence in the information have not been included in the initial release of the register (Environment Protection Authority Victoria, n.d.).

The documentation of quarries and landfills presents formidable obstacles to researchers and governmental bodies alike. Unlike more visible historical landmarks or natural landscapes, these areas are 'hidden' underground, and often lack comprehensive records or standardized mapping protocols. Official documents may be fragmented across various agencies, outdated, or incomplete, hindering efforts to compile accurate datasets for analysis and decision-making. More than half of the world's quarries are undocumented (Maus & Werner, 2024).

Evolving technologies like high-resolution satellite images, machine learning, and algorithms are now being used to identify mining sites (Maus & Werner, 2024; Werner, Bach, et al., 2020; Werner, Mudd, et al., 2020), reflecting an increasing focus on quarry land management and land use changes monitoring. Satellite imagery plays a crucial role in monitoring environmental changes and land use patterns, offering detailed snapshots of the Earth's surface. Its effectiveness in identifying and characterizing quarries and landfills is not without limitations. High-resolution satellite images may struggle to distinguish between natural topography and anthropogenic features, particularly in densely vegetated or urbanized areas where quarry scars or landfill boundaries are subtle or obscured.

Accessing information about quarries and landfills typically involves navigating bureaucratic complexities and employing a combination of archival research, site visits, and data mining from disparate sources. While traditional methods are valuable, they may yield incomplete results and often need further investigation and verification. Moreover, discrepancies between documented records and the physical reality of these landscapes underscore the pressing need for improved transparency and accessibility in knowledge-sharing practices.

Case studies

Around the world, initiatives are emerging that demonstrate the transformative potential of integrating creative tools and methods into the documentation and

revitalization of the post-quarry landscape. However, most of these efforts focus on physical creative works like design, events, and educational programs for post-quarry sites, rather than post-quarry-landfill sites, and often limit decision-making to a small number of people. More voices, from those who have the deepest connection and first-hand experience with the land, need to be heard. Their stories, experiences, and knowledge about the URPQL landscape are crucial for understanding what lies buried underground—information that is not systematically documented or utilized in the design process for URPQL land use changes.

"These digital tools have the potential to unveil hidden stories and knowledge crucial for understanding the past, present, and future of landscapes..."

The application of digital tools, community engagement, and creative methodologies has shown significant potential in revealing and revitalizing overlooked landscapes, offering valuable frameworks for adaptation in URPQL contexts. These digital tools have the potential to unveil hidden stories and knowledge crucial for understanding the past, present, and future of these landscapes, potentially providing this valuable collective knowledge with longevity.

The *PastPort Project* examines how mobile technology can foster community attachment by allowing citizens to share historical materials through a mobile app (Smith et al., 2018). This platform bridges personal memory and collective history, enhancing community engagement and preserving narratives essential for future planning. Similarly, *Queering the Map* uses a digital platform to document LGBTQ+ experiences worldwide, transforming physical spaces into repositories of collective memory (Robards et al., 2020). This participatory project captures diverse narratives that enrich our understanding of social landscapes, offering a model that could be applied to URPQL areas. In another example, the *QualNotes Project* employs digital collaboration tools to enhance ethnographic research, facilitating cross-disciplinary data sharing

and exploration of social narratives (Drozdzewski & Berengueres, 2024). This comprehensive approach is vital for understanding the complex histories and contemporary dynamics of post-industrial landscapes.

Collectively, these projects illustrate the transformative potential of digital innovation, community participation, and creative methodologies in uncovering and reimagining hidden landscapes. While there is no current known direct application to URPQL areas, the principles and methodologies demonstrated in case studies provide a robust foundation for future initiatives aimed at revitalizing post-industrial scarred landscapes with community and expert knowledge. Integrating digital tools and participatory approaches can significantly enhance the understanding, appreciation, and envisioning of these often-overlooked landscapes. And they can potentially provide longevity for the future knowledge base and educational infrastructure around the URPQL landscape.

Emerging methodologies for accessing hidden knowledge

To uncover the hidden narratives embedded within quarries and landfills, researchers are increasingly adopting interdisciplinary approaches that blend digital innovation with community engagement and participatory research methods.

Advances in digital technology have revolutionized the way people access and understand information about quarries and landfills. Geographic information systems (GIS) and digital twins (DT) provide powerful tools for spatial analysis and visualization, enabling researchers to overlay historical maps with contemporary satellite imagery to trace the evolution of these landscapes over time. Online databases and open-access repositories further facilitate information sharing and collaboration among stakeholders interested in urban planning and environmental management. Digital platforms could allow everyone to contribute geo-tagged narratives, oral history and archival photographs, enriching the collective understanding of these landscapes' cultural significance and ecological impacts.

On the other hand, participatory walking research is another innovative method which provides an opportunity to physically engage with the landscape.

Participants are invited to explore and document their perceptions of the URPQL landscape through close connection and communication with the Country and each other. By integrating Indigenous knowledge, and local community knowledge with multi-disciplinary expertise, researchers can capture nuanced insights into the social dynamics and environmental stewardship practices shaping these often-overlooked landscapes.

Local case studies: Applying creative tools and methods in Darebin Creek and Merri Creek

Exploring the URPQL landscapes along Darebin Creek and Merri Creek employs a blend of archival research, interviews, digital platform development, and participatory walks to uncover hidden narratives and provide a comprehensive understanding of these areas. Archival research, using Victoria datasets and GIS mapping, delves into historical records to uncover critical data about the URPQL landscapes' historical and ecological evolution. Interviews with Traditional Owners, and local community members, gather first-hand experiences and insights, enriching the understanding of these landscapes' undocumented aspects and cultural significance.

Creative tools and methods offer a transformative lens through which to reinterpret quarries and landfills as dynamic spaces of historical reflection and future possibility. A digital platform prototype integrates GIS data, historical maps, and collected archival research results, allowing users to explore, learn and visualize the URPQL landscapes, trace their trajectories in land use changes, and contribute their personal narratives to the landscape evolutions. Participatory walks engage community members in documenting their perceptions and experiences, integrating local knowledge with scientific expertise. These walks and interactive storytelling experiences aim to capture nuanced insights into the social dynamics and environmental stewardship practices shaping these areas in the past, present and future. By focusing on specific URPQL sites along Darebin Creek and Merri Creek, these creative methodologies may reveal the intricate interplay between historical usage, community engagement, and future potential, providing a robust framework for the revitalization and sustainable management of these often-overlooked landscapes.

Conclusion

Exploring URPQL as unseen landscapes offers profound insights into the intersections of landscape architecture history, landscape architecture, creative practices and community actions. By embracing innovative workflows, leveraging digital technologies, and engaging creative tools and methods, researchers can uncover hidden stories, challenge conventional narratives, and catalyse inclusive dialogue and knowledge sharing about the future of these dynamic landscapes. As cities evolve and environmental challenges grow, the imperative to see the unseen and reimagine our relationship with overlooked landscapes becomes increasingly urgent in shaping sustainable urban futures and resilient communities for generations to come. ■

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The subjective and experiential in research and communication

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Key words: design research, positionality, advocacy, research impact, methodology

My PhD research with creative work, *Episodes on the Farm*, looks at a series of 'episodes' in the microcosm of my own farm in Doreen, Nillumbik, within the northeastern green wedge of Melbourne (Wurundjeri Country). The episodes are at three scales: domestic (human need, infrastructure, and safety); agricultural (about farm animals, farm functioning, and enterprise); and altruistic (relating to the 'other' including wild species, places, and generations). In my creative work, the episodes use a range of literary and graphical techniques including narrative storytelling, sketch, and imagery to provide a subjective, emotional 'experience' of the situation to spark understanding and innovation.

My research is situated in a unique context where general concerns of environmental design intersect with domains of great personal and professional interest, on the edge of current landscape architecture practice. More than that, the project itself is deeply personal. The project is located upon and consists of the development for sustainable farming and habitat of my own land, farm, garden, and home. In this built project, I am designer, action researcher, farm and project manager and frequently labourer/constructor. I am also client, wife, and mother, and the subject site is the only property I own. The success or failure of the project(s) generally, and the wins and losses experienced along

Fig. 1: The author in her own 'selfie' during a work break on the farm. Doreen, Nillumbik (Wurundjeri Country). 10 October 2017.

the way are deeply important to me. Far from an objective experiment with 'neutral' research methodology, my research is enmeshed within the context of my own life, work, and passion for environmental justice across species and generations.

Whereas positivism set out to explain and fully understand the world, changing tides in academia have seen growing support for subjective, contextual work. Feminist methodology rejects objectivity in research as an illusion.[1] Maynard, Harding, Franks, and others advocate that it's possible to achieve 'objectivity' by acknowledging researcher 'standpoint, situatedness and positionality.'[2] Mason and Sharr embrace and encourage positional

research and use the researcher's 'distinctive agency' as a 'vital and sustaining', and fully declared, component of the work in their *Creative Practice Inquiry* case studies.[3]

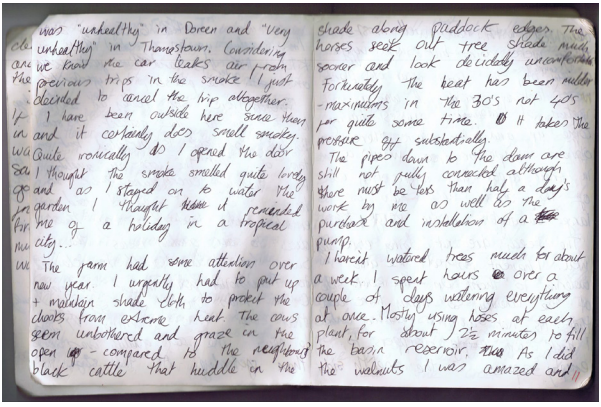
In some instances of my work, recorded in the PhD journal, my work straddled a delicate balance between designer/researcher and advocate/activist.[4] In 2020, a 'cleanfill tip' opened immediately across the road, and directly upstream from, our farm. Drawing upon my landscape architectural understandings of land and water interactions and ability to understand the planning scheme, as well as graphics skills honed in practice and in my academic work, I produced a graphical and written site analysis report to demonstrate to stakeholders and government that the tip was not suitably sited.

My older journal notes and access to the Nearmap aerial photography portal through Melbourne University provided invaluable insights that I would not have otherwise had, allowing me to document and fight against destructive landscape change.

I went on to lead a community campaign against the tip, eventually giving evidence in two VCAT matters, and as a key protagonist in media stories.[5] The closure of the cleanfill tip as agreed in a sealed agreement between the council, tip operator, and landholder was highly political and responsibility for the achievement is contested. Ultimately, the specific covid time fight against this and a second nearby tip led to a change in the Nillumbik planning scheme to limit the importation of fill without a permit.[6] In this instance a specific site and specific impacts provided the evidence of damage and community concern in a way which generated broader conclusions about what was acceptable to the community within the local area and planning scheme.

Communication of research in ways that provide a subjective, emotional 'experience' of the situation and processes to spark understanding and innovation is a further component of my work. This is in large part focused on the use of a series of illustrated narratives (stories) within each of the creative work chapters. Rather than limiting descriptions and moments to the precise and relevant 'facts', these narratives are situated within the wider contemporary context of family and society to invite connection, shock and amusement, meaning and empathy.

[2]



was "unhealthy" in Doreen and "very unhealthy" in Thomastown. Considering the previous trips in the smoke I just decided to cancel the trip altogether. If I have been outside here since then and it certainly does smell smokey. Quite ironically I opened the door so I thought the smoke smelled quite lovely and as I stepped on to water the garden I thought it reminded me of a holiday in a tropical city...

The farm had some attention over new year. I urgently had to put up a mulchan shade cloth to protect the chooks from extreme heat. The cows seem unbothered and graze in the open - compared to the neighbours black cattle that huddle in the shade along paddock edges. The horses seek out tree shade much sooner and look decidedly uncomfortable. Fortunately the heat has been milder - maximums in the 30's not 40's for quite some time. It has taken the pressure off substantially.

The pipes down to the dams are still not fully connected although there must be less than half a day's work by me as well as the purchase and installation of a pump.

I hand watered trees much for about a week. I spent hours over a couple of days watering everything at once. Mostly using hoses at each plant, for about 2½ minutes to fill the basin reservoir. As I did the walnuts I was amazed and

[3]

Fig. 2: [Spread] Nearmap aerial image of the unpermitted 'cleanfill' tip, prepared by the author to illustrate the vastness of the cleanfill tip and advocate for its closure. 7 September 2020.

Fig. 3: [Opposite] The 'journal' was a hybrid of a design journal known in design practice, pedagogy, and design research and a life record drawing loosely on the Phenomenological Research Method used in healthcare research. This journal entry from 8 January 2020 dealt with the impact of noxious bushfire smoke, protection from extreme heat for animals, and construction progress for water infrastructure. Scanned image by the author.

The interest in dealing beyond specific pre-established questions or sets of fact deepens site and context specificity. In the deep, local, and specific, it might be possible to find the replicable and generalisable. In her 2007 creative works thesis, Janet McGaw acknowledged the local (and typological) specificity of her own project, all the while highlighting its conceivably transformative potential by creating new intersections between fields of practice.[7] These might, after invention, mean something else. She cited the potential of the politics of her project to ripple out as a precedent. From narrative storytelling, 'discursive practices' used in forming stories, told in physical project and in accompanying text, there was scope for the creation of new meaning.

> "In the deep, local, and specific, it might be possible to find the replicable and generalisable."

In his acclaimed work of creative non-fiction *Underland*, Professor of literature and environmental humanities Robert Macfarlane includes direct personal experience and a first person retelling.[8] Macfarlane's work is not design but lays bare the physical manifestation of hidden typologies of the underground landscape and the experiences of moving through this space. Like me, he is an active participant in the literal and metaphoric exploration of his subject. He does not hold back in including shocking detail and in sharing the impact of dangerous or difficult situations, as well as the ghastly and compelling spectre of climate (and other) catastrophe lurking in places.

In *The Great Derangement: Climate Change and the Unthinkable*, written in 2016, before he went on to write a work of fiction about climate change, Amitav Ghosh explored the cultural shortcomings that left us unable to sense the impending disaster of climate change.[9] He wrote of the dearth of novels that deal with climate change, even from authors known to be well informed about the topic. In parts of *Underland* Macfarlane conveyed the same concern. His methodology to address the cultural inaccessibility of understanding, and feeling, knowledge was to engage deeply, viscerally, and emotionally with the reader by the use of creative and generous non fiction narrative.

By exploring not only solutions but problems in an open ended, curious, and engaging way in my creative work, I hope to contribute to the understanding of real world problems and explorations of their potential design solutions as situated, rich, and deep understanding that provides a jumping off point for more and new innovation, perhaps even transformation. ■

NOTES

1. Myfanwy Franks describes objectivity in feminist research as an unobtainable phantasm, partly because of the 'masculine' bias contained in the idea of objectivity. She suggests that the greatest rigour can be found only when unveiling normally unseen cultural and biographical aspects that permit the consideration of how 'background and domain assumptions and influences' could have influenced the research. Franks, Myfanwy. 2002. "Feminisms and Cross-Ideological Feminist Social Research: Standpoint, Situatedness and Positionality-Developing Cross-Ideological Feminist Research." https://vc.bridgew.edu/cgi/viewcontent.cgi?article=1601&context=jiws.
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Transitory encounters with the intangible

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Key words: intangible cultural heritage, traditional craftsmanship, ethnography

Fig. 1: 'Become a part of our Cathedral'. Salisbury Cathedral 'Sponsor a Stone' fundraising initiative. Photograph by the author.

FIELD ENCOUNTER

RR:

"With that in mind then, can I ask... what was your experience of Notre Dame, a place such as this, burning? Did you think it was catastrophic?"

[*contemplating. rubber whirring on the A11*]

FR Carpenter 01:

"For me I think, just... 'that's life', like everything. It's an accident. We are able to reconstruct it. To me it's not a big problem."

[*thinking some more*]

"Some people can pray just with a small stone. The spirit's inside. I'm not sure we need a construction like that..."

[*rubber whirring*]

FR Carpenter 02:

"By myself, it just brought questions: What histories were lost? What kind of catastrophe? What is a catastrophe for us?

... mostly questions."

[*whirring. thinking*]

FR Carpenter 02:

"It's just... you know... it hurts because we have a desire of eternity and this we know will disappear. I think this desire of eternity is... we need... We have the thought of.... of the death of our very person."

"But if there is some continuity somewhere, this death can be accepted. Because something which involves you is... in a way we continue, and that helps... that helps to take the pill."

"So that's why it hurts, right? It's a kind of nostalgia of ourselves."

"That's how I see it."

[2]

[3]

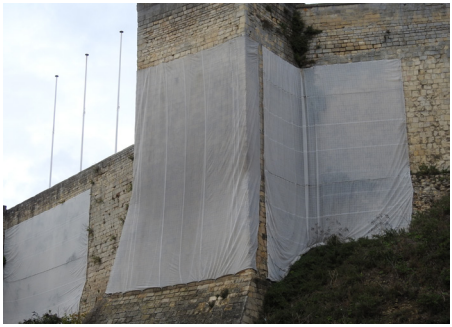

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Fig. 2: [Opposite Page] Worksite 1. Notre-Dame de Rouen cathedral, Normandy, France. [Our Lady of Rouen Cathedral, or Rouen Cathedral]. Photograph by the author.

Fig. 3: [Top Left] Worksite 2. Notre-Dame de Chartres cathedral, France [Our Lady of Chartres Cathedral, or Chartres Cathedral]. Photograph by the author.

Fig. 4: [Top Right] Worksite 3. Wall of Château de Caen, France [Caen Castle wall]. Photograph by the author.

Fig. 5: [Bottom Right] Worksite 3 (detail). Wall of Château de Caen, France [Caen Castle wall]. Photograph by the author.

Exceptional development:

Three buildings on one site

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Key words: architecture, land speculation, economy, Melbourne, Collins Street

This article focuses upon a single site in Melbourne's central CBD, namely the south-east corner of Collins and Queen Streets. This plot experienced extraordinary development from the 1840s to the 1880s, illustrating the city's wealth and progressiveness during the late nineteenth century.

In 1835, Melbourne was founded by a daring group of property speculators (Boyce, 2011). The vision of these speculators was reflected in surveyor Robert Hoddle's 1837 grid plan of the city with its narrow plots enabling the efficient parcelling of land for sale. Hoddle's Grid was placed parallel to the Yarra River to take advantage of its widest section as a port and turning basin for shipping (Doyle, 2011), cementing the immediate area between Flinders and Collins Streets as the commercial centre of the settlement with the Customs House, produce market and warehouses all clustering near Queen's Wharf. By the 1840s financial service typologies were appearing on the higher ground of Collins Street. After the gold rush of the early 1850s, the small settlement of Melbourne expanded, its streets lined with continuous rows of structures containing shops, residences and services. Collins Street contained two- to three-storey brick and render buildings in modest classical dress, many the work of builders rather than architects, dominated by flat wall surfaces and shallow string courses and cornices, the pavements shaded by canvas awnings.

During the 1880s Melbourne's commercial architecture underwent unprecedented development as a result of one of the most significant economic booms in history (Quinn & Turner, 2020). Triggered by a marriage boom and rampant city and suburban land speculation (Hall, 1968) along with vast investment in agriculture, mining, real estate and construction, Melbourne quickly became the centre of Australian finance (Briggs, 1990). Between 1878 and 1888 building accommodation in the city doubled and rising rents pushed residences out of the grid to the suburbs with most new structures devoted to offices ('The Reconstruction of Melbourne', 1889). Collins Street was crowded with banks, insurance companies and building societies, variously constructed as company headquarters and speculative offices. With imposing classical facades, the majority architect-designed, Melbourne's new multi-storey commercial structures could generate significant revenue ('New Buildings in Melbourne', 1888), offering clients and tenants the latest in modern services such as hydraulic lifts, electric lighting, and communication technology (Lewis, 1995). Melbourne during the 1880s was a progressive industrial city with technically and aesthetically sophisticated commercial architecture that referred to commercial British architecture, reinforcing the progress of colonial capitalism (Ludewig, 2020).

By the early 1890s Hamburg-born Melbourne entrepreneur Friedrich Prell had constructed three monumental eight-storey speculative office blocks along Queen Street, subsequently known as Prell's I, II and III by architects F. M. White and Son. This area was the heart of Melbourne's global finance network with a concentration of office space for business exchanges and financial management services such as share brokers serving the increasingly complex financial transactions stimulated by the boom economy. The largest block was Prell's III on the south-east corner of Collins and Queen Streets and was the third building on the site since the 1840s, a remarkably rapid turnover of structures in only four decades.

The Union Bank (Fig. 1), the first custom-designed bank in Melbourne, was built on this site in 1842 (May, 2008), a restrained two-storey palazzo form with a chamfered entrance. It was a substantial building in comparison to the extremely plain brick and timber buildings of the preceding decade. The Union Bank's Georgian simplicity of flat planes and symmetrical windows was given


THE UNION BANK OF AUSTRALIA, MELBOURNE.
H988

[1]


ORIENTAL BANK CORPORATION.
THE NEW ORIENTAL BANK, CORNER OF COLLINS AND QUEEN STREETS.

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Fig. 1: [Opposite Top] George McLagan, Union Bank, 1842, demolished c.1880. Lithograph by Thomas Ham after drawing by Thomas Pittman, 'Union Bank of Australia, Melbourne', *Port Phillip Gazette*, 5 October 1844, State Library of Victoria.

Fig. 2: [Opposite Bottom] Francis Maloney White, Oriental Bank Corporation, 1881, demolished 1888. Engraving by A. C. Cooke, 'The New Oriental Bank, corner of Collins and Queen Streets', *Australasian Sketcher*, 2 July 1881, State Library of Victoria.

Fig. 3: [Above] F. M. White and Son, Prell's III, 1888—1891, south-east corner of Collins and Queen Streets. Photograph by William H. Cooper, *Cooper's Australian Views*, c.1890, City of Melbourne Art and Heritage Collection. http://citycollection.melbourne.vic.gov.au/image-of-prells-building/.

some gravitas by the addition of Renaissance Revival elements such as applied double columns and an arch to announce the corner entrance. Whilst modest, the Union Bank's classical elements were references to the emerging British Renaissance Revival that sought inspiration from the palazzi of the great Italian banking dynasties of the fifteenth and sixteenth centuries. Melbourne's first custom-designed bank asserted its status as a prestigious institution through such classical details.

In 1857 architect Leonard Terry added two bays and another entrance to the Union Bank's Queen Street façade in the same style as the 1842 design as in post-gold rush Melbourne the bank required extra space. By 1880 the Union Bank had vacated the corner site, moving into their new and monumental premises a few doors east in Collins Street. The former 1842 Union Bank was demolished and replaced by the Oriental Bank (Fig. 2) in 1881 by architect Francis Maloney White. The Oriental was a British bank founded in India in 1842 with a network of colonial branches (de Serville, 1998) and therefore its classical design made direct reference to corporate architecture in Britain. White's 1881 design was of similar scale to the earlier two-storey Union Bank. However, the new bank made far more dramatic use of architectural elements to pronounce its presence at the centre of Melbourne's financial district. The illusion of bulk and height was fashioned by the lofty giant order Corinthian columns that supported an elaborate entablature and balustraded superstructure. The corner entrance was tall and wide beneath an inscription of the bank's name, attracting the eye of the consumer. The boldly articulated Oriental Bank made a significant leap in terms of street profile from the unobtrusive Union Bank.

"The need for visibility from the street fostered architectural magnificence..."

The Oriental Bank was reminiscent of John Gibson's Provincial Bank of 1864 to 1866 in the City of London, a grand piece of street architecture that utilized antique forms to convey an image of longevity and prestige. Both bank designs were conceived as prominent edifices, advertising their financial services to the growing middle classes who were increasingly investing and borrowing money (Black, 2000). The need for visibility from the street fostered

architectural magnificence (Bremner, 2022) and in the case of the Oriental Bank, the design was inspired by sophisticated London architecture to reinforce its status in Melbourne as a part of the flourishing British Empire (Magee and Thompson, 2010).

The Oriental Bank suffered huge losses in the coffee trade in Ceylon and sugar interests in Mauritius, with the worldwide closure of the bank in May 1884 (de Serville, 1998). The vacated premises was then occupied by the Bank of New Zealand ('New Banking and Business Premises', 1887). An October 1887 article in the Melbourne Age explained that while the bank was quite modern, '…its usefulness is not what might be expected from a construction occupying so commanding a site.' ('New Banking and Business Premises', 1887: 9). The low-rise building was not taking advantage of the excessively high rates of return on city real estate (Silberberg, 1975). Therefore, incredibly, after only seven years the Oriental Bank was demolished to accommodate a far larger commercial building.

Prell, the owner of the site, commissioned F. M. White and Son to design a new eight story office tower (Chapman & Stillman, 2015). Prell's III (Fig. 3) was a massive speculative venture at 125 feet in height. The building included a ground level banking chamber, a basement fitted with strong rooms and an engine room for three Otis passenger lifts, over one-hundred rooms for lease as offices, lavatories and optimal lighting and ventilation with a large number of windows ('Improvements in Queen Street', 1887). Unlike its two predecessors, Prell's III was a corporate money-making enterprise rather than a single business. It was technically advanced with its iron frame as well as hydraulic lifts, first introduced to Melbourne in 1886 (Lewis, 1995). Concerned about the new high-rise buildings dwarfing surrounding structures and posing potential fire safety risks, Sir George Verdon, Manager of the low-rise English, Scottish and Australian Bank finished in 1887 on the opposite corner, called the new office blocks towers of Babel ('Victorian Institute of Architects', 1889). Prell and other Melbourne speculators were only concerned with progress and profit.

The architectural delineation of Prell's III was also in contrast to the two previous designs on the site. The 1888 design was highly decorative with no flat planes allowed to intrude upon the layers of classical forms. Applied paired pilasters and columns framed each arched window and the titanic cornice

was embellished with giant sculptures in the form of heads of Minerva, the Roman goddess of commerce, reflecting the use of sculpture and symbolism as seen in British commercial architecture of the preceding decades. Gibson's well-known London National Provincial Bank was adorned with sculptural personifications of commerce and industry in classical dress in order to suggest a sense of dignity and permanence (Barnes and Newton, 2019). As one of a cluster of three tall speculative towers, Prell's III was an early instance of corporate branding in Melbourne, where a company consciously formulated a particular architectural identity. Of unprecedented scale in the streetscape and of unprecedented richness of classical detail, Prell's III was a monument to the wealth of Melbourne.

After 1851, commodity culture was a major driving force in British society (Richards, 1990) and coincided with the evolution of commercial street architecture where the spectacle of consumerism was showcased in both Britain and the colonies. The development of the corner of Collins and Queen Streets from the 1840s to the 1880s illustrates how the staggering growth of Melbourne's economy transformed Collins Street into a highly competitive business centre. The ever-increasing scale of buildings on the south-east corner of Collins and Queen Streets illustrates the rapid rise of profits obtainable through land speculation during the 1880s. Within the valuable grid, buildings were forced to their boundaries allowing for no setbacks and consequently facades became the focus for architectural display (Kohane, 1985). The latest technology such as lifts, electric lighting, and fireproofing became important marketing components for speculative developers such as Prell as a means to attract tenants. The increasing complexity of architectural composition also sought to instill investor confidence. Lavish and costly ornamentation as seen on the facades of Prell's III were commissioned by boom speculators as a sound investment in advertising. Such speculative architecture became markers of prosperity (McFall and Dodsworth, 2009). Corner sites in particular saw an amplification of architectural features as standing out in the crowd became the ultimate architectural sales pitch. Over a short period, the three successive buildings on this corner reveal the astounding rise of property values in the CBD during the 1880s and how architectural design was utilized to promote the reputations of financial institutions. ■

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Time machine, episode 01:

Artificial intelligence in immersive heritage environments

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Time is only a kind of space.
— H. G. Wells

In his 1895 novel *The Time Machine*, Herbert George Wells reimagines time not as a separate, abstract entity but as a dimension similar to three-dimensional space. This idea underpins the science fiction premise of the novel, where a 'machine' is capable of traversing time in the same way one might move through space, treating time as a navigable, physical dimension (Wells, 1895: 6).

Media theorist Marshall McLuhan sees machines as mediums: extensions of the human body and mind, amplifying our ability to communicate, create, and interact with the world (McLuhan, 1964). This medium can transform and transcend human experience, influencing how we perceive space, time, and reality. In architecture and media philosophy, there is a comprehensive discourse on creating virtual spaces that can transmute the physical surroundings into an alternate reality for transcendental experiences. These immersive environments when produced in the architectural context for stimulating and experiencing a historical account create what I call in this thesis an 'Immersive Heritage Environment'—a digitally facilitated virtual space that not only simulates the

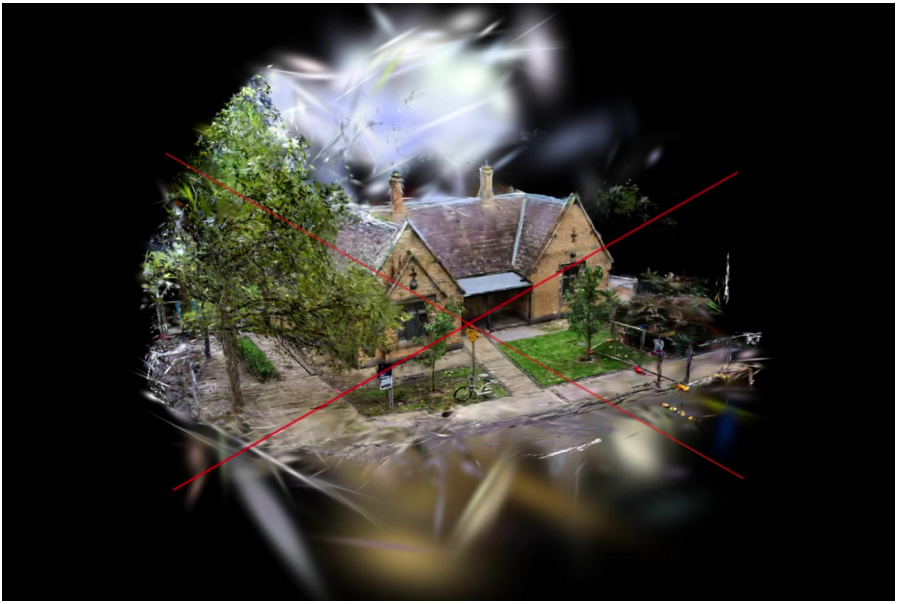

Fig. 1: "Episode 01. Scene 09." Experimental Gaussian model of the Gatekeeper's Cottage. Model and screen capture by author.

visual aspects of historical architecture or artifacts but also engages with the subtle, intangible meanings, rituals and symbolism, providing audiences with an immersive experience through interactive mediums.

In the 21st century, artificial intelligence (AI) is emerging as the latest frontier for creative exploration, increasingly regarded as a new 'medium' for experiencing reality in digital arts, cinema, and gaming industries. Digital culture theorist and artist Lev Manovich argues that AI or deep learning neural networks are not merely conduits for the replication of existing data, but they are possessors of infinite knowledge on which they are trained—every time creating something 'original' and 'unexpected' (Manovich, 2023). Our empirical grasp of reality grows increasingly malleable as virtual and augmented realities proliferate alongside generative AI technologies like generative adversarial networks (GANs), neural radiance fields (NERFs), and Gaussian splatting. AI cannot match human intellect, but it can speculate, learn, and generate creative outputs. Given the inherent predictive nature of heritage practices, the

aesthetics of AI-generated data and human interaction with them serve as a paradigm for deciphering new ways of experiencing time and space. We do not know enough about AI for visual production in architecture and thus, we are inadequately prepared to confront the philosophical and practical challenge it poses for interaction, recognition, and the relationship between humans, AI, and architecture.

This practice-led research investigates AI as a 'machine' to travel back in time to discover historical 'truths' and visualize architectural heritage in immersive and interactive virtual environments. This interdisciplinary research lies between the intersection of computer science, media, and architectural history and asks a larger philosophical question 'Can AI interpret and visualise architectural history?' The research unravels through creative practice—an immersive series encapsulating episodes (RePainting and Time Machine) each targeting a specific sequential AI algorithm to either interpret or visualise heritage. By referring to episodes, I am emblematically treating this creative

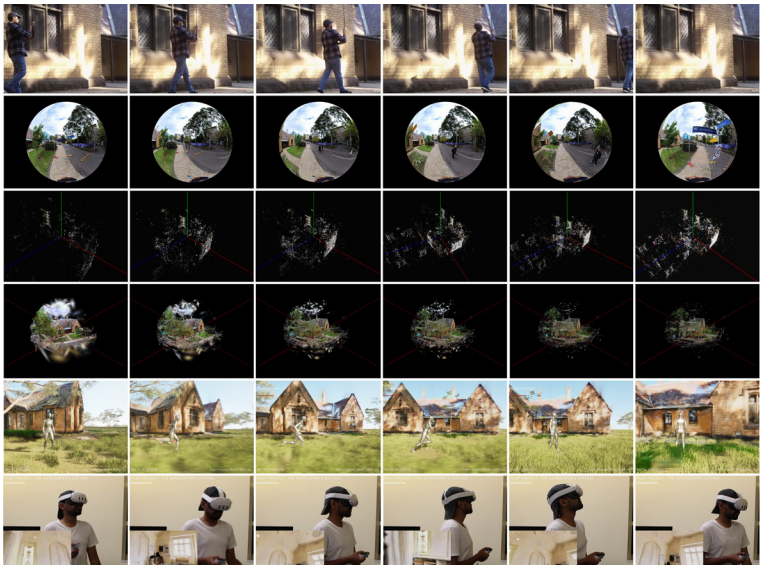

Fig. 2: Iterative documentation of pilot including screenshots from the video footage. Imagery by author.

practice as a media production and like any media series, this thesis follows the convention of beginning with a pilot episode that serves as a test case to introduce the concept, key elements, and tone.

"Can AI interpret and visualise architectural history?"

The Gatekeeper's Cottage, crafted by Joseph Reed in the 1860s stands as one of the earliest structures on University of Melbourne campus. This pilot acts as a take 01 of the Time Machine episode that investigates the visual aesthetics and image-making of the Gaussian splatting algorithm by creating a 3D virtual construction of the Gatekeeper's Cottage. Gaussian Splatting is a powerful AI technique in computer vision and graphics used for 3D imaging. This approach results in a compact 3D scene representation, capable of efficiently representing fine structures using anisotropic volumetric splats. Unlike point clouds, splats have a unique response to lights, materials, translucency, and human interactivity. Splats are blobs of 'gaussian' or 'radiance' in space that are formulated by a training algorithm that mathematically overlaps multiple images. The final visual representation resembles viewing a three-dimensional space frozen in time. Each splat contributes to the aesthetic appeal of the virtual environment, allowing for a unique and immersive experience of the space. Architect and immersive media expert Austin Pahl describes this experience as if 'it feels like you are walking in an impressionist painting where each radiance field feel like a brush stroke and the full scene comes together when you gaze at it from far away' (Pahl, 2023).

Pilot episode dissects the visual aesthetics of the digital space through a phenomenological epistemology by creating an interactive and immersive dialogue between physical and virtual worlds. This included importing the splat model into Unreal Engine, navigating the space as an avatar, and utilizing the Oculus Meta Quest 3 HMD to explore the cottage in Virtual reality. The experiment was documented as a video-footage that presented the methodology as 'design in action' with each training trial referred as a 'scene' (Figs. 1-2). This video is the first instalment towards suggesting a new aesthetic

paradigm through creative practice where historical architecture is conceived not as a set of rigid structures, but as dynamic fields of potentiality—forms that emerge from the interplay of algorithmic forces, much like the natural processes they often seek to emulate.

Evolving ideas about time and consciousness and swift technological advances are all opening our eyes to a more complex understanding of existence. Technology offers us an enhanced perspective on reality, where the speculated realities of virtual and tangible become intertwined. As architect Yehuda Kalay emphasizes the possibility 'to connect existing buildings to similar remains elsewhere and fill in missing details' (Kalay, 2007: 5). This relationship between architecture and speculation dictates that built history is not a linear progression and AI can assist in interpretation by bridging those missing gaps. Through this, can we develop a new methodology to explore the intricate web of realities that transcend our imagination, and visualize time and space in ways that are surreal, hyperrealistic, or even abstract? ■

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Bandung Basin landscapes:

The interweaving of folklore and geomorphology

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As I embark on my PhD journey, a tapestry of new knowledge begins to unfold, revealing the intricate layers of Bandung, a city in West Java, Indonesia, that forms the context of my research. Though some information is familiar, weaving it into new perspectives has opened a fresh lens through which to view the city's landscape. Bandung, with its rich history and cultural depth, offers countless avenues for exploration. In this article, I will delve into one of these layers by examining the city's cultural landscape, focusing on the legend of *Sangkuriang* (/saŋkuriaŋ/)—a cherished folklore among the Sundanese people, the predominant ethnic group in West Java, including Bandung. This intangible cultural heritage narrates the origin of *Tangkuban Parahu*, an ancient volcano that is a prominent feature in the northern Bandung landscape.

Tangkuban Parahu, a majestic mountain located in northern Bandung, stands as both a natural marvel and a cultural icon. Its name, derived from the Sundanese language, describes its silhouette as seen from the south—a shape reminiscent of an overturned boat. *Tangkuban* means overturned, and *Parahu* means boat. This striking form captured the eye of Dutch architect Henri Maclaine Pont, who immortalised it in the design of the *Technische Hoogeschool te Bandung*, now the Bandung Institute of Technology (Fig. 1).

Fig. 1: A view from '*Ijerman* Park' (now Ganesha Park) looking north at *Tangkuban Parahu* Mountain in the background and framed by the main axis of Bandung Institute of Technology, circa 1924-32. Image source: Collective Wereldmuseum (v/h Tropenmuseum), part of the National Museum of World Cultures.

Those who dwell in Bandung, particularly the Sundanese people, are familiar with the folklore of *Sangkuriang*. This tale passed down through generations, is entwined with the origins of *Tangkuban Parahu*. This story is mentioned in the ancient manuscript of *Bujangga Manik*, a prince of the Sunda Kingdom who journeyed extensively through Java and Bali in the fifteenth century.

The legend tells of *Sangkuriang*, a young man who, after a fateful incident, left his mother, *Dayang Sumbi*. Years later, he encounters a beautiful woman and falls in love, unaware that she is his mother, Dayang Sumbi, blessed with eternal youth. When he proposes, *Dayang Sumbi*, recognising her son, sets an impossible condition to avoid marriage—he must build a lake and a boat within a single day. Unbeknownst to her, *Sangkuriang* wields magical powers and enlists the help of spiritual beings to block the *Citarum* river, forming a vast

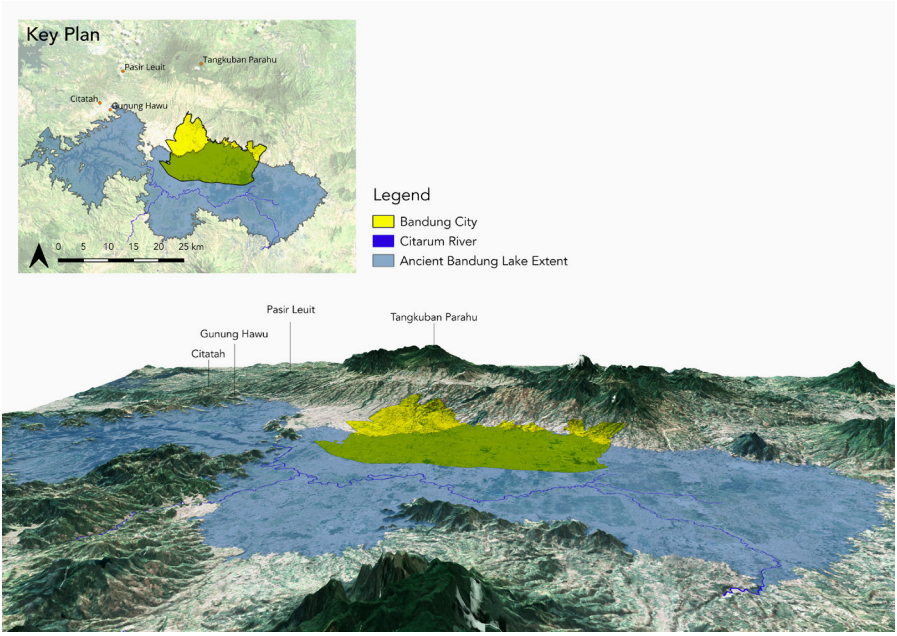

Fig. 2: The extent of the ancient Bandung Lake according to Geologists' findings (Bachtiar et al., 2008; Dam et al., 1996; Gumilar et al., 2023). Image source: GIS-generated 3D model by the author.

lake, and nearly completes the boat. At the last moment, *Dayang Sumbi*, using her own mystical abilities, tricks him into believing dawn has arrived, causing *Sangkuriang* to believe he has failed. In his fury, he kicks the boat, overturning it, and over time, it becomes the mountain known as *Tangkuban Parahu*. The lake drains away, leaving behind what we now know as the Bandung Basin.

In an extended version of the tale, *Sangkuriang*, realising he has been deceived, chases *Dayang Sumbi*, causing chaos as he goes, with the debris of his wrath becoming the *Citatah* karst—a limestone-rich region in West Bandung (Fig. 2). The toponyms of this area, such as *Pasir Pawon* (Hill of the Kitchen), *Pasir Leuit* (Hill of the Rice Barn), and *Gunung Hawu* (Mount of the Stove), echo the remnants of this ancient story. Naming places after legends or myths is just one of many traditions, as suggested by Bachtiar (2008), which also include naming based on dominant native plants, distinctive landscape features or

specific sounds on site. However, physical landscape features often play a central role in this process. The names given to these places frequently reflect the history, the story of their discovery, or the local wisdom that has been preserved over time.

> "In today's digital age, we have a remarkable chance to breathe new life into ancient stories..."

What is particularly captivating is how this folklore is intricately woven into the landscape of the Bandung Basin, reflecting the Sundanese people's deep connection to their natural surroundings. They imbue the land with stories, turning distinct geographical features into sites of reverence and mysticism. This cultural practice mirrors the Roman concept of genius loci—the spirit of a place (Hunt, 2022, p.11)—serving as an ecological mechanism for preserving nature.

Viewed from a broader geomorphological perspective, the *Sangkuriang* legend may be rooted in a geological truth. The tale of a once-great lake (Fig. 2) aligns with geological evidence that a prehistoric lake did indeed exist in the Bandung Basin some 55,000 years ago (Dam et al., 1996; Voskuil, 1996). Over millennia, this ancient lake drained, leaving behind the fertile basin that cradles the city of Bandung today.

Yet, as captivating as the story is, it also carries a deeper message—a reminder to future generations of the spirit of this place, passed down through the oral tradition. Like many others, this legend has long served as a cultural guide, fostering a respectful relationship with nature. However, as the world modernises, these stories risk being reduced to mere bedtime tales, their wisdom fading into the background despite being preserved in written form. This, too, adds another layer to the landscape, one that invites exploration.

The weakening connection between modern people and their natural surroundings has dulled their sensitivity to the landscape. This disconnection can lead to the overexploitation of natural resources, ultimately resulting in environmental degradation and natural disasters. For instance, the

uncontrolled land use changes in northern Bandung have significantly reduced the area's natural ability to absorb rainwater (Agustina et al., 2023; Alhaq et al., 2020), diminishing vital catchment zones. As a consequence, the downstream regions, particularly southern Bandung, are increasingly prone to flooding. This illustrates how disrupting the balance of nature in one area can have ripple effects, causing harm far beyond the immediate vicinity.

In today's digital age, we have a remarkable chance to breathe new life into ancient stories, not just to preserve them, but to embrace their lessons and values. These tales, deeply rooted in the cultural landscape, help us reconnect with our natural surroundings and understand their significance. Modern media and technology serve as powerful tools to extend folklore beyond its traditional reach, bridging cultures and enriching them with shared wisdom. Even as we transition from oral traditions to digital formats, the essence of local knowledge remains vital. It provides a profound insight into the spirit of a place, guiding us to honour and respect it as it truly deserves. By blending the old with the new, we can nurture a deeper connection to the landscapes and communities that shape our world. ■

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Like most myths, the narratives within the picture books of Australian artist and writer Shaun Tan, transcend their allusive, fanciful nature to deliver profound messages of otherwise complex human experiences. Conspicuous amongst several themes explored in Tan's books however is urban alienation: the human experience of being positioned as an outsider to one's urban environment. Even with the unfurling of each page is the sense of stumbling upon parts of an otherworldly plot illustrated as a collage of scrapbook evidence; as if produced by a secret detective scouring for clues, or even an urban designer's sketchbook. Tan's father worked as an architect, perhaps partly explaining the exceptional sensitivity towards the illustrations of urbanity in his books and of which transcend their role as background scenery along their 'hero's journey' (Campbell, 1949). Although this imagery borrows heavily from artistic references and Australian vernacular urban landscapes, consistently brought to the surface in many of Tan's books are universally appreciable urban spaces with tacit relationships to alienation.

Often reading as a *sammelband*, Shaun Tan's written narratives are generally brief and concise but profoundly whimsical, with the vivid imagery of the urban settings augmenting greater meaning. The emotive migrant story within *The Arrival* (2006) is in fact devoid of any written narrative at all. Here, even the street signs and advertising boards appear in a perplexing cipher (Fig. 1). The cityscapes are vividly detailed however, positioning the reader to inherit the experience of the city as a lone outsider; feeling as disorientated,

but also as astutely observant of the surrounding environment and its people's behaviours as the protagonist. In this sense, the visual ties share a likeness to the urban investigation techniques pioneered by architect and urban designer Jan Gehl. In *How to Study Public Life* (2013) for example, Gehl shows a series of photographs taken throughout a single day to demonstrate how a mere public bench was being utilised along a pedestrian shopping strip. Drawing on Jane Jacobs (1961), Gehl (2013: 6-7) famously curated and used these images to illustrate civic virtues of the *sidewalk ballet*; 'the art form of the city…in which the individual dancers and ensembles all have distinctive parts.' However, whilst Gehl's images are arguably imbued with a lyrical quality, elevating an otherwise everyday urban object or space, the virtues of the sidewalk ballet have often deliberately gone astray in Tan's environments.

"Thus, Tan's depiction of the suburban skyline is wittily filled with totemic missiles, uniquely painted and repurposed by the residents over time."

In a *Tales from Outer Suburbia* (2008) narrative titled 'alert but not alarmed' (76-79), suburban households are each supplied with a uniformly grey inter-continental ballistic missile to be placed in their yards. The pretence is a government-funded scheme intended to 'protect our way of life in an increasingly dangerous climate' (Tan, 2008: 76). Rhetorically, this somewhat parodies politically-charged news streams especially prevalent since the September 11 attacks. Likewise, and somewhat inevitably for the story, any sort of invasion by an unknown outsider never actually transpires. In fact, it is unlikely any threat existed to begin with. Thus, Tan's depiction of the suburban skyline is wittily filled with totemic missiles, uniquely painted and repurposed by the residents over time. As the narrative proceeds to more optimistically suggest, 'After all, if there are families in faraway countries with their own backyard missiles, armed and pointed back at us, we would hope that they too have found a much better use for them' (Tan, 2008: 77). One of the more provocative sides of this parable is a reminder that threats to personal and national security undoubtedly alter the architectural fabric of cities.

Fig. 1: Shaun Tan (2004-05). *Street life*. [graphite pencil digitally coloured]. Private Collection.

Fig. 2: Shaun Tan (2007). *The Visitor.* [acrylic and oil on paper]. Private collection.

Urban theorists such as Mike Davis wrote about this sense of militarisation in the city as early as the 1990s. And as with such theorists and architects, Tan appears decidedly conscious of civic design aesthetics created in response to 'public security' and how, in an increasingly anxious geopolitical climate, these responses are often implemented irrespective of any known efficacy. The consequences of this (in both reality and Tan's fiction) is a built environment inclined to evolve towards what Davis (1992) described as, an *inward facing* urban architecture. Not dissimilarly, the opening lines of 'alert but not alarmed' (Tan, 2008: 76) are:

> *'it's [sic] funny how these days, when every household has its own inter-continental ballistic missile, you hardly even think about it.*
>
> *At first they were issued randomly. Back then it was exciting: someone you knew might get a letter from the government and the truck dropped off their missile the following week. Then every corner house had to have one, then every second house, and now it would look strange if you didn't have a missile…'*

Preceding most of Tan's narratives, is the sense this urban militarisation has succumbed to its inevitably Orwellian ends. The 'everyday' city illustrations within *The Lost Thing* (2000) and its adaptation to film (2010) for example are largely imagined through a cacophony of ambiguous state monuments, dark grey street lamps resembling long-handled sickles, monolithic buildings of muted tones, calamitous freeways, and an implicit relationship between peculiar creatures and a Fritz Lang (1927), *Metropolis*-like urbanity. Likewise, Tan's illustrations here reference the stylistic cues of 'marching' workers from Australian painter John Brack's seminal 1955 work, *Collins St., 5pm*. Any notion of public amenity is therefore tacitly denied. Yet, part of what makes these dystopic and decidedly un-Disneyfied images more unsettling are references to familiar elements of more everyday urban architecture and environments.

Whilst Tan's narratives are rarely based in 'Australia' as such, visual references to it commonly interrogate aspects of Australian urbanism. These references are contained, for example, within the representations of low-slung suburban houses with red-pitched roofs and imported stylistic details,

fenced-off from one another and directly contrasting the grey-green hues of remnant bushland (Fig. 2). Similarly, interminable lines of suburban power cables are usually rhythmically propped into a scene, appearing as a quasi, scaffolding to urbanism. As Tan (n.d.) describes:

> *'As kids my brother and I once walked home across two or three suburbs, having no other means of transport due to a bus strike. It seemed to take forever, and really made me think about the scale of suburbia, not just its size, but its relentless repetition of ideas—housing styles, parks, shopping squares, and identical roads that seemed to have no end.'*

Exaggerating and distorting the reader's sense of loneliness, time and place, the shadows and perspectives often leverage the metaphysical paintings of twentieth-century artist Giorgio de Chirico too. Pertinently, such cues serve as reminders for how the suburban fabric is also an alien with tenuous links to an otherwise ancient landscape.

A motif used by Tan on several occasions whimsically illustrates the edge of suburbia abruptly terminating at an infinitely deep and flat 90-degree surface. It complements the aforementioned quote, and appears in *Dog* (2020), *Tales from Outer Suburbia* (2008) and *The Lost Thing* (2000). As Tan (n.d.) later described of a parable in *Tales from Outer Suburbia* (2008), this imagery also speaks of a type of embedded suburban alienation:

> *'This is the story that best captures for me the feeling of a suburban childhood, and the psychological boundaries that can be created by spending a long time in any one place […] When everything you need is locally available, and experience is routine, it can be hard to imagine other places or ways of living—the whole world becomes small and shrink-wrapped.'*

In that story, and as with any technical cross-section drawing, this motif exposes what would ordinarily be hidden from view in everyday suburbia. Again, the imagery is whimsical but the metaphor is not far away from the reality of the general lack of public awareness as to where day-to-day (but equally finite)

domestic utility supplies like water come from and go to. This environmental tension between natural resources and urbanism is developed more literally in *Tales from the Inner City* (2018) where humans and animals vie for living space in apartments and provides another example of what makes Tan's work so compelling and legible for an architectural audience.

On the one hand, the physical characteristics of something such as the 'lost thing' creature, in the eponymous book itself, is reminiscent of artist Max Ernst's 1921 painting *The Elephant Celebes*. However, to an architectural eye, parallels could even be drawn to the French Neoclassical architect Jean-Jacques Lequeu's eccentric creations for an *architecture parlante* ['talking architecture'] made up of colossal building structures resembling safari animals. Likewise, when illustrated in detail, Tan's domestic homes could be seen in guises analogous to literal Corbusian 'machines for living in'; exaggerated by exposed boilers, plumbing, and pressure gauges. In effect, however, they deliberately appear less futuristic and more akin to something from Britain's industrial age of ubiquitously temperamental mechanical inventions that could just as often alienate humans from comfort in their environments as they could enhance it.

Fig. 3: Shaun Tan. (2012). *Never miss the last day of summer*. [oil on canvas]. Private collection.

In interviews, Tan relayed his experience in this regard to growing up in a home designed by his architect father and constructed over a seemingly endless number of years (Robb, 2013). He even drew on the same paper of discarded architectural sketches (Pauli, 2009). Tan's illustrations can therefore often be read through a historic lens of art and architecture.

> "He even drew on the same paper of discarded architectural sketches."

Apart from Brack, Tan cites influences such as Renaissance artist Hieronymus Bosch and contemporary film director Terry Gilliam. For example, the 'Federal Department of Odds & Ends', a foreboding centralised agency building filled with endlessly high walls of dark filing cabinets in *The Lost Thing* (Tan, 2000) draws direct comparison to the equally overwhelming and dysfunctional bureaucratic 'Ministry of Information' in Gilliam's 1985 film *Brazil*. Likewise, the story of Tan's *Cicada* (2018) centres on a lone, green, anthropomorphic cicada having performed the same job for 17 years in an office of bullying, pitiless human beings. The perspectives of the austere workspace cubicles in the book are recognisably akin to those in Jaques Tati's eminent 1967 film *Playtime*. In that film, the profusion of Modernist architecture was not only absolving Paris' identity but, as with *Cicada* (2018), alienating the protagonist. Pertinently however, Tan regularly offers salvation to the types of austere urban environments inherent in *Cicada* (2018) and *The Lost Thing* (2000). After all, for Tan (2022), such creatures remain all the better for not belonging the world they find themselves in. This is where references made to other whimsical yet painted landscapes become illuminated too.

If *The Red Tree* (2001), as Shaun Tan (2013) explains, 'is about the strangeness of an individual's inner life,' *Rules of Summer* (2013) could be considered more about the 'strangeness' of any close relationship. Equally, the story of *Eric* (2010) grapples with an alienation borne from not feeling a belonging to any outside life at all. In all these works however, the urban landscapes are typically hostile to the central characters. That is until their

hero's journey arrives at a resolution, at which point Tan's books often evolve into luminous, full-page colour spreads. This appears in *Cicada* (2018) when the protagonist emerges from his outer shell and takes flight to join a heavenly sky of other cicadas. Likewise, in *Eric* (2010), *The Lost Thing* (2000) and *Rules of Summer* (2013), something as simple as the inside of a kitchen pantry, an otherwise anonymous city laneway, and a spread of fresh seasonal fruits and desserts on a table (Fig. 3) respectively become something as fantastical as a Spanish *Bodegón* [still life] or Bosch's, *The Garden of Earthly Delights* (1490-1510). And like the central panel of Bosch's triptych, these illustrations are equally astounding in their detail, obscure in their meaning, but at peace in the freedom of a shared, albeit calamitous identity.

"...there is always a safe place to be found in the city too; provided someone is young enough at heart to look for it."

For Shaun Tan, an implicit relationship exists between the facets of alienation and urbanism. In *The Arrival* (2006) the reader is compelled to comprehend a plethora of disorientating signs and customs, resisting the central character's attempts at assimilation. In 'alert but not alarmed' from *Tales from Outer Suburbia* (2008: 76-79), the perspective towards urban alienation is somewhat inverted. Here the urban environment is deliberately constructed, at its own detriment, to protect an ambiguous modality of life from an equally ambiguous alien invader. This holds lessons for ways urban theorists might interpret the growing influence security is having on the urban and architectural fabric of cities as well as how science fiction (of which Tan references) explores potential outcomes of this experience. Persisting with this line of reasoning, it would be easy to fall into overwhelming despair about any number of subversive elements underlying contemporary urbanism. However, even if there typically is a sort of secret knowledge requiring time to unravel itself in Shaun Tan's picture books, invariably they show that there is always a safe place to be found in the city too; provided someone is young enough at heart to look for it. ■

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Weaving the meshwork:

Unfolding students' stories through reflexive sensory ethnography

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Key words: architecture, learning environments, sensory ethnography, reflexivity

In all design disciplines, understanding the human experience is essential. This project focuses on exploring the embodied experiences of students in primary learning environments, particularly examining the relationship between their bodies and the design of these spaces. The research aims to uncover how these elements—students' interactions with teachers, peers, and their surroundings—contribute to embodied learning experiences. It also investigates how students use their senses of smell, touch, hearing, and sight as they engage with their environment and how school facilities and educational technologies shape these experiences.

Despite numerous studies examining the influence of school environments on student learning, the relationship between architecture, technology, and students' perceptions of their learning experiences remains underexplored. Previous research often isolated the roles of educational technology, school architecture, or pedagogy, neglecting their interconnectedness. Investigations into classroom environments have described the learning experience as a process of becoming (Benade, 2022; Benade et al., 2021; Colley et al., 2003; Dabbagh & Kitsantas, 2012), frequently overlooking students' sensory experiences within these spaces. The

existing literature predominantly addresses educational technology, school architecture, or pedagogy in isolation, resulting in fragmented studies. Many of these studies emphasize the physical space, examining factors such as spatial measurements, academic performance, furniture design, layout, color, temperature, and lighting, while the complex interrelationships within the built environment remain notably under-researched.

This project proposes an alternative conceptualization, viewing the learning environment as an interconnected space where student bodies are continuously in movement. This perspective sees the environment as experienced through a constellation of relationships (Massey, 2005), where sensory-experiencing bodies (Pink, 2015) and the environment form a meshwork of experiences (Ingold, 2008). This approach challenges the traditional representational theory, which separates the mind and body, by proposing a holistic understanding of student experiences that sees them as embodied, emplaced, and multisensory.

Fig. 1: A digital illustration created from a photograph, showcasing the interview process. Image by the author. https://doi.org/10.26188/27322836.

The findings and discussions are communicated through the conceptual framework of embodiment, multisensoriality, and emplacement, offering deep insights into how students experience learning with their bodies. Visual findings were presented using dynamic digital illustration techniques, combining images and text to effectively convey complex ideas and emotions. This approach aligns with the broader framework of the anthropology of the senses, which emphasizes the use of visual methods to engage with and understand people's experiences.

The foot in the field

This study aims to understand students' embodied experiences in schools, grounded in a sensory-visual ethnography of everyday learning practices and experiences (Pink, 2015) at a primary school in Melbourne. In researching and analysing the nature of the everyday environment, I have focused on the sensory spaces and places within the school's built environment. I have examined essential school elements and cultural values, as well as community, memories and emotions (Pink & Mackley, 2012), sensory perception and reflexivity (Pink, 2014, 2015), people's emplacement (Howes, 2005), places as events and constellation of relations (Massey, 2005), and the entanglement of things (Ingold, 2008), as explored throughout the research narratives. By understanding these elements and the cultural discourses that invest sensory experiences and qualities with school values and individual sensory narratives and actions, we can gain insight into how they contribute to a sense of being in the place and being a part of their designed learning environments.

Entangled methods for revealing stories

Aligning with Pink's (2015) notion of ethnographic place, I approached my research by considering individuals, processes, things, and the environment as interconnected components of a sensorially emplaced and entangled whole, rather than as separate entities. By incorporating the theoretical dimensions of place, movement, and perception, I asked students to express, demonstrate, and discuss their thoughts and emotions about their surroundings, activities, and objects, and what these mean to them.

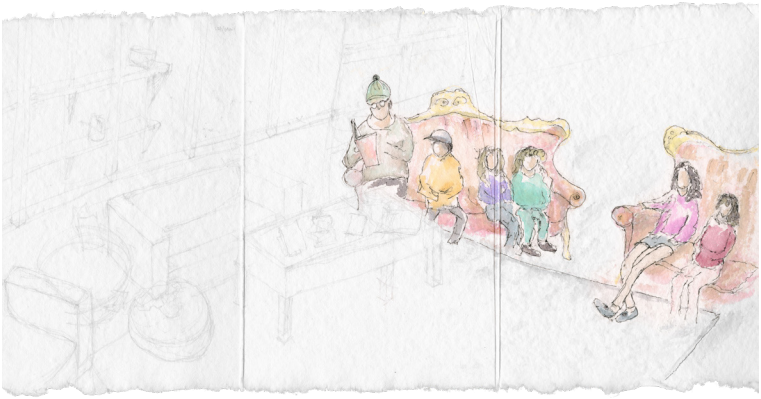
Data collection and analysis were undertaken in the field as an ongoing process of observation and interpretation. As observations were conducted, I also documented my personal experiences through sketches and notes in a visual diary, complemented by voice recordings. This collected data served as the foundation for the sensory auto-ethnographic aspect of the project. In this analysis, I provided brief descriptions and analyses of scenes captured through these sensory and visual ethnographic methods, which were annotated in my sketchbook. All photographs were digitally altered and illustrated (Fig. 1). Visual analysis techniques drawn from visual anthropology studies were employed to effectively communicate the research findings.

Sketching the environment

Sensory sketching, much like photography or videography, plays a crucial role in understanding the embodied and multisensory experiences within a place. This approach acknowledges that sketches are created and interpreted within the context of their surroundings, deriving meaning from the flow of movements within a meshwork, rather than existing as isolated points. As Pink (2015) suggests, sketching, like photography and videography, is essential for engaging with the situated, multisensory, and embodied experiences in the field. This perspective implies that all elements involved in the process—the sketchbook, pencil, eraser, subjects, objects, participants, and environmental entities—are interwoven and contribute to both the creation of the sketch and the constitution of the place itself (Fig. 2). As Massey (2005) points out, the event of place cannot be fully captured or preserved in a drawing or sketchbook, as it continues to evolve over time.

Observational sketching is not separate from the field, nor does it act as standalone data. My sketches are integral to my reflexive, embodied, and multisensory experiences with the people and their everyday learning environment. When I sketch a scene, I engage with the multisensoriality of the place, movement, and event, immersing myself in the environmental details that my body senses and interacts with (Fig. 3).

Sensory sketching also drew my attention to the mundane aspects of everyday life in people's environments. As I sketched, Jordi, a teacher, commented, 'You keep inspiring me to notice things that I don't normally



[2]

[3]

Fig. 2: [Top] A sketch illustrating a multisensory bounding event contributing to the constitution of classroom space. Image by the author. https://doi.org/10.26188/27245880.

Fig. 3: [Bottom] The sensory experience of the place-event, movement, culture, and community during my focused observations. Image by the author. https://doi.org/10.26188/27245883.

see every day.' This experience highlights the significance of observational sensory sketching as a method, in line with Pink's (2015) principles of sensory ethnography, which remind us of its ability to shed light on the nuances of everyday life.

> "Building the cubbies makes me feel strong and creative. It's like our little world that we can change whenever we want."

Drawing and sketching as part of fieldwork is not a new practice, with several studies showcasing sketches as a challenging technique and methodological tool in learning environments (e.g., Flewitt, 2006). Beyond the personal challenge of refining my drawing skills in such settings, I continuously reflect on how my methods engage with non-representational agendas (Simpson, 2021) in learning environment research. This approach fosters engagement with participants in the environments where the studied phenomena naturally occur (Fig. 4). I urge researchers of the built environment to 'attend more closely and reflexively to how academic ways of knowing [places and environments] are constituted, and to consider how techniques and technologies beyond the [traditional] interview and observation might serve this field of research and dissemination.' (Pink et al., 2015, p. 366)

The necessity of the researcher's reflexive body

This research necessitates my physical presence and the application of reflexive and ethnographic methods (Pink, 2012; 2015) to understand students' bodily sensations and cultural categories. It became clear in the field that documenting students' sensory experiences through tours, observations, and interviews alone was insufficient without first considering my reflexive notes and understanding others' perceptions of what feels right (Pink, 2015). As Pink (2015) notes, 'by making similarly reflexive and body-conscious uses of this sensory knowing in the representation of their work, ethnographers can hope to produce texts that will have a powerful impact on their readers or audiences' (p. 59).

When students expressed how making and shaping their school environment made them feel safe—'Building the cubbies makes me feel strong and creative. It's like our little world that we can change whenever we want.'—I engaged sensorially with these narratives to understand how students interact with their surroundings physically and emotionally.

This sensory auto-ethnographic method serves as an encounter that allows me to reflect on my 'biographical' experiences in the field and analyse my sensory experiences alongside the students. Situating myself fully within the field invited me to learn through students' practices—such as building cubbies, playing games, or engaging in recycling and composting—and 'learning how to participate in other sensory ways of knowing' (Pink, 2015, p. 60). ■

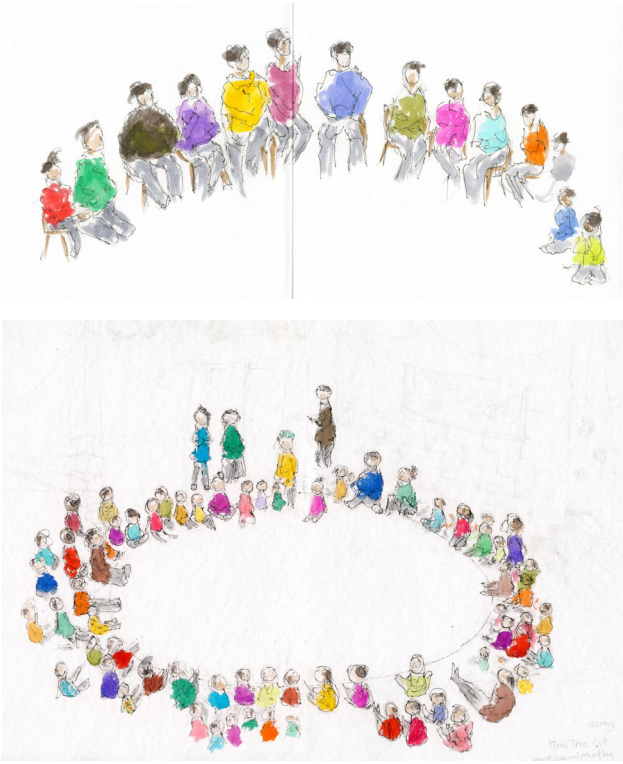


Fig. 4: An interaction with my research participants and others during a school meeting. Illustrations by the author. https://doi.org/10.26188/27245871 [above] and https://doi.org/10.26188/27245868 [below].

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Workplace haiku

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Key words: employee experience, workplace design, corporate real estate

Urged to experiment with something 'outside our normal academic writing', the following contribution is in haiku. This short form of poetry originated in Japan and is comprised of three phrases composed of 17 phonetic syllables in a 5-7-5 pattern. Traditional haiku do not rhyme and include a kireji or cutting word that appears at the end of a phrase severing the train of thought, suggesting the phrases before and after the kireji are equal. The haiku that follow contain a kireji to encourage you, the reader, to reflect on the relationship between the parts. Traditional haiku also contains a kigo or seasonal reference, the temporal markers included in the following haiku are an underlying theme of hybrid work and the impact of the pandemic on work and workplace.

The goal of the first phase of this research (which is what has been done to date) is to confirm a shift has occurred in employees' expectations of the experiences they will have in a workplace and to gain an understanding of the design features and attributes organisations use to deliver them. The following research questions have been addressed:

- **RQ1:** What human experiences are organisations and their employees expecting the workplace to deliver?
- **RQ2:** What is the motivation or driver leading to the request?
- **RQ3:** What design features or attributes are used to deliver those experiences?

Low tolerance now
Same old noise and distraction
What has changed in me?

I sure am lonely
I sit at home all day
Sometimes hybrid stinks

Too hot, too cold, loud
At home I can manage space
Agency is wonderful

Integrity, trust
Sense of purpose and meaning
Always trumps a desk

The commute cost me
More than being in is worth
In time and money

Office renovation
New desk, fancy stair and void
But I want coffee

Social maladies
Generally, not our problem
Thanks a lot Gen Z

Social connection
A good reason to go to work
Cats converse poorly

Academic journals
Weak submit at best, really?
Reviewer two why?

Company agrees
Two or three days at home fine
Manger dissents

I need more than rain
Not hitting my head all day
Workplaces must engage

Tech at home is great
Takes yonks to connect at work
Back to the dark ages

Must earn the commute
A schmick office can't do that
It's utter bulls#@t

Love my work colleagues
It is why I brush my teeth
And commute for hours

Concierge smiling
Work is now like the Hilton
Flat white for me please

Organisations whine
Employees must come to work
Or culture's kaput

Third places, co-working
The flavour of the day
Gotta love choices

Clean up your damn mess
At work they do this for me
It's why I come in

Some think differently
Colours and noises trigger
Neurodivergent

Learn at work, play too
Coffee, lunch and movie dates
Not bloody email

Office's not my desk
Nor is the whole darn building
Precincts my world now

Wellness room exposed
Full of office detritus
A token at best

Who's on first, second?
It is what I want to know
Where is everyone?

Wanted to see you
Esteemed colleague and friend
Even put on pants

Where are my people?
Community, belonging
It makes me human

Take your tired workplace
And shove it in… ahem…the bin
Flight to quality

Basement End of Trip
No longer floating my boat
Dial it up a notch

Retire solo desks
So long stuffy receptions
Homey warmth is in

You're napping again!
Can't see if you're working
I don't trust you much

Slices and dices
Even makes julienne fries
Versatile workplace

Shut up your zooming
Loud talking offends my ears
For God's sake go away

Pale, stale, grey, male boss
Still holding the ropes today
Wait your turn young ones

An ordinary Tuesday

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Key words: home-based work, creative work, creative cluster, housing

It was an ordinary Tuesday morning in Melbourne: freezing cold. I looked through the condensation on the East-facing window in my bedroom just to find a timid sun irradiating its first beams of light. It was a beautiful morning, I reckoned.[1]

Following my daily morning ritual, I decided to go for a cup of coffee at my favourite café just a few blocks away from home. I really enjoy doing this in the morning. Calmly walking to a nearby café, observing the fast pace of city dwellers and the impatient acceleration of cars at the busy intersection. Are they already late before even the start of the day? What do these people do that it is so crucial to get there "on time"? I always wonder.

I then observe the morning dew as I walk through the park, and misplaced seagulls wandering around, and a few humans—I guess "flexible workers" just like me?—sitting or walking their dogs, just taking some more time to start their days.

Something grabs my attention.

And it fascinates me.

I'm sitting next to a pram with a cute baby; the little human is playing with a smartphone. Profusely and skilfully scrolling and searching for content. I don't know if I would lend my phone that easily to a baby. I read some research saying that it undermines their cognitive development. But it amazes

me that these gadgets are treated now as extensions of our bodies as if they were always there, but they are quite recent inventions actually—smartphones are only now coming of age! Can we live without them these days?

And there is all this talk about AI (which, as a matter of fact, is probably as young as this baby). People often ask me: "Maggie, aren't you concerned about AI replacing you? Like, they are already producing music!" But I have another take on this. In a world where everyone, one click away, is able to delegate to a computer the creation of music, I guess it only makes it even more special to witness an artist in the flesh—talent and effort: no shortcuts. Machines don't have a soul, period!

"I love these accidental encounters. Were it not for these, perhaps I would never have thought about this."

At the café, I order the usual cappuccino, but to a new barista, I suppose. I haven't seen that person working here before. I walk to a good spot by the window and see Matt, a graphic designer who works nearby.

"Hey Maggie, any progress on that project of yours?"

"Yeah, actually, I just got it commissioned for the next NGV exhibition coming up in November. But I gotta say, I'm still struggling with the main message I want to convey..."

Our conversation felt so deep, but it only took five minutes for Matt and me to come up with a really good idea. "Sorry Matt, I gotta come back home and try to work on what we just talked about, it is really promising!"

I love these accidental encounters. Were it not for these, perhaps I would never have thought about this. So now I suddenly become one of those fast-paced city dwellers, sprinting my way home to put these ideas down on my computer. Quite ironic for a "slow-morning person," I must say.

I get home, leave my cup of coffee next to the computer, and go for a quick toilet ride. Trust me, it was less than three minutes away, and the worst had happened.

"Oh, no Leopold! You spilt coffee on my keyboard, again! I can't believe it!"

In an act of pure rage, I confess, I rushed to the computer and said a few words I don't really feel proud of. Without putting much thought into it, I turned back and said:

"You know, Leopold, our relationship is not working... I don't think we can do this anymore…"

He looked at me stunned, with shocked, crying eyes from someone who didn't really understand where all this came from. We've been together for over five years now. And, trust me, living in Melbourne as a single-income household is not easy; but not just that, having to juggle work and preparing food for him, washing his clothes, even bathing him, mind you! Now, having also to deal with his mishaps is beyond what I signed up for.

Just for context, Leopold is my cat... But, either way, instead of starting work right away, I had to run to the kitchen, grab a piece of wet cloth, and make sure I could do some damage control. "Damn, Leopold! I really had some good ideas for this piece I'm creating, now they are all gone..."

"That's life when you're working from home..." I sit down and reflect. The computer screen is in front of me, but my mind is somewhere else. Since COVID, I had to shut down my studio in Brunswick and precariously adapt my home into a workspace. Not that I hadn't worked from home before. But now it felt qualitatively different. Symbolically different...

I had to create this truly Frankenstein's monster of a room to sound-proof my music practice. Soundproof it from the outside world—the tram would ruin my song recordings—but also to avoid trouble with my neighbours if it gets too noisy. But since I live in a one-bedroom unit—I can't get tired of repeating: renting in Melbourne is tough! –, my whole home is temporarily transformed into a fully functional workspace. Or not so functional...

But I get to live with it. So, after submerging into deep thoughts, I decided to give it another try. Maybe it wasn't Leopold who messed up with my coffee, maybe it was me! "Wait, don't gaslight yourself, Maggie!", I interject. And here I finally start my workday.

People often fantasise a lot about a "creative" occupation. We are often portrayed as "messy" and "lazy," or the kind of people that didn't want a "normal job" like everybody else. Living a fable. But that's not the case, at least not here, not these days. I work zero-hour contracts and endlessly search for grants and commissions just to make ends meet. I also provide music therapy to a few clients and have a part-time job at the State Library. Yes, it sounds hectic, because it is!

I take the next two hours to work on my NGV commission. It is not quite lunchtime yet. The intercom rings. It is George's music therapy session today, and I completely missed the time, so absorbed I was in my project. I invite him to come upstairs. "Now I have 5 minutes to transform this into a therapy clinic," I whisper to myself. Last, but not least, I lock Leopold into my bedroom.

If you don't know how music therapy works, I have to say: don't try it through Zoom. There is no magic, that invisible yet so powerful, you-can-almost-touch connection that humans make when we are physically together.

"Hi George, how are you feeling today? Can you tell me a nice thing about your week?"

"Well, Maggie, I just had a realisation on my way here today. I'd never noticed that, but every morning there is a bird next to my house that, I can swear..."

My session with George extended more than I would have expected and "ate" some of my lunch(time). But, thanks to Mother Earth, I had already cooked some pasta the night before. Nothing fancy. I ended up eating in front of the computer as my dining table was still a "workstation." Many work artifacts colonised the table. My stomach wouldn't wait for me to tidy it up.

My next shift at the library was only at 2 p.m. As I live just a 20-minute walk from there, I still had some time to spend at the park, get some vitamin D, and read my book on music theory. Was I working or relaxing? It is quite a thin line between my hobbies and my work. I really don't know whether everything I do in my life is just work. How can I escape? Switch off?

Back at home, my "third shift" would soon start. I scheduled a Zoom meeting with Monica, an amazing curator who now lives in Spain and, due

to the time zone, could only arrange this time for our conversation. “How’s everything in Spain?” I sincerely ask—but hoping that her answer wouldn’t result in a detailed, boring description of her day, just like what I’m doing with you now, possibly.

But it is already 8 p.m. and I haven’t had some time for myself. Well, I had a lot of time to myself, but not really. Isn’t it quite paradoxical?

And Leopold is now cranky since I haven’t given him much attention.

Like this text, my day started quite philosophically inspiring. Quintessentially heart-warming, but then it derailed to mechanically ticking a never-ending to-do list. Now that I finally lay down on my sofa and put some MasterChef on—did you see Nat’s dish, how wonderful! –, I feel I can momentarily roll back to that philosopher’s mood... Until I hear a phone notification; it is a group of artists, which I’m part of, debating our next gig. How great, isn’t it?

In the blink of an eye, it is time to leave everything aside—except for Leopold, my grumpy companion—and retreat to the sanctuary, a.k.a. my bedroom.

I set my alarm for the next day, rest my head on the pillow, and tuck myself in for another cold, winter night. Lying on the bed, after a long day mostly at home, I asked myself: was I at home at all?

“Well, it’s just an ordinary Tuesday...” I repeated to myself while falling asleep. ■

NOTES

1. Maggie, a fictional character, has many names and faces. This short story represents what I imagine—after intensive ethnographic work—is a fantastically ordinary day of the home-located artists and designers I visited for my research. It narrates the contradictions, paradoxes, and realisations we—especially those who work from home—have when living and working under a totalising and precarious knowledge economy.

Managing contractual and legal risks in BIM-based projects

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Key words: BIM, construction project management, risk management, risk allocation and mitigation

Building Information Modelling (BIM) has demonstrated its potential to improve efficiency in the construction delivery process (Abd Jamil & Fathi, 2020). However, despite the recognized benefits of BIM, the strategies for its implementation, and the expected future high adoption rates, the overall effectiveness of BIM remains unestablished due to the inherent complexity of construction projects. Consequently, these projects are still susceptible to risks and uncertainties caused by unforeseen circumstances (Ghaffarianhoseini et al., 2017). The increasing complexity of construction projects, driven by the adoption of technologies like BIM, has led to a rise in disputes, raising concerns about BIM adoption (Bodea & Purnus, 2018). Many BIM-related challenges could be mitigated if anticipated and incorporated into contract documents before project commencement (Mahdian et al., 2023). However, a thorough understanding of this issue remains incomplete, and effective measures for mitigating associated risks have yet to be identified and implemented (Bodea and Purnus, 2018). The findings from existing literature have inspired further research to explore the legal and contractual risks associated with BIM and to identify appropriate risk management strategies.

Despite the availability of standard BIM contracts developed by pioneering standardization bodies such as the American Institute of Architects (AIA), ConsensusDocs 301 BIM addendum, Construction Industry Council (CIC) BIM protocol, Architecture Engineering Construction (AEC) UK BIM protocol, and Building and Construction Authority (BCA) BIM protocol, many projects still opt for customized contracts to meet specific requirements, primarily due to local regulations (Mohammadi et al., 2024). However, traditional contractual standards not designed for BIM projects do not encourage collaboration because of the separation between the design and construction phases (Lee, 2020). In contrast, BIM requires collaboration from the initial stages throughout the project lifecycle, necessitating a different approach to risk allocation and management (Eastman et al., 2011).

In recent years, the legal aspects of BIM have received increasing attention from researchers, leading to more studies in this area (Taghizadeh et al., 2021). However, there remains a limited understanding of how risk allocation and mitigation practices affect BIM implementation (Celoza et al., 2021). The nature of BIM requires changes not only to industry processes and philosophies but also to existing contracting practices (Olatunji, 2014). Previous research has highlighted that challenges in BIM adoption can be traced back to inefficient risk allocation and mitigation mechanisms in contractual provisions, leading to resistance to adoption (Mahdian et al., 2023). Therefore, this research explores the ways to adequately address BIM-related contractual and legal risks.

The study aims to explore current risk management practices for BIM contractual and legal risks and propose a more efficient risk management framework, including risk allocation and mitigation methodologies for BIM projects. This study has been designed as a qualitative research and the data was collected through semi-structured interviews. The study participants were sampled among AEC industry professionals with BIM knowledge and experience, as well as construction lawyers. The interviewees were initially identified through the construction law organizations, such as the 'Institutes of Construction Law' in Netherlands and Switzerland, as well as the BIM standardization institutes, e.g.: 'BIM Loket', 'Building Smart'.

The results of this research are expected to create a greater understanding of BIM related legal aspects for construction professionals by revealing the

potential legal and contractual risks in BIM based projects. This research develops a framework for AEC industry to be able to leverage the benefits of risk management strategies through construction contracts for improving BIM based processes at project level. The results will be not only beneficial for the construction industry but also useful for the insurance industry by providing a higher level of understanding of the risk assessment methods and relevant arrangements of indemnity policies for BIM based projects. Consequently, this study creates a positive step towards widespread growth of BIM in the AEC industry. ■

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The treachery of trash:

This is not a bin (*ceci n'est pas une poubelle*)

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Key words: *rubbish bin, municipal waste, multilevel governance, waste politics, Australia*

This is not a bin.

This is a vessel that shelters us from our own discard.
This is a cultural icon that represents our weekly 'bin night' ritual.
This is a safety net protecting us from the unsavoury reality of waste management.
This is a sensory object that stinks of derision and decay.

This is a promise of a better life for our materials.
This is a treasure-chest full of potentially valuable commodities.
This is a black box full of vested interests and money-making schemes.
This is a resource deposit waiting to be mined.

This is a critical piece of infrastructure that keeps our cities clean.
This is a physical manifestation of over 40 years of Australian waste politics.
This is a barrier preventing us from moving toward a circular economy.
This is a governance storm in a plastic container.

As I said, this is not (just) a bin. ■

[1]

[2]

Fig. 1: [Top] Inner-city municipal waste bins with recyclable materials stacked alongside. Photo by the author.

Fig. 2: [Bottom] Municipal recycling bins ready for collection, suburban Australia. Photo by the author.

Beyond mass consumption

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Key words: sustainable consumption, industrialisation, circular economy

The era of mass consumerism, often characterized by a linear 'take-make-dispose,' is slowly giving way to a new paradigm of sustainable consumption. The linear system emerged in the late 19th century, spurred by the mass production of goods during the Second Industrial Revolution. While this industrialization led to significant economic growth, it also resulted in the depletion of natural resources. Waste, pollution, and climate change were by products of this system, putting the planet at risk of an environmental catastrophe.

To tackle these adverse effects, several concepts have emerged. The cradle-to-cradle concept, proposed by McDonough & Braungart (2002), integrates science and design to provide lasting benefits through circular economies and the elimination of waste. Biomimicry, proposed by Benyus (2003), seeks to gain understanding and solutions to today's problems of waste, resource efficiency and management by mimicking nature and its highly efficient systems. Rooted in these concepts, circular economy (CE) has gained significant attention within the past decade. CE is a system that is restorative and regenerative by design and keeps products, components and materials at their highest utility for as long as possible (Ellen MacArthur Foundation, 2015).

The transition to CE isn't just a trend; rather it is an timely response to growing environmental concerns and the exhaustion of natural resources. At the core of this transformation is circular business model innovation, a strategy that businesses are adopting to create value while preserving the planet's finite resources.

The rise and fall of mass consumption

For much of the 20th and early 21st century, the global economy has been dominated by a linear model of mass production and consumption. The linear model is simple: companies manufacture products in masses; consumers purchase them and once those products are no longer needed, they get discarded. Although this approach led to unprecedented economic growth and improved people's quality of life, it also brought about severe environmental consequences. Landfills overflowed, oceans filled up with plastic and resources were being extracted at such a rapid level that they couldn't be replenished. The climate crisis, coupled with growing awareness about environmental issues like waste and pollution, has pushed businesses and governments away from the traditional linear model. Increasing pressure from regulatory bodies, environmentalists and even financial institutions is making it clear that business-as-usual is no longer tenable.

> "As we move into a new era, redefining our consumption habits will be crucial in tackling climate change and the impending depletion of the planet's resources."

The concept of circular economy (CE) has become a promising alternative to mass consumption. Unlike the linear model, CE aims to keep products, materials and components in use for as long as possible, effectively designing out waste from the system. It extends the lifetime of products, promotes reuse of materials and minimizes the need for virgin (unprocessed) materials. Taking these principles into action has been a challenge for businesses and governments. The Global Circularity Index shows the global economy is only 7.2% circular, dropping from 9.1% in 2018 and 8.6% in 2020 (Fraser et al., 2023). Moreover, UN estimates show the rate of raw material extraction will reach unprecedented levels exceeding 190 billion tonnes by 2060 (United Nations Environment Programme, 2020). Applying the foundational principles of CE at a business level is an effective way to redefine the entire value chain and operate in a more sustainable manner.

Circular business models

To accelerate the transition to CE, different types of circular business models have emerged. According to the literature, circular business models have been broadly classified into five categories. A brief description of these categories along with some examples are discussed below (Lacy et al., 2014; OECD, 2019):

- **Circular supply:** Companies adopting this model source renewable or recyclable materials in their production processes. Stotz, a Swiss fabric manufacturer, offers a 100% recycled cotton material from post-production off-cuts (residual fabric). Wear2Wear is another industry leader that makes new clothes from recovered textiles (Bocken, 2022).

- **Resource recovery:** Businesses operating under this business model are designed to recover and reuse materials at the end of a product's lifecycle. Reusable packaging models that offer refundable deposits for fast-moving consumer goods are a prime example of raw material recovery model in the consumer sector (Bocken et al., 2022).

- **Product life extension:** This business model aims to stretch the utility of existing and new products through maintenance, repair and refurbishment. The flooring company Tarkett has implemented a system for extending the product life of its flooring material by reusing plastics from used floors and producing new components. In addition, Tarkett has potentially eliminated the use of toxic materials from its product portfolio (Larsson, 2018).

- **Sharing:** This business model aims to facilitate the sharing of resources in the economy, reducing the need for individual ownership. For example, Adaptive City Mobility aims to increase the efficiency of car use in cities through the shared use of vehicles among fleet operators, such as bakeries, taxi and security companies (Ritala et al., 2023).

- **Product service system:** In this model, consumers pay for access to a product rather than outright ownership. Swapfiets is an example of a firm that provides bike membership model 'as-a-service', maximizing the product (bike) lifetime while minimising running operational and maintenance costs (Ritala et al., 2023).

As we move into a new era, redefining our consumption habits will be crucial in tackling climate change and the impending depletion of the planet's resources. Governments, businesses, and consumers alike will need to collaborate to foster the conditions necessary for this transition. Investments in infrastructure, incentives for circular business practices, and a shift in cultural values will be essential to fully realize the potential of the circular economy.

The shift away from mass consumerism will not happen overnight. However, as circular business models continue to mature, their adoption across industries will rise, eventually replacing linear business models. Innovation of circular business models present a crucial opportunity to redefine our economy and create a more sustainable future for generations to come. ■

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A community engaged research

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Key words: community engagement, post-disaster recovery, resettlement, built environment

This research examines a post-disaster resettlement model initiated in 2016 by the Sri Lankan government following a devastating landslide event in Aranyaka region of Sri Lanka. The research critiques the predominantly government-driven approach while adopting a community-engaged research method. The researcher engaged in conversations with community members inquiring about their resettlement stories. Additionally, an architectural trace analysis was conducted, documenting the place characteristics through measured drawings. To incorporate the government's perspective, a series of semi-structured interviews were conducted with the government service providers. By suggesting a 'regulated flexibility model', the study advocates for a resettlement approach that ensure both economic viability and socio-cultural acceptance in challenging contexts. Such an approach, as the study perceives, allows for reconciling community inclusion with administrative constraints, fostering tailored and needs-responsive outcomes through adaptive design and construction principles.

Figs. 1-4: [Opposite Page Top] Community engaged research method. Photo series by Nandana M., 2022.

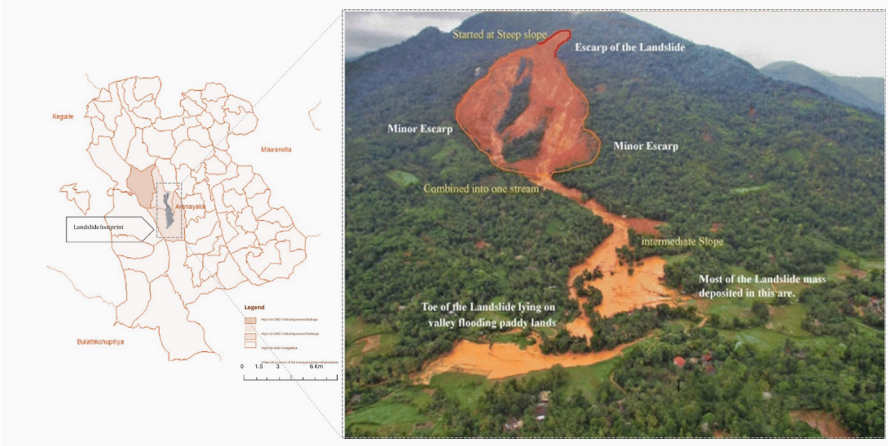
Fig. 5: [Opposite Page Bottom] The 2016 Aranyaka landslide of Sri Lanka. Graphic by the author based on open sources.

[1]

[2]

[3]

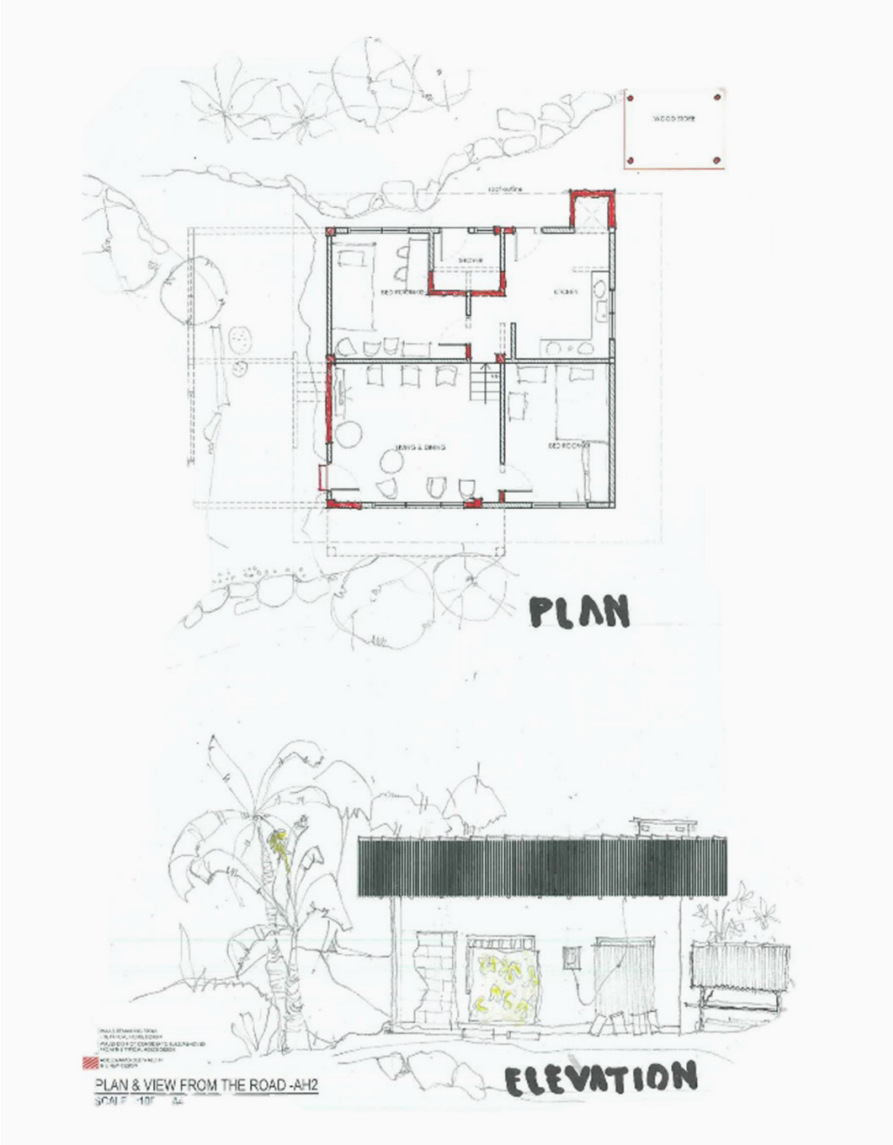
[4]


Kegalle
Mawanella
Landslide footprint
Legend
0 1.5 3 6 Km
Started at Steep slope
Escarp of the Landslide
Minor Escarp
Minor Escarp
Combined into one stream
intermediate Slope
Most of the Landslide mass deposited in this are.
Toe of the Landslide lying on valley flooding paddy lands

[5]


UNIT 01
UNIT 02
VERANDA
LIVING
KITCHEN
BED ROOM
BATH
VERANDA
BED ROOM
PLAN

[6]



[7]

Figs. 6-7: [Spread] Architectural trace analysis drawings of two resettlement houses, produced after measuring the existing house and comparing it with the government's proposed house design. Drawings by the author, 2022.

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