



WHAT IF? WHAT NEXT?

# **SPECULATIONS ON HISTORY'S FUTURES**

## **SESSION 4B**

### **THE COUNTERFACTUAL**

#### **Feedback Loops: Architectural History's Impact on Architecture**

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# **HISTORY IN ACTION: PRACTICE-BASED DOCTORAL RESEARCH AT MONASH ARCHITECTURE**

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*In the latter decades of the twentieth century, practice-based design enquiry emerged as a new mode of research for doctoral study in Architecture. Posed as an alternative to traditional research it promoted projective practice as a productive method for architectural observation, analysis, speculation and discovery. Implicit in this model was a delineation from history and theory and what was perceived as the domination of architectural academy by non-practicing academics. In Australia from the mid-1980s, RMIT University in Melbourne was the most ardent champion of this approach. Led by Leon van Schaik and attracting some of Australia's most acclaimed architects, the program aimed to reveal and share tacit knowledge embedded in practitioners' work. Two of the early alumni of this program, Shane Murray and Nigel Bertram, moved from RMIT to establish the Monash PhD program, which was developed in keeping with the emphasis of the new Architectural Department (of which Murray was Founding Professor), that was advocating for an architectural practice that operates across scales and is embedded in interdisciplinary and contemporary urban concerns. The Monash PhD model broadened its purview beyond the RMIT program with its focus on the work of the individual architect, to a hybrid mode within an expanded field of urban influence, which was perceived as necessary for an impactful design-based practice.*

*Importantly, many of the small and allied group of academics at RMIT and Monash were also practitioners and part of a locally-focused, Melbourne-based architectural community whose practice had evolved out of a deep understanding of the specificities of the urban condition, character and environment. As an example, Nigel Bertram is Practice Professor at Monash as well as co-director, with Marika Neustupny and Lucinda McLean, of NMBW Architecture Studio, a practice that engages with contemporary urban conditions and the relationship between the public realm and everyday life. This fundamental connection to practice formed a particular pedagogical position and was instrumental in attracting the first cohort of students.*

*The early Monash PhDs embraced the hybrid methods and each pursued an urban scale enquiry into the relationship and contradictions between urban form and order, morphology and material architectural detail, framed in the context of larger historical, socio-economic and geographic factors. Driving questions around consistencies and inconsistencies of urban form – what are the compositional rules, how are these materialised, how are these challenged and how do they shift.*

*over time – and an emphasis on evolution and ongoing invention of the city, are represented in the research of these PhDs. What emerges from this initial group is a drawn representation, depicted as a pattern language for design, which reveals, amplifies and reconfigures repeated material and morphology details in order to find a way to act systematically. This situated architectural practice aims to understand urbanism – urban character and its nexus to material detail – in order to inform the creative method for a local architectural practice.*

*This paper<sup>1</sup> considers how history in action – recorded in personal accounts, archives, material and urban form – underpins the design-led, multi-disciplinary research of the early Monash PhDs. We show how historical knowledge and representation of practice-based techniques and procedures, on the one hand, and the logic of urban form, on the other, were emphasized as the necessary basis for a novel, inherently contextual and more impactful architectural practice.*

### Laboratory: Architecture and the City

The genesis of the Monash PhD program can be found in Shane Murray and Nigel Bertram's approach to practice-led research that evolved during their academic tenure at RMIT. Together they had established the RMIT Urban Architecture Laboratory (UAL) in 2002, a research led teaching unit that explored how architectural practice could engage with the diversity of forces that shape the metropolitan condition.<sup>2</sup> With interdisciplinary intakes of masters' students from architecture and urban design, UAL became a prominent voice in the articulation of applied architectural and urban design research within the Australian academy. This was most prominently captured in their joint curation of the *Micro-Marco City* for the 2006 Australian Pavilion at the Venice Architecture Biennale.<sup>3</sup> Insisting on a conceptual relationship between architecture and the evolving urban condition, the exhibition featured architecture projects that focused on the specificity and differences found in the urban environment, conceived in a historical continuum of inhabitation over time and across a range of scales, densities and settlement types as the basis for consideration of future development possibilities.

This work took shape against a background of dynamic practice-based research culture at RMIT<sup>4</sup>, which began in 1987 as a research masters, and transitioned into a doctoral research program in 2001, and garnered a powerful alliance between the academy and the profession. This PhD program has since gone on to support the research training of some of Australia's most acclaimed architects and educators and serves as a distinctive template for practice-based research internationally. Developed by Leon van Schaik, in tandem with an ambitious strategy for architectural procurement and commissioned works, the RMIT School of Architecture and Design emerged as a powerful advocate for contemporary architectural culture, first in Melbourne and progressively internationally.<sup>5</sup> In its early formation, the RMIT program sought post-graduate candidates by invitation, comprising of architects with a substantive, typically acclaimed, body of work. The objective was to value, capture and validate practice-led research through approaching and interpreting tacit architectural knowledge in a "research-minded and methodologically considered manner."<sup>6</sup> This mode of enquiry about design practice establishes its evidence by bringing to the surface the "cognitive capital" embedded in an individual or firm's design practice, enabling it to be broadly disseminated for the benefit of both the candidate / practitioner as well as the profession at large. Van Schaik describes the combining of two kinds of knowledges as the contribution of the design practice research: the first is how "designers marshal their spatial intelligence to construct the mental space within which they practice design"; and the second "reveals how public behaviours are invented and used to support design practice".<sup>7</sup> And while new to architectural research culture, at least in Australia, the model drew on and had parallels within the creative arts whereby the research and transmission of knowledge by exemplars was validated.<sup>8</sup> Here research derived from practice itself was distinguished from theoretical and historical studies of creative practice.<sup>9</sup>

### Literacy: Disciplinary Procedures and Morphology

Among the first to complete the RMIT PhD model in 2004, Murray's doctoral research embraces the model, but cautiously.<sup>10</sup> Supervised by architectural historian John Macarthur alongside Leon van Schaik, his approach is a hybrid, combining design procedures and processes with historical and case study research, and the critiquing and situating of architectural theory. Critical of what he perceived as a prevalent retreat from the architectural object, he proposed a compositional discourse that focused on the attributes of architectural design. Through painstaking tracing and description of his design process, he observes and articulates implicit references in both contemporary and historical disciplinary techniques, which when combined with his new, discovered techniques, constituted the designs' inherent specificity. Murray's purpose is to express tacit knowledge implicit in architects working methods, and to use this knowledge to critique what he sees as an artificial depiction of architectural intention by contemporary architects and theorists. Focusing on the gap between the architects and critics' words and ideas manifest in material development and built form, he at once defends historical literacy as

paramount to an inventive practice and rejects theoretical frameworks within which architecture is a mere referent.

Completed in 2010, Bertram's dissertation is more directly representative of the invitational strand, working more explicitly outside the conventions of a traditional research.<sup>11</sup> The dissertation form and structure consciously play with traditional structures. There is no formal introduction or conclusion; or as Bertram notes, given the reflective nature of analysis, the introductory passages can be also read as conclusions. Referencing and citations are minimal, and the discussion is not linear. Thematic chapters, project descriptions and reflections are treated as loose leaflets, to be read in a variety of order and relationships – depending on the interest of the reader. The form and layout of the document is bespoke and every element, colour, scale, image and text relationship are set out to embody his position – one might say that the form and content are synonymous. But although Bertram distinguishes the document from the conventions of historical research, his creative process rests on a forensic interrogation of urban morphology, starting with first-hand observation: "This research started not in the library, but by wandering around the city. Walking around the city with our eyes open, we act like urban detectives."<sup>12</sup> More than a reflection on an architectural approach, Bertram's thesis is a methodological proposition: to contribute to the city in a fresh way and with meaning requires one to study the city attentively and understand its formation through time and relative to forces by which it is shaped historically. Put in terms of research procedure, the city here serves as an archive, the analysis of which reveals possibilities for design practice. Urban research and architectural design are thus synonymous.

Working in the urban-scale locates his practice within the canonical field of practice-led research, including the seminal contributions of Robert Venturi and Denise Scott Brown, and more particularly contemporary Japanese practices.<sup>13</sup> The term urban detective is borrowed from the Japanese historian and architect Terinobu Fujimori's "Tokyo Architectural Detective Agency" (with Takeyoshi Hori, 1974) and subsequent ROJO Society (1986) research practices where every-day urban environments were effectively scoured for particular items of interest, those about to be lost or those previously 'unnoticed'.<sup>14</sup> In this work, painstaking visual and drawn documentation, interviews with architects and relevant stakeholders, and established detailed archives around the newly documented works, broaden the codified account of Japanese architectural history. Bertram's practice, however, is more analytical, with his close urban observation extending beyond the particularities of the urban environment to the forces that determine its specificity – to why the city is the way it is. His interest is in objects of urban curiosity, architectural and urban moments that at first glance defy easy classification or a straightforward logic, and he looks for where systems break and overlap – not so much the rules but the exceptions or "how rules have been broken". For Bertram, these moments of urban "customisation" reveal novel lessons for how generic systems of urban governance can be appropriated, transfigured and reinvented through everyday use and remaking. He regards this tension as the necessary basis of urban democracy on the one hand, and localisation of urban form on the other. The terms of the title of his PhD (and later book) "Furniture, Structure, Infrastructure" locates the practice as the mediation of systematic-metropolitan order and the experiential-social realm.<sup>15</sup> His work is ultimately a mediation on how to live, learn from and gently reinvigorate the city.

### **Monash: Action Architecture**

In 2008, Murray joined Monash University, as Foundation Professor in Architecture, to establish a new architectural school. The opportunity allowed the development of a new PhD framework alongside and integrated with 'Monash Architecture Studio' (MAS), a practice-led research centre focused on sustainable regeneration of Australian cities. Building on Murray's ARC success in the project 'Ageing of Aquarius' that articulated architectural models for flexible housing suitable for wide application in ageing populations, MAS projects sought to invest architectural practice with broad impact and urban relevance.<sup>16</sup> This included for example, utilisation of the existing urban fabric to increase quality infill housing supply, and adaptive housing typologies for changing social demographics. In 2011, Bertram joined Monash architecture as Practice Professor, playing a key

role in the development of MAS and associated PhD supervision, while also maintaining his role as a practice director at NMBW Architecture Studio. Deliberately distinct to the RMIT model, the Monash doctoral program supported new research over the regular course of doctoral candidature, and further endorsed diverse research methods inclusive of historical and social science methodologies. The early Monash PhD cohort framed their research relative to MAS strengths and priorities (along with their personal research interests) and collectively demonstrate a hybrid approach to practice-based research, whereby historical knowledges form the necessary device for activating architecture at a metropolitan scale. In what follows, a discussion of four exemplars from this first cohort elucidates the ways in which historical knowledge was activated in practice, discussed through the emerging common themes of invention, contextualisation and policy engagement.

### **Monash PhDs: Historical Research as Design Practice**

MAS' growing reputation for practice-based housing research was integral to attracting early PhD candidates, many of whom were drawn to the potential for an impactful architectural practice. A graduate architect with a background in practice and government, Lee-Anne Khor had managed the VicUrban Habitat 21 housing design competition, for which Shane Murray and Diego Ramirez-Lovering designed the 'Adaptable House', a new typology in suburban fringe housing for a diverse population.<sup>17</sup> In 2010, she joined MAS as the coordinator of "Designing Affordable and Sustainable Housing Project", a research initiative funded by the Victorian government and soon extended her engagement through doctoral research. Beginning with the core assumption that urban and suburban fabric is a nuanced index for social and political change, she undertook a social-spatial mapping of Melbourne's rapidly developing suburbs, arguing that such sites of transformation, if understood through an integrated matrix, hold lessons for a contextual and adaptive approach to sub-urbanisation.<sup>18</sup>

Khor's dissertation offers a two-fold analysis comprising of a socio-economic suburban history overlaid with corresponding physical registers. Here the evolution of cultural and demographic character, across time, is read in parallel with environmental factors such as loss of established landscapes and emerging, adhoc development patterns. Her territorial focus is the evolution of Melbourne's residential neighbourhoods developed after World War II and charts suburban typological transitions from single dwellings to multiple units and, in more recent years, the lot-by-lot development of single dwellings into dual occupancies. This careful mapping process is offered as an alternative to what she sees as a pre-conceived yet persistent characterisation of suburbia according to the post-war suburban ideals – leafy streets and gardens, generous open space, a sense of freedom – that are not matched by the contemporary suburban condition. Khor's analysis is thus purposeful: she suggests that contextual change patterns can be strategically repeated, amplified or re-combined, to inform an agile post-suburban form reflective of its own time.

While Khor's thesis is an apt representation of an adaptive urbanism championed at MAS, Laura Harper's dissertation speaks to the evolution of hybrid practice-based research methods at Monash. An RMIT graduate, Harper had been taught by Murray and Bertram and after graduating, was engaged with Bertram in practice at NMBW Architecture Studio, during which time Harper commenced her doctoral research under his supervision. Among the dissertations supervised by Bertram, Harper's works shows most familiarity with his working method and builds on his methodology. In Harper's method however, Bertram's observational engagement with urban and planning history takes a more methodical character, embracing historical knowledge more explicitly.

Implied by Harper's dissertation title, the "Urbanism of Material" is the ambition to restore a perceived rupture between architectural design (at the scale of material detail), and urban design (at the scale of the city).<sup>19</sup> More than an exploration of design process, her thesis is a call for a new mode of practice. Harper sees contemporary architectural practice as typically blind to its urban agency and is in turn critical of top down urban design/planning strategies that reduce the

urban design to abstract/immaterial diagrams. Her intention is two-fold: first to reveal the ways in which the making of architecture systematically engages in urban processes and thus effectively shapes the city from the “bottom up”<sup>20</sup>; and second to promote this material approach to urban design as the basis of a contextual, materially specific and sensory urbanism that operates at scale. Her thesis in essence is about how architects can participate in the making and preserving of local urbanisms.

Distinguishing the role of urban design from overt control to one of subtle influence, Harper charts the incremental process of urban formation over time, and in particular searches for multiple, and at times contradictory, moves and layers that constitute urban character. These she argues range from rational and systematic planning rules to reconfiguration and erasure of these rules, according to alternative logics, purposes and aspirations. For Harper, these multiple overlays constitute the very basis of urban character and specificity. She explores the “unique” and “unexpected” quality of urban precincts and finds fresh opportunities that arise from unplanned juxtapositions and overlays of alternative logics. In these junctions and seams, opportunities emerge for architectural invention or what she refers to as “unexpected inventiveness”.<sup>21</sup> The task of the architect is thus to search for and understand these conditions and derive opportunities to extend and play with inherent urban conventions. She suggests every material decision in architecture holds this opportunity.

Damian Madigan’s PhD, in a similar forensic mode, explores new housing models in context of protected and slow changing suburban heritage. An academic at the University of South Australia and director of Madigan Architecture, Madigan found an affinity with the intersection of architecture and planning research at MAS. Drawing on practice-led knowledge gained through adaptation of inner Adelaide 19<sup>th</sup> century villas, he explores the relevance of these insights to the precinct scale.

Titled “Alternative Infill: a design study of housing intensification, adaptation and choice in the established suburbs of Adelaide”, Madigan’s PhD describes ways in which the predominant, historic housing stock of Adelaidean villas and cottages could be adapted in order to better accommodate multi-generational housing, shared living arrangements, or divisible housing.<sup>22</sup> Key to his argument is that the preservation of ‘heritage’ and ‘character’ needs to be understood relative to the dynamic needs of a suburb. He proposes a shift in thinking about heritage, from “static in the present in order to avoid further loss, to something that is organic, malleable and responsive over time”.<sup>23</sup> Madigan makes the case for fine grain architectural design as a medium for a nuanced historical research, whereby a largely intact heritage fabric is understood beyond matters of style and period features. His methodology is abstract and practical. Looking closely at systematic patterns of design, site placement, proportion and methods of construction, he reveals a legible suburban order that is readily adaptable while remaining robust and coherent. Through reading and working with the built fabric, he establishes a retrospective housing pattern book and overlays this with possibilities for sympathetic reinvigoration. This is tested in three detailed design studies, where each study area is developed as part of a larger housing system. Utilising the four roomed house typology as an identifiable and communicable system of elements, his designs are projective about what the future Adelaide house and its precincts might become. By speculating on the established inner Adelaide suburb as a scaffold, which is supported by a variety of infill and adaptive reuse patterns, he proposes how a new Adelaidean urban form could emerge.

For Madigan, such projective thinking about the heritage of the city expands the architect’s role from the constraints of daily practice with the demands of individual projects, to a field of larger concern and impact. He situates his thesis in relation to larger policy intentions for intensification of cities that can accommodate more people within existing urban boundaries, including in heritage areas: “There is a gap in the strategies. To date, there is no investigation of how existing residential areas, particularly those close to the city centre with heritage and character overlays, might adapt over time to meet the demands of the identified housing pressures.”<sup>24</sup> He argues that the history of heritage listed or character-laden neighbourhoods such as Adelaide’s

Victorian-era inner suburbs, needs to be understood beyond the surface level aesthetic measures of character and nostalgia, to performative aspects such as those of construction and occupation. Thus, while the 19th Century urban patterns strongly informs his thesis, his argument is that this could also be applied in more recently developed suburban contexts that are similar in their make-up, with the capacity to accommodate greater housing diversity and supply and respond in a systemic way.

Working at small scale but in a systematic approach to urban densification is also at the heart Alysia Bennett's PhD thesis. Bennett argues that older parts of Australian and international cities are in essence an archive of covert strategies for densification, for example with the integration of secondary dwellings, dual occupancies and discrete apartments.<sup>25</sup> In her detailed study of the historic suburb of Battery Point in Hobart, she describes how such tactics have ingeniously increased density while respecting the largely intact Georgian streetscape. Critical of contemporary and increasingly stringent regulatory controls that prohibit such progressive evolution, Bennett's thesis is in effect a 'how to' guidebook for the 'covert' negotiation of planning constraints. She tests her methods in design studies that develop tactics in light of contemporary planning rules and socio-economic realities. As an example, working in middle suburban contexts, she re-invigorates the historic granny flat, once common in backyards around Australia as a place to house war-widowed mothers, but this time re-interpreted as a highly functional, well designed and site-responsive addition that could alleviate demands suburban housing.

### **History in Action: Concluding Remarks**

Across and between Khor, Harper, Madigan and Bennett's dissertations, opportunities for architectural invention are found through the synthesising of formal parameters with socio-ecological-socio-economic changes that have impacted on urban structure over time.

The historical mapping of urban morphology, at the scale of building and precinct, from 1:1 to 1:1000, allows patterns to be observed and analysed in specific details – materials, construction systems, buildings' placement on blocks and relationships between sites and buildings, setback distances from fronts and backs, and road, street and lane formations – and reframed as spatial systems that provide contemporary opportunities. It is the combining of these techniques – design-based and traditional forms of urban and historical research – that gives the architect agency to intervene on particular sites with alternative, site-specific development approaches.

This emphasis on local context is necessarily interdisciplinary in its focus. With a seamless incorporation of the fields of urban planning and urban history, the PhDs use their architectural techniques to not only synthesise material across disciplines, but also to uncover/discover new ground that can be acted upon. For example, when working in heritage zones of inner-city areas to increase infill housing for diverse households, the architects' forensic investigations of historic materials, constructions and patterns of development enable the development of new designs that challenge prohibitive planning restrictions, such as the flexible adaptive re-use of heritage buildings. Covert approaches through the addition of dwellings that are hidden behind 'acceptable' facades, are based on the need for any area to continue to evolve to house growing populations with diverse needs, while also being respectful of the past, rendering them acceptable to communities and planning.

Such critical analysis and understanding of how urban planning systems operate is also pivotal to understanding their failure to facilitate quality infill in established, but not yet protected suburbs. Vast tracks of these old suburbs are being transformed, piece by piece, with a corresponding loss of established vegetation and character, and quality, older buildings. In such contexts, the PhDs explore spatial frameworks and systems for how existing urban fabric could be flexibly adapted to a range of occupations and building arrangements that respond to and work with the specific qualities of place. Bottom-up/top-down and small to large-scale strategies are proposed that work in new combinations, facilitating density and amenity improvements over a large suburban field. Key to this approach is finding the often contradictory but still intrinsic



qualities of suburbia that are revealed through historic and urban research. These qualities are then embedded in new spatial combinations and configurations that connect urban fabric across residential tracts of suburbia, enabling them to respond to changing environmental and social needs, without the current erasure.

This engagement with complexity and change moves beyond the familiar limits of site analysis to a broader historical account of urban evolution. What is proposed is a forensic urban research, whereby geographic, historical, environmental, societal and economic parameters and shifts are mapped against intricate material and spatial decisions – or vice versa. Either way, patterns in brick and mortar, street layouts and infrastructure meet shifts in local politics, economic booms and busts. The “curiosity to study a particular aspect of the [material] world”<sup>26</sup> forms a necessary step in linking site-specific actions to larger urban concerns. This speaks to the essence of the early cluster of Monash doctoral research whereby history gains a creative purpose and the city itself becomes the archive for analysis, opening up new ways for making and using the urban environment.

## Endnotes

<sup>1</sup> This paper is work in progress and draws on a recent research project on the development of practice-based doctoral research at Monash University.

<sup>2</sup> See Nigel Bertram and Shane Murray, *38 South Journal of Architecture Research Laboratory* (Melbourne: Royal Melbourne Institute of Technology, 2005).

<sup>3</sup> Shane Murray and Nigel Bertram, *Micro Macro City: Australian Pavilion 10th International Architecture Exhibition La Biennale Di Venezia 2006* (Canberra, Royal Australian Institute of Architects, 2006).

<sup>4</sup> See Leon Van Schaik, *By Practice, by Invitation: Design Practice Research in Architecture and Design at RMIT, 1987-2011* (Barcelona: Actar Publishers, 2019).

<sup>5</sup> See Leon van Schaik, “Practice Makes Perfect,” *The Architectural Review*, 234, 1400 (2013): 82–87, 4 and Leon van Schaik, “Spanning Continuums: Addressing the Separation of Research and Practice in Architecture,” *Architectural Design*, 89, 3 (2019): 38-47.

<sup>6</sup> Stan Lester, “Practice as Research: Developing the Workplace Project,” In *Contemporary Approaches to Dissertation Development and Research Methods*, Valerie A. Storey and Kristina A. Hesbol eds. (Hershey, PA: IGI Global, 2016), pp. 116. For an overview of the emergence of practice-based research in design and architecture in the latter decades of twentieth century extending to the present, see, Rachael Luck, “Design Research, Architectural Research, Architectural Design Research: An Argument on Disciplinarily and Identity,” *Design Studies*, 65 (2019): 152-66.

<sup>7</sup> Van Schaik, Leon, *By Practice, by Invitation*, 4.

<sup>8</sup> Peter Downton, *Design Research* (Melbourne: RMIT Publishing, 2003), 1-15.

<sup>9</sup> Brent Allpress, Robyn Barnacle, Lesley Duxbury and Elizabeth Grierson eds., *Supervising Practices for Postgraduate Research in Art, Architecture and Design* (Rotterdam: Sense Publishers, 2012), 57.

<sup>10</sup> Shane Murray, “Architectural Design Discourse,” (PhD diss., RMIT University, 2004).

<sup>11</sup> Nigel Bertram, “Making and Using the Urban Environment: Furniture, Structure, Infrastructure,” (PhD diss., RMIT University, 2010); see also Nigel Bertram, *Furniture, Structure, Infrastructure: Making and Using the Urban Environment*, (London: Taylor & Francis, 2013).

<sup>12</sup> Bertram, “Making and Using the Urban Environment,” 1.7.

<sup>13</sup> For example, Robert Venturi, Denise Scott Brown and Steven Izenour, *Learning from Las Vegas: the Forgotten Symbolism of Architectural Form* (Cambridge, Mass: MIT Press, 1977); Stephen Holl, *Rural and Urban House Types in North America* (New York, Pamphlet Architecture, 1982); Momoyo Kaijima, Junzo Kuroda and Yoshiharto Tsukamoto, *Made in Tokyo* (Tokyo : Kajima inst.publ. Co., 2001) and Imai, Kesaharu, Tōkyō Kōgyō Daigaku, Tsukamoto Architectural Laboratory and Atorie Wan, *Pet Architecture Guide Book* (Tokyo: World Photo Press, 2002).

<sup>14</sup> Bertram, “Making and Using the Urban Environment,” 1.7.

<sup>15</sup> Bertram, “Making and Using the Urban Environment”.

<sup>16</sup> See, Shane Murray, *The Ageing of Aquarius: Designing New Housing Solutions for Australian Baby Boomers*, *National Speakers Series*, 2005.

- <sup>17</sup> See, Diego Ramirez-Lovering, "An Investigation into the Potential for Spatial Flexibility," PhD diss., Monash University, 2012).
- <sup>18</sup> Lee-Anne Khor, "An Evolving (Sub)Urbanism: Uncovering Spatial Potentials in Melbourne's Residential Fabric for Future Development," (PhD diss., Monash University, 2018).
- <sup>19</sup> Laura Harper, "The Urbanism of Material", (PhD diss., Monash University, 2017).
- <sup>20</sup> Harper, "The Urbanism of Material", 5.
- <sup>21</sup> Harper, "The Urbanism of Material", 21.
- <sup>22</sup> Damian Madigan, "Alternative Infill: A Design Study of Housing Intensification, Adaptation and Choice in the Established Suburbs of Adelaide," (PhD diss., Monash University, 2016).
- <sup>23</sup> Madigan, "Alternative Infill," 40.
- <sup>24</sup> Madigan, "Alternative Infill," 52.
- <sup>25</sup> See for example, Shane Murray, Diego Ramirez-Lovering and Sam Whibley, eds. *Rehousing: 24 Housing Projects*, Melbourne (Melbourne: RMIT University Press, 2008); Stewart Harrison, *New Suburban: Reinventing the Family Home Australia & New Zealand*, (Port Melbourne: Thames & Hudson, 2013).
- <sup>26</sup> Harper, "The Urbanism of Material", 18.