LANDSCAPE REVIEW

VOLUME 19(2)

AN OCEANIA JOURNAL OF LANDSCAPE ARCHITECTURE

LANDSCAPE REVIEW
An Oceania Journal of Landscape Architecture

CONTRIBUTIONS

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The aim of *Landscape Review* is to showcase the relationship between research and professional practice in the field of landscape architecture. It offers a forum for scholarly writing and critique on a wide range of topics that particularly impact Oceania and, more broadly, the rest of the world.

We encourage articles that further develop research ideas and findings from previously published peer-reviewed sources, critiques or reflections, to analyse and synthesise them for impact within professional practice and/or academic research.

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ISSN 2253-1440

Published November 2023

Production *Tanya Tremewan, Christchurch* and *Jenny Heine, Wellington*

Cover image *Gill Lawson, Christchurch (Little Hagley Park, Christchurch)*

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Foreword

GILL LAWSON

The aim of this issue of *Landscape Review* is to turn the page on yet another chapter in the development of this landmark publication in landscape architecture. Having learned about the evolution of the goals of *Landscape Review* from Emeritus Professor Simon Swaffield and Professor Jacky Bowring, the new editorial team is repositioning the journal a little closer to home, in Oceania, a slight shift in the geospatial scope for us from the whole of the southern hemisphere to Australia, Aotearoa New Zealand and the Pacific Islands. This focus seems more achievable, timely, relevant and strategic at this point for our profession and discipline, although our international aspirations remain steadfast. Our part of the world is unique in many ways: we are an archipelago of island nations and territories; our First Nations peoples are diverse and important to us; we have inherited legacies from British, French and Dutch colonisations; the Pacific Ocean and our maritime responsibilities are a critical part of what we do; and our region is flanked by the two most significant geopolitical powers of the twenty-first century, the United States of America and China. As landscape architects, we are also caught up in a global revolution of contested information, knowledge exchange and machine-learning. Our new Editorial Board reflects these interests and concerns for our region. We are therefore keen to traverse the discursive space between practice and research in Oceania with our authors, reviewers, editors and readers in this and coming issues.

This issue of *Landscape Review* opens up a discussion about bridging the apparent divide between professional practice and academic research in landscape architecture. The impetus for this theme stems from recent shifts in professional practice and higher education following the abatement of the COVID-19 pandemic. Many of us have experienced a divergence in our understanding of goals, perspectives and outcomes related to both of these sides of landscape architecture. Nevertheless, some landscape architects straddle this divide by undertaking projects underpinned by research approaches and critical thinking. Others take up practice itself as research, reflecting the multiple ways of expanding landscape architectural knowledge production in these volatile, uncertain, complex and ambiguous times. The first two papers in this issue are critical provocations about what we could or should consider as knowledge bases for our discipline and profession. The other three provide valuable examples of integrating research with practice using design thinking, horticultural expertise and local knowledge in key projects.

Emeritus Professor Peter Downton presents us with his so-called rumination on experimenting with self-remodelling practitioners as researchers. He challenges us to imagine practitioners operating by *inquiring through doing,* as prior work could be categorised as a built experiment with outcomes that could provide new knowledge forming the basis for further experiments. He reflects on researching as a backward-facing pursuit and on practising as forward-facing. Deployed together, the two offer a whole not available to either one alone. His short and pithy paper provides much food for thought.

Associate Professor Katherine Melcher states that landscape architecture research has focused on the development of 'knowing-what' or 'knowing-that' – that is, substantive knowledge – over the past decades. However, in general, the outcomes of this research have not been well integrated into professional practice. She advocates for the development of 'knowing-how', by which she means procedural knowledge, defined as a collectively shared and critically examined understanding of landscape architectural

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KEY WORDS

landscape architecture publication; landscape architecture discourse; landscape architecture divide; landscape architecture knowledge

practice to replace our sole reliance on 'know-how' or individual tacit knowledge of designing. She argues that knowing-how to plan, design and manage landscapes is the core knowledge-base of the field but developing transferable knowledge in this area can be challenging for beginning designers and those who educate them. Her position is that procedural knowledge can be developed from practice or research or some combination of the two and, therefore, can also build stronger ties between them. 'Research into design', she suggests, could make significant contributions to procedural knowledge. She sets out a fascinating proposal to read and digest.

Associate Professor Jillian Walliss and Dr Heike Rahmann explain how the *Landscape Architects as Changemakers* project arose from the limitations of translation in investigating how Japanese designers work. This project then fortuitously expanded into a cross-cultural engagement with Australian landscape architects. The authors discuss the potential of the reflective practitioner, along with the research possibilities afforded by audiovisual media, in developing new knowledge in landscape architecture. They posit a hybrid approach, where characteristics of 'research-on-design' mix with the creative practice of 'research through design'. The project shows how the tacit knowledge of designers and design outcomes can be revealed through the combination of interview and film. It's an inspiring example of impactful research methods.

Dr Wendy Walls and Dr Brent Greene demonstrate how the Woody Meadows project in greater Melbourne revealed the challenges of integrating experimental horticultural research (for climate resilience, reduced labour and financial inputs, and striking visual appeal) into landscape architectural design work in Australia's public realm. They foreground the significance of managing community and professional expectations, alongside the need for better strategies to incorporate innovative horticultural research methods into established workflows and processes in professional practice. In advocating for bridging research and design practice, the authors focus particularly on responding to the challenges of climate change and urban warming. They insist we challenge the assumption that rigorous research will easily flow through to design. In essence, the paper makes an ardent plea for integrating research into broader design practice.

Professor Ray Green addresses impassioned complaints from local community members about how the 'character' of their coastal 'sea change' towns and neighbourhoods is being degraded by accelerated urban growth and development. He illustrates how people living in these settings experience environmental change and its impacts on their sense of place. His research on nine Australian coastal towns, from Byron Bay to Airlie Beach and the Great Ocean Road, has guided local planning schemes and could inform landscape and architectural design practice to optimally 'fit' into the existing character of these places. This work offers a powerful approach for communities coping with change.

As this is the first issue of the next chapter of *Landscape Review*, my thanks go to our authors, who have been so responsive to our call for papers and our deadlines, and to our international panel of reviewers, who kindly accepted the challenge of reading the work of others, and reflecting and generously commenting on it, in a timely manner. Without your efforts, we would miss out on reading broader arguments related to landscape architecture in this part of the world. Special thanks to the behind-the-scenes team. Thanks to Yanan Zhao, who has been invaluable in working with me so closely to master the OJS platform to ensure it performed its duties for authors, reviewers, editors and readers. What a mission it has been! Thanks to Tanya Tremewan, who has been patient and diligent in copy editing the papers in this issue, as she has done in many previous issues with Simon and Jacky. Finally, thanks to Jenny Heine, who has helped update the layout to a streamlined author's template and pushed for a little more visual appeal from the front cover to the end of each paper.

We hope that the papers in this issue will provoke other authors to have their say.

Remnants of a cloister from a Romanesque cathedral formerly on the site where the late 13th century Cathedral Basilica of Saint Cecilia now stands at Albi, France. Known as 'Vestiges de l'Ancienne Cathédrale', these remnants are at the end of a thin rectangular pool redolent with allusions to the Alhambra and works by Carlo Scarpa (image by author, 2013).

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Research, Janus, practice

PETER DOWNTON

This rumination on the relation between research and practice in landscape architecture considers aspects of what genuinely engaging in landscape practice as a researcher would entail. Such engagement would contrast with approaches in which researchers simply claim to be research led or engaging in design research or doing some research to support practice.

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Introduction

The ancient deity, Janus, provides a metaphoric bridge between research and practice. Two-headed Janus was understood to face forwards and backwards, usually represented at a door or gateway. On one side of the garden gate in this case is research; on the other, practice. To be clear, the terms are misleading abstractions that can only be labelled with nouns for convenience: one cannot point at research or place it in a box, any more than practice can be loaded onto a handcart. The outcomes of researching might be put in a box and the results brought about through practice may be walked in or photographed. Researching and practising are each carried out by researchers and practitioners and sometimes one of these people goes through the gate and becomes one of the others. Some even change their hats frequently, wander across the threshold or perhaps, to the delight of milliners, are garbed in simultaneous hats.

Research

Researching as it is typically conceptualised is a backward-facing pursuit. Any gathering of research data concerns the past in the sense that data represent some state or thing that existed at least long enough to be examined and the representation we term data to be made. This is so for fleeting occurrences in high-energy physics, for geology, and for behaviour of people in designed environments. By the time a whole research project entailing many acts of researching, data production and collection is designed, funded, conducted, captured in tables, words and images, published and available for use, this project is overtly reporting the past.

Researching aspects of landscape architecture history falls into the research categorisation above, just as conducting research about project management, hydrology or biochemistry, or about people and their behaviour in various environments does. Enumeration of all the areas of researching that might be conducted under the label of landscape research or imported from other disciplines, while illustrating the breadth of landscape issues and possibly provocative, does not challenge the way to think about researching. If all these areas pursue their normal paths and patterns of doing research and undertake it well, findings potentially useful to landscape practitioners will continue to be produced. Some of these findings will be in a form useful to someone who designs, makes and nurtures landscapes.

Most research is not undertaken to specifically assist landscape architects. When they do use ideas and research from further afield, they run the risk of being accused of misunderstanding and misusing it – although on those occasions when such misuse generates wonderful designing, complaint seems churlish. There may be a suite of agreed activities sensibly termed design research, or often design methodology, the latter having a chequered history of some 60 years since the first formal conference in London (Jones and Thornley, 1963). This activity has often been concerned with almost algorithmic ways of designing and is intended to avoid the art and whimsy that designers engage in. It must be fun for the designers of the (usually prescriptive) design methods.

KEY WORDS

research; practice; education

Citation: Downton, P. (**2023**) Research, Janus, practice. *Landscape Review*, 19(2), pp 3–8

Received: 29 June 2023
Published: : 10 November 2023

Let us conduct a thought experiment in which, as researchers, we decide to test paving materials for wear, slip and strength characteristics. This will involve mechanical testing, hoses, perhaps purpose-designed machinery, a supply of leaves, funding, facilities, comparative measurements, time, and recording and representation of findings. This is where there is a likely mismatch between research findings and the needs of practitioners. Someone making design decisions and wishing to select from a range of available materials requires the information to clearly provide comparable data on these materials and circumstances of use to make informed evaluations on whatever criteria they deem appropriate. The research project outlined would be fully conventional research; to be useful to the landscape practitioner, it must be conceived and reported in a manner that allows comparative and translatable findings that facilitate decisions. This is a requirement of any, and all, data of this ilk. Practitioners might advise researchers on the forms in which to produce data.

Practice

Practising is forward facing. Any design practice is concerned with making a new reality. To do so, practitioners must typically negotiate with clients, operators, various agents and authorities and manage, even perform, an intent-driven process to transform some piece of the world in such a way that the outcome is more or less intended and has a broadly conceptualised, expected future evolution.

Landscaping one's own garden might circumvent the need to deal with too many others. It can create a new reality and allow experimentation, but not much income. It offers the ability to constantly tinker, to shape and shepherd the evolving processes in a way not normally expected in a project for a client. Here, the practitioner can be characterised as a researcher – as conducting an experiment and finding out. This might be an ongoing inquiry.

Remodelling

What if all landscape practitioners saw themselves as behaving in this manner? It requires remodelling to consider oneself, and to present to a client, as a practitioner engaged in *inquiring through doing* rather than as a person with instrumental professional knowledge and a suite of considered propositions that will lead to a design for possible future implementation. The term 'inquiring through doing' is a reasonable descriptor for researching – it suitably abstracts the activities and approaches that we might think of as included when we conduct research. If a practitioner assumes the mantle of researcher, what changes? Simply claiming to be research-driven is insufficient and, although it might lead to some attitudinal differences, little reconceptualising or restructuring of modes and methods of practising necessarily results.

Two issues need to be thought through here. The most immediate is about the ways in which existing practitioners might learn to be researchers. The second, with a longer-term impact, concerns the education of landscape architects, which it would be necessary to reshape and rethink within the existing techno-rational framework of instrumental professional courses offered at tertiary level. Not that adopting researching as a mode of practising is to step outside this framework, but it both changes the emphasis on where knowledge is acquired and potentially harnesses knowledges produced through doing rather than through receiving from authoritative sources and could thus sneak into unmapped territories – especially if the knowings of assorted stakeholders are absorbed into the researcher's knowings.

First, consider individual practitioners, probably working in (small) offices: their daily activities need to begin to encompass critical reviewing of prior work. What can be learnt from it? On what grounds can it be evaluated, and the understandings gleaned from this evaluation formed into a path for actions immediately and in the future? Any evaluation is conducted against a set of views or beliefs of what is right or appropriate and this needs to be coherently expressed for a practitioner and an office or a group within a larger one. Easy to write here, fiendish to do in a real way that means something agreed to

everyone and avoids diagrams of low-thought circles connected by lines with arrow heads indicating everything is related to everything. At a meta level, perhaps, the set of views and beliefs will be drawn from a concept of the project of landscape architecture. A practitioner who holds that this project is restorative will employ different evaluative criteria to one who considers landscape architecture has an urgent role to play in avoiding planetary catastrophe, and be at odds with one who simply seeks to serve the needs of clients and key stakeholders well.

Initially, it is difficult to find time and money to return to prior work and conduct proper evaluations of it. Fairly informal assessments need to be made. When approaches, patterns of operation, materials and ways of doing things are used and repeated, ways of testing them and learning from them – producing knowledge for future use – need to be built into the process as an individual or a group of researching practitioners. This will also lead to evolution and refinement of a constantly scrutinised view of landscape architecture feeding back into an evaluation of actions. Fundamentally this is about building on prior activities, whether they are characterised as traditional practice or as practising through researching. The formal and established tools for this undertaking cluster around forms of post-occupancy evaluation – ranging from construction science through to behavioural science approaches. Prior work is categorised as a prior built experiment, the outcome of which provides new knowledge as the basis on which to conduct another experiment. The research findings are thus cumulative and hopefully provide negative feedback, establishing a form of cybernetic control for the next research experiment, rather than positively contributing to moving the system in which the researcher is embedded (at the same time as operating on it), away from a desirable path.

While the actions are those of a researcher, they also foreground the ethical questions of acting. Appropriate professional behaviour was once deemed to be acting in the interests of one's client; thereafter, various stakeholders were added, including anyone who might consider themselves affected, and subsequently other life forms and inorganic systems. There is an ethics of research and action thus raised. Should either researchers or others judge research, design and implementation actions by their outcomes or consequences, or are the rightness of the actions themselves of greater import? A balancing of these may be difficult in circumstances such as working for, or with, people who are suspicious of professional services. Predominantly, it appears that in designing in areas such as those of concern to landscape, it has been the realm of consequential ethics (where the outcomes receive evaluation, criticism or plaudits) that is foregrounded, not the realm of the debatable inherent rightness of decisions.

Both the outcomes of researching and the designs for intended landscapes have representational issues of scale and type. (This is similar to other disciplines: composers use scores to represent unheard music; physicists use equations to represent the outcomes of experiments; and aerodynamicists use computational fluid dynamics to represent the flow of gases over surfaces. Further, each of these is arguably more abstracted and distant than maps, plans and colours on paper or screens.) Deployed together, the two types of description offer a rich power lacking from either one: that of the researcher melded with that of the possibly more poetic designer offers a whole not available in either alone.

A key difference between researchers and practitioners currently is their acceptance of outcomes. The history and philosophy of science literature has numerous examples over centuries of researchers finding that the world does not behave as they expected when designing an experiment. Such revelations can be regarded as a valid scientific result. Practitioners, however, are expected to deliver an outcome for their client; potentially not the best outcome as it is delivered within a framework of time, budget, legislation, available materials, labour, talent – the constraints are myriad. It is judged on a value scale whereas researchers aspire to be searching for an explanation of the way some portion of the world functions. (It is tempting to claim they are searching for the truth, but sciences keep revising their models, and past and present history shows real scientists are not above fabricating their results.)

Maybe both researchers and design practitioners should be content with aiming to deliver the best they are able to with their personal knowings and disciplinary states of knowledge. Any practitioner self-remodelling as envisaged needs to consider the question of whether the potential unmooring from the comparative safety of prior practice behaviours and knowledges is personally desirable or promises a valuable future.

Formal education

Simple online scrutiny of the outlines of landscape architecture courses in Australia and New Zealand conducted in June 2023 shows a leaning toward design studios with technical, theoretical and cultural subjects at each level and a varying number of electives. Some courses are master level, only admitting students from selected backgrounds. Some mention research methods, and design research within studios is foregrounded in one. A rich reformulation of curricula and pedagogical approaches would be necessary to truly adopt a model of practitioner as researcher within tertiary education across a wide span of practitioners.

As these courses stand, they attest to the excitingly (in)coherent realm of knowledge around landscape architecture, drawing as it necessarily does from many areas (like most design activities) and operating across a diverse arena. No practitioner can be educated to conduct detailed research or display expertise across this wide territory; it is unlikely an accurate map of it could be assembled to cover all the possible byways landscape architects might travel in their search for useful knowledge. As researchers, this is confounding, although, because most designers are familiar with the idea of designing being held to be some manner of synthesising activity (given its long and challenging history as part of design methodologies), can we imagine research in this area operating similarly?

Conclusion?

It is difficult to prescribe what could be concluded from the above rumination because essentially an experiment is proposed. It is not possible to foretell how it would really be conducted, over what duration and with how much similarity by each researching group. Who is to evaluate the results? Can we know if everyone affected, and everything effected, would be ‘happier’ and ‘better’ than if practitioners continued along similar garden paths and avoided passing under the head of Janus? But perched up here atop the garden wall looking into the domains of researchers and practitioners, I think it would be valuable to try.

About the author

Emeritus Professor Peter Downton was previously Professor of Design Research at RMIT University, Melbourne, Australia. He researched the ways teenagers (for UNESCO) and then families (as a research fellow at the University of Melbourne) used their urban neighbourhoods, then moved to RMIT University in 1977 to teach design studios, giving lectures and seminars on the relation areas such as behavioural ecology, philosophy and assorted human sciences have to designing. He headed the Architecture Department from 1983 to 1986 (and finally submitted the PhD started prior to RMIT). He was foundation Head, School of Architecture and Design 1997 to 2001, then Research Director until 2006. From 1990 he ran an ongoing postgraduate seminar on research methods – specifically emphasising practice-based researching – for a wide range of designers. He has been chief investigator with others on several Australian Research Council grants, written widely on design research and maintained enthusiastic photographic and model-making practices. (See peterdownton.com.) He started postgraduate supervision in 1975 and has continued to do so in his retirement. (Image with permission from Marion Pitt.)

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Design discussions in the Community and Place Studio at the University of Georgia's College of Environment and Design (image by author, 2023).

LANDSCAPE REVIEW

Building collective know-how: Part 1: A case for more procedural knowledge in landscape architecture

KATHERINE MELCHER

This paper argues that building landscape architecture's procedural knowledge – defined as a collectively shared and critically examined understanding of the diverse ways landscape architects practice – is of critical importance to the profession and discipline, especially if the field desires to become more relevant and valuable to society as a whole. Knowing-how to plan, design and manage landscapes is the core knowledge-base of the field. Landscape architects' abilities to view complex situations holistically, engage in ethical deliberations, envision new possibilities and weigh alternatives from multiple perspectives are together the key to their expertise. Growing this expertise will help designers create designs that respond to the complex problems of today's society. More procedural knowledge is needed within the field so that: (1) landscape architects can learn from each other; (2) beginning landscape designers have clear models upon which to build expert knowledge; and (3) educators do not have to rely solely on their personal experiences when teaching design. Because good design practice responds holistically within particular circumstances, it can be challenging to develop transferable knowledge about design and planning practices, but models are available from practice research that suggest how it could be done.

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Introduction

The Landscape Architecture Foundation's New Landscape Declaration states that 'landscape architects are uniquely positioned to bring related professions together into new alliances to address complex social and ecological problems' (Landscape Architecture Foundation, 2018, p xxiii). Perhaps landscape architecture can become a 'great mediator between nature and culture' (Corner, 1990, p 74); but, as many critics such as Hohmann and Langhorst (2005) and Fleming (2019) point out, landscape architecture has not yet fulfilled this vision.

Within academia, calls to strengthen landscape architecture's impact and relevancy argue for: more systematic research strategies and methodologies (Braae and Steiner, 2018; Deming and Swaffield, 2011; van den Brink et al, 2017), a better integration of research evidence into practice (Brown and Corry, 2011), stronger leadership by landscape architects within academia (Nassauer, 2023), and closer examinations into how design can be a research method (Abbott, 2018; Lenzholzer, Duchhart and van den Brink, 2017; Nijhuis and de Vries, 2019). The amount of landscape architecture research has increased significantly over the past decades (Milburn and Brown, 2016). However, evidence suggests that, in general, the outcomes of this research are not well-integrated into professional practice (Chen, 2013; Chen et al, 2017; Milburn and Brown, 2016).

Most of these calls for more research within the field focus on the development of substantive knowledge. This is the knowledge that can be widely shared about 'the nature of the environment and the nature of human and spatial and emotional behavior within it and responses to it' (Lang, 1987, p viii), often called 'knowing-what' or 'knowing-that'. The discipline has recently made great strides in developing its substantive knowledge through initiatives such as evidence-based design and landscape performance. Yet it has given less attention to how to develop and expand our procedural knowledge – that is, the understanding of the ideologies, processes, methods and principles that are involved in developing a design, or 'knowing-how' (Murphy, 2016; Ndubisi, 1997).

KEY WORDS
phronesis; reflective practice; design research; landscape architecture; practical knowledge; practice research

Citation: Melcher, K. (**2023**) Building collective know-how: Part 1: A case for more procedural knowledge in landscape architecture. *Landscape Review*, 19(2), pp 9–19

Received: 3 July 2023
Published: 10 November 2023

In this paper, I use 'know-how' to indicate what an individual designer knows and applies while designing, which is often tacit, and 'procedural knowledge' to indicate the knowledge about designing that is shared across the profession and discipline. I define design as 'a locus where integration and synthesis of the natural, social, historical, technological, and built dimensions of knowledge occurs to provide practical and desirable landscape change' (Langley, Corry and Brown, 2018, p 19). Defined in this manner, design is an umbrella term that covers the spectrum of landscape architecture practices, including planning, site design and land management.

Building from these definitions, I make the case that landscape architecture's procedural knowledge is of critical importance to the profession and discipline, especially if the profession desires to become more relevant and valuable to society as a whole.

Historically, much of the knowledge about landscape architecture was developed through practice. Murphy (2016) provides an overview of existing procedural theory within the field. Books authored by practitioners and educators have long shared models of design processes (for example, Halprin, 1970; LaGro, 2013; McHarg, 1992; Steiner, 2000). Peer-reviewed articles also develop new concepts that can inform how one practices (for example, Nassauer and Opdam, 2008; Shearer, 2015). However, given that design is a core activity of landscape architecture, the explicit knowledge about how landscape architects design and how they learn to design is surprisingly limited.

Procedural knowledge can be developed from practice, research or some combination of both (Murphy, 2016); and, therefore, building procedural knowledge can also build stronger ties between the two. My current contribution to this endeavour is divided into two. Part 1 (this paper) makes the case as to why procedural knowledge is of critical importance to building and growing the profession. Part 2 (to be published later) proposes strategies and methods for building collective know-how in landscape architecture based on recent scholarship on reflective practice, practice-based research and practical wisdom.

Why landscape architecture needs more procedural knowledge

Over the years, the profession of landscape architecture has struggled with two aspects of its identity. First is the issue of defining its core expertise (Baird and Szczygiel, 2007; Deming, 2015; Fein, 1972; Langley et al, 2018; Weller, 2018). Second, it has struggled to demonstrate its relevance to society's most pressing problems, such as how to achieve the ideals of sustainability and equity (Brown and Corry, 2011; Fleming, 2019; Landscape Architecture Foundation, 2018; Melcher, 2019; Nassauer, 2023).

Building more procedural knowledge within the field can address both these concerns. Procedural knowledge can make significant contributions to the core knowledge-base of the profession. Additionally, it can prepare practitioners for the future of the profession, where knowing-how to apply information will be just as important as (if not more important than) the knowing of the information. And, finally, it can help practitioners respond to the complex political and economic realities that are at play within wicked problems such as climate change and achieving equity.

1. Knowing-how to design is landscape architecture's core knowledge

Landscape architecture has long suffered from an identity crisis (Baird and Szczygiel, 2007; Fein, 1972; Hohmann and Langhorst, 2005; Langley et al, 2018; Swaffield, 2007). According to Langley and colleagues (2018), part of the problem is that the 'unique knowledge, processes, and capacities of landscape architects – central requirements of a recognizable profession – are currently broad and largely undefined' (p 9). After reviewing standard knowledge domains defined within landscape architecture practice and education, they conclude that 'landscape architecture has no knowledge domains that would be considered unique to the profession' (ibid, p 19). They propose, instead, that 'the intersection of these domains and the focus on conceptualizing and guiding appropriate changes to the landscape might be the bases for landscape architects' uniqueness' and '*the ways the knowledge domains are applied* by landscape architects' could be its core knowledge-base (ibid, emphasis added). The irony is that out of all of the knowledge

domains they present, design is perhaps the least researched and least understood. By not strengthening its procedural knowledge, landscape architecture is weakening its own identity. With more procedural knowledge, landscape architects will better understand how design integrates multiple disciplines and perspectives, thereby better positioning landscape architects to be leaders in transdisciplinary research and practice (Ford, 2018; Nassauer, 2023).

2. Knowing-how to apply knowledge is as important as the knowledge itself

Landscape architects analyse, synthesise and apply a wide variety of information, values and evidence related to a place. Knowing-how to integrate knowledge and values within a project is as important as having the knowledge itself.

In their opinion piece, Brown and Corry (2011) argue that 'landscape architecture has the potential to be as important to the health and well-being of the landscape and the populations in it as medicine is to humanity' (p 329). In order 'to re-establish landscape architecture's respect, credibility, and leadership', they propose evidence-based landscape architecture, defined as 'the deliberate and explicit use of scholarly evidence in making decisions about the use and shaping of land' (ibid, p 328). They further argue that designs based on facts, not beliefs, are needed if landscape architecture is to be a responsible profession. In conclusion, Brown and Corry warn that 'ignoring the lessons of other disciplines' might diminish the importance of our already vulnerable profession (ibid, p 329).

Yet professionals in other disciplines, such as medicine, are realising that facts alone do not make for a successful practice. Malterud (2001) reflects that medical practice involves at least two tasks: understanding the medicine and understanding the patient. Understanding patients is more complex than simply applying research evidence, as she explains:

> There is, for example, much interobserver variation, which affects the accuracy and variability of assumed clinical facts, i.e., when reading of mammographic images. Also, laboratory research findings are affected by manipulation and interpretation. Furthermore, diagnosis of a disease is affected by a doctor's personal experiences, and is not always just a matter of objectively observable facts. (p 397)

Many disparities in the diagnosis and treatment of diseases come from a poor understanding of the patient rather than a poor understanding of the medicine (Kerkhoff et al, 2022). Similarly, landscape architects need to know not only the facts about landscapes but also how to integrate them into a proposed design. Although it is irresponsible for landscape architects to make decisions based on their individual beliefs alone, using facts alone can be equally problematic. The application of knowledge within landscape architecture requires an understanding of beliefs (the awareness of and sensitivity to other's beliefs as well as an awareness of one's own) as well as facts; and this understanding becomes especially important when decisions include concerns about diversity and equity.

In today's world where 'Digital-led automation is making data, information, and knowledge – especially explicit knowledge – more abundant, open, and connected' (Nonaka and Takeuchi, 2021, p 2), a landscape architect's ability to know-how to evaluate and apply information has become even more important. With recent developments in artificial intelligence (AI), the generation and development of information is increasing rapidly; however, the translation of information into action remains a human endeavour (ibid). This might involve, for example, being able to evaluate the relevancy and value of information, to make judgements on what might be misleading or fake, and to reflect on the ethical implications of acting on new knowledge.

Even if knowledge generation becomes dominated by computing, action and therefore design will remain human. The integrative and imaginative know-how of designing might be the one thing that computers cannot do for us – or, at least, it might be the one thing

that we do not want computing to do for us. Yu (2018) argues that, within landscape architecture practice, AI will take care of the 'Many calculations, analyses, and tedious drawing and modeling work [that] are already being done by computers', leaving humans to focus on creation and design, including 'emotional expression, artistic appreciation, and brainstorming' (p 1). Yu concludes, 'in the age when AI is gradually replacing, defeating or even destroying humans … we believe that if there is only one human left in the world, he or she must be a designer!' (ibid). Procedural knowledge is the knowledge that (I hope) AI will not replace, but, if this knowledge is not made explicit, how do we preserve it?

3. Knowing-how involves a deliberative process that grapples with the complexity of today's wicked problems

Finally, if landscape architecture wants to 'lead the planning, design, and stewardship of healthy, equitable, safe, and resilient environments' (American Society of Landscape Architects, 2023), the field needs more than substantive knowledge. Both equity and resiliency are wicked problems (as defined by Rittel and Webber, 1973). They are idealised goals that lack a clear definition, whose solutions are entangled with economic and political forces and subject to global systems and cultural beliefs. Wicked problems lend themselves well to designerly ways of thinking; they need approaches 'based on a model of planning as an argumentative process in the course of which an image of the problem and of the solution emerges gradually among the participants, as a product of incessant judgment, subjected to critical argument' (ibid, p 172). Landscape architecture needs to do a better job of explaining and teaching how its deliberative processes grapple with complex, systemic problems.

Sustainability and resilience

In 'Design and the Green New Deal', Fleming (2019) chastises landscape architecture for self-aggrandising claims of the profession as 'climate saviors', whereas in reality, 'Contemporary practice is focused on sites, not systems; and on elite desires, not public interests'. The work of landscape architects 'is limited in scale and subordinate to client mandates' and, historically, 'we have been bystanders to progress, not principal actors' (ibid).

As Fleming (2019) argues, if we truly want to be a part of the forces for change, 'We must rethink how landscape architecture engages with social and political movements'. Fleming advocates for more political activism within the profession. But, additionally, I think we need to share our knowledge about how we work with (and against) political and economic structures in order to realise projects. Many landscape architects have practices that address some of these larger issues, albeit at the scale of people's everyday lives (for example, SCAPE, MASS Design, Kounkuey Design Initiative and Agency Landscape + Planning). More explicit discussions of these processes could develop into models of practice that promote landscape architecture's ability to make small changes in complex situations.

Equity

'Soft skills', such as how to involve community members in design decision-making processes, are a part of the procedural knowledge that landscape architecture needs to develop, especially if we are concerned about questions of social justice and equity. Implementing equity within the profession is not as simple as adopting a code of ethics or working towards better representation within the profession (although these are both worthwhile pursuits).

Justice involves procedural justice ('equal access to the process by which priorities are set and decisions are made'), as well as distributive justice ('equitable distribution of environmental benefits and burdens') and restorative justice (repairing past harm) (Chang, 2020, p 2).

In a study of how landscape architects (LAs) see equity in the profession, Miller, McNamara and Smoot (2022) observe, 'Many respondents pointed to the public

engagement process as a key connection between LA practice and equity' (p 100) and 'Interviewees noted that LAs need to gain a better understanding of community engagement: A lot of LAs don't really understand community engagement that well' (p 102).

Critically examining the challenges and trade-offs that happen in participatory design can help future practitioners grapple with similar tough questions (for example, Juarez and Brown, 2008; Melcher, 2013). Procedural knowledge can also help students develop the soft skills, including 'communication, leadership, empathic listening – that will enable successful engagement and positive design outcomes' (Ford, 2018, p 103). While these skills are typically learned-by-doing, the profession does itself a disservice by not trying to develop this knowledge more broadly.

Why is procedural knowledge difficult to develop?

Procedural knowledge is not easily captured through the objectivist, deductive research strategies that are frequently valued as the most scientific forms of research. Aristotle's three concepts of *episteme*, *techne* and *phronesis* help explain the characteristics of practice that make it hard to capture in the most traditional forms of research.

In the *Nicomachean Ethics*, Aristotle (2011) places *phronesis* (translated as prudence or practical wisdom) alongside *techne* (translated as artistry or craftmanship) and *episteme* (translated as science) as three of the five 'things by which the soul attains the truth' (p 118). (The other two of these intellectual virtues are *nous* (understanding or intellect) and *sophia* (wisdom or a theoretical reason that combines *nous* with *theoria*).) *Phronesis* differs from episteme in that it involves a deliberation that 'admits of being otherwise', while 'science is a conviction concerning universals and the things that exist out of necessity' (ibid, p 122).

Design can be considered a combination of all three of these forms of knowledge (Braae and Steiner, 2018). It integrates a wide variety of substantive or epistemic knowledge into the design; it involves *techne*, a making – of designs, of drawings and of places. And *phronesis* combines these thoughts and actions into a particular design.

While *episteme* and *techne* are critical components of design decision-making, it is *phronesis* that makes practice challenging to capture and share between people and across a discipline. *Phronesis* tends to be tacit, built up through experience rather than direct instruction, and rarely follows an explicit set of rules or exact set of actions. These characteristics have also been found in design practices through 'research into practice' from the past 40 years (Cross, 2006; Lawson, 2005; Schön, 1983).

Phronesis

Phronesis has been interpreted in many different ways (Flyvbjerg, Landman and Schram, 2012; Kinsella and Pitman, 2012). However, the four characteristics of *phronesis* that Aristotle (2011) has described are especially useful in understanding why know-how is hard to transform into generalised knowledge.

The first characteristic is captured in Aristotle's (2011) words 'admits of being otherwise' (p 112). In his view, 'what we know scientifically does not admit of being otherwise' (p 118). For Aristotle, *episteme* aims to develop universal (or generalisable) principles and truths. But addressing the question of *phronesis*, 'a true characteristic that is bound up with action, accompanied by reason, and concerned with things good and bad for a human being' (ibid, p 120), involves deliberation – a choice between alternative actions. Designing is an action that admits of being otherwise; designers acknowledge that any given project does not have just one correct design solution. Choices must be made; these choices are a key part of the design process.

Second, Aristotle explains that because *phronesis* is 'concerned with the human things and with those about which it is possible to deliberate', it is 'not concerned with the universals alone but must also be acquainted with the particulars: it is bound up with action, and action concerns the particulars' (ibid, p 124). Design always addresses a particular place, particular people and a particular situation. Although design can make

use of the rules and principles found through traditional forms of science, its aim is to address the particulars of a place.

Third, *phronesis* requires deliberation. Good deliberation, for Aristotle, 'is a sort of correctness – but not correctness of either science or opinion' (ibid, p 127). According to Aristotle, good deliberation involves investigation, calculation and a reasoned argument. The process of designing can be described as one of continued deliberation – of developing alternatives, consulting others, weighing solutions against each other and then trying again. Failing to reach the true-or-false form of correctness does not mean that design is simply subjective whimsy.

Finally, being skilled at *phronesis*, being skilled in deliberation and action, requires 'an experienced eye' (ibid, p 130) as well as scientific knowledge. Aristotle argues that age and experience help a person develop good judgement. This is another characteristic of designing; it is generally understood to be a knowing-in-action that is gained through experience or learning-by-doing, rather than through reading a book or memorising principles (Cross, 2006; Lawson, 2005; Schön, 1983). It is a characteristic that makes it especially challenging to share and build procedural knowledge across an entire discipline.

Although *phronesis* is often defined as ethics (for example, by Braae and Steiner, 2018), understanding *phronesis* as being open-ended, particular, deliberative and active involves more than a statement of ethical principles. *Phronesis* integrates *episteme* and *techne* into our everyday world. Despite this, *phronesis* is the least understood and least studied of these three concepts within landscape architecture. Discussions about landscape architecture research seem to set aside discussions of *phronesis* in favour of the more clear-cut and well-trodden path of *episteme*, thereby increasing the divide between practice and research.

Research into practice

Although know-how is hard generalise and develop into a more transferable form of knowledge, research involving close observations of how practitioners work has developed a better understanding of this practical knowledge. Schön (1983) studied how a variety of professional practitioners – in psychotherapy, architecture, engineering, town planning and management – work in situations of complexity, uncertainty, instability, uniqueness and value-conflict (p 39). He concludes that these practitioners actively define and refine the problems while also searching for solutions; a process significantly different from technical rationality.

Cross (2006) and Lawson (2005) both study how designers, especially architects, solve problems. They observe that the problem-solving process designers employ is different from that of most scientists – partly because they are working with ill-defined problems and working towards a prescriptive, rather than descriptive, solution. Similar to Schön, they point out that, for designers, the phases of design overlap and flow into each other. Lawson (2005) concludes, 'It seems more likely that design is a process in which problem and solution emerge together. Often the problem may not even be fully understood without some acceptable solution to illustrate it' (p 48). Because the design process is a back-and-forth action and reaction to the situation and readjustments, a replicable method, such as those valued in research involving experiments, is challenging to achieve (Cross, 2006).

Research into reflective practice and design thinking is not new to landscape architects; theories from Schön, Cross and Lawson feature frequently in its discourse (see, for example, Armstrong, 1999; Armstrong and Robbins, 1999; Cramer, 2022; Deming and Swaffield, 2011; Filor, 1994; Melcher, 2013; Murphy, 2016; Prominski, 2005; Shearer, 2015). However, recent publications about research in the field suggest that the discipline is more interested in using design as a research method than in using research to better understand design (Abbott, 2018; Lenzholzer et al, 2017; Nijhuis and de Vries, 2019).

How can landscape architecture's procedural knowledge be improved?

Both practitioners and researchers can make valuable contributions to landscape architecture's procedural knowledge.

Practitioners can articulate, evaluate and share their know-how with others using reflective practice methods (Schön, 1983). Certainly the task of explaining and sharing such reflections on design processes and practices with others requires additional time and skills that many professionals do not have. However, if the field develops clearer methods and criteria for reflective practice (such as those developed by Fook, 2019), practitioners could use them to document and share their expertise with other designers. Additionally, methods for translating tacit knowledge into explicit knowledge could be inspired by Nonaka and Takeuchi's (1995) research.

A further fear among the profession may be that by developing more explicit knowledge about designing, we will take away some of the magic of design (Lang, 1987). Could more procedural knowledge reduce designing to a formulaic procedure that would hamper creative problem-solving? I do not think so. Because design engages with particulars, procedural knowledge about designing is never going to give us a perfect recipe or magic formula for all scenarios. A design process and design decision-making can never be fully decontextualised. At best, we will develop transferable models and rules of thumb rather than prescriptive procedures.

A related concern is that building procedural knowledge might involve sharing of proprietary knowledge that will threaten the competitiveness of individual firms. I see this as highly unlikely. Skilful designing, like *phronesis*, comes from experience. Even if we do develop a stronger understanding of our procedural knowledge, that knowledge will not fully replace the nuanced, tacit skills of an expert (Dreyfus and Dreyfus, 1991; Dreyfus, Athanasiou and Dreyfus, 1986). A better understanding of design processes will not devalue the skills of an expert practitioner, but it will provide more resources and models for beginning designers and those who educate them.

Researchers who focus on research into design can also make significant contributions to procedural knowledge. However, because know-how is embedded within the subjective experience of the designer and situated within a specific design project, developing transferable knowledge about designing is not as straightforward as other forms of research. Research methods of a more qualitative nature, such as ethnography or action research, are challenging for a beginning researcher to undertake with confidence. Additionally, the more straightforward research methods tend to be seen as of higher value within academia. As Milburn and Brown (2016) point out, 'integrative and applied scholarship' tends to be valued less by universities than 'the traditional "'scholarship of discovery"' (p 72). Still, as many landscape architecture academics start their careers as designers, researching into practice should be a productive way to transition from practice into research. If resources are available to help explain and clarify how research into practice can be conducted, this pathway into research will become even more attractive.

Suggesting some strategies and methods for reflective practice and practice-based research will be the focus of part 2 of my contribution to this topic. Interest in practice-based research is growing within a wide variety of professional disciplines (Costley and Fulton, 2019; Kinsella and Pitman, 2012; Smith and Dean, 2009) and landscape architecture can draw from their experience. Practice-based research includes both 'research into practice' and 'research through practice'. Many professional doctorate programmes are developing more explicit theory, criteria and methods in order to prepare professionals 'to use data to design and understand the effects of innovation through the ability to gather, organise, judge, aggregate, and analyse situations, literature, and data with a critical lens' (Perry, 2019, p xvi).

Conclusions

Knowing-how to design is a core knowledge-base of landscape architecture. Landscape architects' abilities to view complex situations holistically, engage in ethical deliberations,

envision new possibilities and weigh alternatives from multiple perspectives are central to their design expertise. We need to grow this expertise in order to create designs that respond to the complex problems of today's society. More procedural knowledge within the field is needed so that landscape architects can learn from each other, beginning landscape designers have clear models on which to build expert knowledge and educators can teach design based on knowledge beyond their personal experiences alone. Because good designing responds holistically within particular circumstances, it is challenging to develop transferable knowledge about designing, but there are models from practice research that suggest how it could be done. In part 2, I will review theories and methods from reflective practice, practice-based design and practical knowledge to propose some strategies for increasing procedural knowledge in landscape architecture.

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Acknowledgements: The author would like to thank all who have been engaged in discussions about landscape architecture's future, especially those cited in this review.

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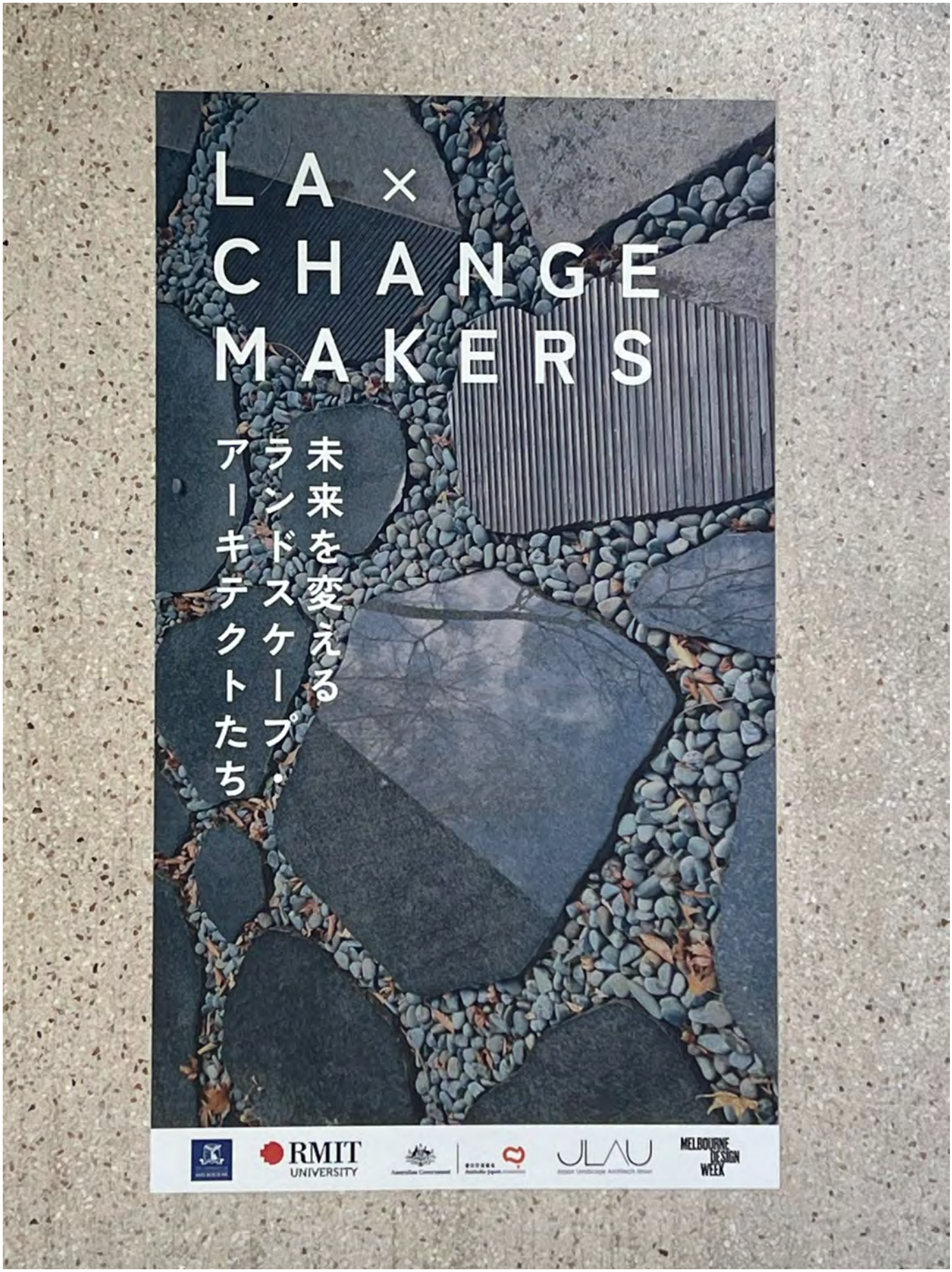

Opening exhibition panel (image by Jillian Walliss, 2023).

LANDSCAPE REVIEW

Digital media and the design project: new creative research methods for landscape architecture

JILLIAN WALLISS AND HEIKE RAHMANN

Practice and academia exist in parallel worlds. Universities, with their priorities guided by government research metrics and competitive funding schemes, encourage academics to present research through refereed journals (often behind paywalls) or at international conferences to academic audiences. Conversely, practice works at speed, offering minimal time for critical reflection before moving on to the next project. The design project connects these two worlds. It is here that the conceptual collides with the material, and theory meets practice. While both academia and practice recognise the importance of design precedents and case studies, we argue neither is yet to fully capitalise on the tacit knowledge of the designer in advancing landscape architecture knowledge. Through a critical reflection on the research processes and creative methods underpinning the *Landscape Architects as Changemakers* project, in this paper we discuss the potential of the reflective practitioner, along with the research possibilities afforded by digital media, in developing more complex and precise understandings of design practice. Drawing a contrast with repeatable and predetermined research methodologies, we highlight the value of flexible and creative research approaches that can transform and respond to unfolding knowledge and evolving opportunities for funding and dissemination emerging during a research project.

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The limits of language

In 2020, we published *The Big Asian Book of Landscape Architecture* (Rahmann and Walliss, 2020), which has been acknowledged for its comprehensive engagement with Asian landscape architecture (Lu, 2021). While developing the book, we were acutely aware of the limitations of image and text in presenting the culturally diverse work of Asian landscape architecture. The book showcases over 80 projects, representing each of them with three to six images and a 500-word description. Longer essays, for which we encouraged the authors to fold project discussions directly within their work, place the projects in cultural, ecological and political contexts.

What is largely missing from the book is the direct voice of the designer. In one section, we invited three landscape practices from China (Z+T Studio), Japan (Earthscape) and Korea (PARKKIM) to develop short reflective essays on how their respective cultural traditions inform their contemporary practice. While these essays offer invaluable insight, they also demonstrate the difficulties that follow from asking non-English-speaking cultures to present their work in English. Translation diminishes cultural complexity and nuances.

The *Landscape Architects as Changemakers* project emerged out of this problematic question of translation. Our successful grant application to the Toshiba International Foundation proposed that a shift from printed text to audiovisual media could deliver a deeper understanding of how Japanese designers work within their own complex economic, social and urban conditions to achieve positive outcomes. Importantly this project would be bilingual, meaning designers could speak in Japanese and a skilled translator would offer English translation. Outcomes would be communicated in both languages. Working with RMIT University's School of Media and Communication, we developed interviewing skills and strategies for recording design projects, alongside technical knowledge on sound and digital media. In November 2022, accompanied by our translator Saran Kim (who also assisted in filming), we packed our gimbals, smartphones,

KEY WORDS
digital media; research methods; design practice; cross-cultural

Citation: Walliss, J.; Rahmann, H. (**2023**) Digital media and the design project: new creative research methods for landscape architecture. *Landscape Review*, 19(2), pp 21–34

Received: 21 August 2023
Published: 10 November 2023

a DSLR camera, tripods, portable light, and audio equipment and set out for Japan. Over almost four weeks, we interviewed four Japanese landscape architects and filmed their projects. In addition, we interviewed a further eight landscape architects on broader issues facing the profession such as gender diversity and professional identity.

As this paper discusses, in its evolution from an initial focus on Japan to a more complex cross-cultural perspective, our project offers valuable insight into qualitative research methods that focus on design. These methods include working with the tacit knowledge of designers and culturally comparative research along with harnessing the potential of digital media, exhibitions and websites as creative research tools and far-reaching modes of dissemination.

Repositioning the case study as tacit knowledge

More than 50 years ago, Hungarian intellectual Michael Polanyi proposed the idea of 'tacit knowledge' premised on the concept that 'we can know more than we can tell' (Seiler et al, 2021, p 2). Drawing on the earlier work of Gilbert Rye, Polanyi highlighted the limitations of philosophical and scientific approaches to knowledge that ignore what cannot be codified or quantified. In response, he advocated for the importance of 'context-dependency and the embodied aspects of knowledge and understanding' (Schrijver, 2021, p 7).

Tacit knowledge has been adopted in design, particularly in architecture, as a way of bridging the gap between practice and academia. This separation, observes Leon van Schaik (2019), resulted in research 'about the history, sociology, and environmental science of architecture, rather than research grounded in the mediums of practice' (p 40). Tacit knowledge is increasingly recognised for its value in understanding 'the entanglements between the built environment, cultural habits, and the impact on the natural environment', revealing knowledge beyond the limitations of rational thinking (Schrijver, 2021, pp 7–8).

Yet within landscape architecture, the value of tacit knowledge is not recognised to the same extent. While the profession in general accepts 'research for design' and 'research-on-design', it is hesitant to recognise 'research-by-design or research through design' where the act of designing is seen as the research method (Lenzholzer, Duchhart and Koh, 2013, p 121). Deming and Swaffield (2011) consider this approach to be subjective and point to limits to its value in advancing new academic knowledge. More recently, Beza and colleagues (2022) question the value of critical reflection on a designer's existing body of work, claiming that it:

> potentially lacks critical insight, because in practice or consultancy (where these reflective pieces are commonly drawn from) one does not usually commence works with a specific research agenda in mind. (p 691)

In contrast, Lenzholzer and colleagues (2013) highlight 'the value and potentials of designing as a constitutive part of academic research processes' (p 121), adopting Crewell's framework to demonstrate its methodological value. Similarly, Kathryn Moore (2019) argues for a more flexible approach to landscape research:

> If we have the confidence to move away from the central hard core of scientific assumption and methodology, there is a real chance to develop new approaches, make connections across and between disciplines, and erase rigidly drawn boundaries delineating and distinguishing practice from theory. (p 321)

The research methods applied in the *Landscape Architects as Changemakers* project can be considered a hybrid approach, mixing characteristics of 'research-on-design' and the creative practice of 'research through design'. For example, we use interview and film to move beyond general understanding of landscape architecture practice to uncover the depth and insight offered by the tacit knowledge of the designer. But at the same time the production of the films and subsequent exhibition can be considered creative practice outcomes.

Strategically, interviews and films focused on a single project for each designer (which featured previously in *The Big Asian Book of Landscape Architecture*). All the designers were experienced and well respected. This targeted focus on a project offered the potential for unravelling and revealing knowledge and experiences that would far exceed the standard project descriptions found on websites and in journals. To achieve this, the discussions needed to occur between designers. Given most of the interviews were in Japanese, the role of the translator was critical. Fortunately, our translator was a recent architecture graduate from the University of Melbourne who had an interest in landscape architecture and was originally from Japan.

Initial questions established the pragmatics of the project. Then the interviews moved to open-ended questions to encourage deeper reflections by, for example, discussing challenges and failures, lessons learnt and the positioning of the project in a broader lineage of design practice (personal and professional). Given three out of the four projects had been completed over 10 years ago, the interviews uncovered valuable long-term reflections on how the project has been transformed and accepted over time. Questions were provided beforehand in Japanese. The designers took the interview very seriously, coming prepared with many notes. These interviews were filmed in their offices, with our research team responsible for one task each (audio, filming or interviewing). Three cameras were used: two smartphones and a DSLR.

Interviewing involves cultural considerations. Our RMIT advisors encouraged us to take control of the interview environment, for instance by moving furniture and objects to establish appropriate visual backgrounds and controlling sound. However, these instructions did not translate culturally or physically to Japan where offices are extremely small and where tight time-constraints (often allowing only two hours in total for an interview, including equipment set-up) limited control. Our initial plans had been to travel to Japan twice: first to visit offices and sites to understand the context; and second to film and interview. However, COVID-19 reduced our travel to only one visit, meaning that we just had to make things work – technically and intellectually.

While we had extensive prior experience of interviewing designers, filming projects was a completely new research technique to us. As high-quality digital media becomes more accessible and user-friendly, researchers from critical geography, anthropology and visual culture are increasingly exploring the potential of film as both a field of representation and as a research method. Geographer Jessica Jacobs (2015) observes that 'film is a better fit in the body of research methods that are multi-sensorial, multi-modal, practice-based and targeted towards how we experience our lived environment' (p 481). Documentary film-making is now being recognised as a creative practice and a research method. For example, Fitzgerald and Lowe (2020) adopt Guba and Lincoln's quality criteria to highlight the value of documentary as a qualitative methodology. Offering an extension of the accepted research paradigm of ethnography, they argue that documentary film offers 'a research lens for seeing, knowing, showing and making sense of lived experiences under study' (p 2).

Critical visual research methods in architecture and landscape architecture, however, remain poorly defined. Christophe Girot's Medialab at ETH offered some early explorations, including the 2013 publication *Landscript 2: Filmic Mapping: Documentary Film and the Visual Culture of Landscape Architecture* edited by Fred Truniger. More recently *Visual Research Methods in Architecture*, edited by Igea Troiani and Suzanne Ewing (2021), documents the generative, analytical and culturally situated practices of visual research methods, highlighting the potential of 'drawing, photographing, filming or more experimental visual modes and media' to surface emergent design knowledge (p 27).

In conceiving the project films, we aimed to use digital media as a mode for revealing the designer's tacit knowledge. Before leaving Melbourne, we had extensive discussions with RMIT University's School of Media and Communication to establish the best types of footage and filming strategies to match the design knowledge embedded in each project. Strategies, therefore, differed for each project. Following the storytelling advice of

'showing rather than telling', the projects were filmed to reflect the design thinking of the landscape architect, as well as to capture the dynamic aspects of landscapes that defy the still image. The films were shot entirely on smartphones, aided by gimbals with their stabilisation, tracking and panning tools. Site sound was also recorded using a shotgun microphone. We planned for two days of shooting for each project, which accounted for different light conditions and changing weather conditions. Some designers were interviewed directly in their completed projects.

The advantages of digital media over still images quickly became apparent. For example, digital media more adeptly captured a human-scale experience moving through the landscape, along with dynamic atmospheric conditions such as sound, temporality, light and moisture. This shift in media is aligned with what Giuliana Bruno describes 'as a theoretical move from the optic to the haptic and from sight to site' and establishes a 'reciprocal contact between the world and us' (Farsø and Peterson, 2015, p 3). For landscape architecture, the immersive qualities of film present a major shift from dominant design representations such as plans, maps and the increasing use of drone footage. All of these representations act to disconnect the body from space, as well as offering the capability to fluidly shift scales from the broader context to the detail.

Film as thick descriptions

Returning to Australia, we carefully curated hours of footage and interviews to reveal a design-focused narrative. The final bilingual films, each between 8 and 12 minutes long, offer a qualitative research response to a design project that differs significantly from more common approaches to case studies, which tend to prioritise quantifiable outcomes. Four major differences are evident.

First, in most case studies the designer's voice is minimal. While interviews may inform the research, the researcher controls the narrative, language and message. In our process, the project is presented entirely through the voice of the designer, and the native language (Japanese) is respected to maintain accuracy and cultural knowledge.

Second, our approach is highly reflective. Case studies and post-occupancy evaluations tend to emphasise quantifiable and comparable criteria. For example, one of the most influential case study projects is the Landscape Performance series developed by the Landscape Architecture Foundation. This series has now been adopted in Australia and conceived to support research teams to 'develop methods to quantify the environmental, social, and economic benefits' of nominated projects (Landscape Foundation of Australia, 2023). As the name suggests, the focus is performance, aiming to 'identify valid, defensible, and replicable metrics and methods that can be used elsewhere by non-experts' (ibid). In contrast, our looser, more open-ended approach to revealing knowledge gives agency to the designer, rather than to the preconceived criteria of the researcher.

A third difference is the temporality of critical reflection. As stated, three of our four projects had been completed over 10 years ago. Interestingly, the Landscape Performance case studies series does not recommend using projects completed more than 10 years ago given 'landscape performance should be measured against the project's design goals and intent, and over time this information is often lost and/or the built project is modified' (ibid). For our project, the age of the project facilitated a deeper reflection from the designer, along with offering the opportunity to film a project at a greater level of maturity.

Finally of note is the shift in the media. Most case studies are presented through a combination of text, tables, images and plans. These formats are the language of science. Producing a film narrated by the designer offers direct links between concepts, ideas and design outcomes. This was further heightened when the designer was interviewed directly in their project. Materiality, systems, experience, planting, use and maintenance come alive in the film. Critically, the design was also deeply situated in its specific cultural and ecological context. Given this highly contextualised approach, it is possible to consider each film as a digital media representation of Geertz's concept of a 'thick' description.

In *The Interpretation of Cultures* (1973; cited in Ponterotto, 2006), North American anthropologist Clifford Geertz argued that the best way of understanding culture was not through rules, patterns or laws but instead as webs of significance. Interestingly, Geertz's ideas were inspired by Gilbert Rye, who as mentioned influenced Polanyi's concept of tacit knowledge. Thick descriptions are accepted as a form of qualitative research across a range of disciplines, and are broadly understood as offering 'an interpretive characteristic of description rather than detail' integrating 'meanings, intentions, strategies and motivations' (Ponterotto, 2006, p 540).

On many levels the films meet these criteria, embedding the knowledge of design as expressed by the designer's voice directly into the specifics of time, place and culture. The combination of narration and precise film editing makes visible connections, interactions and experiences, revealing explicit and original design knowledge. This film process shares similarities with research approaches as highlighted by Fitzgerald and Lowe (2020). For instance, they have similarities in 'identifying a question to explore, planning the design approach, use of similar data collection techniques (e.g. observations, interviews), and analyzing narratives as a way of sense making using both systematic processes and creative interpretations' (p 3).

Importantly the films present landscape architecture as an embedded cultural practice. This aspect can be lost with the current emphasis on problem-solving, which tends to push landscape practice towards science (Weller and Hands, 2022). The value of culture was heightened even further in the second phase of our research project, which was shaped by an Australia–Japan Foundation grant.

Cultural juxtaposition

The Toshiba International Foundation grant committed us to complete four short films, record broader thematic conversations with other Japanese designers and present this work on a project website. However, additional funding from an Australia–Japan Foundation grant highlighted the value in shifting the project scope significantly, transforming the focus on Japan into a cross-cultural engagement with Australian landscape architecture, including cultural exchange. This grant was developed in partnership with the Japanese Landscape Architecture Union and also featured a commitment from the Melbourne School of Design at the University of Melbourne to fund a significant exhibition to coincide with Melbourne Design Week.

Reframing the initial research project involved matching the four Japanese designers with four Australian designers, along with introducing an exhibition as a major research outcome. In an interesting twist that reflects the speed of this project, it was only near the end of our month in Japan that we began to consider which Australian projects to feature. With our minds deep in Japan, dominant framings of Australian landscape architecture (urban, infrastructural, nation-building and climate change) were dislodged and we began to see the Australian work with fresh eyes. The extreme cultural juxtaposition between Australia and Japan established a way of engaging with culture that was very different from our previous experience in developing *The Big Asian Book of Landscape Architecture*. Here, we adopted the idea of inter-referencing, also known as 'asia as method', which has its origins in the work of Japanese philosopher Yoshimi Takeuchi.

Speaking in 1960, Takeuchi warned that it was unproductive for Japan to look to North America or Europe to understand its own history. He observed, 'If one went to Europe or the United States, there would be a sense that the people there are superior to or better than oneself' (Takeuchi, 2005, p 150). Instead, Takeuchi suggested 'inter-referencing places' that share similar historical experiences to produce grounded knowledge. This framing presented an intellectual agenda that 'enables research to be placed in its specific historical context without the epistemological and ontological burden of catching up with the West' (de Kloet, Chow and Chong, 2019, p 4). In structuring *The Big Asian Book of Landscape Architecture*, we adopted inter-referencing as a method for diminishing the influence of western typologies and theories. Inter-referencing design practice within similar cultural contexts enables us to escape the generalisations inherent

in nationalism and globalisation to reveal specific processes, theories and philosophies influential in design.

However, in the second iteration of the *Landscape Architects as Changemakers* project, it was now necessary to conceive of methods for engaging two cultures and contexts that had little similarity. Rather than adopt a common lens such as sustainability or climate change to shape an enquiry, we used the experience of the Japanese projects to productively unsettle the familiar narratives of Australian landscape architecture. For this reason, the sequence of the project driven by grant requirements unexpectedly shaped the research trajectory. Here we see how flexibility and serendipity can have a positive impact on research, particularly in terms of its originality. In describing what makes a skilled researcher, Moore (2019) states it involves:

> Being brave enough to reconceptualize basic beliefs again and again, to work things out without having a preconceived idea as to what the results are going to be. Having the insight to bring to bear new ideas and understandings that can enlighten and inform. (p 320)

This shift in the scope required a fast and brave conceptual repositioning. We began by thinking about pairings. Each Japanese project offered a particular provocation to guide the selection of an Australian project. In some cases, the pairings were driven by similarities; at other times, by contrast. The Japanese experience inspired us to consider regional projects. There is a tendency in Australia to focus on urban work, whereas only one Japanese project was in a highly urbanised context. Interviews with the Japanese designers that revealed a precision in discussing materiality, form and designed experiences also directed us to focus on more 'pure' landscape approaches. This meant moving away from multidisciplinary design outcomes or national typologies such as botanic gardens to find projects that would encourage Australian designers to reflect on their personal design approaches as distinct from other external project drivers such as government motivations or general ideas of climate change and sustainability.

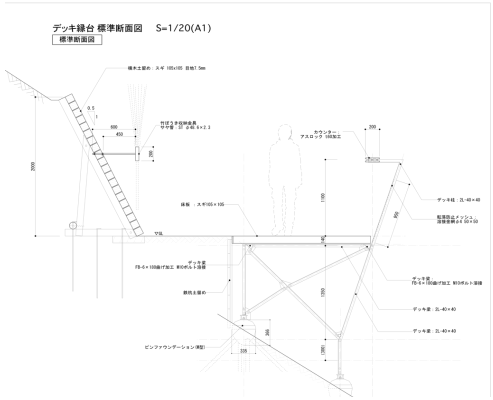
Final influences were time and money. As we had only three months to complete the Australian content, we strategically limited our work to Victoria and New South Wales. With the clock ticking, we needed to simultaneously design the exhibition, travel to film the Australian designs, complete eight Japanese and Australian films, and develop a feature digital piece for the exhibition documenting perspectives from 18 landscape architects.

Exhibition as research

Developing an exhibition through digital media was exciting but challenging. It offered new possibilities for designing immersive landscape-driven gallery experiences while at the same time presenting technical challenges such as maintaining projection qualities in varying light conditions and managing multiple sound outputs. After a month of prototyping and testing, the exhibition opened with a soft launch on 28 April followed by the official launch on 18 May as part of the Melbourne Design Week 2023. The exhibition was conceived around six key moments.

Stop One: Scales of inhabitation. Visitors enter through an immersive projection of a Japanese pine forest complete with a soundscape. Featuring the Okutama Forest Therapy Trail and the Grampians Peak Trail walk, this opening content introduces the multi-scaler thinking of the landscape architect, shifting between the expansive landscape experience (using immersive and drone footage) and detailed design presented through floor-to-ceiling construction drawings. Digital clips of the designers discussing materiality and construction processes support the drawings (figure 1).

(a)



(b)

(c)

Figure 1. Stop One: **(a)** immersive projection of the Okutama forest therapy trail (image by Jillian Walliss, 2023); **(b)** detail of terrace and retaining wall (image with permission from Studio on Site); **(c)** digital clip explaining the materiality of the Grampians wilderness walk (image by Jillian Walliss, 2023).

Stop Two: Spatial and cultural disparities. Two significant differences between Australia and Japan shape the landscape architecture of each country. Specifically, most Australian practice is orientated towards the public and conceived for a multicultural society whereas Japanese society lacks cultural diversity and the concept of public space is relatively new. This disparity is highlighted in the exhibition. At one end of the gallery, three screens showcase the extraordinary water landscape and exquisite detailing of Hoshinoya Karuizawa, a resort where urban-based visitors come to experience a diversity of landscapes. Yet, as the designer explains, this privately owned development operates within a unique Japanese framing of public and private space. Contrasting with this position is Melbourne's Prahran Square – a new civic space conceived as a hybrid typology that merges attributes of a park and a square. Here the designer discusses the complexity of balancing the diverse needs of a multicultural society with the need to allow ideas of civic to emerge from ongoing community use.

Stop Three: The urban garden. The Japanese respect for the garden encouraged us to look more closely for Australian examples. In this pairing, the rooftop Nihombashi Garden designed on top of a 100-year-old department store in Tokyo is matched by Sydney's Paddington Reservoir where a Victorian-inspired garden offers a subterranean retreat in post-industrial infrastructure. Despite contrasting spatialities of above and

below and differing concepts of heritage, both of these urban gardens offer a physical and imaginative retreat from the busy city. Sections of the project films are contrasted by two large-scale, black-and-white aerial photos of the cities (figure 2).

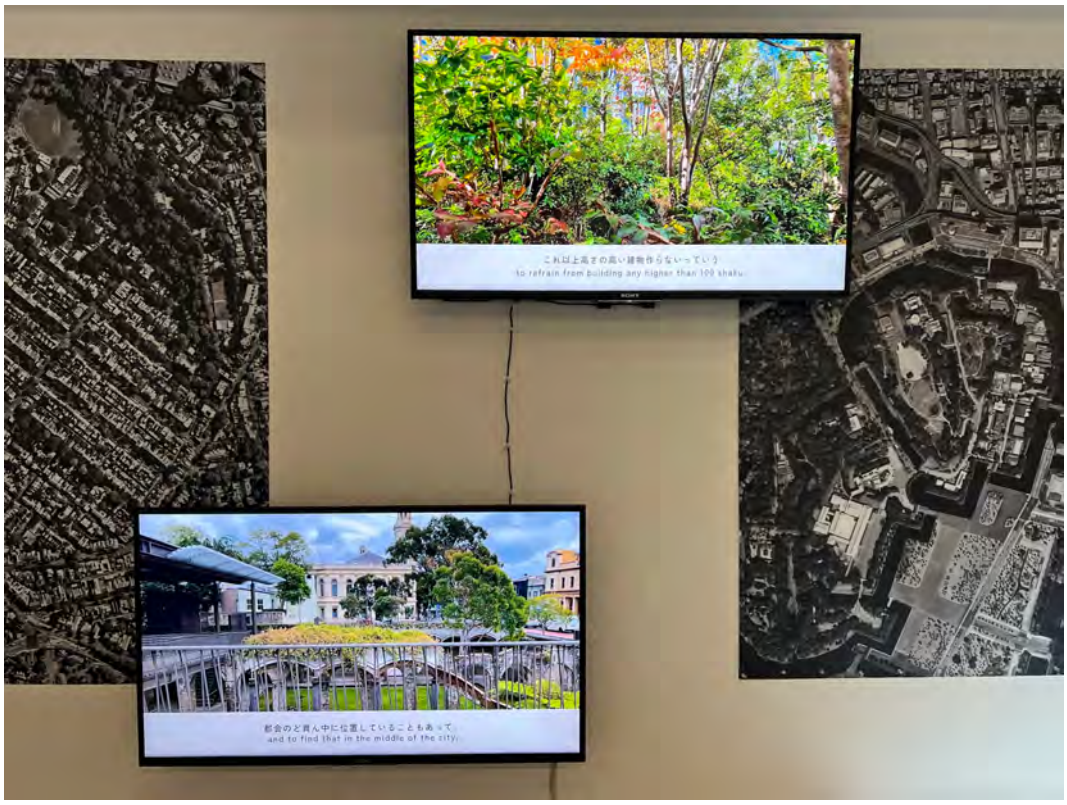


Figure 2. Stop Three: The digital films of the two gardens juxtaposed against the aerial photos of Tokyo and Sydney (image by Jillian Walliss, 2023).

Figure 3. Visitors watch two full-length films from the tatami mat platform (image by Jillian Walliss, 2023).

Stop Four: A philosophy of place. A visit to the extraordinary project Queen's Meadow Country House in Japan's Tono region inspired us to think about regional projects that engage with larger philosophical concepts for living in and caring for landscapes. At Tono**,** a group of like-minded professionals has transformed an abandoned property into a living experiment that explores ways to develop a more sustainable and meaningful lifestyle. In contrast, Forest Edge garden is an expansive bush garden on the edge of a national park in New South Wales, where the designer, the client and a bush regenerator collaborated to shape the gardens and landscape surrounding the house over time into landscapes of co-inhabitation. Exhibited side by side, these two films are the only ones in the exhibition shown at their full length (12 minutes each). A platform covered in tatami mats invites visitors to sit and be immersed in these expansive regional landscapes and hear about slow cultural and ecological practices (figure 3).

Stop Five: The conversation pieces. Crossing academia, practice, research and government, this collection of observations and comments from 18 Japanese and Australian landscape architects displayed on two digital screens offers a snapshot of where landscape architecture is positioned in 2023 (figure 4). At times, the disciplinary strength of one country is identified as a weakness of the other. For instance, the evolution of Australian landscape architecture into a dynamic and adaptable discipline with strong female leadership contrasts with a discipline in Japan that is constrained by weak governance structures and continuing issues of gender diversity. On the other hand, Japanese designers' attention to detail, access to skilled craftsmen and acceptance of slow design practices are the envy of Australian designers, who must work increasingly quickly in a web of procurement processes and value management.

Stop Six: A table of books. A collection of 30 books presents a mix of landscape practice and theory from Australia and Japan. Visitors are encouraged to sit at the table and peruse the books at their leisure.

Figure 4. A screenshot of the conversation piece addressing the thematic of practice strength (image by Jillian Walliss, 2023).

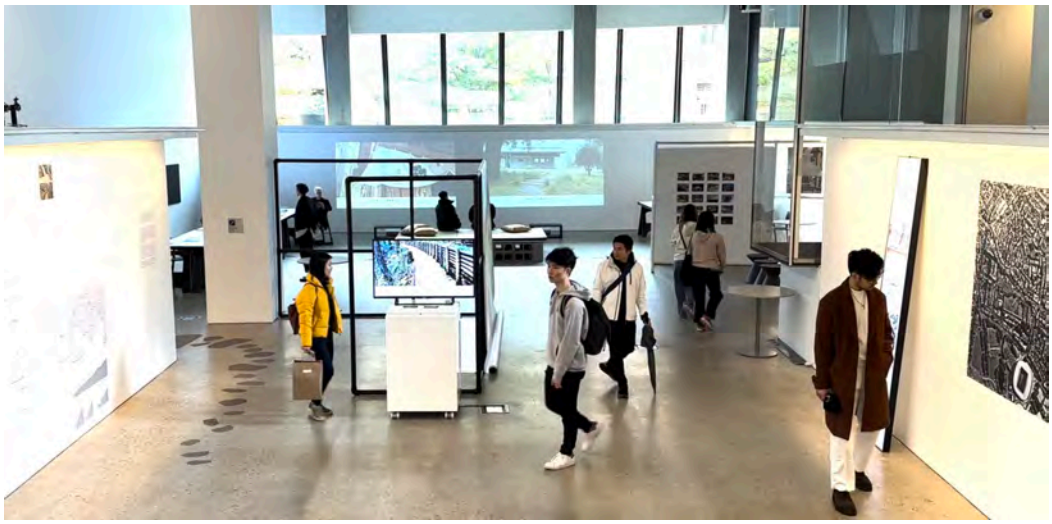


Figure 5. A view of the exhibition in the Dulux Gallery, Melbourne School of Design, University of Melbourne (image by Saran Kim, 2023).

In addition to supporting the exhibition, the Australia–Japan Foundation grant provided funds for cultural exchange between design practitioners. For three days inclusive of the official opening night, three Japanese landscape architects visited Melbourne for talks, presentations and informal Australian socialising. An afternoon event held at RMIT's iconic Storey Hall featured discussions between Japanese and Australian landscape architects. These conversations were carefully curated to encourage reflection rather than formal presentations as well as to ensure the Japanese visitors were comfortable speaking in English or using a translator. In front of an audience of about 200 people, conversations flowed around new professional opportunities and ways to expand skills and diversify practice, before moving to reflections on what it means to be Japanese and work in Australia. In November 2023, these discussions will continue in Japan, when the exhibition is relocated to Tokyo's Kudan House accompanied by Australian designers.

The exhibition and supporting talks were extremely well received. However, beyond popularity, how can creative practice be judged for its contribution and quality? In the case of *Landscape Architects as Changemakers*, multiple layers of peer review have examined its quality and impact. First, the project was funded by two competitive grants that required the researchers to identify its significance, research methodologies and impact. The Toshiba International Foundation, whose grant funded the films and website, required a detailed discussion of the value and methodologies underlying the shift to digital media. Similarly, as a condition of providing its grant focused on cultural exchange, the Australia–Japan Foundation asked for strategies of exchange, engagement and dissemination. Significantly, this peer review occurred *before* the creative work was produced.

A second period of review occurred in the process of making the competitive applications required for the work to be accepted for exhibition in the Dulux Gallery (and Kudan House) (figure 5) and included in the Melbourne Design Week programme. Each application had to outline the work's significance, audience and contribution.

Three published peer reviews of the completed exhibition provide a third layer. In her review for *Landscape Architecture Australia*, Naomi Barun (2023) highlights the value of the shift away from conventional static and reductive representation of practice, commenting that 'the beauty of this exhibition was clearly in its orality'. She further writes:

> The text that accompanied each of the projects enabled the viewer to understand the strategies employed and the impact made; however, it was the additional layer of conversational audio-visual information that provided a greater depth of understanding.

The power of this representational shift is reinforced in Terren Shi's (2023) review for *World Landscape Architecture*. This exhibition approach, states Shi:

> allows visitors to grasp the transformative nature of landscape architecture and appreciate the ongoing processes that shape and redefine our surroundings. By combining various mediums, the exhibition effectively conveys the dynamic and ever-changing nature of landscape architecture, showcasing the intricate relationship between design, time, and the environment.

Shi also emphasises the value of the cultural comparisons, commenting '*Landscape Architects as Changemakers* sets a trajectory for landscape architecture that crosses the national boundaries.'

Writing on the absence of landscape architecture content in the Melbourne Design Week 2023 programme, Olivia O'Donnell (2023) highlights the significance of the exhibition in presenting landscape architecture practice to a wider community. Despite the Melbourne Design Week programme's 'clear interest in landscapes and living systems', O'Donnell observes, only two of the 200 participants addressed landscape architecture practice. In a further acknowledgement of the success of *Landscape Architects as Changemakers* in communicating to an audience beyond the profession, Barun (2023) concludes in her review:

> At its core, the exhibition created a space for conversation and knowledge-sharing, one that enabled designers to hear from industry leaders and learn about their methods of practice. It also enabled a conversation with a broader community, helping landscape architects demonstrate how considered design moves can create places for humans that help them to connect to the surrounding world.

While the exhibition was only open for a month, the website www.laxchangemakers.com offers an enduring documentation of the project. The bilingual site features the eight full films and the conversation pieces, along with a digital scan of the Melbourne exhibition. In this mode, the research escapes the confines of academic journals and conferences and remains freely accessible from anywhere in the world for use by academics, practitioners and the wider community. From April to July 2023, the website attracted over 1,000 views: 600 from Australia, 300 from Japan and the remainder from 15 other countries. This level of interest arose without any formal promotion of the website, which we plan to do after completing the Tokyo exhibition in November.

This paper itself represents a final form of review. Its critical reflection on the theory, research methods, innovation and contribution underpinning the work has been accepted following academic peer review.

Research that fires the imagination

The *Landscape Architects as Changemakers* project has been logistically and intellectually challenging, requiring a flexible approach to research, collaboration and organisation across two very different cultures. But the ability to work creatively through digital media, exhibitions and a comprehensive website reveals new ways of thinking about academic research, its links to practice and modes of dissemination. The project helps to advance landscape architecture research methods in three clear ways.

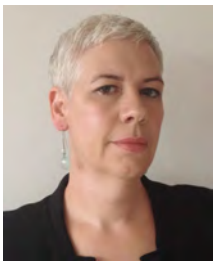
First, in its broadest sense, this project demonstrates the value of understanding landscape architecture as a cultural practice of design. Direct links between the tacit knowledge of the designer and the design outcome are made possible through the combination of interview and film. Further, these understandings are embedded in specific ecological and cultural contexts, producing thick descriptions of a project that contribute original knowledge of design practice. Already affirming the value of the films in communicating knowledge, the climate change working group of the International Federation of Landscape Architects (IFLA) Asia Pacific region has nominated the film on

Queen's Meadow Country House as one of its submissions to the IFLA knowledge-sharing platform, which documents project knowledge from around the world.

Second, the project highlights the power of cultural comparison and cultural exchange to generate new knowledge. Organisations such as IFLA and the Council of Educators in Landscape Architecture, along with academia, tend to diminish cultural differences by assuming commonalities such as climate change and place-making. While this strategy may mobilise a collective approach, it misses the productive value inherent in acknowledging cultural differences. Importantly, this research project respects the language of designers with the aim of avoiding the diminishing of cultural ideas and concepts that arises through requiring them to adopt English. Further, when translation occurs in this project, it is through a skilled bilingual translator.

Finally, the shift to digital media in combination with an exhibition and website has the potential to disseminate research to a wider and more diverse audience. Around 1,000 people spanning academia, the general public, landscape architects and allied built-environment professionals, many of them in younger generations, visited the exhibition. As we prepare to transform the exhibition to take it to Tokyo in November 2023, we are being approached to exhibit in other places and consider other content. If the role of research is to have an impact, then this project exceeds all our work to date in both speed and outreach. For both researchers and audience, it is evident that *Landscape Architects as Changemakers* is a project that, to quote Moore (2019), 'fires the imagination' (p 320).

About the authors



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Acknowledgements: Saran Kim played a critical role in the *Landscape Architects as Changemakers* project, through interviewing and translating Japanese landscape architects and contributing to the exhibition curation, graphic design, web design and multimedia production. Special thanks also to Philippa Knack, Sizhen Wong and Sara Brocklesby for their support and advice in the development of the exhibition and to Rachel Wilson and Daniel Binns from RMIT University's School of Media and Communication for their expertise and encouragement.

Funding: This research project was funded by the Toshiba International Foundation, Asialink and the Australia–Japan Foundation. It also received support from RMIT University and the University of Melbourne.

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The winter blooms of *Eucalyptus caesia* in the pilot planting at Royal Park, Melbourne, Australia (image by Wendy Walls, 2023).

LANDSCAPE REVIEW

Grounding Woody Meadows: examining the application of horticultural research into landscape design

WENDY WALLS AND BRENT GREENE

This paper reviews the application and integration of experimental Woody Meadows horticultural research into landscape design projects in Melbourne, Australia. The Woody Meadows experiments investigate the use of Australian native plants as resilient urban planting. Benefits include reducing labour and financial inputs; maintaining striking visual displays; achieving high vegetation density and diversity; and establishing horticultural outcomes that are climate resilient (especially to the impacts of heat and drought). While the trials have proven successful, the experimental strategies applied through design are often conceived as technical additions rather than integrated elements in broader landscape design agendas. This paper catalogues Woody Meadows experiments within greater Melbourne to reveal three primary typologies for how research is incorporated in design: 'pilot and demonstration plantings', 'upgrades and renewals' and 'design feature'. It also draws on researcher perspectives to discuss the challenges of applying experimental horticultural research to design projects. In looking across the project examples and researcher experience, the study reveals the significance of managing community and professional expectations, alongside the need for strategies that introduce innovative horticultural methods to established design workflows and processes.

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Introduction

Woody Meadows are dense naturalistic plantings that are composed of Australian trees and shrubs exclusively. They are maintained through coppicing, a tactic that influences vegetal structural responses (such as re-sprouting and the development of multiple basal stems) and enhances the visual impact of a plant (by encouraging bold aesthetic outcomes and flowering). The first pilot plantings were installed at Melbourne's Birrarung Marr and Royal Park in 2016. Now more that 24 examples are planted across Australia, covering a total of 6,000 square metres and numbering 40,000 plants from 150 species (Farrell and Bathgate, 2023).

As experimental research, the Woody Meadows project investigates plant selection, installation and maintenance aimed at developing climate resilience (especially to the impacts of heat and drought) with reduced labour and financial inputs while maintaining striking visual outcomes. The ongoing experiments have demonstrated innovative urban planting that celebrates the distinctive material and aesthetic qualities of Australian native vegetation. Despite these outcomes, the Woody Meadows plantings are often confined to sections of designed space and are rarely conceived of as part of larger design project agendas. This separation of aesthetic and maintenance criteria between Woody Meadows and larger spatial design begins to reveal the source of implementation gaps in applying innovative horticultural research to landscape architectural design in Australia's public realm.

This paper considers these divisions by reviewing the evolution of Woody Meadows plantings applied to the public realm. First, we briefly introduce the research project's background and ambitions. Second, we review Woody Meadows examples within greater Melbourne and catalogue the degrees to which they are incorporated into a design's spatial context. Lastly, we draw on conversations with lead researchers, Associate Professors Claire Farrell and John Rayner from the University of Melbourne, who assist in contextualising the complex environmental and cultural conditions that influence the application of Woody Meadows research in design projects.

KEY WORDS
planting design; horticulture research; urban vegetation; landscape architecture

Citation: Walls, W.; Greene, B. (**2023**) Grounding Woody Meadows: examining the application of horticultural research into landscape design. *Landscape Review*, 19(2), pp 35–44

Received: 2 July 2023
Published: 10 November 2023

Background

The Woody Meadows research project began in 2015 as a collaboration between Associate Professors Claire Farrell and John Rayner from the University of Melbourne, the City of Melbourne, the Royal Botanic Gardens Victoria (Cranbourne) and Professor James Hitchmough and Dr Audrey Gerber from the University of Sheffield. While the meadows draw from the University of Sheffield's experience with naturalistic plantings, the Melbourne-based projects were conceived to respond to the city's distinctive climatic conditions, notably heat and drought (University of Melbourne, 2021).

The research team shortlisted 21 plants from an original list of 1,200 Australian species, including cultivars of small trees and shrubs, for the initial pilot (table 1). Selection was influenced by two principal performances: a plant's ability to survive without irrigation (beyond establishment) and to resprout or develop multiple basal stems after being maintained through coppicing. Tube stock, which included *Acacia acinacea, Eucalyptus latens*, *Eucalyptus caesia*, *Alyogyne huegeli* and *Astartea fascicularis*, among other species, was planted into 200 millimetres of scoria substrate, which provided well-drained and weed-free soil conditions to promote establishment. Plants were then arranged as a vegetation community of three layers, named base (less than 1 metre), bump (1–2 metres) and emergent (more than 2 metres). This layering structure replicates 'shrub-based natural ecosystems' and provides 'visual interest' to the public (University of Melbourne, 2021).

Table 1. The 21 species in the City of Melbourne pilot plantings at Birrarung Marr and Royal Park

Layer type	Species
Base (< 1 m)	*Goodenia ovata* 'Gold Cover'
	Dampiera alata
	Veronica arenaria
	Banksia spinulosa subsp. *spinulosa*
	Grevillea lanigera 'Mini Prostrate'
	Beaufortia sparsa
	Xanthosia rotundifolia
	Melaleuca thymifolia 'Pink Lace'
	Callistemon 'Little John'
	Veronica perfoliata
	Astartea fascicularis
	Philotheca myoporoides subsp. *myoporoides*
Bump (1–2 m)	*Calothamnus quadrifidus*
	Acacia acinacea
	Melaleuca nesophila 'Little Nessie'
	Grevillea 'Coconut Ice'
	Eucalyptus latens 'Moon Lagoon'
	Leptospermum polygalifolium 'Cardwell'
Emergent (> 2 m)	*Eucalyptus preissiana*
	Alyogyne huegelii
	Eucalyptus caesia

The pilot planting was considered successful. Most plants resprouted after coppicing, achieving dense vegetation layers with flowering throughout the year. The substrate scoria reduced weed growth and maintenance costs. These outcomes were achieved even though the planting received no irrigation and less than 2 millimetres of rainfall in one summer month (Backhouse, 2016; Bolge, 2017; City of Melbourne, 2020; University of Melbourne, 2021). These results were later made publicly available as design guidelines and comprehensive plant lists (Backhouse, 2016; Kenefick and Farrell, 2021; Martin, 2017; University of Melbourne, 2021).

Subsequently, the Woody Meadows research approach has been applied as new urban plantings to suburban parks, roadside verges, streetscapes and new landscape projects. While the range of Woody Meadows projects and applications is much wider than the plantings covered in the next section, many of these outcomes are not yet well documented. The selection of projects for this study is limited to reviewing the more established examples, which better illustrate the distinctions in how horticultural research has been applied to varying urban sites and landscape projects.

Methodology

Our initial categorisation focused on 16 Woody Meadows plantings in greater Melbourne, implemented between 2016 and 2023 (table 2). It was drawn from existing literature, including project descriptions and guidelines (City of Melbourne, 2020; University of Melbourne, 2021). This review was further supported by site visits and observation that, as DePoy and Gitlin (1998) state, permit the researcher to 'obtain information that incrementally leads to the investigator's ability to reveal a story' (p 232). In the context of this research, observation is a critical technique for recording and reflecting on a spectrum of Woody Meadows projects, helping to address questions such as: how these are achieved in the built landscape, and the degrees to which they have shifted through time and in response to varied maintenance regimes and site conditions.

The categorisation reveals three main typologies of Woody Meadows and their application within Melbourne: 'pilot and demonstration plantings', 'upgrades and renewal' and 'design feature'. These typologies have emerged sequentially as the Woody Meadows research has become better known within industry, across multiple levels of government and among the public more broadly. While all Woody Meadows plantings are intended as horticultural experiments, the three typologies illustrate useful distinctions in how the research was implemented across landscape sites and design projects. Differences occur, for example, in when research is introduced into a project and in critical alignments between design, project and maintenance decision-makers.

Table 2. Summary of Woody Meadows projects in chronological order, showing site location, design context and application type

Site		Region	Design	Application
Birrarung Marr	2016	City of Melbourne	Large park or existing designed space	Pilot
Royal Park	2016	City of Melbourne	Large park or existing designed space	Pilot
Bothwell 1	2021	City of Port Phillip	Streetscape	Visual amenity, revitalisation, renewal
Burden Park	2021	City of Greater Dandenong	Park upgrade	Visual enhancement
Dandenong-Rotary Park	2021	City of Greater Dandenong	Park upgrade	Visual enhancement
Ross Reserve	2021	City of Greater Dandenong	Park upgrade	Visual amenity, revitalisation
Norris Bank Reserve	2021	Whittlesea City Council	Park upgrade	Playground, low sight lines, renewal
Boulevard roundabout	2021	Whittlesea City Council	Streetscape	Visual amenity, renewal
Pandora Reserve	2021	Whittlesea City Council	Park upgrade	Visual amenity, renewal
Fritsch Holzer Reserve	2021	Boroondara	Park upgrade	Performative planting, ex-landfill
Jack Mutton Woody Meadow	2021	Merri-bek City Council	Streetscape	Visual amenity, revitalisation

Site		Region	Design	Application
Cox Reserve Woody Meadow	2021	Merri-bek City Council	Park upgrade	Visual amenity, revitalisation
Maribyrnong streetscape	2021	Maribyrnong	Streetscape	Visual amenity, renewal
Multiple sites or level crossing removal	2020–2022	Multiple	Railway siding, pocket parks, linear parks	Design feature, visual appeal
Flower and Garden Show	2023	Exhibition	Demonstration	Research display
New Student Precinct	2022–2023	University of Melbourne	Urban open space, new design site	Design feature, visual appeal

Pilot and demonstration plantings

Pilot plantings are closely linked to early-stage horticultural research as additions to public parks that pilot the Woody Meadows experiments. Birrarung Marr and Royal Park (figure 1) typify this approach. At the time of their insertion, the plantings were conceptually and spatially distinct from the pre-existing vegetation communities of each park – and they continue to be so. The meadows were added as discrete rectangular planting beds, with no need to integrate them into the surrounding designed contexts of the parks.

Figure 1. The Royal Park pilot, initially planted in 2016, is now a dense and well-established planting (image by Wendy Walls, 2023).

More recently, pilot beds have evolved into demonstration plantings that showcase how Woody Meadows have naturalistic aesthetics and resiliency to heat and drought events. An added benefit of these plantings is that they test public responses to the horticultural experiments and maintenance tactics such as coppicing. For example, a recent (2022) meadow display at the Melbourne International Flower and Garden Show (in collaboration with Super Bloom and Hassell) highlighted the beauty of the layered and diverse planting approach to a public audience (University of Melbourne, 2023). While this example demonstrates design collaboration between horticultural experts and landscape architects, the display remains isolated from its surrounding context due to the temporal nature of the exhibition. Critically, in these cases the collaborators were not required to consider the impact or potential of the horticultural research in relation to site design.

Upgrades and renewal

The upgrade and renewal typology represents the majority of existing Woody Meadows plantings. Municipal governments implement these plantings to revitalise public sites such as suburban parks and roadsides. Woody Meadows are added to increase plant diversity and resilience to heat and drought, reduce maintenance and financial inputs, and enhance a site's aesthetic attributes. For example, figure 2 shows a Woody Meadow inserted along the perimeter of Cox Reserve as a naturalistic planting design addition that is distinct from the usual park typology of grass and trees. In this case, the planting contributes new vegetation characteristics and qualities to the open space.

While this typology demonstrates successful retrofitting of an open space design in Melbourne, the process of inserting Woody Meadows into a pre-existing site represents another gap between research and practice. It is unclear if or how the horticultural research can inform a park's larger spatial design due to the timing of the addition, at a much later stage in a park's development. Similar to the pilot planting, upgrades and renewals offer little opportunity for dialogue between the park designers and the horticultural researchers about how spatial and aesthetic criteria, as well as practicalities of maintenance, might inform the overall site design.

Figure 2. Cox Reserve in Merri-bek municipality, showing the Woody Meadow edge plantings in contrast to the grass and tree typology of a standard urban park (image by Wendy Walls, 2023).

Design feature

The third typology of the Woody Meadows application comprises featured design elements. Significantly, these plantings are embedded into the decision-making and design process at the beginning of a project's inception.

This approach is best demonstrated through the Victorian Government's Level Crossing Removal projects (figure 3). In these cases, design teams and infrastructure and horticulture experts – including the Woody Meadows lead researchers – collaborated at the earliest stages of the design project. This approach sees the Woody Meadows fine-tuned to site-specific constraints (such as water flows, light conditions and level changes) before the project is built. By engaging horticultural research at the earliest stages of a new design project, a stronger alignment between broader design agendas and Woody Meadows planting emerges.

Figure 3. The Woody Meadow addition on the Bell to Moreland section of the elevated rail project (image by Wendy Walls, 2023).

Reviewing the evolution of Woody Meadows reveals a progressive shift from isolated pilot experiments towards informing the other elements of a landscape design project, like the shape of garden beds or planning for light and water. However, across the three typologies, the influence of the Woody Meadows research remains as an additive element to design projects. Even the use of Woody Meadows as a substantial design feature is positioned as a discrete element rather than in reciprocal dialogue with the surrounding spatial design aesthetics or outcomes. It is clear that the timing of how and when planting decisions are incorporated in a project is critical to how research is aligned with other site planning and design decisions. The following section discusses this theme from the perspectives of lead researchers Claire Farrell and John Rayner.

Researcher perspectives

Farrell and Rayner suggest that the complexity of applying Woody Meadows approaches to designed spaces begins from the negotiations between stakeholders in public projects, who include researchers, landscape architects, contractors, the community and local government. Over the last eight years, they have collaborated with Australian landscape firms such as Oculus, Hassell, Tract and Pollen, as well as with local government and community groups. Through these experiences, they have encountered a spectrum of responses to Woody Meadows, from enthusiasm for the native plant palette to concerns around coppicing. Such responses impact on aesthetic outcomes (such as flowering and foliage) and demonstrate the complexities of applying Woody Meadows research as projects are implemented and managed.

For example, Farrell and Rayner describe challenges that have emerged between researchers and contracted professionals, who use established planting and maintenance methods that are distinct to the layout and maintenance of a Woody Meadow. They explain that some contractors have ‘weeded out’ a meadow’s base layer, selected untested species as substitutes and refused to coppice the plant community.

The researchers also explain that communities can react negatively when Woody Meadows are managed. Referencing the Bothwell Street upgrade in South Yarra (figure 4), they describe the public’s unfavourable sentiment following the first coppicing, which greatly shifted its visual impact. They note that signage in these landscapes is critical to communicate with members of the public and educate them on the critical role of management in achieving high-quality planting outcomes.

Figure 4. Bothwell streetscape planting in South Yarra (image by Brent Greene, 2023).

When working with plants in public spaces, managing assumptions and expectations while introducing new methods and outcomes, particularly new maintenance and stylistic outcomes in the urban realm, is a challenge to the successful integration of research into design. In Australia, these tensions are part of an ongoing and complex conversation about climate, the Australian landscape, gardens and colonisation (Greene and Johnson, 2020; Raxworthy, 2019). Catherine Bull (2002) comments:

> The majority of designed landscapes in Australia have resulted from a process of clearing indigenous plant species and eradicating or smoothing away irregular characteristics … landscapes designed to rely on regular and predictable watering … modelled on traditional [European] notions of the garden. (p 20)

Farrell and Rayner explain that the most successful outcomes such as the University of Canberra's Woody Meadow (2022) develop when they work closely with landscape architects and maintenance teams across the life of a project. This engagement, they believe, supports the robust sharing of expertise, properly understanding site conditions (which impact plant selection) and managing a client's expectations before planting begins. Where they have aligned project teams in such cases, they can also communicate, negotiate and educate as the project develops.

However, this kind of direct and ongoing collaboration becomes limited in larger, more complex project structures like the Level Crossing Removal or the New Student Precinct. While still engaged in the early stages of the project, designers have far fewer opportunities for consistent consultation, communication and feedback. For example, it is not uncommon for engineering specifications and landscape plans to be updated separately in large projects. This means designers can be working with incorrect site information, with the result that they allocate spaces for planting that are misaligned with the light and water specifications for how the plants will perform. In these cases, the researchers suggest it is beneficial to have key representatives or champions who can maintain oversight of objectives in big projects as well as helping with communication about site constraints and between the planting design, construction and maintenance teams.

Discussion and conclusion

As bridging research with design practice becomes increasingly important, particularly in responding to the challenges of climate change, and urban warming, we need to challenge the assumption that rigorous research will easily flow through to design. The Woody Meadows examples discussed here demonstrate that the knowledge of plant selection, layout and maintenance for creating resilient and beautiful urban planting designs already exists. However, even with eight years of ongoing research and practical demonstration, the extent to which this knowledge is applied to design projects varies. Often Woody Meadows research is positioned as a separate technical achievement within a cost-saving agenda (requiring low maintenance and minimal irrigation) and involves little response to the surrounding site design. As a consequence, the Woody Meadows research operates in isolation from broader spatial and vegetative systems or design agendas and misses the opportunity for influencing wider-scale resilient urban planting.

This gap between research and practical application highlights the critical nature of *strategic communication* in design project workflows. Certainly communication is critical to introducing the purpose and method of the initial research. More than that, it extends to how a design project and its key players manage expectations in the design context – notably, in maintaining information flows across the life cycle of a project, not just communicating the initial research itself. To be effective, projects clearly need implementation strategies that assist in upskilling designers and maintenance contractors to understand the intent of horticultural research. Further, such skills encompass navigating the challenges of application and maintenance, social expectations and the norms of construction in large-scale, multi-actor projects.

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Acknowledgements: We would like to thank Claire Farrell and John Rayner for their time and for sharing their thoughts on implementing Woody Meadows research. We are grateful for, and inspired by, your insights and passion for promoting plant diversity in urban landscapes.

Data availability statement: Details of the Woody Meadows projects, including plant lists, fact sheets, guidelines and the research team, are available at https://woodymeadow.unimelb.edu.au.

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Foreshore and associated plantings are integral in defining the distinctive character of Lorne, a Great Ocean Road town in Victoria, Australia, as perceived by the residents (image with permission from Elahna Green, 2003).

LANDSCAPE REVIEW

Assessing the character of Australian coastal towns through the eyes of the residents

RAY GREEN

Since the 1990s, many smaller coastal settlements in Australia, particularly near major metropolitan areas, have experienced accelerated growth associated with an influx of tourists and permanent or temporary migrants. Unfortunately, this attraction to the coast and the development that often accompanies it have resulted in environmental changes that threaten the qualities that made these destinations attractive in the first place. In some coastal settlements, changes have been rapid and dramatic, eliciting impassioned complaints from local community members about the 'character' of their towns and/or individual neighbourhoods being degraded. This paper reports on a methodological approach for assessing the contributions of landscape features to the distinctive character of selected coastal 'sea change' towns as residents perceive it. The findings of studies undertaken in nine Australian coastal towns illustrate the importance of natural environments, heritage buildings and socially vibrant public spaces to their character. They enhance understanding of how people living in these settings experience environmental change and its impacts on their sense of place. Practically, the findings have guided local planning schemes aimed at protecting landscape features important to a town's character. They can also inform landscape and architectural design actions to optimally 'fit' into the existing character of coastal towns.

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KEY WORDS
place character; public perceptions; Australian coastal towns; environmental changes; methodology

Citation: Green, R. (**2023**) Assessing the character of Australian coastal towns through the eyes of the residents. *Landscape Review*, 19(2), pp 45–60

Received: 23 July 2023
Published: 10 November 2023

Introduction

Over the last couple of decades, smaller coastal settlements in Australia have witnessed dramatic changes associated with tourism and the 'sea change phenomenon', where affluent urbanites move to coastal areas seeking a relaxed lifestyle in scenic and natural surroundings (Australian Government Department of Infrastructure, Transport, Regional Development, Communications, and the Arts, 2022; Burnley & Murphy, 2004; Victorian Department of Environment, Land, Water and Planning, 2020). Consequently, these places have experienced various types of environmental changes and at different rates and scales. A major catalyst in the transformation of the character of these places has been the replacement of heritage and smaller traditional buildings with out-of-scale, McMansion-type developments perceived to be 'out of character'. As part of this process, natural environments have been destroyed due to overdevelopment, buildings being inappropriately sited, planning regulations not adequately protecting natural environments and many ill-conceived landscape design actions. Residents in communities where these changes are most apparent often complain that the valued 'character' of their town and/or individual neighbourhood is being lost or degraded due to changes in the landscape. Such changes threaten the unique constellation of landscape features that have traditionally defined the distinctive character of many Australian coastal towns, which in many places is increasingly being replaced by one of global uniformity in the built environment and degraded natural environments. The overarching aim of the studies featured in this paper is to prevent changes that negatively impact the landscape features contributing to the unique character of such towns and to conserve them for the future.

Visitors and new residents to these sea change destinations are often attracted to them precisely because these places possess an appealing feel, ambience and atmosphere; in other words, they have distinctive character. Residents frequently identify the most destructive changes as environmental changes wrought by development and its negative

impacts on cultural heritage features and natural environments, along with changes to popular social spaces. Many of these communities rely on tourism for economic survival and use their distinctive character as a main selling point. The loss or degradation of this character can reduce tourist numbers and associated commercial activity. Preserving features in the landscape that define the character of these towns is one way of ensuring their long-term sustainability, both environmentally and commercially.

Assessing the character of sea change towns

In a report entitled *Meeting the Sea Change Challenge*, Gurran, Squires and Blakely (2005) point out, 'Local character or "sense of place" in smaller coastal communities is being overwhelmed by the scale and pace of new residential and tourism development' (p 7). They note there is 'a lack of effective planning tools to preserve and enhance the attributes of a place that are important to residents' (ibid). In response to this need, I designed a methodological approach for systematically assessing people's responses to landscape features they perceive to either support or detract from a town's character. Over a 10-year period, from 1995 to 2005, I implemented this methodology in nine Australian coastal sea-change towns: Byron Bay in New South Wales, Airlie Beach in central Queensland and seven towns along Victoria's Great Ocean Road. The findings of these studies revealed the importance of conserving natural environments, heritage buildings and socially vibrant public spaces as key defining elements of the character of the coastal towns studied.

These types of character assessments are typically undertaken by planning and design experts (for example, landscape architects and urban planners) whose role is to employ their expert judgement to identify features in the landscape associated with the character of the places under investigation. The aim is to determine which features warrant protection and which might be more adaptable to some extent. The problem with these expert-based character assessments is that the findings often contradict how members of the public construe and use their local environments. Experts are more likely to base their assessments on styles and forms, particularly regarding buildings. In contrast, the lay public tend to base their appraisals more on associational and functional aspects (Hubbard, 1996). The methodology reported in this paper starkly contrasts with the expert-based approach as it relies on community participation in assessing the importance of certain features in the landscape. In Laurajane Smith's (2006) insightful book *Uses of Heritage*, she discusses heritage values as associated not only with physical objects and places but also with the experiences of ordinary people and the significance they give those places and features.

Expert-based approaches are more likely to ignore the emotional bonds, or place attachments, people may have established with certain places and their features. These bonds tend to develop over time as people become increasingly familiar with their everyday surroundings. They can be instrumental in shaping how people experience the character of places. Expert-based assessments typically rely on information from objective sources, reports, photographs, maps and the like, with little or no long-term relationship with the assessed places. In contrast, the approach reported in this paper is more likely to respect assessments based on the perceptions of residents, who are likely to be much more familiar with their local environments and may have established deep emotional bonds with certain places and place features, which are integral to their sense of place. When these *place attachments* (Low and Altman, 1992) are threatened or disrupted due to environmental changes, it can threaten people's sense of continuity and belonging to those places (Brown and Perkins, 1992). Such disruptions can sometimes have profound psychological consequences for individuals who feel their sense of belonging, security and *place identity* (Proshansky, Fabian and Kaminoff, 1983) has been threatened. The experts are typically outsiders who do not experience the same sense of belonging and attachment to the places they are assessing as do residents who are insiders. As Relph (1976) suggests in his seminal book *Place and Placelessness*, conflicts can develop

between the place experiences of 'insiders' (for example, the user public) and 'outsiders' (for example, experts).

In my studies, the outsiders were the planners and environmental designers typically engaged in assessing town character. The research focus, however, was on the local communities as insiders. They were involved in all stages of the research process, from identifying landscape features salient to their perceptions of local place character, to helping to determine how and from which vantage points these features should be photographically documented, to evaluating the *degree* to which the places and features in photographs were perceived to be compatible, or not, with the character of the towns under investigation. The assumption here is that members of the user public are the true experts when assessing such an inherently experiential phenomenon as a town's character. The residents are also more likely to be sensitive to changes in their local environment that impact its character. This participatory action research approach (Baldwin, 2012) contrasts with expert-based approaches typically used to conduct character assessment studies because involving the public helps to produce findings that truly reflect the perceptions and concerns of the studied communities.

A few earlier studies employed participatory approaches to explore how residents of small coastal towns perceive their towns and the features in the landscape important in conveying their distinctive characters. Hester (1985, 1990), for example, undertook an interesting study in the small coastal town of Manteo, North Carolina. He identified environmental features integral to the town's 'sacred structure' as perceived by the residents, which he defined as the complex of significant places and social patterns to which the residents had become emotionally attached. The study initially used a community questionnaire to survey residents about the features in the local landscape they felt emotionally attached to and wanted to be preserved in the face of the town's rapid growth. It then used behavioural mapping to identify the activity patterns of the townspeople. Combining these two sets of data revealed 'a powerful social mosaic [that] explained not only how space related to the social patterns, but also how people had invested cultural memory in certain parts of the landscape' (ibid, p 6).

Likewise, a study by Palmer (1983) in the coastal town of Dennis, Massachusetts aimed to explore the town's 'special image' as perceived by the residents. First, a projective mapping method was used to identify salient elements of the local landscape that residents perceived to be important to the town's image. After that, the study used a photo-sorting method to assess the importance of different landscape features in conveying the town's 'special image' from the respondents' perspective.

Both Hester and Palmer used the results in formulating planning controls to guide the future development of each town in ways that protected important character-defining features while limiting those features and associated characteristics that were perceived to detract from the character of these towns.

In another early study, which was not set in a coastal environment, my colleagues and I explored the 'sense of place' of residents of the towns of Mount Macedon and Macedon in the Australian state of Victoria in the aftermath of the 1983 'Ash Wednesday' bushfires (Green, Barclay and McCarthy, 1985). The fires caused extensive environmental damage to these towns and surrounding landscapes and resulted in the deaths of some residents. This study used visitor-employed photography and a range of photo rating, ranking and sorting methods to identify environmental features the residents perceived to be important to their sense of place and that might be selectively maintained, restored or enhanced to help re-establish the unique sense of place of each town and create a framework of valued landscape features the residents were cognitively familiar with to help them adapt psychologically to the post-fire environment.

For the studies reported in this paper, I developed and used a research methodology to involve the residents of nine coastal sea-change communities, in three Australian states, in assessing the character of their town and identifying the features in the landscape they perceived to be integral in conveying that character. In many instances, these features

were threatened due to development associated with tourism and the inward migration of so-called 'sea changers'. The nine towns studied were:

1. Byron Bay, New South Wales
2. Airlie Beach, Queensland
3. Torquay, Victoria
4. Anglesea, Victoria
5. Aireys Inlet, Victoria
6. Lorne, Victoria
7. Apollo Bay, Victoria
8. Port Campbell, Victoria
9. Port Fairy, Victoria.

The methodology I developed for these studies is comprised of various methods derived primarily from environmental psychology (Daniel, 2001). It combines qualitative and quantitative data collection and analysis methods that I used to systematically identify features in the landscape that residents perceived to be compatible or incompatible with the town's character, and to what degree. Methods producing comparable results were initially used for identifying such landscape features based on residents' perceptions. The Byron Bay study used open-ended questions in a mail questionnaire; in Airlie Beach, face-to-face interviews were used; and for the study of the seven towns along the Great Ocean Road a projective mapping technique administered through mail questionnaires was used in each town. The features identified through these methods were then photographed, and these photographs were used as stimuli to have samples of residents evaluate the *degree* to which the depicted features contributed to or detracted from their town's character. Community photo-rating workshops were used in Byron Bay and the Great Ocean Road towns, while a Photo Q-sort method was used in Airlie Beach for this purpose. (For details about these methods, see Green, 2000b, 2005, 2010.)

Byron Bay, New South Wales

The first study explored how residents of the coastal town of Byron Bay in New South Wales perceived that town's distinctive character and the changes that were degrading that character. Byron Bay is unique in that it is located at Australia's most easterly point of land. At the time of the study (the mid-1990s), the town was experiencing various environmental and social changes driven mainly by tourism and 'sea changers', typically wealthier urbanites relocating there to escape the larger cities. The study aimed, first, to identify the aggregate of landscape features the community thought imbued the town with its distinctive and desirable character. Its second aim was to link specific landscape features with connotative meanings the user public associated with that character.

The study first involved content analysis of 1,880 letters of complaint sent to the local council concerning a proposal to build a Club Med resort in the town. This proposal had drawn widespread opposition, with many community members believing it would diminish the town's character. A mail survey was then sent to a random sample of a quarter of the town's residents and received a 50% (n=318) response rate. The questionnaire asked the respondents to identify those landscape features they felt most strongly defined the town's 'character' and those features and associated characteristics they perceived to be incompatible with that character. Subsequently, two community photo-rating workshops were held at a community hall, drawing a total of 55 participants. At each workshop, 56 photographs of the most frequently mentioned features identified in the mail survey were projected on a screen and participants were asked to rate each one as it appeared. Ratings drew on a battery of semantic differential scales, constructed using words derived from content analysis of open-ended data in the form of the 'Club Med letters' (Green, 2000a) and responses to open-ended questions in the mail survey, which revealed various connotative meanings people associated with the depicted landscape features (Green, 1999).

Figure 1. Palm Grove, a patch of rainforest near Byron Bay's main beach, was rated highly 'in character' (image by author, 1995).

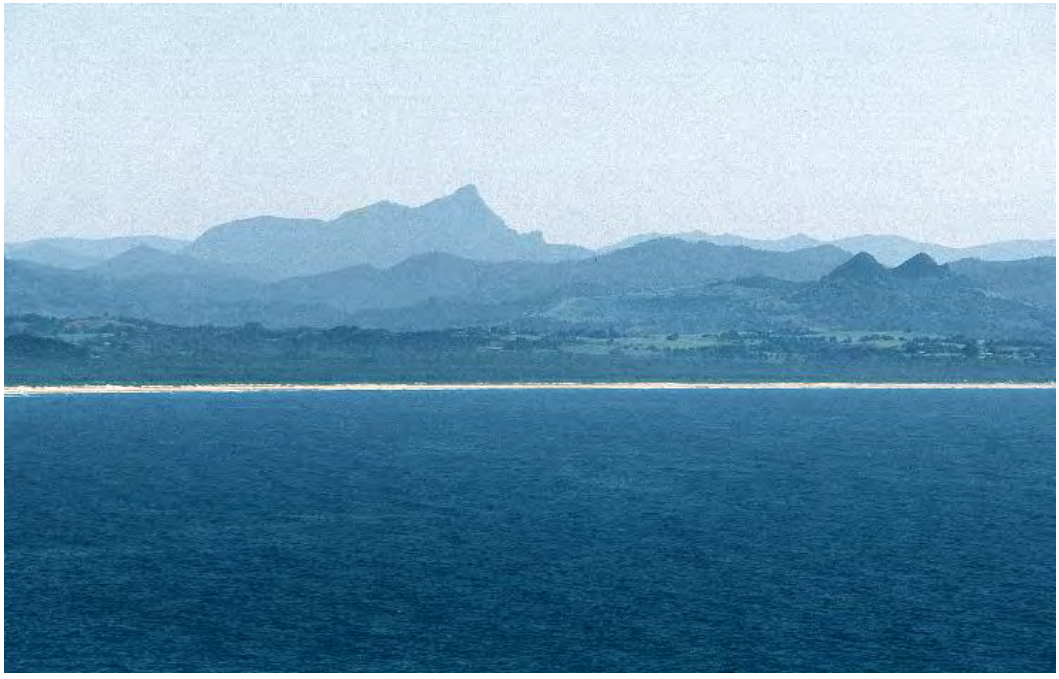

Figure 2. Mountains over Byron Bay, viewed from the town, were perceived to be an integral element of the town's character (image by author, 1995).

The quantitative data derived from the community photo-rating workshops were subjected to a range of multivariate statistical analyses, including Multidimensional Scaling and Multiple Discriminate Function analyses, to link individual landscape features with profiles of connotative meanings. 'Perceptual maps' generated from these analyses graphically illustrated how the community conceptualises the town's character as conveyed by the depicted landscape features.

Natural features, including areas of specific types of vegetation (figure 1), distinctive geological features (figure 2) and wildlife (for example, dolphins), were strongly associated with the town's character. Heritage buildings, including the Byron Bay lighthouse, the

historic railroad station master's house, the post office (figure 3) and other historic buildings, were also strongly associated with the town's character. Various social behaviour settings where groups gathered, such as the weekly outdoor market (figure 4) and certain local pubs, were likewise linked to the town's distinctive and appealing character. The respondents most frequently associated the town's character with being 'beautiful', 'natural', 'distinctive', 'pleasant', 'stimulating' and 'interesting'. Features identified as being 'out of character' include a new shopping arcade, a bland-looking supermarket building, a large, recently constructed housing estate (figure 5), a brick clock tower in the town's centre (figure 6) and other newer structures. Respondents most frequently associated them with being 'boring', 'ugly' and 'ordinary'.

Figure 3. Byron Bay's historic post office building was perceived to be strongly 'in-character' (image by author, 1995).

Figure 4. Byron Bay's outdoor weekly market was perceived to be a strongly character-defining feature of the town (image by author, 1995).

Figure 5. Newly constructed residential housing estate in Byron Bay was perceived to be strongly 'out of character' (image by author, 1995).

Figure 6. The clock tower in the centre of Byron Bay was perceived to be 'out of character' (image by author, 1995).

Airlie Beach, central Queensland

The Airlie Beach study was undertaken to assist the Whitsunday Regional Council in developing a development control plan (DCP) for this small, tourism-intensive, tropical coastal town in Queensland. The primary aim of the DCP was to protect and build on desirable aspects of the town's character as both residents and tourists perceived them. Airlie Beach is located where the Great Barrier Reef comes closest to the mainland and has exquisite views of the sea and nearby Whitsunday Islands – features that make it an attractive destination for tourists and sea change migrants. The planners wanted to understand how the local community and tourists perceived the town's character and what features in the landscape they felt were most responsible for conveying desirable aspects of that character. They would use this information in developing design controls aimed at retaining those features and scenic attributes associated with desirable aspects of the town's distinctive character and prevent those that would detract from it.

The study collected data using various methods to identify those landscape features most strongly associated with supporting or detracting from the town's character (Green, 2000b). In initial face-to-face interviews (n=105), the respondents, both residents and tourists, were asked to describe the character of Airlie Beach as if they were trying to describe it to someone who had never been there before and identify both what they considered to be the positive aspects of the town's character and those elements they associated with loss of that character.

Next, another group of interview respondents (n=60) was asked to indicate seven views on a simple map of the town that best illustrated the range of different landscapes associated with the town's character. They were also asked to indicate where they would photograph these views. The scenes and landscape features that respondents most frequently indicated on the projective maps were then photographed, resulting in 56 photographs.

The photographs based on the respondents' perceptions were combined with photographs of other features the local planners wanted to test because they thought those features might be important to the town's character. Collectively, this set of photographs depicted a wide range of features salient to the town's character, including certain buildings and their associated styles of architecture, signage (figure 7), landscape treatments and plant materials (figure 8), roadside engineering treatments, scenic views of the sea and the nearby islands, among other features.

These photographs were then used as stimuli for Photo Q-sort interviews with a smaller sample of residents (n=21). Their task was to sort the photographs into seven piles, with the number of photographs in each pile prescribed to reflect a normal distribution (three photographs to be placed in piles 1 and 7, seven in piles 2 and 6, eleven in piles 3 and 5 and fourteen in pile 4) as originally used by Pitt and Zube (1987). The first pile represented the landscape features, views and places residents thought were most important in defining the town's character. In contrast, the last pile represented the features and places they perceived to detract from the town's character. The intermediate piles represent gradations between these two poles.

The results revealed how certain landscape features were associated with physical attributes and meanings that collectively conveyed the town's character. While respondents did use 'commercial', 'touristy' and 'changing' in relation to that character, they also described it as having a 'small coastal town feel'. They perceived it as being a 'relaxed', 'pleasant', 'beautiful' and 'friendly' place, qualities that the residents and tourists overwhelmingly wanted to be preserved. To many respondents, the town and the surrounding landscape were a 'tropical paradise'. Reinforcing this image were tropical vegetation at the foreshore and on the surrounding vegetated hillsides, and views over the sea and of the offshore Whitsunday Islands (figure 8), which respondents rated as strongly defining positive aspects of the town's character.

Socially, Airlie Beach was described as a 'party town', an image reinforced by its many bars and nightclubs that mostly young backpacker tourists frequented. However, the diversity of people from different cultures living in and visiting the town was seen as a

positive social aspect of the town's character. In contrast, certain built features were perceived as being 'ugly', with construction and architectural design of 'poor quality' and inappropriate signage (figure 7). Among other features singled out as distracting from the town's character were a lack of high-quality landscape treatments, and views of unsightly parking lots at the foreshore, utility poles and wires. As noted, these findings were used to guide the formulation of a development control plan for Airlie Beach that aimed to protect existing features in the landscape that support desirable attributes of the town's character and discourage those features and attributes perceived to detract from that character.

Figure 7. Bars and various forms of architecture and signage lining Airlie Beach's main street were perceived to detract from desirable aspects of the town's character (image by author, 2000).

Figure 8. Airlie Beach's foreshore and associated landscape features were strongly associated with the town's character (image by author, 2000).

Coastal towns along Victoria's Great Ocean Road

Studies using a similar methodology to that used for the studies discussed above were conducted in seven towns along Victoria's Great Ocean Road (Green, 2010). The Great Ocean Road starts an hour-and-a-half's drive west of Melbourne at the town of Torquay and proceeds along the coast, weaving its way through the small towns of Anglesea, Aireys Inlet, Lorne, Apollo Bay, Port Campbell and (technically beyond the Great Ocean Road) Port Fairy. These towns had experienced various environmental and social changes due to tourism development and population growth, which residents saw as responsible for eroding the distinctive characters of these towns.

These studies began by mailing residents in each town (n=1,344 across all seven towns) a questionnaire that included open and closed questions and a projective map task. The projective mapping exercise asked the respondents to imagine that they would be taking photographs of local landscape features they felt were important in defining the town's character and to indicate the vantage points from which those photographs would be taken on a map included in the questionnaire. They were also asked to indicate those features they thought most detracted from their town's character and locate them on another map. Photographs were then taken of the landscape features respondents most frequently identified as compatible or incompatible with their town's character. This resulted in a set of between 68 and 109 photographs for each town.

These sets of photographs were used as stimuli in photo-rating community workshops (n=324 in total) conducted in each town. Here participants were asked to rate the features in the projected photographs on seven-point bipolar rating scales to measure the degree of perceived 'compatibility' with town character, from strongly compatible (1) to strongly incompatible (7). They also rated those features on three other scales that measure the degree of perceived 'beauty' (beautiful–ugly), 'distinctiveness' (distinctive–ordinary) and 'naturalness' (natural–artificial), which are dimensions of meaning that were found to be highly correlated with perceptions of town character in the Byron Bay study (Green, 1999). Simple mean and standard deviation values were aggregated across the respondent samples for each town, as measures to reflect the degree to which individual features contributed or not to a town's character. In Aireys Inlet, Lorne and Apollo Bay, further data sets were collected using the Photo Q-sort method, which were subjected to Multidimensional Scaling Analysis to produce 'perceptual maps' illustrating the structure of the community's collective image of the character of each of these three towns.

Figure 9. Historic lighthouse keepers house in Aireys Inlet was rated as strongly 'in character' (image with permission from Elahna Green, 2003).

Across all seven towns, respondents identified and evaluated similar features as being salient to the character of their town. Natural features and views of natural environments were consistently the most strongly associated with their town's character. Respondents also perceived some older houses and heritage buildings (figure 9), including vernacular 'beach shacks' (figure 10), along with a few contemporary buildings sited within established indigenous vegetation (figure 11), as highly compatible with the character of their town.

Figure 10. 'Beach shack' in Aireys Inlet was rated strongly 'in character' (image with permission from Elahna Green, 2003).

Figure 11. Contemporary art gallery building in Aireys Inlet was rated strongly 'in character' (image with permission from Elahna Green, 2003).

The photographs used as stimuli in the photo-rating workshops, along with the corresponding mean and standard deviation values associated with each photograph, were shown to smaller groups of residents (n=10 to 12 per town) in a series of focus groups in Torquay, Anglesea and Aireys Inlet. The participants were then asked what they thought were key physical attributes associated with each feature that may have led the respondents in the photo-rating workshops to rate it as either strongly 'in character' or strongly 'out of character'.

The results revealed that built features perceived to be strongly 'in character' were often those screened by vegetation, particularly indigenous vegetation; were relatively small in height and mass; and were often associated with warm, earthy, muted and natural-looking colours and other attributes that made them appear to blend in with their surroundings. In contrast, those elements perceived to be most 'out of character' tended to be newer structures that were seen as too large and 'out of scale'. This perception arose most often for buildings that were visible above the tree canopy or lacked sufficient screening from vegetation (especially indigenous vegetation) and that were visually obvious from roads and open public spaces. Some structures were identified as possessing a hotch-potch of materials, colours and architectural design characteristics that prompted the perception that they were 'out of character' (figure 12). The results were, however, remarkably similar in terms of the types of features associated with the character of the towns studied. This allowed a typology of character-defining landscape features to be defined that can be useful for guiding planning and design actions in similar places that aim to protect aspects of their distinctive and desirable characters. Identifying the physical attributes associated with the in-character and out-of-character features can also inform the design of new buildings and landscapes to better fit into the character of a town and places within it where they are to be sited.

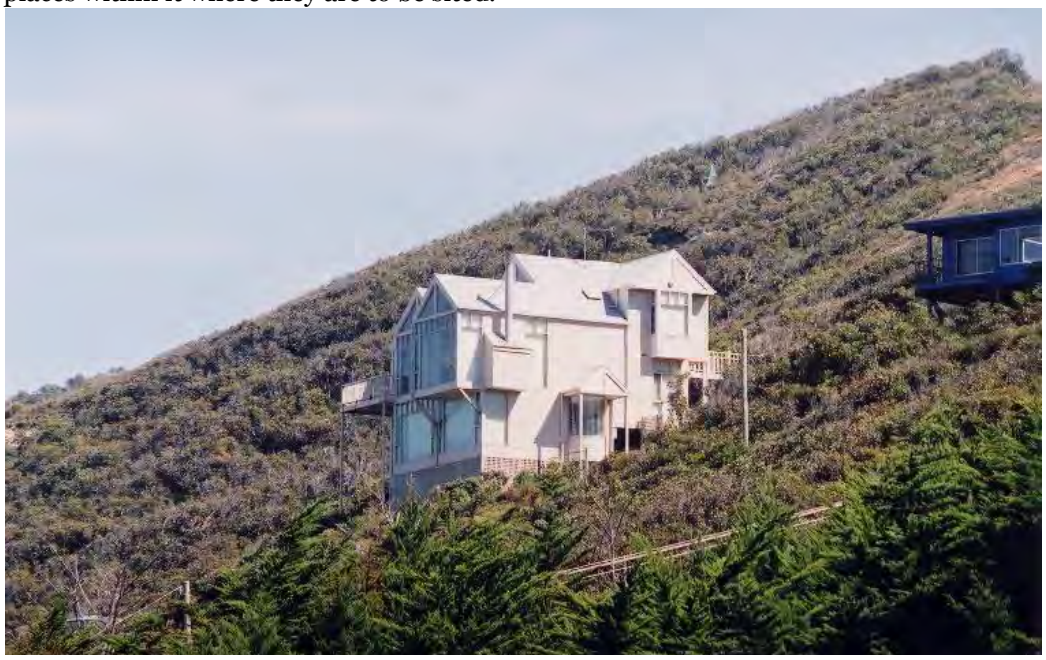

Figure 12. McMansion-type house was rated strongly 'out of character' in Aireys Inlet (image with permission from Elahna Green, 2003).

Applications

The methodological approach discussed in this paper was designed to assess how people living in Australian coastal sea-change communities perceive their town's distinctive character and the changes they feel are responsible for eroding that character. The beauty of this approach is that it gives a voice to the local communities in assessing what features in the landscape they feel are important to protect and those that should be removed or discouraged in the future. Basing urban and landscape planning and design actions on the

findings of these types of studies is far better than relying on the judgements of outsider experts. Many of the features identified as being salient to the character of the towns in these studies would be amenable to planning and design control. It follows that this information would be useful in guiding the formulation of local planning schemes and 'character legislations' aimed at protecting such features, just as the study findings informed the development control plan for Airlie Beach. I have also successfully used this methodology to conduct studies in coastal settlements in other countries that are similarly experiencing environmental changes that threaten their distinctive and appealing characters, demonstrating that this methodology is transferable to other geographic contexts. One example is my study in Ban Chaweng, a coastal town on Koh Samui island, Thailand, where intensive tourism and associated development were rapidly eroding the town's distinctive character as the residents perceived it (Green, 2005).

Since these studies were undertaken 20 or more years ago, environmental changes have, in some instances, further degraded the character of these settlements. During and following the COVID-19 pandemic, many people relocated to coastal towns to escape the cities, resulting in new environmental changes that are likely to have impacted the character of these places. CoreLogic (2021), Australia's largest provider of property data, produced a report stating that 'Thousands of Australians are leaving the city behind and relocating to the country or coastal towns. Internal migration to regional New South Wales, Victoria and Queensland is the highest it has been in ten years.' This underscores the need to protect the distinctive character that many of these towns possess. A better understanding of how environmental changes might impact people's perceptions of the character of these sea change towns will be crucial as this valuable yet intangible resource is often overlooked in the planning and design of these coastal destinations.

The tourism that many Australian coastal communities rely on for economic survival virtually stopped during the pandemic. However, it has since bounced back in many of these towns. Preserving the unique character of these places into the future will be important if they are to maintain their distinctive character as their main tourist attraction. That task has to entail protecting their natural landscapes and heritage-based features that collectively convey that distinctive character and appealing sense of place. Those towns perceived to still 'have a lot of character' will likely remain attractive destinations. In contrast, those whose character is perceived to have been lost or degraded are likely to fall out of favour, leading to negative social, cultural and economic consequences for their local communities.

The environmental impacts of climate change, and the actions implemented by governments to confront them, have also accelerated since the studies reported here were undertaken (Gibbs, 2019). These more recent changes have negatively impacted the character of some of the towns studied (Green, 2008). For example, in Lorne, a historical timber pier that residents had identified as a significant character-defining feature in the mid-2000s has since been demolished, and a much larger, shiny metal pier has been built in its place (taller than the original one to better adapt to future sea-level rise). Would this new pier be perceived as highly compatible with the town's character, as the older one had been?

The methodology of my studies provides a useful tool for gathering evidence in formulating and amending local planning schemes aimed at controlling landscape changes to protect the character of the types of towns discussed in this paper. The idea behind this work is to consciously shape future changes in the landscape to make them as sympathetic as possible to the character of the places of concern (see, for example, Galway and Mceldowney, 2006). Further, rather than treating features and associated attributes salient to a town's character as objects frozen in time, the idea is to think creatively about how those attributes and features might be used to inform the design of new landscapes and architectural interventions that have the best chance of being perceived as strongly 'in character' in the future.

Changes in the natural and cultural landscape features salient to the character of the towns in my studies will have happened since I undertook them. More recently, other

studies have been conducted in similar coastal sea-change towns (for example, de Jong, Fuller and Beynon, 2017), which, although they used different methods, came to similar conclusions as those from my own research. However, questions arise as to how the specific towns studied more than 20 years ago have changed and whether the same study today would produce the same results. Are the values of both new and longer-term residents the same now as they were then? Questions as to what caused the environmental changes that degraded the character of these towns in the first place also need to be addressed. Did these changes result from particular planning or design actions, natural processes, changes attributable to climate change, or other forces of change? What planning, design and environmental management strategies could be implemented to control and manage these types of changes to avoid negative impacts on the character of these sea change towns while encouraging changes that would result in positive outcomes in the future? These questions could be answered by revisiting the towns that were the focus of the original studies and replicating them to compare the results from then with now.

About the author

Dr Ray Green is a Professor in the University of Melbourne's School of Design. He is the author of *Coastal Towns in Transition: Local Perceptions of Landscape Change* (2010) and co-authored *Planning, Housing, and Infrastructure for Smart Villages* (2019), *Towards Low Carbon Cities in China: Urban Form and Greenhouse Gas Emissions* (2015), *The Green City: Sustainable Homes, Sustainable Suburbs* (2005) and *Design for Change* (1985). His research employs various methods adapted from environmental psychology to study community perceptions of landscape change, particularly in tourism-intensive coastal settlements, with the findings often used to guide environmental planning and design decision-making. Before focusing on research, Ray spent over a decade in professional landscape architectural and planning practice. He is a Fellow of the American Society of Landscape Architects and is credited with numerous professional projects in the United States of America, Mexico, Southeast Asia and Australia.

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