Walking with water.
A relational and respectful design
to resurfacing water memory in the city

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BA Cultural Anthropology (Hons)

MA Tourism and Social Anthropology

A thesis submitted for the degree of Doctor of Philosophy

at Monash University, Australia in 2022

Department of Art, Design and Architecture

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Abstract

This thesis explores relational frameworks and care of water to inform urban design and planning of cities. An analysis of Melbourne's geomorphology and deep history reveal that since colonisation, urban planning and design interventions have significantly altered coastal landscape conditions and displaced water in the urban environment. These practices are still being perpetuated in modern water management. Despite water being largely engineered underground, water memory keeps resurfacing in the form of intense flooding compelling us to reconsider our human and more-than-human relations.

This study centres on the Indigenous paradigm of relationality. This concept provides an expansive alternative to colonial approaches, whereby water is understood as agentic and sentient rather than merely as a 'resource'. Water is treated as a designer. The paradigm involves a set of practices which orient our understandings of the world towards an equal, responsible, and co-creative design role.

Relationality frameworks invite us to nourish relationships with Country. In Aboriginal worldviews 'Country' refers to an understanding of land and environments that is directly related to a cultural group through ancestry, culture, and knowledge. According to Australian Indigenous people Country also includes sky, underground, waters, and all animated and unanimated things.

This thesis explored the relational practices in Boon Wurrung Country such as walking, yarning, mapping, and designing to develop a framework which inform new urban planning and design methodologies for underground water management. In particular, the research analyses drained, displaced, and piped waterways and tests how relational methods that can contribute to more careful, respectful, and effective approach to the design and management of water.

The research is created with the collaboration and co-supervision of Boon Wurrung Elder Professor N'arwee't Carolyn Briggs AM. The PhD proposes a relational design methodology based on Indigenous Ways of Knowing, Doing and Being. This methodology was tested through projects including the creation of an augmented reality application for heritage organisation National Trust of Australia, and through a curriculum design for Master of Architecture Students at Monash University.

Looking at design through an Indigenous lens demands that planning and design interventions adhere to local cultural protocols. This progresses the decolonising of planning and design not only in Australia but worldwide. This thesis demonstrates that relational design as an alternative to mainstream approaches, enables a deeper understanding of the world in a continuous reflective and contemplative manner. It recognises the agency and knowledge of waterways through a series of practices that involve a bodily and cultural experience. The thesis further argues that this environmentally and culturally sensitive practice critically enables planners and designers to address environmental challenges at varying scales including climate change.

Declaration

This thesis is an original work of my research and contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Ana Cristina Lara Heyns

November 2022

Acknowledgements

I want to pay my respects to my elders, ancestors, and *maestros* who have inspired and guided me to connect with this knowledge.

I acknowledge that this research was done in the ancestral Country of the Boon Wurrung and Wurundjeri peoples of the Kulin Nations. I celebrate this Country, its sky, waters, underground, its people, culture, and knowledge. I would like to pay my respects to their Elders, past, present, and emerging and their continuous custodianship and care for Country. I wish to thank Professor N'arwee't Carolyn Briggs AM PhD, for her time, for sharing knowledge with me, and for her friendship.

I want to thank my supervisors. Professor Nigel Bertram for pointing me towards an exciting encounter between anthropology and design. Dr Laura Harper, for your insightful feedback and helping me develop my design skills. To Professor Brian Martin, Marilu Melo Zurita and Catherine Murphy for their advice and mentoring.

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To the students of the master's in architecture in 2022 design studio *Unearthing Waterways* for exploring water relationships and design practices with me, enriching this thesis with your creative designs.

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This thesis is dedicated to my parents, Lilly and Luis Fernando, my brother Eugenio, and my partner Paul. Thank you for encouraging my creativity and reflection. Thank you for reading, challenging, and helping me edit this thesis and its diagrams. I love you all so dearly and could not have done it without you by my side, despite the distance. To Caesar, Nahui and Odie, for walking Country with me.

WALKING
WITH
WATER

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Participation and presentations delivered during candidature

Ana Cristina Lara Heyns, "First Nations for Water Justice." Talk part of Future Forums: ideas shaping tomorrow. (Melbourne Museum, November 8th, 2022).

Ana Cristina Lara Heyns, "Open Lab" Collaboration with APR Collective and Public Street. Installation (March 23-26th, Melbourne Design Week 2022)

Ana Cristina Lara Heyns, "Urban undercurrents: The hidden infrastructure of wild cities- workshops" Collaboration with Professor Wendy Steele, Prof David Carlin, Dr Fiona Hillary, Dr Jordan Lacey and Aviva Reed, in collaboration with KERB Journal of Landscape Architecture. (March 18th, Melbourne Design Week 2022)

Ana Cristina Lara Heyns, "City Centre Encounters- Participatory mapping workshops" Collaboration with APR Collective (March MPavillion 2022)

Ana Cristina Lara Heyns, "Hidden Rippon Lea" Collaboration with N'arweet Dr Carolyn Briggs, National Trust of Australia, Dr Laura Harper, Oscar Raby, Dr Xavier Xo, Dr David Chesworth, Sonia Leber, Dr Marilu Melo Zurita, Taylor Coyne and Professor Jon McCormack. (Festival of Urbanism 2021)

Ana Cristina Lara Heyns, "Urban Undercurrents: The Hidden Infrastructure of Wild Cities" Collaboration with Professor Wendy Steele, Prof David Carlin, Dr Fiona Hillary, Dr Jordan Lacey and Aviva Reed, in collaboration with KERB Journal of Landscape Architecture. (Festival of Urbanism 2021)

Zheng Chin, Alexandre Faustino, Nicolas Guerra, Rachel Iampolski and Ana Cristina Lara Heyns, "The Alliance for Praxis Research Manifesto" Presented at State of Australian Cities Conference (Melbourne, 2021).

Zheng Chin, Alexandre Faustino, Nicolas Guerra, Rachel Iampolski and Ana Cristina Lara. "Endengered public spaces?: Encountering the people of Melbourne City Centre" Presented at The Festival of Urbanism 2021 (Melbourne, September 17th, 2021).

Ana Cristina Lara Heyns, "Exploring water memory and relationships in the contemporary city." Presented at the Conference of the Institute of Australian Geographers and New Zealand Geographical Society (July 2021)

Ana Cristina Lara Heyns, Laura Harper and Nigel Bertram "The undergrounds' underground: strategies for mapping what is both covered and invisible." Presented at Conference ADR19 Real/Material/Ethereal. The 2nd Annual Design Research Conference (October 2019).

Ana Cristina Lara Heyns, "Visualizing the Invisible: A Multidisciplinary Approach to Understand Cultural Heritage in the Underground." Presented at Location, Relationships and Practice: The Con/servare Melbourne Forum 2019 (Grimwade Centre, University of Melbourne, October 4th, 2019).

Table of Contents

PART I: WAYS OF BEING

GLOSSARY

NOTE TO THE READER

The glossary compiles important terms from design, anthropology, heritage, and Indigenous frameworks. It also includes words in Spanish and Nahuatl that are part of my background and Boon Wurrung words that are shared by Elder N'arweet Carolyn Briggs AM. Some terms are capitalised when referring to Indigenous Australians and Indigenous frameworks but will not be capitalised when used in general. The capitalisation of these words is used as a mark of respect.

Anthropology and heritage

Counter-memory allows for other memories and discourses to be heard; it offers a space for alternative memories to emerge and contradict the idea that "the West knows best."

Cultural Landscape: This category is defined by UNESCO and World Heritage Convention[1] as "Combined works of nature and humankind, they express a long and intimate relationship between peoples and their natural environment."

Cultural Memory: Allows for other memories and discourses to be heard; it offers a space for alternative memories to emerge and contradict the idea that "the West knows best" that eclipses local needs, desires, values, and meanings.

'Deep Cities' Heritage Approach is proposed to understand how cultural heritage can be better integrated into urban policies for sustainable futures. This Deep Cities heritage approach challenges researchers, managers, and urban planners to understand the changing features of the cities by investigating and recognising the cities' deep histories, and it offers methodological approaches to understanding the tangible and intangible cultural heritage of the urban environment. It combines an in-depth understanding of the past with the present and the future, focusing "not only on what 'we can see' but also on what 'we can feel', 'discover', uncover and 'not see' but 'experience'", according to Fouseki, Guttormsen and Swensen.[2]

Extractivisim commonly refers to the over-extraction of raw materials from the environment. However, a new turn in geopolitical thought includes the over-extraction of not only raw materials but everything that can be offered in the capitalist market, such as labour, the production of ideas, or even Indigenous Knowledge that can offer an experience in the tourism industry. In many cases, extractive activities are led by capitalist nations over less

[1] UNESCO and World Heritage Convention, "Cultural Landscapes," UNESCO (blog), accessed January 12, 2022, https://whc.unesco.org/en/culturallandscape/.

[2] Kalliopi Fouseki, Torgrim Sneve Guttormsen, and Grete Swensen, eds., "Heritage and Sustainable Urban Transformations. A 'deep Cities' Approach.," in Heritage and Sustainable Urban Transformations. Deep Cities, Studies in Heritage (New York: Routledge, 2020), 1–15.

developed countries (for example, foreign mining companies mining in third-world countries for resources or with illegal technology in their home countries).

Heritage: UNESCO[3] defines heritage as "our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration."

Heritage Urbanism is a movement that tries to understand the impacts and integration of cultural heritage into the development of the environment in the context of spatial and urban planning.

Historic Urban Landscape Recommendation (HUL) is a category created by UNESCO in 2011 to understand the complex and dynamic nature of historic cities that would include the cultural, historical, and natural dimensions of the urban system. These dimensions include land use patterns, spatial organisation, social and cultural values, topography and soils, vegetation, and infrastructure, as well as intangible dimensions of heritage, cultural diversity, and identity.

Invisibilisation occurs when marginalised social groups or entities are misrepresented or excluded from the public sphere. The exclusion or marginalisation is seen as a process of silencing or invisibilising histories, social groups, or in this case too, cultural, and natural landscapes.

The Gaze is a metaphor coined by John Urry[4] to address how different people will look at the urban landscape in a different way depending on their historical, economic, political, and cultural affiliations and class.

Modernity is considered a historical process where a set of cultural, political, economic, and spatial relationships influence our lives on a daily basis. Some authors argue that modernity has universalising tendencies to homogenise and standardise in the belief of "progress" and improvement.

Noble Savage was a term used in the 18th century to describe remote communities that lived free of sin, of conceptions of right and wrong, uncorrupted by modern civilisation. Following the colonisation of the Americas, this term would be used to justify the European colonisation across the globe, connoting Indigenous people as 'barbarians,' 'backwards', and in need of 'civilised' intervention.

Other, Otherness, Othering: Because of Edward Said's analysis of Orientalism,[5] the 'Other' has been used as a concept in which an identity different to the West is seen as exotic and unknown. The process of 'Othering' another person creates a hostile and unbalanced power relationship.

[3] UNESCO, "World Heritage," World Heritage Convention (blog), accessed January 11, 2022, https://whc.unesco.org/en/about/.

[4] John Urry, The Tourist Gaze: Leisure and Travel in Contemporary Societies (London: Sage: Theory Culture & Society, 1990).

[5] Edward Said, Orientalism (London: Penguin, 1977).

Orientalist/Orientalism: In the late 1970s, Edward Said wrote *Orientalism*,[6]
in which he argued that the Western world belittles the East through
representations of Western culture as powerful over the East.

Participant Observation is a type of data collection method used in qualitative
research. It involves an immersive involvement with a group of people
or community through intensive interactions over a large period in their
cultural environment. It has been a pillar of ethnographic work since the
1920s, used by anthropologists Margaret Mead, Clifford Geertz, Bronislaw
Malinowski, Franz Boas and E. E. Evans-Pritchard, among others.

Rapport is a trust-building process in traditional ethnographic research.
However, it has been criticised for serving the interests of the researcher and
not the participant.

Design

Catchment: Area of land that collects water when it rains from the very top of
its mountains, draining water down through creeks and rivers to valleys and
ultimately to a body of water. The dividing ridge between drainage areas is
called a watershed.

Catchment Thinking is an urban design approach to managing an area of
land through shared responsibilities, cooperation and coordination of
stakeholders that depend on socio-economic and environmental forces.

Co-Design is the process of collaboration with stakeholders and citizens to
design new products, services, and policies. The aim is to create solutions
that are grounded in the needs of a community but bounded by the
limitations of a government.

Daylighting rivers or streams is restoring a waterway to its previous condition
by removing tangible obstructions such as drains and pavement. This
process has been proven to provide socio-economic and ecological
benefits.

Deep City: Method to aid decision-makers to integrate the global potential
of the urban underground into city-scale strategic planning.[7] It defines
four realms within the underground that compete and overlap, including
building space, geothermal energy, geo-materials, and groundwater. This
approach facilitates the understanding of geological maps so that cities can
use them to plan belowground development while protecting the resources.

Deep Time was coined by John McPhee in 1981. Deep time understands the
history of the earth through geological events, which, in comparison to
social history, transcends our human understanding of time.

Ecological Urbanism considers the relationships between living organisms
and their environment, providing a framework to address ecological threats

[6] Said, Orientalism.

[7] Huan-Qing Li et al.,
"An Integrated Planning
Concept for the Emerging
Underground Urbanism:
Deep City Method Part
1 Concept, Process and
Application," Tunnelling
and Underground
Space Technology 38
(2013): 559–68, https://
doi.org/10.1016/j.
tust.2013.04.010.

to humanity such as climate change, energy production and consumption, environmental justice, and more.

Environmental history studies the interaction of humans with the natural world over time.

Green Infrastructure is the multifunctional management of green spaces in the city for people that includes ecological connectivity. It creates partnerships between local and state agencies that aim to create innovative responses to biodiversity and flood mitigation through urban planning and architecture.

Hydrofeminism is a posthuman feminist movement that understands our bodies as part of the natural world.

Metropolitan Nature: Throughout his work, Matthew Gandy[8] conceived the idea of metropolitan nature, stating that the natural features of the city are an outcome of the developments of urbanisation and modernisation, bounded by the technical and social networking of the city itself, instead of thinking of nature as the green spaces in the city, such as parks. Metropolitan nature, in this sense, is an infrastructural provision shaped by the political and ecological dynamics of the city.

More-than-human is a term used to include a wider ontological turn toward post-humanism; it challenges the binaries in which the western worldview operates to include humans and nonhumans alike. The term de-centres humans as the only place-producing agents.

QGIS is a free and open-source geographic information system used to map, view, edit and analyse geospatial data.

Rewilding activities are based on efforts of conservation and restoration of natural areas. The goal of rewilding is to let nature take care of itself with little human management to reduce biodiversity loss.

Terra Nullius means 'nobody's land' in Latin. It was used by the British government to justify and legitimise the dispossession of Indigenous land and the violent treatment of Indigenous peoples in Australia. It implied that Indigenous Australians were not civilised and capable of land ownership.

Underground Urbanism can be defined as an innovative concept for urban restructuring and transformational construction practices aiming to increase mixed uses of urban centres by relocating space underground to release surface land, while safeguarding valuable groundwater, geothermal energy and geomaterial resources.

Underground Urban Space (UUS): The creation of integrated policies for the underground to foresee and prevent the unsustainable development of the underground space, as well as to resolve the conflicts of interest that the exploitation of underground resources can lead to.

[8] Matthew Gandy, Concrete and Clay: Reworking Nature in New York City (Cambridge, Mass.: MIT Press, 2002).

Urban Greening: According to Porter, Hurst and Grandinetti,[9] Urban Greening was proposed as a trend to increase and distribute access to green areas in a city as a human service.

Urban Heat Island Effect occurs when cities have a large concentration of pavement, buildings and other surfaces that absorb and retain heat. The urban heat island effect increases pollution levels and energy costs and is a cause of many heat-related illnesses.

Urban Political Ecology: According to Matthew Gandy[10] (See "Introduction" in his book The Fabric of Space), this movement is a theoretical synthesis between the study of the homosocial cycle and political economy that emerged in the 1990s. Urban political ecologists argue that urbanisation is deeply embedded in the social, political, and economic landscapes that shape our cities.

Vertical Urbanism explores the city as a multilayered and multidimensional organism. It addresses issues of highly densified cities, proposing using the underground for better adequate planning.

Water-sensitive Urban Design (WSUD) aims to improve urban environments through sensitive management of urban water that can capture, treat, transport, and reuse water in the city while simultaneously reducing the degradation and pollution of water bodies.

Waterscape research understands landscapes where water and society are deeply intertwined; waterscape addresses this relationship. Researchers in political ecology and environmental history address the power relations that are at play in watery landscapes through time and the production of space.

Indigenous frameworks

Aboriginal Waterscapes: in *Freshwater*, Marcia Langton[11] states that Aboriginal waterscapes "are construed not only as physical domains, but also as spiritual, social and jural spaces."

Country, for Uncle Charles Moran, Uncle Greg Harrington and Uncle Norm Sheehan,[12] is "an area of land that is directly related to a group of Aboriginal people through ancestry culture and language. The relationship between a people and their Country extends beyond time and is recorded in stories laid down in Country that are the spiritual source of knowledge essential to generations. Country is alive and intelligent providing everything that its people need. As a conception Country exists outside as a living vital place that we inhabit and through learning culture and respect, it also exists inside as a model for being human in a proper way."

[9] Libby Porter, Julia Hurst, and Tina Grandinetti, "The Politics of Greening Unceded Lands in the Settler City," Australian Geographer 51, no. 2 (April 2, 2020): 221–38.

[10] Matthew Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination (Cambridge, Mass.: The MIT Press, 2014).

[11] Marcia Langton, "Freshwater," in Background. Briefing Papers (Broome, WA: Lingiari Foundation, 2002), 43–64, 44.

[12] Uncle Charles Moran, Uncle Greg Harrington, and Norm Sheehan, "On Country Learning," Design and Culture 10, no. 1 (January 2, 2018): 71–79, 75.

Deep Listening: Laura Brearly[13] says that deep listening is respectfully listening; it involves many senses beyond just hearing, it can take place in silence, and it is informed by community and reciprocity.

Indigenising: according to Daniel R. Wildcat,[14] Indigenising involves a set of practices and processes in which people adopt particular and unique cultural practices of the place in which they live today, acknowledging the wisdom that those practices contain about the world.

Indigenous Knowledge: according to the Australian Indigenous Design Charter (AIDC),[15] is a "term used to describe ways of knowing, seeing, and thinking that are passed down orally and visually from generation to generation of Indigenous peoples."

Indigenous Water Knowledge: the Indigenous Knowledge of Country that includes waterways in all their forms; this knowledge is embedded with social, spiritual, ecological and kin affiliations in place.

Relational: The AIDC[16] explains it as "concerning the way in which two or more people or things are connected."

Relationality: according to the AIDC,[17] is "the state or condition of being relational".

Relatedness is a state in a set of processes and practices that can occur between different conditions that include spiritual, physical, political, intellectual, emotional, social, sensorial, and intuitive. As stated by Indigenous scholars Karen Martin and Shawn Wilson, relatedness occurs between humans and more-than-humans in the relationships humans have with their surroundings.

Respectful Design[18] addresses "natural systems by thinking more deeply, divergently, and connectively through design. The Indigenous Knowledge conception of Respectful Design is not based on what design is, what design does, or what design means; it is founded on how design positions itself in relation to natural systems and the social world. When informed by Indigenous Knowledge, Respectful Design is an aspiration for a deeper situational awareness that generates many divergent spaces where innovation can contribute positively to the well-being of the whole."

Ways of Knowing: Drawing from Karen Martins' work in *Please knock before you enter*,[19] Ways of Knowing are the ways I 'know' through my stories of relatedness, who I am and where I came from. Martin states: "the core conditions of Ways of Knowing are to know, as fully as it is possible, 'who your People are', 'where your Country is' and 'how you are related to the Entities'. That is to know your Stories of relatedness, the individual and communal Stories and through this, your identities unfold."

[13] Laura Brearly, Gulpa Ngawal Indigenous Deep Listening (Melbourne: RMIT University, 2010), 13.

[14] Daniel R. Wildcat, "Indigenizing the Future: Why We Must Think Spatially in the Twenty-First Century," American Studies 46, no. 3/4 (2005): 417–40, 419.

[15] Indigenous Architecture and Design Victoria, Design Institute of Australia, and Deakin University – Institute of Koorie Education, "Australian Indigenous Design Charter: Communication Design. Protocols for Sharing Indigenous Knowledge in Communication Design Practice.," n.d.

[16] Indigenous Architecture and Design Victoria, Design Institute of Australia, and Deakin University – Institute of Koorie Education, "Australian Indigenous Design Charter: Communication Design. Protocols for Sharing Indigenous Knowledge in Communication Design Practice."

[17] Indigenous Architecture and Design Victoria, Design Institute of Australia, and Deakin University – Institute of Koorie Education, "Australian Indigenous Design Charter: Communication Design. Protocols for Sharing Indigenous Knowledge in Communication Design Practice."

[18] Norman W. Sheehan, "Indigenous Knowledge and Respectful Design: An Evidence-Based Approach," Design Issues 27, no. 4 (October 2011): 68–80.

[19] Karen Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers, (Teneriffe Queensland: Post Pressed, 2008), 72.

Ways of Doing can unfold in our daily practices that understand the world through Ways of Knowing and Being. Ways of Doing engage consciously and subconsciously in relatedness practices that depend on our contexts.

Ways of Being[20] "enfold Ways of Knowing and contain the conditions for respecting the Stories of relatedness."

Yarn/Yarning: Brian Martin[21] says that "With Yarning, or the circular movement of knowing, knowledge is given agency through building relationality with one another, with knowing and knowledge building relationality with itself."

[20] Martin, Please Knock before You Enter, 76.

[21] Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge," Educational Philosophy and Theory 49, no. 14 (December 6, 2017): 1392–1400.

Boon Wurrung language:

*The words in the Boon Wurrung language have been shared by N'arwee't Aunty Carolyn Briggs.

Baany – water

Bagurrk – woman

Barerarerungar – country

Barramaeel – emu

Barreng – tracking

Biik – land

Birrarrung – Yarra River

Buath – grass

Bubup – child

Dhumbali – Commitments to the laws of Country

Galen-barreeam – east ocean

Guleeny – man

Gumbak – fish

Guyeem – kangaroo

Iilk – eel

Murnong – yam daisy

Nairm – Port Phillip Bay

Ngargee – ceremony or dancing

Ngarn-ga – Understanding

Ngargerr-moon – memory

Noogal – Belonging

Tarrang biik – woodlands

Tjeera – spear

Warreeny – sea

Wurneet – river

Words in other Indigenous Australian languages:

Dadirri: in Ngungikurungkurr language of the Daly River means deep listening.

Gulpa Ngawal: in the Yorta Yorta language of the Murray River in Victoria means deep listening.

Wilip-gin Birrarung murron, in Woi-wurrung language, meaning Keep the Birrarung alive.

Nahuatl and Spanish words:

Adobe is a building material made of mud and mixed straw or manure, dried in the sun, square or rectangular in shape and larger than brick.

Altepetl means water-mountain.

Amerindian: That which belongs to one of the Indigenous groups of the Americas or is related to them.

Apapacho: Caress, gesture or attitude with which love, affection, tenderness embrace with the soul.

Axolotl or axolote: Amphibian, a kind of aquatic salamander found in lakes underlying Mexico City. It used to be an important part of the precolonial ecosystem of the lake system of the basin of Mexico.

Aztec: Pre-Columbian group that settled in and around the highlands of Mexico during the 13th century. They founded on an islet to the west of Lake Texcoco, the city of Mexico-Tenochtitlán, and in a short time managed to dominate the centre and south of the current Mexican Republic. This empire ended in 1521 with the Spanish conquest.

Barrio: a place of membership that involves being part of civic traditions, which were inherited by their ancestors.

Chinampa: A farming system developed by the Nahua people in Mexico City. The Chinampas are built on small rectangular areas of fertile land over shallow lakes. Some were built with woven canes to float.

Chinelos are a kind of traditional costumed dancers in the State of Morelos; they dance particularly in the carnival before Easter celebrations.

Coatlicue: The goddess of the earth and mother of the gods and all the Mexica people.

Coyolxauhqui: Mexican goddess. Daughter of Coatlicue.

Huitzilipochtli: The Mexican god of war and of the sun, son of Coatlicue.

Maestros: Teachers.

Mestiza: a person of mixed heritage; in the Mexican context, a person who identifies themselves as having both Indigenous and European heritages but ideologically embedded in the national Mexican identity.

Mostrenco means not having an owner, a homeless person, or a stray dog. This word is particularly used in my hometown to name foreigners.

Mojoneras: Small buildings with which the limits of an area are marked. Boundary marks.

Otomí: A Mesoamerican Indigenous group whose ancestors occupied, since prehistoric times, the southern highlands where the Federal District, the State of Mexico and Hidalgo are today, as well as, possibly, part of Puebla and Tlaxcala. It seems to have participated in the creation of the Teotihuacan culture, but always alongside other indigenous groups to whom the great works known to archeology are attributed. At the time of the heyday of Tenochtitlán, it had a reputation for being a people of skilful and brave warriors, for which it formed mercenary corps under the orders of the Mexica, in such a way that the Otomí army was the first against whom Cortés had to fight when he arrived in Tlaxcala.

Pericón: A wild indigenous flower that grows in Central Mexico, used for its medicinal properties and traditional customs. Its botanical name is Tagetes Lucida, Tagetes Florida.

Ponche de Leche: Traditional beverage, like a punch or eggnog, made by elders in the region of Morelos.

Pueblos Mágicos: A tourism brand that the government gives to towns in Mexico with cultural and natural elements that contribute to the town's folklore and, therefore, can be used as an attraction in the tourism industry.

Tecorrales: A rock-piled wall that helps separate the lands but also keeps the animals from crossing into houses or even reattaining water and landslides.

Templo Mayor: The centre of the Aztec Empire. Currently an archaeological temple in the Historic City Centre.

Tepozteco/tepozteca: A person that ancestrally belongs to Tepoztlán.

Tepoztiza/tepoztizo: a colloquial way to name someone who relates to Tepoztlán but cannot show evidence of their ancestral belonging.

Tequio: A Nahuatl word for the labour one does as a community member to favour the collective necessities of that community; it is offered without payment and is part of the cohesion of identity building.

Tihualahque in tepetl: In Nahuatl, we come from the mountains.

Trajinera: A sort of flat-bottomed canoe.

Preface: A story of knives, banana trees, and thunder

I was probably around seven years old, and it was probably around July. One of those summer months in Mexico where we get heaps of rainy days in a row, or we get bright shiny mornings followed by rainy afternoons. When it rained all night, some mornings we would wake up to what we call, in my hometown, a visit from the angels, which we can literally translate to fog. But we like to use metaphors because it allows us to feel connected to the sacredness of this more-than-human world.

My best friend Anais lived two houses down from me. We would go to my house after school every Tuesday, and then go to hers every Thursday for playdates. Her garden was a wild exotic place, like a lost island where adventure hid at every turn. It had a massive variety of trees: guavas, coffee, bananas, jaboticabas, and angel trumpets. Every tree was a different home to us. Our house was the guava tree, which had three big branches we would climb, one her wing, one mine, and the third was the living room. We grew up climbing not only the trees but any rock and fence we saw in our way. We had to learn the hard way to stay away from the crops next door, as the farmer would shoot into the sky with his rifle to warn us not to cross his fence.

We would contemplate the bees that went into the angel trumpets and come out dizzy with its hallucinogenic pollen. The jaboticaba would be the gourmet restaurant or delicatessen shop because we would only have its fruit when the bats didn't eat it all. But this story is about banana trees.

When it rained, the fallen banana tree leaves would create little bowls of water that we loved to sip water from. After using it, we would modify it into little boats we sailed across the puddles that would form after the rain. On big storms, the little banana leaf boats would flow through the miniature creeks from puddle to puddle. We would spend most rainy days outside, jumping in the rain and following the puddles with our boats.

Of course, our parents weren't the biggest fans of our little natural world. Not only because I would come home completely wet but because our parents feared that we would be hit by lightning. Lightning in Tepoztlán is one of the most common

causes of wildfires (that, and the neglectful boy scouts that don't put their fires out well). After the tenth time our parents saw us playing in the storm, they decided they needed to take matters into their own hands. And so, Anais's father went into the kitchen one afternoon, took a knife from the cabinet, and marched into his wild garden. The next few Thursdays, there were no storms.

Of course, we were familiar with the tradition of sticking a knife into the soil to "cut" the rain. We would do that when there were kids' parties in summer, and for mum's birthday too because it is in July. We spent months looking for the knife he used to keep us from having fun in the rain. We missed our banana tree boats. It wasn't until the next year that we finally found the knife. We looked at the sky, and there were some menacing clouds, so we took the knife out of the soil. We waited.

It started to rain. Puddles started to overflow, and the miniature creeks would start to connect them. That day, we decided we would not let any knife near the ground.

As soon as Anais's father saw us again jumping puddles, he went to see what had happened to his hidden knife only to see it had been pulled out. 'Girls!' He screamed and went back to the kitchen to take out another knife, thinking this time he would hide it even better.

Surprisingly for him, we had hidden all the knives in the house.

The ritual of sticking a knife into the ground as soon as the first menacing cloud shows up in the sky to avoid a storm is common folklore in Mexico. To be honest, I don't know where it comes from, but oral tradition says that farmers use this ritual to prevent the flooding of their crops.[1] In ancient Mexico, knives had a direct relationship with rain. It was thought that you would find obsidian to make knives in places where lots of thunder and lightning would fall. That is why knives were attributed to the Aztec god of the rain, Tlaloc.[2]

Tlaloc is also the deity of the hills, water, and fertility. According to the Nahuas, Indigenous people from the centre of Mexico,

Tlaloc governed meteorological phenomena such as lightning, thunder, hail, and storms and, frequently, it was associated with caves. Franciscan friar, missionary, and priest in colonial New Spain, Fray Bernandino de Sahagún,[3] pointed out that this god was considered an inhabitant of the earthly paradise and the one responsible for giving human beings all the necessary resources to have a prosperous life. He would strike the clouds with his knife or axe to produce thunder and rain. I can only suppose (because of the lack of archaeological and anthropological evidence) that sticking the knife into the soil would be the opposite of striking the clouds, hence it wouldn't rain. I must also point out that many rites in Mexico after the Spanish conquest were modified to cover up Indigenous beliefs from the Catholic religion through the process of syncretism. This ritual could be also an example of this.

This is how my understanding of water in the landscape started, through the traditional lore of my hometown. With this ritual, I could understand how water was connected from the ground below to the rain, the flows of the puddles into little creeks that would mimic the huge ones that trickled down the mountains. I could understand the power and sacredness of the rituals that would change the weather (even if they sometimes failed), but most importantly, how it was part of our identity and practices: a communion between natural phenomenon, myth, and action. A clear interconnection. Our ways of being, our ways of doing and our ways of knowing.

This study was inspired by my never-ending interest in identity and belonging. Growing up in between the different worlds of Mexico, it has always been my pursuit to understand who I am and why I'm here. I grew up in a little country town one hour away from Mexico City called Tepoztlán. A town that has attracted many waves of national and international migrants to reside in its valley due to its closeness to the magnificent Chichinautzin Mountain Range and to Mexico City and because of its strong Indigenous roots and traditions. My parents wanted my brother and me to grow up outside of the concrete jungle of Mexico City. And so, I grew up surrounded by Tepoztlán hills and traditions as a member of the barrio de Ixcatepec.[4]

I was seventeen when I left Mexico to explore the other part of my identity, the Belgian side. I believe we are a minority, Mexican Belgians. It's an

[1] INAH, "Persiste Culto a Tláloc," INAH Boletines (blog), 2008 https://www.inah.gob.mx/boletines/2249-persiste-culto-a-tlaloc.

[2] Yolotl González Torres, "Técpatl o cuchillo de pedernal," Arqueología Mexicana (blog), accessed January 24, 2021, https://arqueologiamexicana.mx/mexico-antiguo/tecpatl-o-cuchillo-de-pedernal.

[3] Fray Bernardino de Sahagún, Historia General de Las Cosas de Nueva España, Mexico City, 1829.

interesting mix of two clashing worlds: the colonised and the coloniser. During my time in Europe, I started to understand how others would see the darkness of my skin, that darkness that in Mexico is not dark enough. The year after, I returned to Mexico to study cultural anthropology, a career that would let me delve into my own understanding of belonging and identity. I graduated with a thesis describing the cultural dimensions of identities in Tepoztlán. Its incorporation into the tourism industry allowed me to continue to explore my belonging in this town.

It was the tourism industry that led me to Australia, far, far away from the hills of Tepoztlán to the shores of Port Philip Bay. Once again, I was looking into my identity in these foreign lands: Boon Wurrung Country and Woi Wurrung Country.

This research project looks at how people from different ancestors can relate to and care for Country through the disciplines of design and anthropology. By privileging relationality, the thesis offers another approach to urban design methodologies that concern waterscapes in the underground. The research incorporates Indigenous Ways of Doing, Being and Knowing as a methodological alternative to the western academic research structures. By analysing relationality through urban planning and architecture, the ideas developed in this study can be applied to diverse settings in academia and practice.

[4] Barrio is a place of membership that involves being part of civic traditions, which were inherited by their ancestors. In the case of my parents, the membership in the barrio depends on the civic involvement they, as outsiders, have with the traditional festivities and how much they contribute to the communal labour, which in Nahuatl, the Nahua language, is called Tequio. A great description of barrio membership is given in Robert Redfield's contributions to ethnographic work in Tepoztlán. See Robert Redfield, "The Calpolli-Barrio in a Present-Day Mexican Pueblo," American Anthropologist 30, no. 2 (April 6, 1928): 282–94, https://doi.org/10.1525/aa.1928.30.2.02a00080.

Thesis curation

By now, you are probably wondering why you are reading different colours. In this thesis, I want to show you how knowledge has its ways of knowing, doing and being. Brian Martin has stated that everything, including knowledge, has agency.[1] I hope that the knowledge that I share here with you will inspire you to look closely at everything that surrounds you, and as you read some stories of my life, of my research, and the conversations with Aunty Carolyn Briggs, you will understand how the research is being carried out as if it were a ceremony.[2] So, imagine you are having dinner with your parents and grandparents on a casual Sunday afternoon; you have already talked about the daily doings of life, politics, and whatever else you usually talk about with your family. Now your parents and grandparents recall an anecdote that happened in your family when you weren't even on this earth. They tell you some family secrets that you never knew. Suddenly you are part of a secret. Something that ties you to your ancestors, an accomplice of the doings of those who are no longer with you.

You go home, and days pass. But the secret wanders in and out of your mind; sometimes, it keeps you up at night. After a few more days of reflecting and contemplating on your family, you realise this secret explains who you are and why you are like this. This learning comes with new responsibilities; you think you will need to share this secret with your kids at some stage so that they too can fill in the gaps of who they are by experiences they never lived but that marked you, your parents, your grandparents, your great grandparents…

Your whole belief system seems to welcome this information. Your behaviour changes now that you know what you know. Your way of viewing the world changes too. The exchange of experiences in your family is a circular movement of knowing. Knowledge is given agency by understanding the deep relationships that tie you to your parents and grandparents. This is what Indigenous Australians call Yarning.[3]

The blue font that you will read across the thesis and the ideograms are my ways of telling you stories, my lived experiences and how I understand the world. The green font are

[1] Brain Martin discusses the diffewrences between Indigenous and western ontologies; he states that in the Indigenous worldview, "all things have agency and are interconnected through a system of relationality." See Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge" Educational Philosophy and Theory 49, no. 14 (December 6, 2017): 1392–1400, https://doi.org/10.1080/00131857.2017.1298034.

[2] The works by Shawn Wilson, Karen Martin and Booran Mirraboopa heavily inspired this research. Shawn Wilson sees research as a ceremony, wherein he sees axiology, epistemology, methodology and ontology as a circle. An inseparable blend from one to the other, "the whole of the paradigm is greater than the sum of its parts" (p. 134). Mirraboopa and Martins' work shares the implications of working within an Indigenous Ontology for researchers.

[3] Martin describes yarning as a circular movement of knowledge, a form of interpolation connecting different agents through relationality. Read Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge," Educational Philosophy and Theory 49, no. 14 (December 6, 2017): 1392–1400.

the stories and ideas shared by Aunty Carolyn Briggs. The black font is written in a more 'academic' style, with proper referencing and neutrality. By using this kind of knowledge sharing, a westernised academic one and a relational one, I acknowledge my position within this system of relationships, and the polyphonic way in whcih knowledge is created. With this in mind, I hope to be held accountable for my relationality and ethnographic reflectiveness. But even more, I hope to break some of the western paradigms of academia to respect my cultural protocols and those who have shared their knowledge with me.

The thesis is divided into three parts. The first acknowledges the Ways of Knowing. Chapter 1 introduces the fields of knowledge and the gaps this research will address. The hypothesis, considerations and aims are described. This chapter sets the context in which Professor N'arwee't Carolyn Briggs AM PhD[4] and I collaborated to create this study and defines my central position within the research process. A detailed overview of my cultural background creates a sense of relatedness through the sharing of personal stories and supports my personal connection to the topic. To decolonise my practice, reflections on anthropological enquiry situate my research, not only as a foreigner in Australia but also as an academic endeavour that responds to the question, 'is there space for a non-Indigenous Australian to do this research?'

Chapter 2 details the key considerations that have influenced this research including the main planning approaches to the underground and the identification of exclusions of values and meanings. Through the conceptions of heritage and cultural landscapes, this chapter discusses how we can understand the role of deep time and the historical processes that have resulted in the current capitalist and neoliberal political economy seemingly unable to acknowledge counter histories in the name of equality and sustainability. The questions of how history is written and by whom; what memories and heritages are we supporting and passing on and what memories and histories are privileged are explored in this chapter. A discussion of the literature specific to the access and ownership of the underground, reveals an exciting future with possible directions when contemplating Indigenous custodianship of Country. Finally, the analysis proposes recognising that the underground is full of life, agency, stories, and knowledge. It highlights the need to acknowledge the current political, economic, and historical violence in Australia that has dispossessed the Traditional Owners from their Country and also questions

[4] Professor N'arwee't Carolyn Briggs AM PhD is a Boon Wurrung senior Elder. She was awarded a Member of the Oder of Australia in 2019 for her important service to the Indigenous community. Calling Professor N'arwee't Carolyn Briggs 'Aunty' is a sign of respect for both her family and community members. The use of this term should not be taken lightly as it denotes a direct relationship with her, as the reader will notice in the yarns throughout the thesis. In an academic setting, the research will refer to Elder Carolyn Briggs as Professor or N'arwee't Carolyn Briggs.

how the subterranean could be understood and used through the lens of Indigenous thinking.

Chapter 3 reviews and discusses water management literature specific to Australia including three critical ways to think about water. Firstly, water can be considered as a relational entity, requiring us to develop and acknowledge our connection and engagement with water flows. A second possible perspective is, to explore the agency of water as a relatiownal entity whereby the rivers' legal personality has enabled policies to protect and restore waterscapes. This perspective is challenged by the legislative definition that denotes that, a river drained underground, forgotten below layers of concrete, has subdued agency. This creates disastrous consequences such as flooding as the he invisible nature of underground water flows, even those drained, makes them more complicated to relate to, resulting in their lower presence, or 'shadowing' in water planning when compared to more visible surface water. Lastly, the third possible viewpoint considers our relationships with the agency of drained and piped rivers and how we experience them in the contemporary city.

Part 2, Ways of Doing, includes a description of the evolution from traditional data analysis to a relational framework. Chapter 4 provides an overview of the traditional practices within this relational design that are then thoroughly explored in the following chapter, inclusive of the relative fieldwork. Also explored is the move beyond the Indigenous perspective in a western discipline to research through an Indigenous paradigm. Considerations such as ethics and researcher responsibilities, commitments to collaborations, and relationships of care, where research is considered a ceremony is also discussed.

Chapter 5 builds on the previous discussion of the relational framework by exploring its design and development including the methods and rituals pivotal to the relationship of building with water and Indigenous Knowledge. Through a series of experimental iterations of a methodology, this chapter describes the development from data analysis to the relational approach in detail. The Rippon Lea Estate case study was thoroughly explored through ethnohistorical and GIS mapping to understand the European settlement's political, social, and cultural implications and influences present in the urbanisation of Melbourne and its waterways. Also discussed within this chapter is how the Hidden Rippon Lea virtual experience was created through a relational design methodology.

Chapter 6 reviews some contemporary planning approaches that consider waterways in city planning, revealing what gaps can be complemented with the Indigenous worldview. This chapter captures the the yarns and knowledge sharing with N'arwee't Carolyn Briggs that contributed to the creation of a Water Country-connected design studio. The studio engaged in relational design to speculate and respond to social and cultural water management issues through architectural proposals. The chapter analyses and discusses the tasks and design propositions students created to respond to their knowledge.

Building on the above discussion of ways of knowing and ways of doing, the final chapter captures the possible Ways of Being revealed by the research inclusive of the challenges and implications that influenced how the research was conducted. Chapter 7 provides a conclusion as to how relationality has the potential to contribute to improved sustainable management of urban waterways and expand our configurations to work with the built environment through a Country-connected approach.

PART I. Ways of Knowing

Chapter 1. Context

Introduction

This thesis centres on the Indigenous paradigm of relationality as a holistic and expansive alternative to understanding human and more-than-human relationships that influence the way designers and planners of the urban environment can propose new methodologies for underground water management. In particular, the research analyses drained, displaced, and piped waterways to show how these disciplines could develop their relational methods and contribute to planning studies and urban data.

[1] In line with the Indigenous Australian Design Charter and as suggested by many Indigenous scholars, including Dr Brian Martin

This research is part of a longer and deeper project called Atlas of the Underground. Using different tactics and methodologies, we aim to generate knowledge relating to the meanings and complexities of the underground realm to contribute to its long-term management, planning and design. The project is led by architects Nigel Bertram and Laura Harper; my contribution to this project focuses primarily on the intangible and meaningful features of the underground, which recognises the Indigenous custodianship of the underground and its resources, particularly water. Aligned to best working practices with Indigenous Ways of Knowing,[1] Professor N'arwee't Carolyn Briggs AM PhD, Boon Wurrung Elder, collaborated with and supervised my research. N'arwee't Carolyn Briggs has been instrumental in my development of

relational design, sharing with me her way of Knowing, Doing and Being, while encouraging me to delve into my indigeneity and ways of relatedness.

Privileging Indigenous Ways of Knowing, Doing and Being, the thesis explores what Indigenous academics Uncles Charles Moran, Greg Harrington, and Norm Sheehan[2] call 'respectful design' as a methodology. These authors state:

> We have a sound ontological framework based on an intelligent world, so we can state that design is simply action in relation and that everything on earth and in the universe is thus a designer. When diverse things act aware of and in relation to each other, they design environments that become replete with life as more things (entities, materials, artifacts, understandings, etc.) emerge and contribute to the design. In this way, Respectful Design seeks to identify the knowledgeable practices written into Country, engaging with learning environments and reactivating the cultures of repair.

Respectful design opens a pathway into a relational framework that helps us understand our positions, actions, reflections, and learnings from and with Country. Using relational design as a method, design becomes a tool to process these understandings. Furthermore, designing respectfully and with relationality, as a premise, acknowledges the intellect and agency of humans, more-than-humans, and knowledge. Design becomes the vehicle to make these relationships, the space where it happens, and to build on the connections it creates.

1.1. Hypothesis

Urban scholars have rightly connected serious urban problems, such as flooding, to ill-considered interventions in the complex environmental systems of the underground. While underground urbanisation has proceeded unplanned, resulting in chaotic mismanagement and affecting the urban process above the ground,[3] there is a growing concern in Australian planning[4] about the lack of involvement of Indigenous People due to the challenge of reconciling two different worldviews.[5]

> *I remember when architects Nigel Bertram and Tom Morgan interviewed me to participate in this project. As they explained their interest in the underground as a complex space that affects the above planning of the cities as well as below, and their*

[2] Uncle Charles Moran, Uncle Greg Harrington, and Norm Sheehan, "On Country Learning," Design and Culture 10, no. 1 (January 2, 2018): 71–79, https://doi.org/10.1080/17547075.2018.1430996, 76.

[3] David Evans, Mike Stephenson, and Richard Shaw, "The Present and Future Use of 'Land' below Ground," Land Use Policy 26s (2009): s302–16, https://doi.org/10.1016/j.landusepol.2009.09.015.

[4] Hirini Matunga, "Theorizing Indigenous Planning," in Reclaiming Indigenous Planning, ed. David Natcher, vol. 70, McGill-Queen's Indigenous and Northern Studies (McGill-Queen's University Press, 2013), https://ebookcentral.proquest.com/lib/monash/reader.

[5] Sue Jackson, Libby Porter, and Louise C. Johnson, Planning in Indigenous Australia. From Imperial Foundations to Postcolonial Futures (New York: Routledge, 2018).

interest in an anthropologist joining the multidisciplinary team, one question kept popping in my head: How was this project going to engage with traditional custodians of the area of study, and if so, would their worldview and knowledge be taken into account?

Researching the underground is fascinating and invites different people to share their own imaginaries of what lies below, from layers of materials that recount the stories of the earth for millions of years to stories that can be found through a single archaeological artifact or the different mythical stories that once explained the natural phenomena for populations around the globe.

Take, for example, the story of Hades, the God of the Underworld, and Persephone, the goddess of agriculture, in Greek mythology. It was said that Hades abducted Persephone and took her to the underworld. Angry at this situation, Demeter, mother of Persephone and goddess of vegetation and grains, created a drought to pressure Zeus to take her daughter back above ground. It is said that Persephone ate a pomegranate that would compel her to return to Hades for at least half of the year. This story explained to the Greeks the changing seasons and the perennial change from spring to winter, from life to death. I use this myth because people might be familiar with it and because it explains the direct relationship between the underground and the above-ground balance. It invites us to reconnect with the changing seasons, and it gives the underground and the natural world a personality that, in western society, we tend to forget.

Relating to stories of cultural significance that explain the natural phenomenon and how we are part of them allows us to reconcile different world views and understand how Indigenous people have lived in this land for thousands of years. Cultural meanings of the underground in Australia have been often overlooked because of a lack of understanding of Indigenous ontology.

In addressing these issues, my hypothesis considers the complex space of the urban underground through an Indigenous paradigm of relationality.

The (re)organisation of the underground is vast and immense. To delve into a relatable space within the underground, the research had to shift; it focuses less about space planning and more about the methods and water. I argue that the paradigm of relationality has the potential to contribute to more sustainable management of urban waterways as well as better protection for layers of cultural meaning embedded in the underground.

1.1.1. Considerations and Aims

However, no hypothesis comes without a series of considerations that this thesis will explore in the following chapters:

- We design and live in unceded lands; how can architecture, planning and design be held accountable for more than reconciliation and repair?
- Country temporalities challenge the economic structure of architecture and planning. In the model of Country, the cost is cultural, not economical. Whereas in architecture and planning, the land is a commercial construct, in the Indigenous worldview, the land is a relational entity.
- Designing with Country is not equal to designing with nature; it is about designing with a culture where nature is part of it.
- How can you recognise intangible connections between tangible environments or architecture and planning?

It is essential to consider these issues to establish the aims of this research:

- To develop new configurations of working with the built environment that can contribute to the ecology of the landscape as well as the cultural relationships with Country that can contribute to a range of interdisciplinary urban data providing a new framework for designers and planners of the urban environment.
- To use water as a vehicle to understand the cultural significance attributed by the Traditional owners to translate the relational design into planning methodologies.
- To explore how to contribute to the fields of planning, design, and architecture on ways of accounting for caring for Country in their disciplines.

In working with new configurations reconciling different worldviews, it is inevitable to acknowledge that my cultural and academic background would influence and inspire my contribution to The Atlas of the Underground, but also confront my practice and life in this foreign land. Allow me to introduce myself.

1.2.   Cultural background

Come with a purpose to my beautiful home. The lands of the two great bays, Nairm, Port Phillip Bay, Warn Mar In, Western Port Bay.
– Aunty Carolyn Briggs.

In the following few pages, I will give more context to who I am and where I came from and where I am located within this research, as a Mexican mestiza anthropologist researching the underground and its waterways through Indigenous knowledge in a spatial manner to inform design and architecture. As said by Moreton-Robinson,[6] "the protocol of introducing oneself to other Indigenous people is to provide information about one's cultural location, so that connection can be made on political, cultural and social grounds and relations established."

My name is Ana. No Hs and no double Ns. Once I asked my family where we came from. My older brother said, "our ancestors were made of maize and cacao." I was born and raised Mexican, like my father. My mum was born Mexican to a Belgian father and a German mother born in Cuba. It's in my veins to be all over the world, so it was no surprise to my family that I ended up in Australia.

I arrived in this Country because of my inherited love for adventure, but I stayed because of my research. I am an anthropologist. Through an honour's degree in cultural anthropology and later a master's in tourism and social anthropology, I have researched my identity, and this PhD continues to explore it, asking myself again, where am I from? Aunty Carolyn asks us to come with intention, with purpose; what is my purpose, and why am I here?

The Spanish settlement in Mexico, as in many other Latin-American countries, assimilated Indigenous populations by creating a system of castes that would position each inhabitant in a specific class and status. I am a mestiza,[7] a term historically used in Latin America to refer to a person who has combined European and Indigenous ancestry.

[6] Aileen Moreton-Robinson, Talkin' up to the White Woman : Aboriginal Women and Feminism (St Lucia, Queensland: University of Queensland Press, 2000), xv.

[7] In the Dictionary of Mexican Spanish, the definition of Mestizo is that it comes from the union of different races, and in America particularly, the person who is the daughter or son of white and Indigenous parents: mestizo blood, mestizo peoples, accessed 27th of March 2020, https://dem.colmex.mx/Ver/mestizo

Figure 1.1. Castes of Nueva España.
Painting by Ignacio María Barreda y Ordóñez (1777).

This painting is one of the many examples of the classification of descendants of interracial unions in Nueva España.

The hierarchy in the caste system in Nueva España was defined by the level of Spanish blood, which was considered purer due to whiter skin. This hierarchy would give more rights to whiter people and less to the darker, including Asian, African, and Indigenous descent.

Figure 1.2. From the Conquest to 1930.
Fresco in Palacio Nacional Mexico City by Diego Rivera (1929-1930)

Diego Rivera mural in Palacic Nacional in Mexico City was commissioned by José Vasconcelos to represent the history of Mexico. It aimed to represent pivotal historical scenes to highlight the struggles of Mexican people against foreign invaders and the resilience of Indigenous Cultures to showcase the Mexican mestizo identity.

The mestizo race was envisioned by philosopher and educationist José Vasconcelos[8] who defined the mestizo as the cosmic race that would unify and embrace the major races of the world. Vasconcelos tried to envision a race that would embrace the different casts that would homogenise our identities so that we would all feel a sense of identity and pride in the civic nation-building of Mexico. That's how some of us who don't have pure Indigenous blood became mestizos.

Although Vasconcelos's idea of the mestizo at that time was thought of as one of inclusivity, opposing the policy of racial purity that many countries were adopting,[9] the Mexican education system taught us to be mestizos while 'othering' the purer Indigenous groups, other ethnic diasporas and even our own indigeneity that does not fall into the mestizo narrative, reproducing, again and again, the systemic and structural racism and exclusionism, as Jumko Ogata says "hiding it in plain sight."[10]

The work of Gloria Anzaldúa opens a pathway to understanding the mestiza identity in the English-speaking world. Her work examines the Chicano and Latino cultures in the United States through the term Borderlands. This term gives us a theoretical framework to position the hybridity of the mestizo. The term refers to the geographical and intangible borders that exist in the western world: women and men, Latino and non-Latino, and more. This framework is popular in Latino and migrant cultures because it recognises the ambiguities into which Latino migrants fall when encountering the colonial heritage in Anglo-Saxon countries. Anzaldúa writes,[11] "The ambivalence from the clash of voices results in mental and emotional states of perplexity (…) The mestiza faces the dilemma of the mixed breed: which collectivity does the daughter of a dark-skinned mother listen to?"

> *I grew up celebrating traditional German/Belgian feasts with their traditional dishes and music. But I also grew up with all the Mexican celebrations and many more Indigenous celebrations that I acquired through my belonging to my hometown. I'm conscious of my borderlands, and that is why I cringe at the mestizo term. Unfortunately, for many Mexicans, mixed breed or mestiza is the best way to describe our ethnicity because mestizaje in Mexico has been a process for more than 500 years. That, along with the nation-building identity of the mestizo, has drawn us away from our indigeneity. So, to be more explicit on who I am and why I am here, my identity also involves another layering of complexity.*

[8] José Vasconcelos, La Raza Cósmica (Mexico City: Espasa Calpe Mexicana S.A., 1948).

[9] Gloria Anzaldúa, Borderlands/ La Frontera: The New Mestiza (San Fransisco, CA.: Aunt Lute Book Company, 1987).

[10] Jumko Ogata, "Racism in Mexico: Challenging Mestizaje and the Cosmic Race," (Race in 21st Century America Conference, Michigan State University, February 11, 2021), https://clacs.isp.msu.edu/events/past-events/racism-mexico-challenging-mestizaje-and-cosmic-race/.

[11] Anzaldúa, Borderlands/ La Frontera: The New Mestiza, 78.

When I was studying for my honour's degree, I researched the different dimensions of the identities that live in my hometown, thinking that perhaps that way, I could understand better who I was. My hometown is called Tepoztlán, and the locals are called Tepoztecans. Nevertheless, I'm not a Tepoztecan, I was not born there, and neither were my parents; that's why I'm a Tepoztiza, a non-ancestral tepoztecan. I was born in Mexico City. However, I grew up surrounded by the mountains and waterfalls of Tepoztlán. I learnt the pathways into the mountain range, walking and hiking their boundaries. I learnt how to recognise the plants that are good for tummy aches and those that give you allergies. Every year I make my Pericon[12] cross to keep the devil from entering my home, and I sip Ponche de Leche[13] with the Elders when we celebrate the harvest of corn with friends in the Elotadas.[14] I jump to the rhythm of the Chinelos,[15] and I respect and honour those who live in other barrios and their patrons.

I might not be a true-born tepoztecan, but I'm not an outsider either. The Tepoztecans know me, my family, and where I live. I was raised to respect and work together with the locals, I have
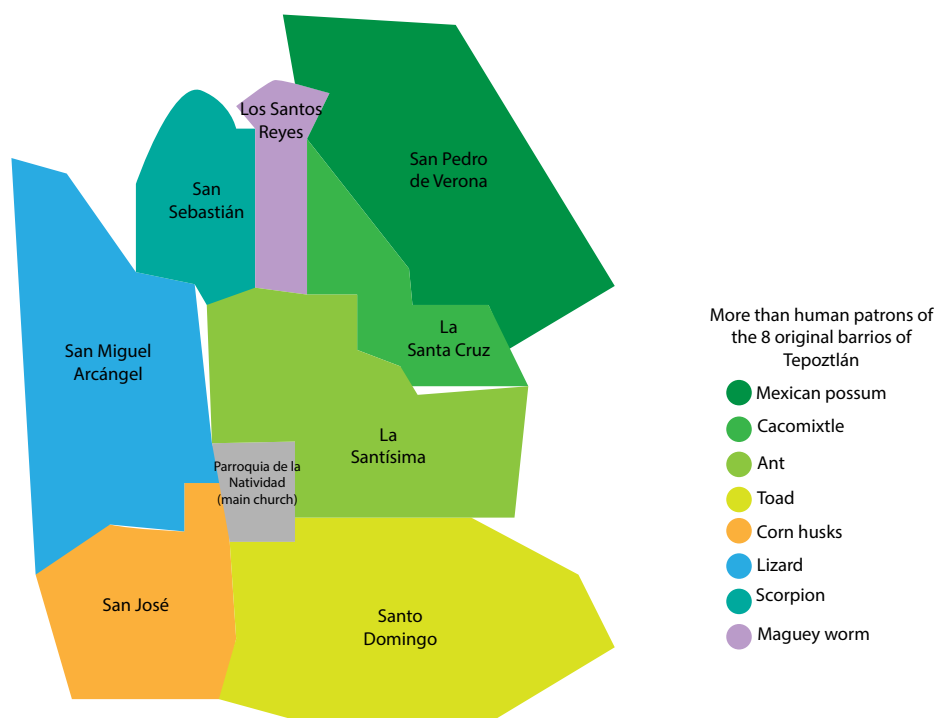
Figure 1.3. Map of Tepoztlán barrios and its more-than-human patrons, Produced by Ana Cristina Lara Heyns, (2020).[16]

[12] A wild indigenous flower that grows in Central Mexico is used for its medicinal properties and in traditional customs. Its botanical name is Tagetes lucida, Tagetes florida.

[13] Traditional beverage, like a punch or eggnog made by elders in the region of Morelos.

[14] An Elotada is a feast celebrated on the 28th of September in Tepoztlán. On this day, farmers invite their neighbours to eat the first corn harvest and collect the flower known as Pericón. The tradition comes from the Indigenous feast of the Yauhtli, the pericón flower that blooms weeks before this celebration. In Nahuatl cosmology, this date is the day the Goddess of Maize dies to give us new life, and the pericón blooming announces the sowing cycle for the corn. Once the flower blooms, people make a cross to put in the entrance of their homes and on the four cardinal points of their crops to repel the devil set loose the night before. With Spanish Catholic heritage, the feast commemorates the triumph of Archangel Saint Michael over the devil, which is celebrated the day after the Elotadas, which means the Pericón crosses worked.

[15] Chinelos are a kind of traditional costumed dancers in the State of Morelos, they dance particularly in the carnival before Easter celebrations.

[16] Tepoztlán is formed by eight traditional inner barrios that are dedicated to a more-than-human patron. This tradition comes from an ancient Nahua tradition of linking barrio identity to a natural motif, who will protect the people and land. Original produced by the author in Ana Cristina Lara Heyns, "Flexibles y Selectivos: Identidades Locales y Postizas En Tepoztlan," in

done tequio,[17] and so I've earned my place. Because culture makes me who I am.

Now that I'm fourteen thousand kilometres away from my beloved mountains, I ask myself, why am I here? As Aunty Carolyn Briggs says, what is my purpose? Through this research, I keep exploring the different levels of my identity and consciousness, work that has been inspired and shared through my yarns with Aunty Carolyn and my genealogical understandings. I am a mixed breed descended from the mix of European settlers and Indigenous people in the Americas, most likely from Nahua and Otomi ancestry, whose traditional lands include the highlands of Hidalgo, where my father's Indigenous ancestry possibly descends from. From his genealogy, we have traced genetic ethnic signatures not only from Indigenous Amerindians but also from Inuit and Melanesians. From my mother's side, I descend from Balkan, Scandinavian, Gaelic, and Celtic ancestry, yet another mix to add to this complex consciousness.

Growing up in Tepoztlán taught me to pay respects to my elders and to the traditions and cosmologies embedded in the land. It is respectful to present yourself on other Indigenous people's land. In saying that, I recognise that my research is being done in Boon Wurrung Country and want to acknowledge how and why I have been researching in their Country.

This research aims not to disrespect; rather, my purpose is to share my experience of recognising my own Indigeneity. In this chapter, I want to introduce myself and my research, not as an outsider but as 'another' who respects and values the land, the sky, the water, and the underground in which we are here today.

Tepoztlan En Su Laberinto, eds. Alfonso Valenzuela Aguilera and Maria Cristina Saldana Fernandez (Mexico: Universidad Autonoma del Estado de Morelos, 2020), 271–340, 280.

[17] Tequio is a Nahuatl word for the labour one does as a member of a community to favour the collective necessities of that community; it is offered without payment and its part of the cohesion of identity building.

1.3. Academic background: a brief reflection of anthropology in Australia.

Anthropology has a long history. In the fifteenth century, Europe expanded into the globe, encountering new environments and people that many explorers sought to understand. Herbert Spencer, influenced by Lyell's geological works and Darwin, developed his views on human and social evolution. Although Spencer's contributions to western thinking marked an important scientific advance, it came to scientific racism which opened the door to ideas of the Noble Savage and the primitive, in which the native populations were seen as relics of human evolution, undeveloped, and as Sutton[18] explains, "preserved in their isolated areas like so many living fossils in their geological strata. By studying them, one could hope to unravel the history of the human species, especially if assisted by the newly developing science of archaeology."

While Europe expanded into the world with violent colonisation, anthropology was beginning to develop as a science of history and social evolution that westerners could use to justify the colonial aggression and domination over the old worlds.[19] Since then, the discipline has carried the burden of its colonial origins. However, anthropology has long reflected upon its roots and has now moved towards a more reflective ethnography, a tool for bridging and understanding. With this, I don't mean to excuse the anthropological inquiry but instead, offer a new perspective as a practising anthropologist.

In Australia, museum anthropologists, in decades earlier than the 1970s, explains Sutton,[20] focused on recording data such as territories, languages, ceremonies, and technologies of Aboriginal groups. Although western European theorists on social evolution influenced them, Australian anthropologists refrained from theorising and focused on data recollection. But through the display of Aboriginal culture in museums without Indigenous involvement, the political context which located the Indigenous Australians in the same category as flora and fauna in museums, and the lack of human rights and land ownership, the anthropological inquiry only reinforced those injustices rather than alleviated them.[21]

After the 1970s, Australian anthropologists recognised that their research and writings did not represent the social life of communities they once perceived as primitive. Myers[22] argues, "The natural hegemony of this approach has now evaporated (...) We have moved outward from community-based studies to multi-sited projects engaged with understanding how

[18] Peter Sutton, "Anthropological History and the South Australian Museum," Australian Aboriginal Studies, no. 1 (1986): 45–51.

[19] Sutton, "Anthropological History and the South Australian Museum," 46.

[20] Sutton, "Anthropological History and the South Australian Museum."

[21] Paul Burke, "Towards an Ethnography of Anthropology's Encounter with Modern Law," in Law's Anthropology: From Ethnography to Expert Testimony in Native Title (Canberra: ANU Press, 2011), 1–34.

[22] Fred Myers, "We Are Not Alone: Anthropology in a World of Others," Ethnos 71, no. 2 (June 2006): 233–64, 234.

broader relationships constitute the local." More collaborative relationships with the communities have exposed the unsustainability of the 'us' and 'them' approaches. Anthropology has adopted a code of ethics in which research serves not only as an academic endeavour but as the reading of scientific evidence in courtrooms and hearings.[23]

However, ethnographic tools such as 'rapport' assumed "a separation between the world of the subject and the professional world of anthropological writing, one that typically conceived of the anthropologist as the producer of knowledge."[24] What is now known as the 'Politics of Representation' poses the question to all of us in the social sciences: Who is suitable to produce that knowledge.

Cultural Anthropology[25] in the United States involved intensive and long-term fieldwork in remote communities that included methods such as participant-observation and rapport: "The powerful shorthand concept used to stand for the threshold level of relations with fieldwork subjects that is necessary for those subjects to act effectively as informants for anthropologists,"[26] which only reproduced the production of knowledge of 'them' to 'us.' However, Marcus[27] says, "There are now signs of the displacement of this foundational commonplace of fieldwork, given the changing mise-en-scene in which anthropological research is now frequently being constituted."

Rivoal and Salazar[28] agree,

> Rooted in the intellectual endeavour of investigating human unity through cultural diversity, anthropology has long focused on descriptions of "Otherness". However, ethnographers who enter the discipline today are more concerned with "the challenge of the contemporary" (…) The challenge for them is to know how the people under study will manage to (re)invent sociocultural forms that suit the rapidly changing (global) context in which they live – and possibly find ethnographic vantage points to describe this.

Marcus, through a series of analytical and reflexive research of the anthropological inquiry and its methods, has suggested that the figure of 'rapport' might be replaced with that of 'collaboration,' which indicates a more complex interface than the binary dichotomy of 'us' and 'them'. Marcus [29] states "Theoretically, collaboration creates a figure for a much more complex understanding of fieldwork (…) The collaborative ideal entails the notions that knowledge creation in fieldwork always involves negotiating a boundary between cultures and that the result is never reducible to a form of knowledge that can be packaged in the monologic voice of the ethnographer alone."

[23] Paul Burke examines the role and development of Australian anthropologists in native title claims and other cases in his introductory chapter, "Towards an Ethnography of Anthropology's Encounter with Modern Law."

[24] Myers, "We Are Not Alone," 245.

[25] While the British tradition of anthropology seeks to create narrow specialists in social anthropology, the American tradition provides a solid ground in the four areas of anthropology (cultural anthropology, archaeology, biological anthropology, and linguistics) before the student can specialise. My academic background comes from the American tradition mixed with the application of fieldwork in the Latin American context.

[26] George E. Marcus, Ethnography through Thick and Thin (Princeton: Princeton University Press, 1998), 106.

[27] Marcus, Ethnography through Thick and Thin, 106.

[28] Isabelle Rivoal and Noel B. Salazar, "Contemporary Ethnographic Practice and the Value of Serendipity: Ethnographic Practice and Serendipity," Social Anthropology 21, no. 2 (May 2013): 178–85, https://doi.org/10.1111/1469-8676.12026, 179.

[29] George E Marcus, "The Uses of Complicity in the Changing Mise-En-Scène of Anthropological Fieldwork," Representations 59, no. Special Issue: The Fate of "Culture": Geertz and

Myers[30] agrees with Marcus and states that anthropologists in Australia have acknowledged this, moving to a more collaborative approach and relationships of knowledge production with Indigenous communities in which the 'us/them' dyad is no longer sustainable.

Myers [31] speaks for an approach in anthropology as a participatory and shared practice that acknowledges culture as a re-elaborative process, not a static one. "I believe it is possible to have a 'shared anthropology' — one in which we can contribute both to the anthropological project and those of our subjects."[32] An anthropology that, far from being stuck in the notions of social evolution, can translate and break down or, as he states, "make porous the boundary of cultural difference."

In their book Reading the Country, Benterrack, Muecke and Roe[33] also account for the transformation of the discipline in the last decades, from its birth in European Imperialism as investigators serving the colonial powers to contain the colonised 'Others' to a self-reflective science that tries to find out more about ourselves and how our backgrounds tint our position and communication of knowledge.

Brian Martin [34] states that in the Indigenous worldview, "all matter, including knowledge, has agency," and everything is interconnected through a system of relationality. The Australian Indigenous Design Charter [35] defines 'Relationality' as the state or condition of being relational; that is, how two or more people or things are connected. For Indigenous communities, relatedness is part of their identity. Karen Martin [36] explains it:

> We are therefore related to every inch of our Country and to
> every Entity within it, but there are sites where this relatedness is
> deeper for some Entities. For People, this depth of relatedness
> is experienced in terms of gender where there are women's sites
> or men's sites. There are also areas within our Country where the
> relatedness is deeper for certain families or clans.

It is relatedness that allows us to understand the Indigenous worldview, in which, according to Brian Martin,[37] the only way to legitimise research practice is to realise that there is no separation between method and content, epistemology and ontology, as everything is interconnected.

Karen Martin[38] expresses that relatedness occurs across different dimensions: physical, spiritual, political, geographical, intellectual, emotional, social, historical, sensory, instinctive, and intuitive. Looking at the natural

Beyond (Summer, 1997) (1997): 85–108, 92.

[30] Myers, "We Are Not Alone," 234-235.

[31] Myers, "We Are Not Alone," 259-260.

[32] In this research there is no such thing as subjects.

[33] Krim Benterrak, Stephen Muecke, and Paddy Roe, Reading the Country. Introduction to Nomadology, (Fremantle WA: Fremantle Arts Centre Press, 1984).

[34] Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge," Educational Philosophy and Theory 49, no. 14 (December 6, 2017): 1392–1400, https://doi.org/10.1080/00131857.2017.1298034, 1393.

[35] Indigenous Architecture and Design Victoria, Design Institute of Australia, and Deakin University – Institute of Koorie Education, "Australian Indigenous Design Charter: Communication Design. Protocols for Sharing Indigenous Knowledge in Communication Design Practice," n.d.

[36] Karen Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers (Teneriffe Queensland: Post Pressed, 2008), 70.

[37] Martin, "Methodology Is Content."

[38] Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers.

environment is looking at the built one, at the people who have cared for the land, at the waterways and the skies. It is looking at oneself in this system of relatedness and reflecting upon the research being done.

Uncles Charles Moran, Greg Harrington and Norman Sheehan[39] suggest that "Respectful Design is founded on the understanding that design is ancestral and alive in Country." In an Indigenous worldview, Country informs people about their identity and culture; positioning oneself with Country, as Brian Martin[40] explains, is understanding that people and Country have both agencies, inseparable in the system of relatedness. Therefore, how we obtain knowledge is important, as this impacts the agency of that knowledge.

As mentioned, ethnographers have faced this reality in the last few decades. In acknowledging the agency of knowledge, James Clifford[41] believes the reflexive accounts from ethnographers, by narrating interpersonal experiences, allow for the text to be transformed into a speaking subject "who sees as well as is seen, who evades, argues, probes back (…) In this view, 'culture' is always relational, an inscription of communicative processes that exist, historically, between subjects in relations of power."

The relations of power that Clifford suggests refer to who is rightful to bear that knowledge and who is suitable to represent it: what scholars call the politics of representation. Today, it is the ethnographer's job to reflect and recognise that all knowledge has agency and that cultures are not scientific objects nor informants but agents in a system of relationality. In a way, ethnographers can be an interpolation point that, along with knowledge's agency, can perhaps bridge understandings and worldviews rather than neglecting them, asking new critical questions on how anthropology can continue to develop and contribute. As Karen Martin[42] says: "With relatedness as premise and impetus, there is no such thing as Outsider, or Other, but of Another."

1.4 Cultural protocols: collaboration, co-creation and supervision.

This research is being held in the Traditional Lands of the Boon Wurrung and other clans of the Kulin Nation. For that, we must understand the Indigenous worldview, sticking to the values that involve working with Indigenous people. The Australian Indigenous Design Charter (AIDC)[43] stipulates that when

[39] Moran, Harrington, and Sheehan, "On Country Learning."

[40] Martin, "Methodology Is Content."

[41] James Clifford, "Introduction: Partial Truths," in Writing Culture: The Poetics and Politics of Ethnography, eds. James Clifford and George E. Marcus (Berkeley/Los Angeles/London: University of California Press, 1986), 1–26, 14-15.

[42] Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers, 148.

[43] Indigenous Architecture and Design Victoria, Design Institute of Australia, and Deakin University - Institute of Koorie Education, "Australian Indigenous Design Charter: Communication Design. Protocols for Sharing Indigenous Knowledge in Communication Design Practice."

working on projects involving the representation of Indigenous culture, the projects need to adhere to a set of guidelines: to ensure the project is Indigenous-led and respects the rights of Indigenous people to be self-determined; respects the cultural protocols of the Indigenous community in which the project is undertaken; ensures a respectful and personal engagement for effective communication; considers the implications of the design upon the community; invites actions that can be improved by Indigenous Knowledge; obtains the correct permissions to honour cultural ownership and integrity; and implements methods of engaging and sharing knowledge.

Honouring the guidelines provided by the AIDC, this research was undertaken through collaboration, supervision, and co-creation with N'arwee't Carolyn Briggs; these steps involved determining Indigenous methods that would be used to learn from and with Country according to the Boon Wurrung cultural protocols established by N'arwee't Carolyn Briggs. Throughout the research, N'arwee't Carolyn Briggs and I shared our understanding of the world through building a relationship with daily practices that included walks, yarns, sketches, deep listening and observing. Through these Ways of Doing, the methodology included considering a set of practices of relatedness: reflecting, contemplating, living, connecting, and keeping on building (and nourishing) relationships. By sharing our stories of relatedness, we ensured relatedness would be respected and proposed ways to be responsible, accountable, reciprocal, understanding and caring. It was through respectful design that these guidelines were set as my guidelines to work with Australian Indigenous ways. I would also like to advise the reader that my ethnicity and identity have directly influenced the research as I, too, come from an Indigenous and colonial background.

Indigenous frameworks such as respectful design are culturally inclusive by nature. This meant that my ethnicity and identity were interwoven into the research, as my own stories of relatedness are positioned through my experiences as a mestiza woman. Respecting my positionality and culture, stories of my culture are shared throughout the thesis. Respecting and honouring N'arwee't Carolyn Briggs and my culture, our yarns, sketches, and discussions were framed using Boon Wurrung, Spanish and Nahuatl languages. Some excerpts of our yarns are included to give context to the reader. However, all Boon Wurrung knowledge is attributed to Boon Wurrung's custodianship. The co-creation and collaboration with N'arwee't Carolyn Briggs also involved continued supervision, feedback, and re-iteration to honour and respect her knowledge and role in this research.

1.4 Is there a space for a non-Indigenous Australian to do this research?

Both design and anthropology are disciplines that come of a western and colonial origin.[44] Designing, planning, and researching must bear responsibility in places where colonisation is sensitive. Furthermore, acknowledging an unbalanced power relationship in research and understanding one's privilege must be central to research studies in these fields. Scholars engaged with Respectful Design[45] argue that to overcome those binary spaces and hierarchies, a third space can be developed, where the dominant identity is not from the person who comes from outside. Rather, this third space builds from the dynamic of the interaction between all stakeholders, allowing a balanced relationship while respecting each stakeholder's involvement. Designers can stimulate this third space by using tools and methods such as conversations and discussion starters. However, as Reitzma et al.[46] acknowledge, designers do not create solutions but rather can participate in understanding their personal connection to the design process and the communities' own Indigenous Knowledge to help close the gap. Design, as Norman Sheehan[47] explains, aspires to a deeper awareness that creates spaces for innovation and creativity, which contribute positively to the well-being of our relational system.

Using design processes as a tool to start conversations allows for non-Indigenous Australians like myself to learn from the community and share ideas to develop a broader understanding, enabling third spacesw of solidarity and relationships. In addition, decolonising research can be advanced by deep self-reflection to build relationality and by seeking to immerse oneself in experiences to develop deep listening.[48]

Is this the place for a Non-Indigenous Australian to do this kind of research? Yes, but only by grounding it within the framework of the community, committed to the recovery and reconciliation with a broader audience so that the gap can be closed. Indigenous and non-Indigenous peoples in this research work together to navigate the parallel worlds of Indigeneity and colonialism, as Ted Jojola and Ryan Walker[49] state, to redress the history.

Hirini Matunga[50] argues that for planning to be Indigenous, it must be according to Indigenous analysis, frameworks, values, and processes. In working with communities, Matunga[51] states that

> The aim should be knowledge collaboration rather than competition, and alliance rather than combat. Equally, oppositional, binary distinctions between tradition and modernity

[44] Matunga, "Theorizing Indigenous Planning."

[45] Lizette Reitsma et al., "A Respectful Design Framework. Incorporating Indigenous Knowledge in the Design Process," The Design Journal 22, sup1 (April 1, 2019): 1555–70, https://doi.org/10.1080/14606925.2019.1594991.

[46] Reitsma et al., "A Respectful Design Framework. Incorporating Indigenous Knowledge in the Design Process."

[47] Norman W. Sheehan, "Indigenous Knowledge and Respectful Design: An Evidence-Based Approach," Design Issues 27, no. 4 (October 2011): 68–80, https://doi.org/10.1162/DESI_a_00106.

[48] Brian Martin et al., "Situating Decolonization: An Indigenous Dilemma," Educational Philosophy and Theory 52, no. 3 (February 23, 2020): 312–21, https://doi.org/10.1080/00131857.2019.1652164.

[49] Ryan Walker and Ted Jojola, McGill-Queen's Native and Northern Series, Volume 70 : Reclaiming Indigenous Planning, ed. David Natcher, vol. 70, McGill-Queen's Indigenous and Northern Studies (McGill-Queen's University Press, 2013).

[52] Matunga, "Theorizing Indigenous Planning."

[51] Matunga, "Theorizing Indigenous Planning," 18.

are unnecessary and should be removed. Indigenous knowledge exists on a temporal continuum of ongoing contextualizing and adaptation by the community. The community alone has the right to determine relevance and epistemic coherence.

In this sense, in this research, Indigenous representation oversaw the development and process of this research, respecting the community protocols. In this way, the information gathered in this research is only represented with the permission of the Boon Wurrung Elders and respects their cultural ownership of the knowledge they have shared with me.

I acknowledge the cultural diversity of Aboriginal and Torres Strait Islander cultures and have followed the community-specific cultural protocols provided by the community. I also advise the readers that this research was carried out by a non-Indigenous Australian and that this work could only be achieved by collaborating and co-creating with the Boon Wurrung Elder, N'arwee't Carolyn Briggs. Therefore, the main goal of the research is to empower Indigenous peoples by reflecting on their cultural values and identity. The information shared by N'arwee't Carolyn Briggs is her intellectual property, as she is the primary guardian of her culture.

So, who am I, why am I here, and what is my purpose? I am a Tepoztiza woman with Indigenous ancestry from the Amerindians of Mexico, Otomi and Nahua, and a mix of Balkan, Scandinavian and other northern European combinations. I am an uninvited guest in Boon Wurrung Country, and at the time I'm writing this thesis, I live in Woi Wurrung Wurundjeri Country. Through this research, my purpose is to learn from Country through relatedness, understand where I belong, and learn how to care for it. In this way, by sharing my experience, perhaps other anthropologists, designers, planners, architects, and uninvited guests can also relate with traditional devices of relatedness to Country to inform their projects, decolonise their thinking, and offer more culturally and ecologically sustainable alternatives for the future.

Because I, a mestiza,

continually walk out of one culture

and into another,

because I am in all cultures at the same time,

alma entre dos mundos, tres, cuatro,

me zumba la cabeza con lo contradictorio.

Estoy norteada por todas las voces que me hablan simultaneamente.

– Gloria Anzaldúa, 1987,[52] Una lucha de fronteras

[A struggle of Borders].

[52] Anzaldúa, Borderlands/ La Frontera: The New Mestiza.

Chapter 2.
The underground: complexities and problems

Introduction

In 1978 a group of electricians were updating the electrical cables that run underneath Mexico City's central square. While the technicians were excavating for the upgrade, their machines bumped into a hard material that stopped the work immediately. The workers thought it might be a rock, unusual in the traditional wall foundations of an ancient house. The stone that appeared was big, about 3.25 meters in diameter, and seemed carved. Soon after this event, the Mexican National Institute of Anthropology and History (INAH) sent archaeologists to survey the area, concluding that the monolith had a carving of an old goddess of the Mexica culture: Coyolxauhqui.[1]

Coyolxauhqui was the daughter of Coatlicue, the goddess of the earth and mother of the gods and all the Mexica people. The Mexica story says Coatlicue was pregnant with a boy whose father's identity was unknown. Coatlicues' 400 children were upset about this and, led by Coyolxauhqui, decided to murder their mother and her unborn child. At the same time, the children were coming to assassinate their mother, and the unborn child communicated to his mother, telling her what her sons and

[1] A recount of the finding of the monolith of Coyolxauhqui can be found in Mexico Desconocido, "Así fue el hallazgo de la diosa Coyolxauhqui en CDMX," n.d., https://www.mexicodesconocido.com.mx/hallazgo-coyolxauhqui.html.

[2] A comprehensive history of Mexico is found in A New Compact History of Mexico published by El Colegio de Mexico.

[3] An interesting overview of the hydrological developments of Lake Texcoco is given in: Carolina Montero-Rosado et al., "Water Diversion in the Valley of Mexico Basin: An Environmental Transformation That Caused the Desiccation of Lake Texcoco," Land 11, no. 4 (April 8, 2022): 542, https://doi.org/10.3390/land11040542.

daughters had planned. When they arrived, the child was born and fought them. He confronted his sister Coyolxauhqui, cut her head, and then threw her body from the top of Coatepec hill. Coyolxiauhqui fell on the foot of the mountain, dismembered. It is said that the newborn child was Huitzilopochtli, the God of war and the sun, one of the most important gods for the Mexica, along with Tlaloc, the God of rain.

The finding of Coyolxiahqui helped archaeologists in Mexico City to recover the remains of what used to be Templo Mayor, the centre of the Aztec Empire. Until today, incredible findings keep archaeologists working on Templo Mayor. Yet what is most important in this anecdote is that through the uncovering of this stone, essential knowledge has been recovered about the people who fought against Spanish colonisation, their way of life, economic trade, sacred and housing architecture, their cosmology, rituals, and wars. This finding foregrounded the history of Tenochtitlan city before the Spanish invasion and made Mexico City remember its pre-Colombian life.

Like Melbourne, the underground in Mexico City is very swampy; the Mexica people used to call the area altepetl, which means water-mountain, but was the name given to each Mexican lordship. The valley of Mexico was a grid of streets and canals, where three important kingdoms received tributes from the rest. For two hundred years before the Spanish arrived, the area provided prosperous agriculture in chinampas, small patches of land that allowed growing crops on shallow lake beds.[2] Mexico Valley was an elevated basin where five interconnected lakes would rise their water levels in the rain season and decrease in the dry months. The Aztec Empire founded its capital on this basin by constructing complex engineering that handled flooding, agriculture, and urban water supply. When the Spanish invaded Mexico, they established their settlement on top of this ancient city, demolishing as much as they could and covering its urban pattern with their Iberian urban organisation, which involved draining the lake of Texcoco to grow its density and create what would become, in later years, Mexico City.[3]

[4] Chinampa is a farming system developed by the Nahua people in Mexico City. The Chinampas are built on small rectangular areas of fertile land over shallow lakes. Some, where built with woven canes stuck on the lake bed and filled with soil.

[5] An Axolotl or axolote in an amphibian, is a kind of aquatic salamander that is found in lakes underlying Mexico City. It used to be an important part of the precolonial ecosystem of the lake system of the basin of Mexico.

[6] Many scholars have argued that the pressures of above ground are increasingly demining the use and exploitation of underground space and resources. An example of this logic can be reviewed in the work of Roya Zargarian et al., "A New Sustainability Framework for Urban Underground Space," Proceedings of the Institution of Civil Engineers - Engineering Sustainability 171, no. 5 (August 1, 2018): 238–53, https://doi.org/10.1680/jensu.15.00013, 238.

[7] Hunt et al. argue that the underground urban space can facilitate sustainable development while preserving the above ground while avoiding the shocks and trauma that impact the subsurface. the authors describe the legal processes cities around the world have created to manage underground policy. See D.V.L. Hunt et al., "Liveable Cities and Urban Underground Space," Tunnelling and Underground Space Technology 55 (May 2016): 8–20, https://doi.org/10.1016/j.tust.2015.11.015, 10.

Some remnants of the ways of life by the water are still visible around the city; in Xochimilco the trajineras, a sort of flat-bottomed canoes, navigate through canals where people still grow crops in chinampas,[4] and just like eels in Melbourne, axolotls[5] still swim in the old waterways of Mexico City. The once-upon-a-time waterscape that characterised Mexico City tries to come back into its residents' spatial and visual memory, with flooding occurring every year.

The urban development of Mexico City, from its Aztec foundations to the megalopolis of today is bounded by the intrinsic relationship between water and the underground. Familiarly, Melbourne is too. Water knowledge and memory run beneath the streets. This research focuses on the interception of intangible and tangible undergrounds in the stories and knowledge of water that lie beneath the concrete urban interventions of the colonial settlement.

2.1 The underground

Humans have long interacted with the underground, whether as a space for inhabitation, burial, storage, and disposal, or by exploiting underground resources that support human life, such as minerals, materials, or water. As the global urban population grows, urban sustainability has become the centre of global debates.[6] As climate change is more imminent, using underground space offers an alternative for sustainable cities.[7] The subsurface and its resources can make cities more liveable, sustainable, resilient, and inclusive.[8]

The consideration of the subsurface for the development of urban spaces aims to shape future cities to adapt to climate change and to support urban resilience.[9] Nevertheless, as the world surface becomes more and more contested and congested, resources grow scarcer, increasing the pressure on the urban underground. The rise of a whole field of study focusing on the underground is an example of how this space is becoming more controversial. The research about the underground goes beyond geology and archaeology; it has increasingly been researched in engineering and urbanism to tackle the rising issues of above ground and propose new sustainable development options.

Sustainable development is based on three pillars: economy, environment, and society. Underground urbanisation proposes using the underground in

[8] Underground urban strategist Han Admiraal and urban planner Antonia Cornaro argue that to achieve underground space sustainability, surface planning must include the underground space and resources as part of the urban tissue. See: Han Admiraal and Antonia Cornaro, "Why Underground Space Should Be Included in Urban Planning Policy – And How This Will Enhance an Urban Underground Future," Tunnelling and Underground Space Technology 55 (May 2016): 214–20, https://doi.org/10.1016/j.tust.2015.11.013, 215.

[9] In their work, "Future Cities, Resilient Cities," Admiraal and Cornaro continue to discuss the emergent need for use and management of underground spaces, as the use of the subsurface could alleviate the stresses above the ground. Read more: Han Admiraal and Antonia Cornaro, "Future Cities, Resilient Cities – The Role of Underground Space in Achieving Urban Resilience," Underground Space 5, no. 3 (September 2020): 223–28, https://doi.org/10.1016/j.undsp.2019.02.001, 6.

[10] Nikolai Bobylev explores how can underground sustainability be considered as part of mainstream city planning, as he argues, the city centres tend to have a denser use of the underground, therefore, he argues, sustainability and management of the underground should be considered across the globe. See Nikolai Bobylev, "Mainstreaming Sustainable Development into a City's Master Plan: A Case of Urban Underground Space Use," Land Use Policy 26, no. 4 (October 2009): 1128–37, https://doi.org/10.1016/j.landusepol.2009.02.003.

[11] Huan Qing Li and other underground planners define Underground Urbanism as a method

the long term, which requires lower maintenance costs, contributing to the economy in the long run. Its planning focuses on developing more compact cities that tackle urban sprawl while safeguarding the natural environment, helping reduce atmospheric emissions, and providing efficient energy. In addition, the underground can offer new public services and spaces that can contribute to equity and the well-being of society with better public infrastructure.[10]

Underground urbanism[11] emerges as an innovative concept for urban planning to relocate space underground while releasing surface land and safeguarding underground resources such as geomaterials, water, and energy, as well as the use of space. Nevertheless, there are now multiple and overlapping demands on the urban underground realm: layers of progressively outdated services and infrastructures; substantial underground parking developments; overlapping underground transportation systems; continued requirement for extractive industries such as quarrying; and new forms of geo-energy production, to name a few.

The underground is increasingly becoming a complex subterranean space of stacked and intertwined infrastructures[12] where spatial control is its most contested issue.[13] Above ground, increased densification has been accompanied in many places by the development of complex systems of governance and planning which regulate the way space is used and by whom. Despite the parallel densification of the area under urban environments, the use and exploration of the underground have remained unplanned. Although there have been moments and locations throughout history where the use of the underground has been highly regulated,[14] occupation or exploitation of the underground has historically proceeded on a 'first-come, first-served basis', where a series of unrelated and relatively small interventions result in the development over time of an unplanned, undocumented, and often chaotic underground realm.[15]

A great range of modern urban problems has rightly been identified as being influenced by the unplanned development of the underground realm: unforeseen clashes between disused and proposed infrastructure; the building out of access to required natural resources such as construction materials; and large-scale flooding of cities due to ill-considered interventions which interrupt natural underground water flows. There is a growing consensus that underground space development needs better-integrated planning, regulation, and monitoring, particularly in highly densified environments.[16] Methodologies

to restructure the underground to use its space for releasing surface land while safeguarding subsurface resources, including water, space, geomaterial and geo-energy. See Huan-Qing Li et al., "An Integrated Planning Concept for the Emerging Underground Urbanism: Deep City Method Part 1 Concept, Process and Application," Tunnelling and Underground Space Technology 38 (2013): 559–68, https://doi.org/10.1016/j.tust.2013.04.010.

[12] In Stephen Graham's 2016 book Vertical: The city from Satellites to Bunkers, Graham invites us to rethink the verticality of cities and their connection to the underground, the sky and other planets. He sees cities are three-dimensional labyrinths that can be understood beyond the horizontal approaches of mapping, toward a complex multilayered space. Read Stephen Graham, Vertical: The City from Satellites to Bunkers (New York and London: Verso, 2016).

[13] Pierre Belanger argues that the underground is not immune to the socio-political and economic contestations of the above ground. The author invites us to reflect on underground ownership and legal accessibility. Read Pierre Bélanger, "Underground Landscape: The Urbanism and Infrastructure of Toronto's Downtown Pedestrian Network," Tunnelling and Underground Space Technology 22, no. 3 (May 2007): 272–92, https://doi.org/10.1016/j.tust.2006.07.005.

[14] The Victorian Goldrush is an example of a specific time/place which resulted in an explosion of exploration, documentation, and regulation of the underground realm. See Laura Harper, "Gold Rush Urbanism: Continuing

such as the Deep City method and others have developed to address the clashes between the spatial and material aspects of the underground.

Nevertheless, other clashes also occur between plans to use or exploit the underground for productive purposes and pre-existing sites of cultural meaning, which this exploitation would destroy. Examples include building development that threatens cultural significance sites; for example, the findings of rare indigenous artefacts and places on Rio Tinto's iron mining explorations in the Pilbara.[17] Transport and infrastructural developments threaten sacred trees, such as the decision of the Victorian government to cut down a birthing tree for the Djab Wurrung people to make way for a highway.[18] Or the New South Wales Warragamba Dam Wall project to raise its wall, which would destroy cultural sites that are part of the stories of the creation of the Blue Mountains by the Gundungurra people.[19] Another example is the artificial interventions in underground water catchments that affect the cultural activities and livelihood of existing communities and ecosystems. The over-pumping of water out of aquifers in the Otway, for example, has led to drained waterways, toxic soils, and increased bushfires, among other negative impacts.[20] The clashes between the physical and cultural value of the underground point to the need for a relational framework that can understand the less tangible layers of the underground to propose more environmentally and socially just futures for the city.

Aiming to expand knowledge in interdisciplinary fields and to create a visible resource to enable future researchers and planners to understand the way urban environments develop over time, the long-term project, The Atlas of The Underground: The Deep Urban History of Melbourne, will offer alternatives that will respond to the challenges and changing conditions of the future. It is within this project that this research is born.

2.2 Defining the underground

The term 'underground' is commonly used in two ways: firstly, to define the physical space which extends from the centre of the Earth, bounded by but also including the ground, which itself can be thought of as the line between the atmosphere and the earth. Secondly, the underground can be used to describe things that are hidden or concealed, perhaps existing below or in a marginalised relationship to the establishment. This second type of underground evokes everything that operates or is situated below the surface, from clandestine economies and production outside the establishment to

Effects of Gold Mining on the Urban Form of Victorian Towns," in Proceedings of the Society of Architectural Historians, Australia and New Zealand: 33, Gold., eds. Annmarie Brennan and Philip Goad, vol. 33 (Melbourne, Australia: SAHANZ, 2016), 236–48.

[15]In the article "Why Underground Space Should Be Included in Urban Planning Policy – And How This Will Enhance an Urban Underground Future," Han Admiraal and Antonia Cornaro address the challenges in underground planning, including its tangible accessibility, its contested legal ownership, and even its liability as multiple stakeholders are increasingly wanting to use and exploit the subsurface. Maria de Lourdes Melo Zurita adds to this discussion stating, that the underground urban development has neglected holistic planning processes that include not only the technicalities of projects but also their social and cultural aspects. See Maria de Lourdes Melo Zurita, "Challenging Sub Terra Nullius: A Critical Underground Urbanism Project," Australian Geographer, February 10, 2020, 1–14, https://doi.org/10.1080/00049182.2020.1723829, 2.

[16] David Evans, Mike Stephenson, and Richard Shaw, "The Present and Future Use of 'Land' below Ground," Land Use Policy 26s (2009): s302–16, https://doi.org/10.1016/j.landusepol.2009.09.015, 314.

[17] Unfortunately, mining companies have increasingly neglected cultural sites of significance; the mining company Rio Tinto blew up 46,000-year-old rock shelters at Juukan Gorge in the Pilbara, traditional lands of the Puutu Kunti Kurrama and Pinikura peoples. Read more Ben Butler, "Rio Tinto Boss Admits Destroying Juukan Rock Shelters 'was a Dark Day' and Announces

ideals and symbols that are invisible yet important for the social fabric. An example could be what Jovchelovitch and Priego-Hernandez[21] describe as 'underground sociabilities' to all social forms that have been pushed down and made invisible to mainstream society by geographical, economic, symbolic, behavioural, and cultural barriers. I would also include all the social and cultural forms repressed and subdued by colonial settlement and oppression. The dominant representation socially constructs the repression and marginalisation of these sociabilities. The system of meanings, practices, values, and objects that constitute the background horizon in which these populations exist and live remain invisible, thus underground, hidden and covered up.

British writer Robert Macfarlane[22] distinguishes three ways in which the underground has been used in human history: "The same three tasks recur across cultures and epochs: to shelter what is precious, to yield what is valuable, and to dispose of what is harmful." In this way, the author locates the tangible and intangible features of the underground:

- To dispose of what is harmful: waste, trauma, poison, secrets.
- To yield what is valuable: information, wealth, metaphors, minerals, and visions.
- To shelter what is precious: memories, precious matter, messages, fragile lives.

Cultural sites – sites that are made by, and contain meaning for, humans – exist within this physical underground realm. A clear example of an underground cultural site is that of a burial, which has both a physical body of a deceased person but also the meaning applied to that site by loved ones as a place of memorial.[23] Other examples include archaeological sites of historical importance; natural geographical elements which relate to traditions and cosmology; or culturally significant waterways that (although we cannot necessarily see them) are continuous between above and below-ground situations.

In many cases, the physical underground overlaps with the metaphysical underground through the existence of physical sites of cultural significance that contain or embody repressed or forgotten memory. Archaeological sites, for example, are often found by accident, as development attempts to overlap sites that have been previously inhabited, such as the case of the Coyolxauhqui monolith in Mexico City. Usually, the meaning and even purpose of these archaeological sites have been forgotten but can be revealed through research

US$9.77bn Profit," The Guardian (blog), February 18, 2021, https://www.theguardian.com/australia-news/2021/feb/18/rio-tinto-boss-admits-destroying-juukan-rock-shelters-was-a-dark-day-and-announces-us977bn-profit.

18 In 2020, the Victorian government decided to cut down a culturally significant tree for the Djab Wurrung people of the Kulin nations, stating that it wasn't listed as a sacred site in their protection agreements with the Eastern Maar Aboriginal Corporation. The tree was believed to be 800 years old, directly linked to the dreaming and stories of the local Indigenous people. Read more Calla Wahlquist and Nino Bucci, "Chainsaws Tearing through My Heart': 50 Arrested as Sacred Tree Cut down to Make Way for Victorian Highway," The Guardian (blog), October 27, 2020, https://www.theguardian.com/australia-news/2020/oct/27/djab-wurrung-directions-sacred-tree-cut-down-victoria-western-highway-upgrade.

19 When the Warragamba Dam was built in 1960s, they flooded a great proportion of the cultural landscape for the Gundungurra people. This, as the other examples above shows the little understanding about cultural meaning attributed to Country by Indigenous People. The Australian Foundation for Wilderness Ltd. has created a campaign to stop the raising of the Warragamba Dam Wall. See Australian Foundation for Wilderness Limited, "Give a Dam about World Heritage Wilderness," accessed July 12, 2022, https://www.giveadam.org.au.

20 Matt Neal, "Otways Wetland Proposal by Environmentalists Seeks Unique Subterranean National Park Status," ABC News (blog), November 12, 2019, https://www.

and interpretation. Archaeological projects are designed to research material culture in situ, often found underground, but it is still bound to the limitation of accessibility and visibility.

The history of other underground sites may have been deliberately repressed. An example of this is the work of Ian D. Clark,[24] who records the massacre sites in Victoria, where violent historical events between European colonial settlers and Indigenous Australians led to the deaths of many Indigenous people. These sites have been covered up physically with soil and in memory by the telling of incomplete history. But why research below the ground? Robert Macfarlane[25] writes:

> It is a counter-intuitive action, running against the grain of sense and the gradient of the spirit. Deliberately placing something in the underland is almost always a strategy to shield it from easy view. Actively to retrieve something from the underland almost always requires effortful work. The underland's difficulty of access has long made it a means of symbolising what cannot openly be said or seen: loss, grief, the mind's obscured depths.

Both types of 'underground' (both physical and intangible) cannot be seen. In the case of the physical underground, cultural sites are covered up by the soil, pushed out of sight, often forgotten about and challenging to quantify, locate and understand without exposing them. Intangible cultural sites, including those underground, exist in memory; unseen documents or stories are also hard to see, quantify and map. The below and the above spaces are differentiated in collective memory through the implication of meanings and symbolic attributes that show us a version of history that foregrounds certain events. The underground becomes a discursive space that reveals untold stories of the city by hidden or repressed populations.[26]

2.3 Accessing the underground

The use of subsurface space offers a potential alternative for sustainability and preservation of the natural environment. As part of a strategy for climate change adaptation, underground space can be used for human occupation and storage. However, planners and engineers acknowledge that the main challenge within these realms is the underground's lack of visibility and accessibility, not only its physical invisibility, but also recognition of its metaphysical or intangible value.

abc.net.au/news/2019-11-12/300-years-to-repair-a-wetland/11662628.

[21] Sandra Jovchelovitch and Jacqueline Priego-Hernandez researched the psychosocial world of the favela communities in Rio de Janeiro, Brazil; UNESCO promoted their work to align to the Programme for Management of Social Transformations, aiming to support sustainable and efficient policy making between all levels of society. See Sandra Jovchelovitch and Jacqueline Pirego-Hernández, "Underground Sociabilities. Identity, Culture, and Resistance in Rio de Janeiro's Favelas" (Brasilia: United Nations Educational, Scientific and Cultural Organization (UNESCO), 2013).

[22] Robert Macfarlane's book Underland. A deep Time Journey compiles a series of myths and legends that recount the human relationship with the underground throughout different cultures and cultural sites.
Read: Robert Macfarlane, Underland: A Deep Time Journey, First American edition (New York: WW Norton & Co, 2019), 8.

[23] As seen in Robert Macfarlane's book, physical burials evoke the myths of life and death. Read more Macfarlane, Underland: A Deep Time Journey.

[24] A confronting history is presented by the work of Clark, which foregrounds the colonial violence while revealing a counter-history in the landscape. Read more: Ian D. Clark, Scars in the Landscape: A Register of Massacre Sites in Western Victoria, 1803-1859, Report Series / Australian Institute of Aboriginal and Torres Strait Islander Studies (Canberra: Australian Institute of Aboriginal and Torres Strait Islander Studies, 1995).

[25] Macfarlane, Underland:

Admiraal and Cornaro[28] remark, "underground space planning challenges urban planners and urban designers to make the invisible visible." Yet, the nature of the underground presents challenges to understanding it. On a tangible dimension, there is the challenge of recording and mapping the underground without necessarily seeing it and surveying it, the usual first step in mapping. In planning for the underground, the volume becomes more central than the area. Volume in the underground has been explored through different technological advances; examples include: seismic data or sonar, which uses sound waves that return a visual representation of the land below; ground-penetrating radar uses radio waves; LiDar technology uses laser light; and ERT uses electromagnetic waves. These technologies provide a kind of 3D scan showing the continuity of different materials or contours below the ground.

Other methods include core sampling, which involves drilling underground and provides more accurate data on extracted materials. Extracted material can serve as a witness of time as the layers of the ground give us information about the different materials and locations in time. In his book Vertical, Stephen Graham[29] states that the ground is humanly manufactured through the human agency of the Anthropocene, where humans create new layers of the ground:

> New urban soils are gradually created from 'trash, construction debris, coal ash, dredged sediments, petrochemical contamination, green lawns, decomposing bodies, and rock ballast.' Such accretions, in turn, are flattened to create a new, raised, surface level, which then becomes the building surface and the new 'ground' level.

The author explains how the cities have a layer of time in which human influence shaped and created the 'artificial ground.' In this way, the underground, natural and artificial, can be a means to look back into history.

The study of layers of history in the underground is not a simple task; the successive phases of development, the re-used and recycled soil, the waste and the artificial changes made by humans, leave a complex stratigraphy that cannot be understood only as a simple made-up accretion of historical layers, piled one over the other. As humankind enters the Anthropocene, it is essential to appreciate the undergrounds' history, which can be studied through understanding Deep Time. To construct a history of the underground requires us to expand urban study beyond the human scale of social history to encompass the 'deep time' of the geological events that have given it shape. Australian historian Tom Griffiths[30] describes the difference between

A Deep Time Journey, 11-12.

[26] Urban writer Domenic Beneventi analyses the Montreal's Underground through literature to describe the social dimensions that creates different social, ethnic, gender appropriations of underground urban spaces. See Domenic A. Beneventi, "Montreal Underground," Journal of Canadian Studies 46, no. 3 (Fall 2012): 263–92.

[27] Evans, Stephenson, and Shaw, "The Present and Future Use of 'Land' below Ground."

[28] Admiraal and Cornaro, "Why Underground Space Should Be Included in Urban Planning Policy – And How This Will Enhance an Urban Underground Future," 217.

[29] Graham, Vertical: The City from Satellites to Bunkers, 284.

[30] Tom Griffiths challenges the scientific discovery of human antiquity in Australia. The author recognises Indigenous custodianship of Australian Country for over 60 thousand years through the notion of deep time. See Tom Griffiths, "Social History and Deep Time," Tasmanian Historical Studies 7, no. 1 (2000): 21–38, https://doi.org/10.3316/ielapa.200103972, 22.

[31] Macfarlane, Underland: A Deep Time Journey, 15.

[32] Pierre Bélanger discusses the lack of attention given to the section as a technical drawing, compared to maps, a horizontal view of the world. He argues that the vertical view opens paths to an understanding of the world in its cyclical, complex, intertwined and overlapping relations across time and space. See Bélanger,

social history, which 'takes its chronological scale from a human lifespan,' and deep time, which embraces an ancient evolutionary history of which human endeavour accounts for the most recent and small layer.

John McPhee coined the term 'deep time' in 1981. The word 'deep' invokes an archaeological metaphor where antiquity can be understood in a vertical depth, suggesting that the past is buried in the ground. Deep time is the chronology of the underground.[31] Time is tangible through stone, stalactites, sediments, and tectonic plates. In vertical depth, the sectional drawing[32] allows us to understand and reveal the overlapping, intertwined and entangled dimensions of the complex underground urbanisation over time and space. Modern cities tend to swallow the earlier cultures that inhabited the space, unfolding into a contested and politicised area.[33]

The study of deep time allows us to acknowledge the cultures and histories that have been unrepresented. Griffiths[34] argues that by looking into the deep history of Australia, we can understand the Australian landscape as not only natural but also cultural, helping us comprehend the immensity of human experience and learn from the history of resilience, adaptability, and connection to Country. To consider deep time allows for recognising the continuing relationship of Indigenous Australians to the landscape over more than 65,000 years. Indigenous communities have a continuing relationship with the landscape through social, spiritual, and cultural values.[35] This is why, according to historian Ann McGrath,[36] to tell the story of this landscape, all kinds of research are required from different disciplines.

The concept of Country considers the land as more than just the landscape; it is a living entity with stories and histories that cannot be erased. Water bodies, minerals and geographic features in the landscape strongly connect to Indigenous cultural heritage and knowledge. These geographic elements hold the stories of creation and spirits that form the identity of Indigenous communities. Deep time invites us to rethink how we learn from geology, history, and archaeology, and in Australia, how oral histories can help us understand this Country, and, as we will see later, as cautionary tales that can prevent us from overwhelming our urban environments and learn from the past.

Aunty Carolyn[37] shares the Time of Chaos story:

Many years ago, the biik we now call greater Melbourne extended right out to the warreeny. Nairm (Port Phillip Bay) was then a large flat grassy plain. The Yarra River, as it is known today, flowed out across this flat plain into the warreeny. For the

"Underground Landscape," 5.

[33] In his book Vertical: The City from Satellites to Bunkers, Stephen Graham argues that looking at the cities from a vertical point of view, allows us to regard the buried structures, artifacts and narratives that have been destroyed, built upon, and forgotten due to historical, social, political, and economic accounts of the contemporary cities. Graham, Vertical: The City from Satellites to Bunkers, 294.

[34] Billy Griffiths aims to present the transformative nature of archaeology in decolonising its structures to account for Indigenous perspectives in Australia in his book Deep Time Dreaming. He argues that through the notion of deep time, we can recognise cultures and narratives that have been unrecognised for so long. See Billy Griffiths, Deep Time Dreaming : Uncovering Ancient Australia (Collingwood: Black Inc, 2018), ProQuest Ebook Central, https://ebookcentral.proquest.com/lib/monash/detail.action?docID=5058720, 293.

[35] Robyn Heckenberg, "Learning in Place, Cultural Mapping and Sustainable Values on the Millawa Billa (Murray River)," The Australian Journal of Indigenous Education 45, no. 1 (August 2016): 1–10, https://doi.org/10.1017/jie.2015.23.

[36] In the book Long History, Deep Time, historian Ann McGrath states that the discipline of history alone cannot account for the depth of history that surpasses human antiquity. She argues that new tools and techniques must be incorporated. See: Ann McGrath, "Deep Histories in Time, or Crossing the Great Divide?," in Long History, Deep Time: Deepening the Histories

Boon Wurrung, this wurneet was known as Birrarung (the river of mists).
Later this wurneet is called Birrarung.

This large plain was covered in buath and tarrang biik on which the Boon Wurrung men hunted guyeem and barramaeel. The bagurrk cultivated the murnong. They collected food from the wurneet and the warreeny and harvested the iilk that migrated through there every year.

The Boon Wurrung were the custodians of their biik but traded with and welcomed people from other parts of the Kulin Nation. They obeyed the laws of Bundjil, who travelled as an eagle, and Waang who travelled as a crow.

One day – many, many years ago – there came a time of chaos and crisis. The Boon Wurrung and the other Kulin nations were in conflict. They argued and fought. They neglected their biik. The native murnong was neglected. The animals were over killed and not always eaten. The gurnbak were caught during their spawning season. The iilk were not harvested.

As this chaos grew the warreeny became angry and began to rise. The wurneet became flooded and eventually the whole flat plain was covered in baany. It threatened to flood their whole barerarerungar.

The people became frightened and went to Bundjil, their creator and spiritual leader. They asked Bundjil to stop the warreeny from rising.

Bundjil was angry with his people, and he told them that they would have to change their ways if they wanted to save their land. The people thought about what they had been doing and made a promise to follow Bundjil.

Bundjil walked out to the warreeny, raised his tjeera and directed the warreeny to stop rising. Bundjil then made the Boon Wurrung promise that they would respect the laws.

The baany never subsided but stayed to create a large bay that the Boon Wurrung called Nairm. Today it is known as Port Phillip Bay. The warreeny took away much of the biik of the Boon Wurrung and much of their barerarerungar was reduced to a narrow strip of coastline.

The Boon Wurrung learnt from their mistakes. They returned to their old values and the laws of Bundjil. They took greater care of the biik of Bundjil and the bubup of Bundjil.

They met with the other Kulin people and sorted out their differences through sports, debates and dance.

One of the most important laws that Bundjil required to be obeyed was for Boon Wurrung people to always welcome visitors

of Place, eds. Mary Anne Jebb and Ann McGrath (Acton, ACT: ANU Press and Aboriginal History Inc, 2015), 1–33, 3.

[37]In the glossary, all the words in Boon Wurrung are described. Read the story: Carolyn Briggs, "Boon Wurrung: The Filling of the Bay – The Time of Chaos" (Victorian Aboriginal Corporation for Languages, n.d.), https://cv.vic.gov.au/stories/aboriginal-culture/nyernila/boon-wurrung-the-filling-of-the-bay-the-time-of-chaos/.

and to require all visitors to make a promise that they would obey the laws of Bundjil, not hurt the biik of Bundjil and not harm the bubup of Bundjil.

Today, the wurneet that once flowed through this large flat plain still flows under the nairm.

The story of the Time of Chaos, told by Aunty Carolyn, is an example of how deep knowledge is embedded in cultural memory. Western sciences often overlook oral histories; however, a few examples can corroborate the longevity of the knowledge passed on from generation to generation, and the Time of Chaos is one of those examples. This story is the interception of cultural memory, heritage, and deep time. Yet its effects have tangible and visible elements: the drying and flooding of Port Philip Bay. Scientists[38] have extensively researched the bay, using different methods, including Carbon-14 dating, vibrocoring, multibeam and seismic surveys, and palynology samples, among others, to understand the hydrodynamic of the bay. Yet, western sciences acknowledge this knowledge as purely anecdotal. If we could try to understand natural phenomena from a different ontological view, perhaps knowledge could be recovered in spaces where accessibility – such as the underground – limits our understanding.

[38] A full study of the bay was conducted by earth scientists Holdgate, Wagstaff and Gallagher. See the full study: G. R. Holdgate, B. Wagstaff, and S. J. Gallagher, "Did Port Phillip Bay Nearly Dry up between 2800 and 1000 Cal. Yr BP? Bay Floor Channelling Evidence, Seismic and Core Dating," Australian Journal of Earth Sciences 58, no. 2 (March 2011): 157–75, https://doi.org/10.1080/08120099.2011.546429.

2.4 Where this research sits

While one method of understanding the underground is through the emerging discipline of environmental history and deep time (see glossary), of which we have so little knowledge, design as a process opens many pathways to explore a place, even if it is in the underground. In recent years, there have been multiple spatial planning approaches to the underground (such as the deep city method and urban underground space methodology) that lack understanding of the values, meanings, and heritages that are still active and part of Indigenous people's cultural memories and knowledge.

This thesis focuses on three fields of study (see Figure 2.2) as a way to understand the underground; the first one acknowledges my research background in anthropology with my experience in heritage and tourism through ethnographic methods; the second one recognises the field of Indigenous research frameworks, since the research is done in collaboration with the Boon Wurrung people and their knowledge, in accordance with cultural protocols; the third one is the field of underground spatial planning and design, where I aim to contribute with my involvement in the Atlas of the Underground.

Considering these three fields requires an analysis of the gaps and complexities that each field conveys and how they can complement knowledge yet to be researched. Thinking about the underground as an Indigenous urban landscape results in the following considerations:

- The underground has been exploited as a blank space for human purposes.
- This has led to unsustainable management of the underground, which impacts the city and its cultures.
- Cultures connected to the underground have been repressed and restricted in their use of the underground.
- Current approaches to the underground include its use for human-centric purposes or are managed by western conceptions of heritage that do not acknowledge the Indigenous worldview.
- In Australia, Indigenous and non-indigenous scholars pinpoint the need to recognise Indigenous Knowledges and practices in planning and design.

As seen in Figure 2.3, these considerations highlight the links, gaps and debates between the different fields and the need to research them altogether.
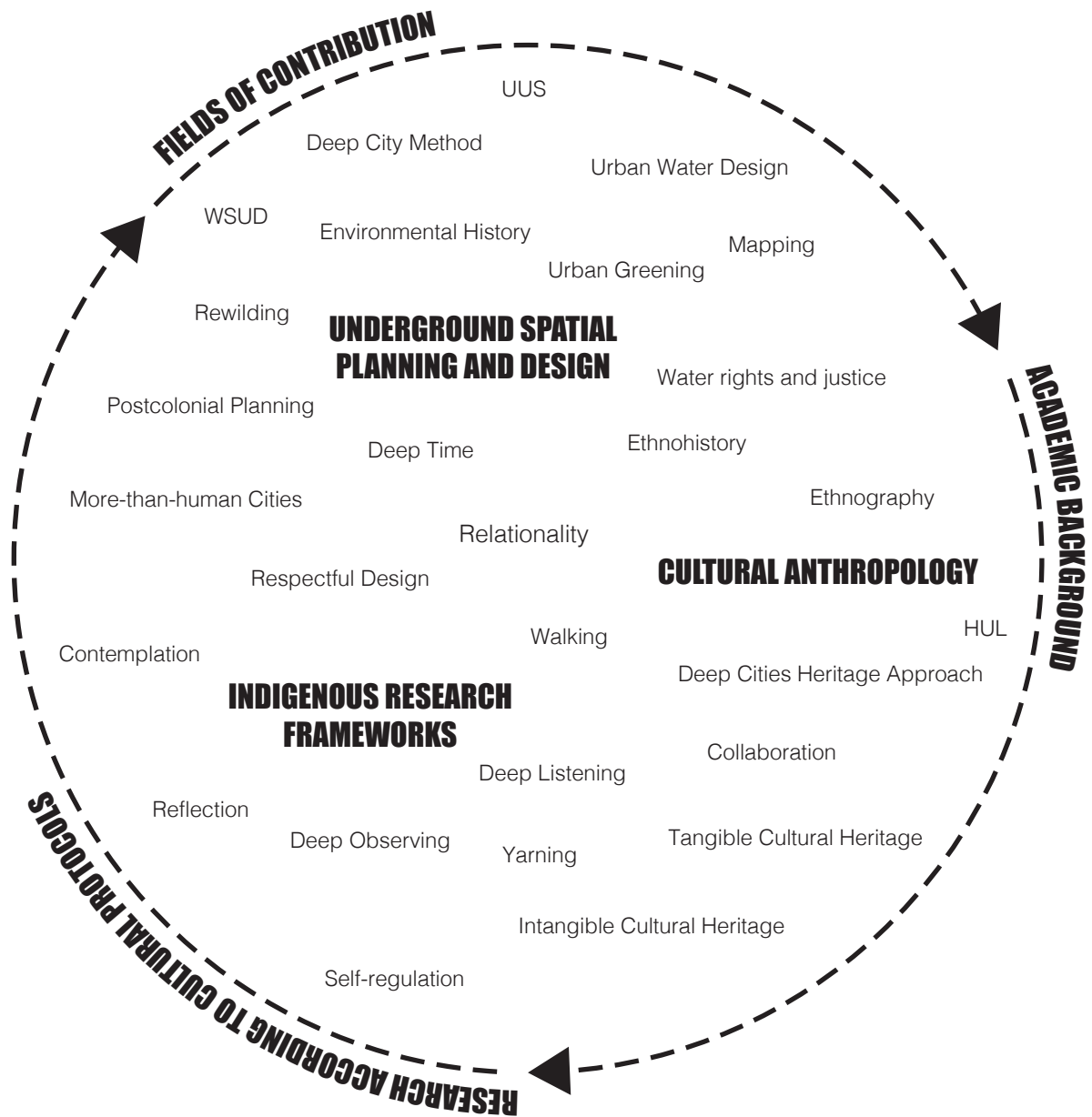
Figure 2.2. Fields of contribution, Ana C. Lara Heyns, (2022).

THE UNDERGROUND

Exploited for human-centric purposes.
Seen as a blank/empty space

Deep City Method (EPFL)
UUS (Hunt et al)

Sub-terra Nullius
Colonialism

Sustainability focus on
Nature (Ian McHard)

The "Other"
(Orientalism,
Said)

This has led to an unsustainable management of the subterranean that impacts the city and its cultures

Boring cities
(Garret, Melo Zurita and Iveson)

Flooding
Mining
Toxic Drainage
and more...

Political
economy of
Australia

Traditional cultures that have connection to the underground have been repressed and restricted from its use.

Governance
Sovereighty
Ownership
(Admiraal and Cornaro, Melo Zurita)

Neoliberalism
and Capitalism

Human practices in the under-ground are managed by Western notions of heritage and 'modern' infraestructure that do not acknowledge the Indigenous Knowledges and worldview.

Western practices of heritage
HUL- Unesco (Hall, Harvey)

Deep Cities Heritage
approach (Fouseki et al)

Memory

How do we understand the underground as a cultural landscape?

Underground Country

In Australia, both Indigenous and non-Indigenous scholars call for the need to recognise Indigenous Knowledges and practices

Reading Country (paddy Roe et al, Moran, Harrington and Sheehan, Neale and Kelly, Bewaka Country et al, +more.

Figure 2.3. Considerations and issues of the underground.
Linking urban underground spatial planning, heritage studies and Indigenous Knowledge and practices. Ana C. Lara Heyns (2022).

2.5 Underground spatial planning and design

Recent international studies of the urban underground have been motivated by the growing congestion of the underground environment through overlapping requirements for infrastructural space, mineral and water resources, and energy, particularly in high-density city centres.[39] Some important engineering and urban planning contributions have emerged through methodologies such as deep city and urban underground space.

The deep city methodology developed by Aurele Parriaux at the Swiss Federal Institute of Technology in Lausanne (EPFL)[40] aims toward the purposeful planning of underground resources. Following the ideas developed by Ian McHarg on designing with nature,[41] the deep city methodology responds to the local geology to accommodate underground space and use.
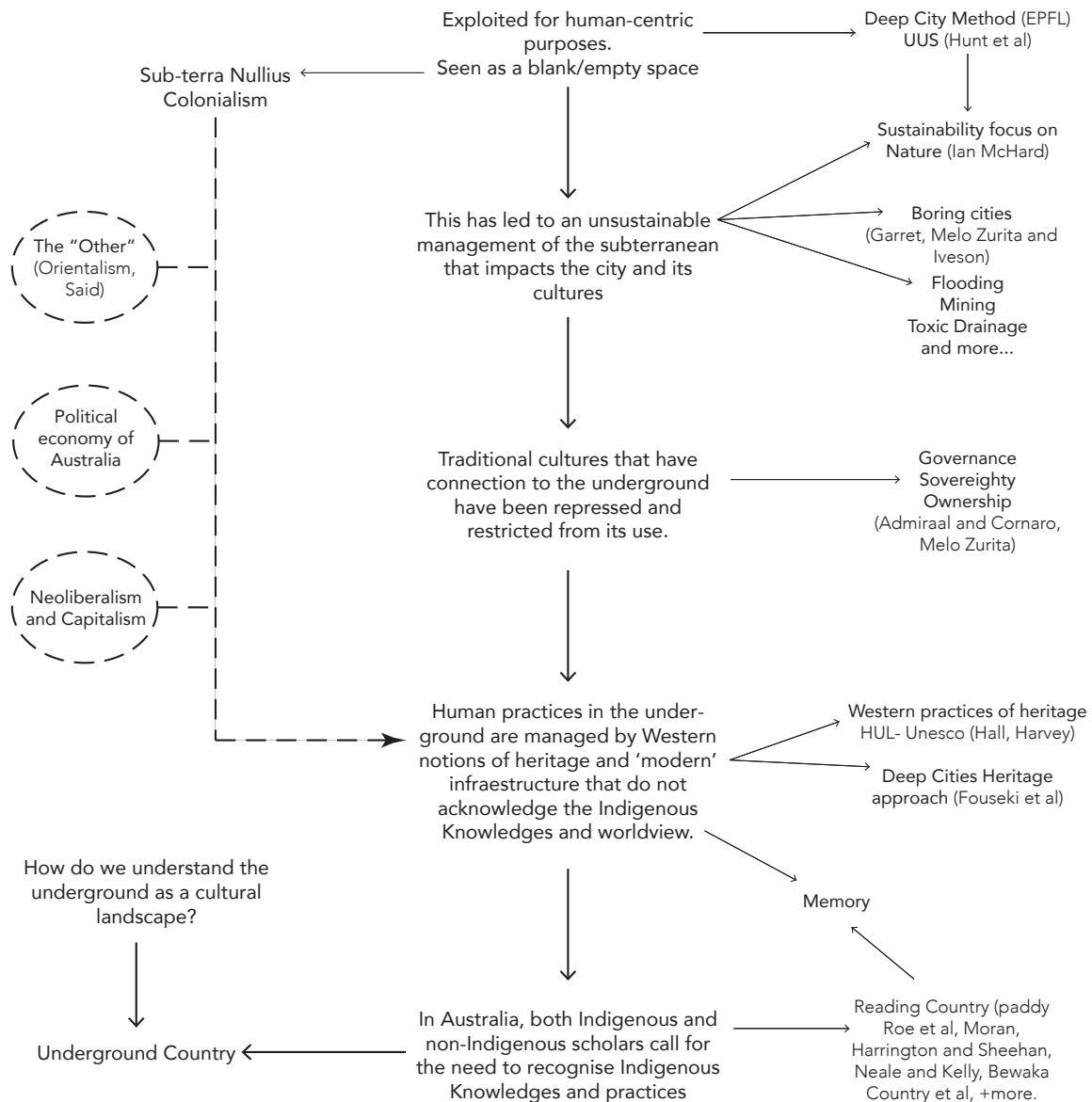
Based upon the idea that no resource should be considered in isolation from other resources, as argued by Doyle, Thalmann and Parriaux,[42] Li et al[43] claim that the deep city method is put forward to aid decision-makers in integrating the global potential of the urban underground into city-scale strategic planning. It defines four realms within the underground that compete and overlap, including building space, geothermal energy, geo-materials, and groundwater. This approach facilitates understanding geological maps so that cities can use them to plan belowground development while protecting the resources.[44]
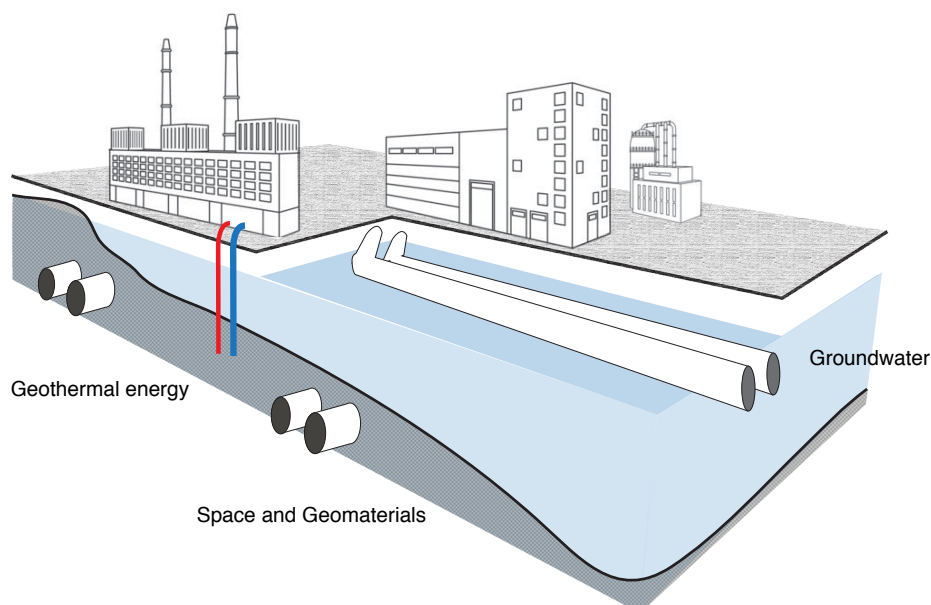

Geothermal energy

Groundwater

Space and Geomaterials

Figure 2.4. Underground resources in the Deep City Method. Produced by Ana C. Lara Heyns (2022) based on Hunt et al.[45]

[39] In the book Think Deep, a compilation of case studies is presented to invite urban planners to make the underground space part of the planning of future cities. Read more: International Society of City and Regional Planners and International Tunnelling and Underground Space Association, Think Deep: Planning, Development and Use of Underground Space in Cities., eds. Han Admiraal and Shipra Narang Sui (The Netherlands: Drukkerij Aktief, Pijnacker., 2015).

[40] Huan-Qing Li, Aurele Parriaux and Philippe Thalmann give an overview of the strategic framework using the underground space, in "The Way to Plan a Sustainable Deep City: The Strategic Framework and Economic Model," in Deep City Project (13th ACUUS conference "Underground Space Development – Opportunities and Challenges," Singapore, 2012), 1–12.

[41] In 1969, Ian McHard introduced the idea of designing with nature, which aims at creating designs that take advantage of the natural processes and services of the ecosystem to create a healthier environment and public health in cities. See Ian McHard, Design with Nature (New York: J. Wiley, 1992).

[42] Doyle, Thalmann and Parriaux explore mapping within the deep city method to showcase the connection between underground resources in the city of San Antonio, Texas. See Michael Doyle, Philippe Thalmann, and Aurèle Parriaux, "Underground Potential for Urban Sustainability: Mapping Resources and Their Interactions with the Deep City Method," Sustainability 8, no. 830 (2016): 1–17, https://doi.org/10.3390/su8090830.

[43] Li et al., "An Integrated Planning Concept for the Emerging Underground

According to the scholars working with the deep city method, underground urbanism can "balance urban density and landscape liberty. Possible land saving in building footprint extension can reach 19%, which could create more public recreational spaces"[46] and preserve the cities' historical heritage by locating infrastructure below the ground and creating new public spaces. However, this idea neglects the memories and sacredness of underground spaces and relates to an extractive convention that space under our feet doesn't concern us because we cannot see it. Melo Zurita challenges this conception of the urban underground as sub terra nullius, space and resources waiting for humans to exploit.

Another emerging approach is that of underground urban space (UUS), which, similar to the deep city approach, argues for the creation of integrated policies for the underground to foresee and prevent the unsustainable development of the underground space, as well as to resolve the conflicts of interest that the exploitation of underground resources can lead to.[47] UUS proposes using innovative concepts for urban restructuring and transformational construction practices, aiming to increase mixed uses of urban centres by relocating space underground to release surface land, while safeguarding valuable groundwater, geothermal energy and geo-material resources.

Urbanism."

[44] Applications of underground master planning drawing from the Deep City principles can be seen in the Japanese 'Special Measures Act for Public Use of Deep Underground' and Singapore's 'Underground Room for Growth' plan, for which new laws were passed in 2015. A detailed case study is presented in Jing-Wei Zhao et al. in their article, "Advances in Master Planning of Urban Underground Space (UUS) in China," Tunnelling and Underground Space Technology 55 (May 2016): 290–307, https://doi.org/10.1016/j.tust.2015.11.011.

[45] Hunt et al., "Liveable Cities and Urban Underground Space." 15.

[46] Melo Zurita, "Challenging Sub Terra Nullius."

[47] Admiraal and Cornaro, "Why Underground Space Should Be Included in Urban Planning Policy – And How This Will Enhance an Urban Underground Future."

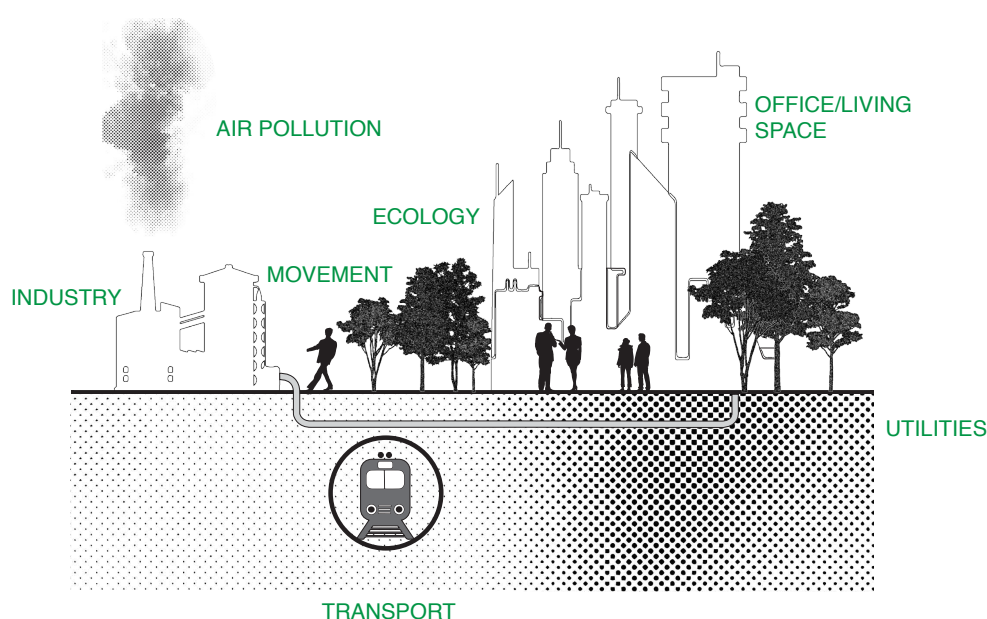[48] Hunt et al., "Liveable Cities and Urban Underground Space." 14.

Figure 2.5. Dimensions of urban sustainability and resilience that UUS impacts within the Urban landscape.
Produced by Ana C. Lara Heyns (2022) based on Hunt et al.[48]

The UUS approach prioritises services according to the city's needs, foreseeing sustainable exploitation of the underground realm. Bobylev[49] argues that the underground urban space is a non-renewable resource that should be used frugally and preserved for its use in the future. In his classification of underground resources and services, only groundwater and geothermal energy can be potentially renewed, compared to other resources such as physical space, underground flora and fauna and cultural heritage (see Figure 2.6). Hunt et al[50] conclude that these services have been underestimated, leading to an absence of adequate planning measures; in fact, cultural heritage is commonly absent in underground planning papers.

[49] Bobylev, "Mainstreaming Sustainable Development into a City's Master Plan."

[50] Hunt et al., "Liveable Cities and Urban Underground Space."

[51] Hunt et al., "Liveable Cities and Urban Underground Space." 15.

[52] Nikolai Bobylev and Ray Sterling, "Urban Underground Space: A Growing Imperative," Tunnelling and Underground Space Technology 55 (May 2016): 1–4, https://doi.org/10.1016/j.tust.2016.02.022.
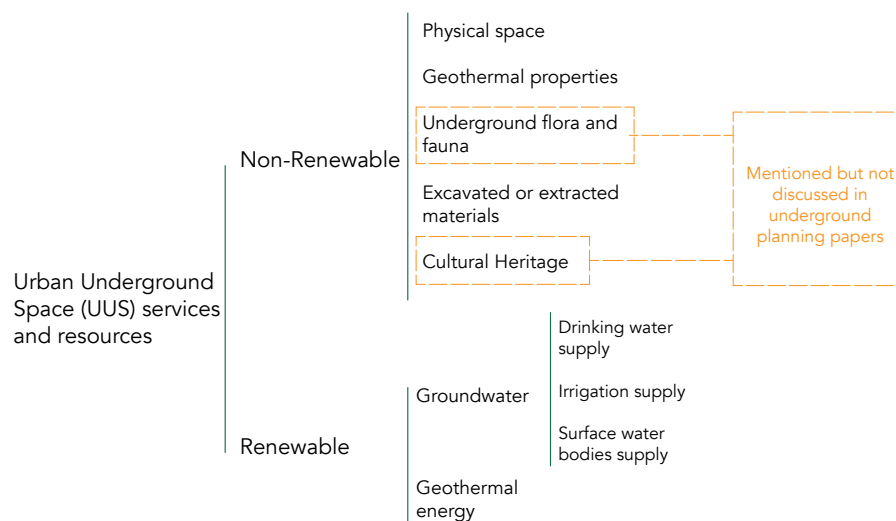
Figure 2.6. Classification of underground resources and services. Produced by Ana C. Lara Heyns (2022) based on Hunt et al.[51]

In the special edition of Tunnelling and Underground Space Technology,[52] a collection of papers gathers the implications of the underground urban space, such as sustainability, resilience, liability, resource use, city planning, land use, governance, management, policy, design, health, interior design, architecture, and psychology. The common ground of all the disciplines researching underground urbanisation is sustainability, but there seems to be a lack of focus on understanding the underground as a symbolic landscape that contains meanings and cultural values. If the UUS aims for a sustainable future, shouldn't the community's cultural value of the underground be considered?

2.5.1 Critiques of existing underground spatial planning and design approaches

At the United Nations Conference on Environment & Development in Rio de Janeiro, Brazil, in 1992, the UN highlighted the importance of integrating sustainable development into planning policies that would reduce and reverse the loss of environmental resources. From the Millennium Development Goals[53] to the Sustainable Development Goals 2030,[54] sustainable development has contributed to the idea that the urban underground future needs to be part of the development of the cities.

The use of subsurface space offers a potential alternative for the sustainability and preservation of the environment, but there is general recognition that the use and exploitation of underground resources is contested and needs integrated planning, proper regulation and monitoring, and requires more research to inform public policy to gain a better public acceptance.[55]

Both the deep city method and UUS approach consider in detail the interaction of complex natural and artificial systems that are woven together in the seemingly infinite three-dimensional space of the underground. However, the focus on the potential conflicts and physical clashes between spatial and material aspects prioritises the role of the underground as a site of production of economic value while ignoring other types of value or meaning that may be culturally associated with it.

Throughout the literature review of underground urbanisation, critical dimensions are not discussed in the areas of engineering, architecture, and urban planning.[56] As cities grow, urbanisation affects all liveability within the city, including the pre-existence of heritage and cultural resources, which need protection. However, underground urbanisation approaches pose the concept that the protection of cultural resources is an issue of the above. Although underground urbanisation frameworks have touched on the cultural heritage within the underground, Admiraal and Cornaro[57] provide some arguments that critique the current underground urbanisation methodologies. The authors argue that these approaches ignore issues such as underground governance and ownership, which tend to be directly linked to the embedded histories of the land and the people who inhabit the surface.

[53] United Nations, "Goal 7: Ensure Environmental Sustainability" (The Millennium Development Goals Report. Department of Economic and Social Affairs), accessed November 15, 2019, https://www.un.org/millenniumgoals/pdf/Goal_7_fs.pdf.

[54] United Nations, "About the Sustainable Development Goals," accessed November 15, 2019, https://www.un.org/sustainabledevelopment/sustainable-development-goals/.

[55] In the article, "The present and future use of 'land' below the ground," Evans, Stephenson and Shaw review the contested issues and challenges that underground urbanisation poses. They not only include the use and exploitation of resources but also how commercialisation and legislation affect the national agendas. See Evans, Stephenson, and Shaw, "The Present and Future Use of 'Land' below Ground."

[56] Hunt et al., for example, argue that when it comes down to urban underground, there is a lack of consideration for resilience in both design and assessment of geo-structures, for long-term performance in a significantly changed future, for support in decision making for spatial and temporal information, in geological spatial features, and in particular complex geology, which impacts use and cost of underground space. See Hunt et al., "Liveable Cities and Urban Underground Space."

[57] Admiraal and Cornaro, "Why Underground Space Should Be Included in Urban Planning Policy – And How This Will Enhance an Urban Underground Future."

[58] As landscape

People impute meaning to their surroundings;[58] not only the surface land, but the land beneath our feet carries a cultural dimension that gives meaning and holds a deep history that makes up the identities above the ground. Interactions with the underground, such as burials, embody some of the most important cultural and spiritual meanings of any urban site. Anthropologists Setha Low and Denise Lawrence-Zuniga[59] claim that when the appropriation of land for urban redevelopment – even land beneath the surface – threatens to limit the access to or exclude groups from using these spaces; contestations for such places arise, as many identity values are bound to these sites.

Urban planners Admiraal and Cornaro[60] agree with challenging the urban research so that planners can consider the land below the ground as an urban landscape, with the same potential for layers of cultural meaning, heritage, and conflict as environments above ground. If the underground is acknowledged as urban, should the mapping and planning of this space include non-physical aspects such as cultural memory and histories that form the fabric of above-the-ground landscapes? Moreover, how can these sites, covered up and invisible, be translated into a language that the disciplines of planning and design can consider?

2.6 Cultural heritage approaches to Urban Landscapes

The United Nations Educational, Scientific and Cultural Organisation (UNESCO)[61] defines heritage as "our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration." Defined by UNESCO, cultural heritage (tangible and intangible) has undergone a series of developments that include operational guidelines for its management, conservation, and protection.

Unfortunately, the notion of heritage as a common possession that should be preserved and passed on has become an asset within the global economic structure. Gonzalez [62] argues that heritage has become a commodity for governments and institutions that alienates local communities from their heritage. In 1992, UNESCO added a new category of sites: cultural landscapes. This category is defined as the "Combined works of nature and humankind, they express a long and intimate relationship between peoples and their natural environment." [63] Fowler [64] remarks that the work of Carl Sauer [65] influenced the promulgation of this cultural heritage category in the 1920s, where he stated that cultural landscapes are "fashioned from a natural landscape by a

anthropologists Hirsch and O'Hanlon state in The Anthropology of Landscape. See Eric Hirsch and Michael O'Hanlon, The Anthropology of Landscape. Perspectives on Place and Space (Oxford: Oxford University Press, 1995).

[59] Setha Low and Denise Lawrence-Zuniga, The Anthropology of Space and Place (Oxford: Blackwell Publishing, 2003).

[60] Admiraal and Cornaro, "Why Underground Space Should Be Included in Urban Planning Policy – And How This Will Enhance an Urban Underground Future."

[61] UNESCO, "World Heritage," World Heritage Convention (blog), accessed January 11, 2022, https://whc.unesco.org/en/about/.

[62] Pablo Alonso Gonzalez, "From a Given to a Construct: Heritage as a Commons," Cultural Studies 28, no. 3 (May 4, 2014): 359–90, https://doi.org/10.1080/09502386.2013.789067.

[63] UNESCO and World Heritage Convention, "Cultural Landscapes," UNESCO (blog), accessed January 12, 2022, https://whc.unesco.org/en/culturallandscape/.

[64] Peter Fowler, "World Heritage Cultural Landscapes, 1992–2002: A Review and Prospect," in Cultural Landscapes: The Challenges of Conservation, World Heritage Papers 7 (Paris: UNESCO, 2003).

[65] Carl Sauer was an American geographer. His work titled "The Morphology of Landscape" is considered to have influenced the conception of Cultural Landscapes; he argued that the agency of culture directly shaped the landscape, therefore, humans had a direct

cultural group. Culture is the agent, and natural area is the medium, the cultural landscape the result."

However, within the heritage literature, many problems are easily identifiable, as some notions of heritage fail to identify the power relationships embedded in the formation of urban environments that privilege a part of the historical fabric ignoring and neglecting other parts, showcasing the past in different ways.[66] Martin Hall [67] argues that urban landscapes are shaped by expressions of identity, which in turn create that identity; therefore, they are inseparable from the political and economic context. His work in Cape of Good Hope in South Africa scrutinises the historical layers to understand the formation of the city's heritage and its role in the current global economic model of tourism and heritage. He argues that we can look at the landscape as a bulk of historical layers. The first stratum is the precolonial landscape of Indigenous people, followed by the initial grids of colonial settlement, overlaid with the 'British Victorianisation of the white city.' Another way of looking at the urban landscape and its history is through the notion John Urry [68] called "the gaze." In this metaphor, each person will look at the urban landscape differently: a white settler would look at Hoddles Grid and would see it as a mark of white civilisations' superiority over the pre-colonial landscapes, while an Indigenous person would instead see it as aggression and displacement of Country and its ways.

Lefebvre [69] discusses the monumentalisation of buildings, spaces, and other forms to create an image of identity and belonging, or as Lefebvre calls it, 'membership'. Membership leads to forms of exclusion and the absence of certain identities, where some are exalted, and others repressed. Martin Hall comments:[70]

> Lefebvre's concept of the 'recognition effect', in which the 'monumentalisation' of the landscape enables repression to be redescribed as a celebration, points to the inherence of contradictions in these cultural constructions. Identifying such contradictions is an effective way of digging down beneath the surface of the illusion.

Hall proposes seeing the urban landscape through the lens of counter-memory, where we could emphasise the contradictions to challenge the hegemonic discourses of the city.

Counter-memory allows for other memories and discourses to be heard; it offers a space for alternative memories to emerge and contradict the idea

relationship with the natural las landscape.

[66] Martin Hall, "Identity, Memory and Countermemory: The Archaeology of an Urban Landscape," Journal of Material Culture 11, no. 1–2 (July 2006): 189–209

[67] Hall, "Identity, Memory and Countermemory."

[68] John Urry, The Tourist Gaze: Leisure and Travel in Contemporary Societies (London: Sage: Theory Culture & Society, 1990).

[69] Henri Lefebvre, The Production of Space (Oxford, OX, UK; Cambridge, Mass., USA: Blackwell, 1991).

[70] Hall, "Identity, Memory and Countermemory," 205.

that "the West knows best", which eclipses local needs, desires, values, and meanings. A great example is Fiannuala Morgan's What Lies Beneath: Reading Melbourne's CBD Through 'The Another View Walking Trail'. In this article, Morgan[71] discusses the counter-monuments built in 1995 in the frame of the politics of Reconciliation.[72] The trail was commissioned by The City of Melbourne in collaboration with Aboriginal artist Ray Thomas, Aboriginal researcher Robert Mate Mate and Megan Evans. The monuments sought to reconfigure the colonial narrative cemented in the construction of Melbourne, showcasing the complex history and relations between Indigenous and settler Australians. However, the counter-monuments were seen as 'too confrontational' for the government, and that they would not serve the reconciliation objective; since then, the counter-monuments have fallen into despair, along with any information on this trail for anyone interested – other than the academic articles about it, such as the work above mentioned, as well as the ones of Morris[73] and Jacobs.[74]

Another View Walking Trail (AVWT) sheds some light on the complex issues of heritage, the urban landscape, and the confronting histories of nation-building. Firstly, it acknowledges the historical and political complexities of heritage management and production in Australia; secondly, it challenges "the way that history is inscribed in architecture and urban design and questions the techniques and strategies that modern colonial cities employ to project narratives that neutralise violent histories."[75] Lastly, the need to revisit the concept of heritage is still a living and continuing presence in Australian cities.

2.6.1 Critiques of existing heritage approaches to subterranean urban landscapes

There is still the issue of the underground. How do we recognise, acknowledge, protect, promote, and preserve the heritage beneath the ground? Heritage studies offer different approaches in which intangible and tangible features of subterranean cultural heritage can be understood, as Fouseki, Guttormsen and Swensen[76] claim:

> Our cities contain time capsules filled with history, artefacts and traces of the past. The urban heritage is visible in the city's name, monuments, architectural details, streets, parks, and urban spaces, to name just a few places. Other parts of the past are invisible and layered beneath our feet. Our responsibility as researchers, heritage managers and consultants is to make these time capsules available for the citizens, planners, developers and managers so

[71] Fiannuala Morgan, "'What Lies Beneath: Reading Melbourne's CBD through 'The Another View Walking Trail,'" PAN: Philosophy, Activism, Nature, no. 12 (2016): 69–80.

[72] Morgan Fiannuala states: "The trail itself communicated the optimism of the belief that reconciliation was possible and intimately associated with the nation's ability to look unflinchingly into the past and acknowledge violence as well as successes. … The reception of the trail, however, was expressed in the language of manufactured guilt." In Morgan, "'What Lies Beneath: Reading Melbourne's CBD through 'The Another View Walking Trail,'" 72.

[73] Brian Morris, "Defacing the City: Extraordinary Everyday Encounters on the 'Another View' Walking Trail," Meanjin no. 1, 2001, 90–99.

[74] Jane M. Jacobs, "Staging Difference: Aesthetisization and the Politics of Difference in Contemporary Cities," in Cities of Difference, eds. Ruth Fincher and Jane M. Jacobs (New York: Guildford Press, 1998), 252–78.

[75] Morgan, "'What Lies Beneath: Reading Melbourne's CBD through 'The Another View Walking Trail,'" 70-71.

[76] Kalliopi Fouseki, Torgrim Sneve Guttormsen, and Grete Swensen, eds., "Heritage and Sustainable Urban Transformations. A 'deep Cities' Approach.," in Heritage and Sustainable Urban Transformations. Deep Cities, Studies in Heritage (New York: Routledge, 2020), 1–15, 8.

that the knowledge and traces of the past can be used in the best way as resources today.

The underground realm poses a new challenge for heritage managers, not only to understand the intangible and tangible features of cultural heritage in the land below our feet, but also to make it visible for planners and designers, which would require considering the natural features in which the built environment is designed, used, and planned.

Mladen Obad Šćitaroci, Bojana Bojanic Obad Šćitaroci, and Ana Mrđa[77] argue that cultural heritage research is a broad field that focuses on the importance of the preservation, enhancement, and revitalisation of cultural heritage as a driver of economic and social development. However, little cultural heritage research has been done on architecture, urbanism, and spatial planning of the underground. The authors[78] use the term Heritage Urbanism[79] to understand the impacts and integration of cultural heritage into the development of the environment in the context of spatial and urban planning. Researchers in this field[80] explain that the current models of urban development focus on strategies centred on environmental challenges and less on socio-economic issues. These scholars[81] acknowledge heritage as an active agent that can contribute directly to the sustainable development of the cities. Still, they recognise that the challenge lies in making heritage understood by all parties involved in urban development.

In 2011, UNESCO introduced another category, 'Historic Urban Landscape Recommendation' (HUL), driven by the growing development threats to world heritage cities and their surroundings. The HUL offered a new way to understand historical cities' complex and dynamic nature, including the urban system's cultural, historical, and natural dimensions. These dimensions include land use patterns, spatial organisation, social and cultural values, topography and soils, vegetation and infrastructure and intangible heritage, cultural diversity, and identity.[82]

Fouseki and Nicolau[83] analyse HUL and critique this framework, arguing that HUL has not evolved much since its creation and failed to record the immaterial and invisible socio-cultural meanings of urban landscapes. To address this issue, Fouseki, Guttormsen and Swensen[84] introduce the concept of deep cities as a new heritage approach[85] to understanding how cultural heritage can be better integrated into urban policies for sustainable futures. This deep cities heritage approach challenges researchers, managers, and urban planners to understand the changing features of the cities by

[77] Mladen Obad Šćitaroci, Bojana Bojanić Obad Šćitaroci, and Ana Mrđa, eds., Cultural Urban Heritage: Development, Learning and Landscape Strategies, The Urban Book Series (Cham: Springer International Publishing, 2019), https://doi.org/10.1007/978-3-030-10612-6.

[78] Obad Šćitaroci, Bojanić Obad Šćitaroci, and Mrđa, Cultural Urban Heritage.

[79] Heritage urbanism (HERU) proposes a multidimensional and multidisciplinary method based on architecture, urban planning, technology and infrastructure, economic, legal, and ecological views. This kind of urbanism aims to be an active agent in the development of communities to enhance the space and human life. In this way, the authors consider heritage in multiple scales, from cultural landscape, cities and settlements, to individual buildings and intangible features. The authors explain that from the heritage urbanism point of view, cultural heritage is an active agent of community development, so it can enhance human life and its spatial surroundings. See Obad Šćitaroci, Bojanić Obad Šćitaroci, and Mrđa, Cultural Urban Heritage.

[80] Fouseki, Sneve Guttormsen, and Swensen, "Heritage and Sustainable Urban Transformations. A 'Deep Cities Approach."

[81] Fouseki, Sneve Guttormsen, and Swensen, "Heritage and Sustainable Urban Transformations. A 'Deep Cities Approach."

[82] Fouseki, Sneve Guttormsen, and Swensen, "Heritage and Sustainable Urban Transformations. A 'Deep Cities Approach."

investigating and recognising the cities' deep histories. It offers methodological approaches to understanding the tangible and intangible cultural heritage of the urban environment.

Through a deep analysis of the development of heritage, David Harvey[86] explores the concept of heritage and notices the direct influence of the economic structures upon its management and preservation. He also observes that the 'presentness' of heritage is what guides the imaginations of what should be kept present and what should be left behind; he states:

> Since all heritage is produced completely in the present, our relationship with the past is understood in relation to our present temporal and spatial experience. (…) Heritage, as practised today, is portrayed as a product of the wider social, cultural, political and economic transitions that have occurred during the later 20th century.

This notion requires us to see the multidimensionality of heritage and how and why it is kept today. What historic, economic, political and cultural influences of today preserve and exalt heritages in Australia, what kinds of memories[87] are kept, and who has access to these memories?

Despite Harveys' work in scrutinising the development of heritage and all its conundrums and the methodologies used by researchers in the deep cities heritage approach, one aspect is left unattended: the relationship of human experience to heritage is predominantly Eurocentric.[88] Kersel and Luke[89] argue that international agencies follow and reinforce the dichotomous relationships embedded in the Orientalist legacy, "Othering", that is, any flexible or fluid heritages that do not conform to the dominant identities.

Benterrak, Muecke and Paddy Roe[90] remark, "the most obvious history to write is the one which celebrates the achievements of the powerful, using the language of the powerful." In Australia, it wasn't until 1972 that Aboriginal people demanded a re-write of the history of Australia, in which they would be recognised as original sovereigns of the lands in this continent. It is important to note, as these authors[91] articulate, that "within the issue of Aboriginal sovereignty, there is more at stake than the use of lands; there is the right to control the production of Australia's mythologies" and the way it is incorporated into the conceptions of Australian heritage and nationhood. The big difference is that for the western gaze, the myths, dances, songs, and customs of Indigenous people are commonly assumed as a heritage that remains in a spatial and temporal time that is not present, but conceived as the

[83] Kalliopi Fouseki and Mariana Nicolau, "Urban Heritage Dynamics in 'Heritage-Led Regeneration': Towards a Sustainable Lifestyles Approach," The Historic Environment: Policy & Practice 9, no. 3–4 (October 2, 2018): 229–48,

[84] Fouseki, Sneve Guttormsen, and Swensen, "Heritage and Sustainable Urban Transformations. A 'Deep Cities Approach."

[85] The deep cities heritage approach is different from the deep city of spatial urban planning approach. This other deep cities approach combines an in-depth understanding of the past with the present and the, future focusing "not only on what 'we can see' but also on what we can feel, discover, uncover and not see but experience", according to the authors.

[86] David C. Harvey, "Heritage Pasts and Heritage Presents: Temporality, Meaning and the Scope of Heritage Studies," International Journal of Heritage Studies 7, no. 4 (January 2001): 319–38.

[87] Harvey discusses the conceptions of 'traditional memory' and 'modern memory.' While modern memory is preserved in archives and institutions, traditional memories are kept unrecorded and normally passed on orally.

[88] Darko Babić, Meltem Vatan Kaptan, and Clara Masriera Esquerra, "Heritage Literacy: A Model to Engage Citizens in Heritage Management," in Cultural Urban Heritage Development, Learning and Landscape Strategies, ed. Mladen Obad Šćitaroci, Bojana Bojanić Obad Šćitaroci, and Ana Mrđa, series: The Urban Book Series (Cham: Springer International Publishing, 2019), 1–18.

[89] Morag M. Kersel and

remains of a time before colonial settlement. This notion was encouraged by the Australian museums and anthropological and archaeological work before the '70s (as discussed in Chapter 1). At the same time, Indigenous people acknowledge their stories as living knowledge that informs the future.

2.7. A way forward: incorporating Indigenous worldview in subterranean urban landscapes

Throughout world history, the underground has been a significant part of human cosmologies, as a space where spiritual beings reside, where life begins and ends, and a space where rituals and landscape markers can define places and societies. Accessing, mapping, and acknowledging the subterranean values and meanings, explains Maria Lourdes Melo Zurita,[92] poses the challenge of recognising this space as political, economic, cultural, and social.:

> Although the subterranean has increasingly become an epistemological space for economic, social, and political calculation (Braun 2000), the underground, in many ways still remains a mystical place that involves ritual (Pike 2007; Melo Zurita, Munro, and Houston 2018). There are rituals associated with its access. (…) Restrictions on access also challenge the notion of sub terra nullius – they confirm the fullness of meanings, beings and experiences. In the city, such restrictions trigger questions of who can access, use, and enjoy underground spaces. Privatisation from the rock, soil and water to the underground malls and train stations is capitalising extracted territory.

Melo Zurita[93] proposes four areas of discussion that showcase the complexities of the use and exploitation of the underground:

1. What already exists underground? – Thinking of the underground as sub terra nullius waiting for human exploitation erases the agency of more than human worlds beneath our feet.
2. Who gets dispossessed and affected by the development or exploitation of the underground? – The above and below spaces are interconnected; as the author notices, tunnelling can displace homes and communities but can also affect more than human geographies, such as water and rivers, toxic drainage due to mining pollutes watercourses, and sinkholes appearing all over the world.
3. Who owns or should own the underground, and how? – the legal regimes of ownership of the underground are diverse across the world; however, there is a growing tendency to privatise subterranean spaces

Christina Luke, "Civil Societies? Heritage Diplomacy and Neo-Imperialism," in Global Heritage: A Reader, ed. Lynn Meskell, ed. (John Wiley & Sons, Inc., 2015), 70–93.

[90] Krim Benterrak, Stephen Muecke, and Paddy Roe, Reading the Country. Introduction to Nomadology, (Fremantle WA: Fremantle Arts Centre Press, 1984), 125.

[91] Benterrak, Muecke, and Roe, Reading the Country. Introduction to Nomadology, 126.

[92] Melo Zurita, "Challenging Sub Terra Nullius."

[93] Melo Zurita, "Challenging Sub Terra Nullius."

[94] Bradley Garrett, Maria de Lourdes Melo Zurita, and Kurt Iveson, "Boring Cities: The Privatisation of Subterranea," City 24, no. 1–2 (March 3, 2020): 276–85, https://doi.org/10.1080/13604813.2020.1739455.

[95] Progress in the name of human development of the underground includes using the underground for transportation, communication, mining, and commerce. See Garrett, Melo Zurita, and Iveson, "Boring Cities."

[96] In challenging Sub Terra Nullius, Melo Zurita states: "An examination and deconstruction of sub terra nullius helps us rethink urban undergrounds. It is an effort to move beyond the awareness campaign of the undergrounds as relevant and central to our urban narratives, imaginaries and realities, towards the social, political and financial effects of its perceived emptiness." Melo Zurita, "Challenging Sub Terra Nullius," 3.

[97] Janet McGaw and

where the subterranean is seen as valuable, for example, under the cities or spaces that are rich in resources.[94]

4. Who will have access to the underground? With privatisation and ownership by governments and corporations, how does the public access the underground, and what is the underground being accessed for? This interrogates the role of the use and exploitation of the underground for present and future generations.

Although these questions seem to interrogate the current uses and exploitation of the underground for human-centric purposes in the name of 'development' in the last two hundred years,[95] this research poses the need to acknowledge the urban underground as a cultural landscape that contains ancestral knowledge and memory for Indigenous communities all over Australia.

The urban underground in Australia has followed the colonial rhetoric of 'nothingness,' coming from the false narrative to rationalise the European invasion and occupation of Australia through the discourse of terra nullius.[96] This notion has been widely discussed by many Indigenous scholars and people to challenge the Eurocentric conceptions of land[97] where Country is inclusive of water, earth, sky, and everything that is part of it, even the underground.

Country is everything, with no division between animate and inanimate; it holds the Law and the Knowledge. Everything starts and ends with Country, "yet there are no endings in this worldview, nor are there beginnings. Time and place are infinite and everywhere. Everything is part of a continuum, and an endless flow of life and ideas emanating from Country, which some refer to as the Dreaming," as Neale[98] expresses. Uncle Charles Moran, Uncle Greg Harrington and Norm Sheehan[99] explain that Country extends beyond time and contains the spiritual source of knowledge that is recorded through stories, songlines, and dances:

> The intelligence of living environments is essential to our world because we learn from the patterns written into the earth and we share in ways that fit with these earthly cognitions. This is, after all, the place where our being and consciousness originated and so even though it has suffered extreme disruption, our design has always been nurtured and informed by this natural intelligence.

In the Indigenous worldview, Brian Martin[100] explains that the knowledge we gain from Country is also alive, interconnected through a system of relationality; it has its own agency. Country informs people about their identity

Naomi Tootell, "Aboriginal 'Country': An Implicit Critique of Terra Firma and Traditional Architectural Practices," Architectural Theory Review 20, no. 1 (January 2, 2015): 91–114, https://doi.org/10.1080/13264826.2015.1050042.

[98] Margo Neale and Kelly Lynne, Songlines: The Power and Promise, ed. Margo Neale, First Knowledges (Port Melbourne: Thames & Hudson Australia Pty Ltd, 2020).

[99] Uncle Charles Moran, Uncle Greg Harrington, and Norm Sheehan, "On Country Learning," Design and Culture 10, no. 1 (January 2, 2018): 71–79, https://doi.org/10.1080/17547075.2018.1430996, 75-76.

[100] Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge," Educational Philosophy and Theory 49, no. 14 (December 6, 2017): 1392–1400, https://doi.org/10.1080/00131857.2017.1298034, 1392.

and belief systems. Indigenous Knowledge written into Country opposes the western conception that privileges humans as the only intelligent agents, negating the agency of the more-than-human world. In not only recognising Yolnu ontology but collaborating with Bewaka Country as a more-than-human agent, Suchet-Pearson, Wright, Lloyd and Burarrwanga[101] state:

> Recognising a Yolnu ontology of co-becoming makes it clear that all humans and non-humans, actors, actants, everything material, affective, all processes and relationships, are not things, are not even isolated beings, but are entangled becomings, creative and vital and always in the process of becoming through their connections.

Understanding that Country (earth, sky, sea, waters and underground) is embedded with knowledge also recognises that the underground is a relational being. The issue lies in how to identify the inside of the underground to inform planning and design.

Summary

In this chapter, I have mentioned a series of factors influencing this research. When we think about the underground in urban planning and design, the approaches tend to focus on using and exploiting the underground as a resource (for water, geothermal energy, space and geomaterials). Both underground urbanisation approaches discussed (the deep city method and UUS) exclude meanings and values that people and cultures attribute to underground landscapes. Other approaches to heritage, such as the deep cities heritage approach, have tried to incorporate the cultural heritage of the underground. However, when talking about Australia (as well as many other parts of the world), many important complexities arise from the particular histories relating to colonisation.

Through the concepts of heritage and cultural landscapes, we can start to understand the role of deep time and the historical influences that have led us to where we are today, a capitalist and neoliberal political economy that is faced with the challenges of acknowledging counter histories in the name of equality and sustainability. Yet we keep asking ourselves, how is history written and by whom? What memories and heritages are we keeping and passing on? What memories and histories are privileged, and what others are repressed or forgotten in the conception of the underground as an urban landscape?

Melo Zurita's[102] questions about access and ownership of the underground might point us towards an exciting direction when we think about Indigenous custodianship of Country. We could recognise that the underground is full of life and agency and stories and knowledge; we could acknowledge that the current political economy and historical violence in Australia has dispossessed the Traditional Owners of their Country, even that below our feet. If we could recognise Indigenous people as original custodians of Underground Country, how would the subterranean be understood?

[102] Melo Zurita, "Challenging Sub Terra Nullius."

Chapter 3. The Ways of Water

Introduction

As previously discussed, urban scholars have recognised that the historical lack of underground planning has caused severe urban problems, with flooding being one of the most common issues in cities globally. Water is an element that overlaps human activity and the natural underground landscape[1] and yet the water knowledge shared from generation to generation of First Nation peoples that considers the direct relationship between humans and landscape for a longer and deeper time has often been neglected by the planning field.

In Australian planning[2] there is growing concern at this lack of involvement of Indigenous People and consideration of their water wisdom. Consequently, there is a need to propose methodologies, policies and strategies to deal with spatial and environmental management that can include Indigenous people and their Knowledge inclusive of collaborative planning for water management below the ground.

Water management in Melbourne has a long history of human interventions developed by colonial settlers that continued throughout the 20th century. These are largely focused on the control and displacement of waterways to suit urban sprawl and housing developments. However, climate change and the

[1] Gandy, Matthew. The Fabric of Space Water, Modernity, and the Urban Imagination, Cambridge, Mass.: The MIT Press, 2014.

[2] Hirini Matunga, "Theorizing Indigenous Planning," in David Natcher, ed., Reclaiming Indigenous Planning, Vol. 70, (McGill-Queen's Indigenous and Northern Studies: McGill-Queen's University Press, 2013), 3-34.

increased densification of urban areas have shown us the need to rethink these water management interventions.

In recent decades, researchers and planners have developed new methodologies that propose better water management in the city, including landscape urbanism, water-sensitive cities, green infrastructure and more. These methodologies recognise that the above and below urban environments act as an ecosystem, interconnected and co-dependent, and thus need to be considered and understood as a whole. Natural systems affect and influence human-made ones.[3] Parallel to this, Indigenous people have advocated for the inclusion of Indigenous Knowledge to care for the well-being of waterways. Nevertheless, there continues to be significant gaps in the consideration of water management through the lens of Indigenous Knowledge, despite this approach having the potential to radically shift the way water is managed in the city and to begin to address some of the pressing challenges facing urban water management.

This chapter explores a relational approach to water, water planning and Water Knowledge. Also introduced is my relationship with water and the historical water processes in Melbourne. Further discussion is included on water as a relational entity and its agency to enable us to understand the policies designed to protect and restore waterways and the legal rights of some rivers around the world. Finally, the chapter defines the waterways that the research focuses on: drained and piped waterscapes, the lack of attention they garnish within water management and city planning and the problems that have ensued from the dynamic between the underground and above landscapes.

3.1 Percolating water relationships

Waterways are the lifeblood of Mother Earth… water is our life, is Mother Earth's life.
–Aunty Carolyn Briggs[4]

It is a fascinating exercise to reflect on water. Water seems an ordinary part of our lives, yet essential to our biological and spiritual lives. A few years ago, travelling with my mother and brother in Morocco, I experienced, for the first time, a heat stroke. Overnight my body had absorbed the heat stored in the desert sand and woke up to very unpleasant dehydration. I guess I had never experienced the need for water on a functional level

until, after three days, I couldn't still retain any liquids—a bodily drought.

[5] Tlaloc is the god of rain for the Nahuas, as mentioned in the preface.

Droughts extend beyond our bodies to the landscape; Australia has seen many throughout its history. So does my hometown, as the lush forests dry up on its mountain range, causing wells to lower so much that the business of water peaks and it becomes a luxury. When my parents built their home in Tepoztlán, they already knew the effects of the dry season. When building their house, they thought of how to manage the water supply sustainably throughout the year. They had to consider thermic materials and water accessibility and consumption. In Tepoztlán, houses are made of mudbricks, the vernacular architecture. We call it adobe, the brick made from the same land soil, which allows the inside of the houses to be cooler in summer and holds warmth in winter. Not only did my parents want to respond to the climate conditions of living in Tepoztlán by adopting mudbricks like many other houses in the area, they also gave my brother and me a pathway to belonging to the town. Living inside walls made of soil gives one an attachment to the land. You are literally living in the land. They say the heart of the house is in the kitchen; in Tepoztlán, the adobe walls are the body itself.

In Mexico, the hot season is before the peak of summer, just before the rainy season cools down the landscape. Winters are arid; by March, the entire mountain range browns, and water becomes a scarcity. Throughout the years, the Tepoztecans have feared this season. It has also become the time when multiple wildfires harass the mountains, killing flora and fauna but also harming the identity that is highly attached to them. This is when we pray to Tlaloc[5] for the rain to come. Thinking of this issue, my father installed a 150,000-litre water tank underneath the house terrace. Multiple water pipes gather rainwater from the roof, filling as much as 5,000 litres per storm. Growing up in a town that fears wildfires as they threaten not only the natural landscape but also its sacred relations to its mountains, and in a home where water accessibility through rain is so important, I have developed a strong relationship with water through bodily, natural, and sacred dimensions.

By thinking of water, I saw how my customs and beliefs are tied to sacred aspects of the Tepoztecan life. Ordinary acts such as walking upstream to reach the sacred pools and the waterfalls or walking to map the boundaries of the town are ritualised by a sacred consciousness attributed to these acts. Or more intangible rituals, like praying to Tlaloc to bring the rainstorms and thunders that, in my childhood, would mean an afternoon of fun with friends (and terrified parents). It makes me realise that once you stop thinking of water as just a resource, you see how your life is closely linked to water through ritual, sacredness, historical, emotional, and visceral relations.

Take, for example, in the diagram in Figure 3.1, the outsider connections with water are made evident through the red dotted line, suggesting the ritual, sacred, relational, and intangible values, and meanings of water that extend beyond the tangible uses and aspects of water as a recourse and its qualities. A relational design allows for this expansion of relational thinking.

Through a deep reflection, the diagram shows the different activities, qualities, meanings, and values that water holds for me. Some values are deeply tied to spiritual meanings and local lore. In a way, the yarns with Aunty Carolyn had made me focus on the interceptions of lore and embodied actions, acts that bring us closer to water: rituals. My relationships with water go beyond our tangible connections with this element. Moving from a basic human need, water in my own life has a sacred, spiritual meaning. This diagram adds a relational and intangible dimension to understand my relationship with water, my water memory, cultural meanings and how I experience water in Kulin Country.

Water flows through our bodies as it flows through the landscape. It is an incredible element that can change, form, and cross multiple dimensions horizontally and vertically. Water moves, flows, evaporates, condenses, filtrates, percolates, moisturises, freezes, and transports.

This chapter takes a multi-discipline exploration of water in the Australian context including political ecology, environmental history, geography, and design. Water management and planning is reviewed through the lenses of

social contestation, governance, agency, and environmental exploitation, and how these dimensions inform and affect our lives.
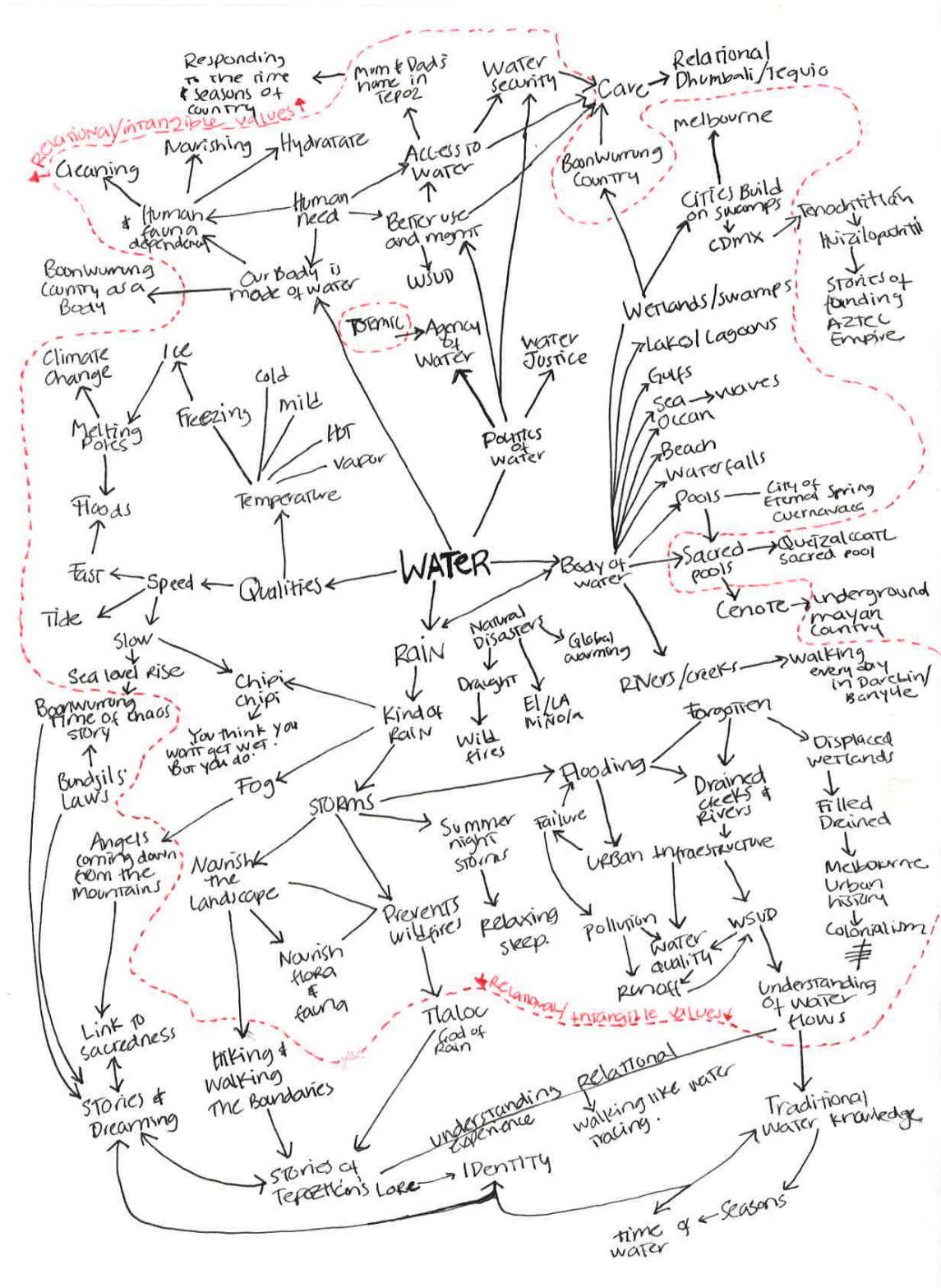

Figure 3.1. Relational thinking of water.
Produced by Ana C. Lara Heyns (2022).

Water is an agent of change and has historically shaped our landscape.[6] Availability and scarcity has been shaped by the landscape's different weather patterns, geological, and topographical attributes,[7] but more aggressively, by human–landscape interactions. The drive for humans to manage and control water has historically been recorded throughout the world. Allan[8] argues that humanity constantly uses and exhausts water from the environment to serve human needs, causing its scarcity. Through the period of modernity,[9] characterised by the expansion of a European worldview of 'development' over the colonies, water management and water relations have been directly affected by urban interventions and water infrastructures. Much work has been done through the different disciplines to explore the relationship between water and modernity. Matthew Gandy[10] suggests exploring the relationship between water and the cities beyond hydrology, engineering, geology, and history, to include other disciplines to contribute to and complement our insights on water like anthropology, planning and architecture.

However, as a result of modernity' water interventions, other water knowledges and practices have been overlooked, displaced, and repressed.[11] This chapter summarises the work done around water and modernity and brings into the discussion the implication of acknowledging two worldviews that are often difficult to reconcile, western thinking and the Indigenous worldview, to position this research within the respectful design approach, but also to understand these implications in the water planning of Australia. Finally, the chapter introduces a framework in which I locate the drained and piped waterways that this research studies as the interception of nature, life, and infrastructure within the underground.

3.2 Water and modernity: The gaps and the problem

In the book, *In Time with Water: Design Studies of 3 Australian Cities*, Bertram[12] states that the period of modernity[13] coincides with the expansion and growth of the European settlement in the formation of the Australian cities. He argues that from the 1850s (the Victorian Gold Rush) up to 1973 (the Global Oil crisis), the Australian cities experienced extensive modifications and infrastructure that impacted the natural layout, of which he identifies five characteristics:

[6] Richard Blewett, ed., Shaping a Nation: A Geology of Australia (Canberra: Geoscience Australia and ANU E Press, 2012).

[7] Cooperative Research Centre for Water Sensitive Cities, "Water and the Australian City: Lessons from History," accessed October 2, 2020, https://watersensitivecities.org.au/wp-content/uploads/2016/12/PC795_A2.1_WaterHistories-1.pdf.

[8] J. A. Allan, "Water in the Environment/Socio-Economic Development Discourse: Sustainability, Changing Management Paradigms and Policy Responses in a Global System," Government and Opposition 40, no. 2 (2005): 181–99, https://doi.org/10.1111/j.1477-7053.2005.00149.x.

[9] See glossary.

[10] Matthew Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination (Cambridge, Mass.: The MIT Press, 2014).

[11] D. K. Bardsley, "Indigenous Knowledge and Practice for Climate Change Adaptation," in Encyclopedia of the Anthropocene (Elsevier, 2018), 359–67, https://doi.org/10.1016/B978-0-12-809665-9.09797-4.

[12] Nigel Bertram, "A Geomorphological and Hybrid Approach," in Catherine Murphy and Nigel Bertram, eds., In Time with Water: Design Studies of 3 Australian Cities (Crawley, WA: UWA Publishing, 2019), 41–78.

[13] According to Bertram, in "A Geomorphological and Hybrid Approach," 51, the period of modernity is characterised by the establishment of European settlements in Australia, where dramatic changes were made to the landscape. However, this

1. The excessive draining of swamps through engineered channels to connect these bodies of water to the ocean. This facilitated land speculation and settlement.
2. Water flows through irrigation channels to areas of minimal rainfall, encouraging agriculture.
3. The damming, diversion and channelling of streams and rivers to manage watercourses to serve human needs, such as drinking water, food production, generation of electrical power and controlling flooding.
4. The extensive groundwater extraction through bores to sustain livestock, and irrigation for public and private gardens, while introducing exotic plant species.
5. And finally, the filling of low-lying and waterlogged land enables urban development, drainage, and diversion of natural waterways.

These practices, along with the growing population, have repressed and displaced historical water methodologies that existed before colonial settlement including consideration of Indigenous Knowledge in the current urban planning and design approaches.

Although significant advances have been made to answer for this gap in the fields of architecture and urban planning, for example, the water-sensitive cities approach and the emergence of urban political ecology,[14] there are still gaps that relate to a more embodied experience and relation to urban space and water systems, which can be informed by Indigenous Knowledge.

As the idea of modernity increasingly opposed nature or at least supposed a greater control over nature, the place of nature in cities became antagonistic with the urban experience,[15] for example, as floods or wildfires. Today, more scholars are looking back into the past to understand the complexities of water and the urban experience, mapping[16] and noticing the changes in the landscape through ethnohistorical approaches and human interactions with the geomorphology of the land.[17] However, Indigenous Water Knowledges are still to be addressed; in doing so, this chapter will explore a series of considerations for this research.

Firstly, water as a relational entity. The understanding of waterscapes in the contemporary city requires us to look back at the past but also look into our own urban experiences of water. The recently emerged hydrofeminism[18] movement asks us to create solidarity with other watery bodies; understanding

concept is viewed from a western perspective of development and innovation. The term 'modernity' itself is conflicting when we think of it from a deep-time perspective. Matthew Gandy argues that "modernity" and "modernization" are concepts tied to the European experience of human interactions with water, which has changed over the last decades (see Matthew Gandy, "Introduction," in The Fabric of Space Water, Modernity, and the Urban Imagination (Cambridge, Mass.: The MIT Press, 2014), 1–25. 3). Bruno Latour also criticises these terms, stating that the use of "modern," "modernisation," and "modernity" privileges an asymmetric relationship of techniques and practices (usually western practices) that have been accepted over others. See Albena Yaneva, Latour for Architects: Thinkers for Architects, 1st ed. (London: Routledge, 2022). Aiming to decolonise this research, I want to acknowledge that these terms do not encompass the Indigenous experiences with water in Australia over the last 60,000 years.

[14] Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination.

[15] Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination.

[16] Gini Lee, "Deep Mapping for the Stony Rises," in Designing Place: An Archaeology of Western District, ed. Lisa Byrne, Harriet Edquist, and Laurene Vaughan (Melbourne: Melbourne Books, 2010), 36–39.

[17] Taylor Coyne et al., "Culturally Inclusive Water Urban Design: A Critical History of Hydrosocial Infrastructures in Southern Sydney, Australia," Blue-Green Systems 2, no. 1 (2020): 364–82.

this interconnectedness gives us ethical obligations to those more-than-human worlds. The relationship with water is no stranger to Indigenous Australians, who have long cared for both land and water; understanding water through the Indigenous paradigm of relationality can inform the western disciplines of urban planning and design.

This then leads us to a second consideration: water as an agent. In Australian water management policies and initiatives, Indigenous Water Knowledge is often overlooked. When it comes to water and city planning, reconciliation of western and Indigenous worldviews is notably absent. If we understand water as an agent of change and as a relational entity, consideration should be given to the legal position of more-than-human worlds and how they affect policy and decision-making.

Lastly, shedding light on unseen waters. Water systems have been invisibilised[19] by urbanisation and modern western development practices and are often demoted and repressed in the experience of the contemporary city. Sewers and drains are one of the most intricate and multilayered symbols and structures underlying the cities, and even though we cannot see them, they are an essential system that makes the above structure work. Matthew Gandy[20] analyses the link between water and infrastructure in the dynamics of urban space and argues that infrastructure is part of the rationalisation and formation of the modern state. This is characterised by a tendency to control water to tackle the health needs and power dynamics of the city, large-scale interventions in agriculture, and flood control. Water, in this way, Gandy suggests, "lies at the intersection of landscape and infrastructure, crossing between visible and invisible domains of urban space."[21] This last consideration allows us to ponder the waters that have been repressed, forgotten, or, more obviously, drained and piped. These unseen waterways are central to this research, as they present ways to understand the different dimensions of values and meanings of the underground.

3.3 Water as a relational entity

In the Aboriginal worldview, the relationship with watercourses is tied to spiritual connections where water is a living entity. The spiritual relationships of Aboriginal peoples to waterscapes are inseparable from land and water; everything is interconnected through a system of relationality.[22]

[18] Maria Bordoff, "Hydrofeminism Is Solidarity Across Watery Bodies," Nordic Art Review (blog), April 4, 2018, https://kunstkritikk.com/hydrofeminism-is-solidarity-across-watery-bodies/.

[19] The idea behind the word 'Invisibilising' comes from anthropological theories of class, race, gender, and justice. Benno Herzog for example, states that Invisibilising social groups is the process of excluding or marginalising groups that often face problems of recognition and representation. This exclusion or marginalisation often silences these groups, to reproduce a social order where power relations are at play. Read Benno Herzog, "Invisibilization and Silencing as an Ethical and Sociological Challenge," Social Epistemology 32, no. 1 (January 2, 2018): 13–23.

[20] Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination.

[21] Gandy, "Introduction." 20.

[22] Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge," Educational Philosophy and Theory 49, no. 14 (December 6, 2017): 1392–1400.

Water landscapes hold meaning and purpose under Aboriginal laws passed down from generation to generation, a heritage that bounds people to place. Marshall argues that this bounding by birthright includes the concept of ownership; however, 'ownership' in Aboriginal law does not implicate the western idea of property, but rather entails responsibility and belonging. Marshall[23] explains that the relationship of Aboriginal peoples with land and water is regulated by traditional knowledge and water practices and "cannot be separated from the land because Aboriginal creation stories have laid the foundations for Aboriginal water values." Marcia Langton[24] elucidates that Indigenous people's cultural identity lies in the cultural construction of places in the environment and their knowledge of the place; this includes the use and management of this resource.

Aboriginal communities are connected to tangible and intangible values, practices, and customs that relate to Aboriginal identity.[25] A holistic set of Aboriginal water values exists within all types of water because Aboriginal identity is characteristic of water kinship. In Australia, Indigenous people recognise a unique cultural identity within a water landscape through familial connections. They recognise kinship values through collective descriptions of water bodies or water types.[26] An excellent example of this, if we listen deeply, is that when Indigenous People introduce themselves, they position themselves in their Country.[27] In Melbourne, it often refers to a body of water: the bays, the rivers, and the creeks.

Aboriginal Knowledge is complex and encoded with ceremony, creation stories and cultural subtleties; therefore, transferring these values into western concepts is difficult and often inaccurate. Some examples of misinterpretation of Indigenous Knowledge includes assumptions, and bias in writings about Indigenous peoples in the ethnographic work from the early 1900s.[28] Similar to ethnographic misrepresentations, geographic representations can also be seen. "An aboriginal water landscape is projected into topographic features dominated by 'sea to mountain, and river to river' and divided by ridge lines to mark Aboriginal boundaries to country,"[29] turning all the twists and turns of Country into straight lines. Land, according to Australian law, says Langton,[30] is seen as somewhat fixed, but not in the Indigenous Worldview. Water is fluid and crosses dimensions and boundaries that topographical features cannot fit into a single representation. Understanding that water and knowledge are fluid and dynamic allows us to consider water as an agent of change.

[23] Virginia Marshall, Overturning Aqua Nullius: Securing Aboriginal Water Rights (Sydney: Aboriginal Studies Press, 2017), https://aiatsis.gov.au/sites/default/files/research_pub/contents_13.pdf.

[24] Marcia Langton, "Freshwater," in Background. Briefing Papers (Broome, WA: Lingiari Foundation, 2002), 43–64.

[25] Marshall, Overturning Aqua Nullius: Securing Aboriginal Water Rights.

[26] In her book, Marshall shares how Lionel Mongta, a Traditional Owner of Gulaga Mountain on the South Coast of NSW, describes how 'saltwater refers to Aboriginal peoples in coast, "freshwater" to inland river area communities, and "bitterwater" to the communities where the saltwater meets the freshwater" (Marshall, Overturning Aqua Nullius: Securing Aboriginal Water Rights, 11).

[27] Langton, "Freshwater."

[28] A great reflective work has been done by anthropologists James Clifford and George E. Marcus in the book: James Clifford and George E Marcus, eds., Writing Culture: The Poetics and Politics of Ethnography (Berkeley/Los Angeles/London: University of California Press, 1986).

[29] Marshall, Overturning Aqua Nullius: Securing Aboriginal Water Rights, p. 14 of Chapter 2.

[30] Langton, "Freshwater."

3.4 The agency of water

Water follows its own lifeline.
– Aunty Carolyn Briggs.[31]

Aunty Carolyn and I are walking in Rippon Lea. I recall for her the way the pipe network was conceived, telling her that the owner of the estate decided to capture all the flood water that was flooding the northeast area of the estate. We have shared many maps before this walk, so she knows how the ephemeral waterways must have grown in volume when Paddy's Swamp got drained. This caused these flooding events, making them more common. The water finds its way flowing down the catchment, flooding streets if it needs to, or travelling underground should this be easier. Aunty Carolyn sees this flooding as part of the balance of Country. It makes it feel like there is no binary categorisation of 'good' or 'bad' water, 'great' or 'disastrous' or 'terrible' water events. It is just water doing what water does, flowing.

Aunty Carolyn mentioned often that we must learn to live around, and with, water. In her book The Boonwurrung Journey Cycles: Stories with Boonwurrung Language, she explains how the clans would move across the land, depending on the seasons. This would mean that at times of flooding the clans moved to drier grounds. This movement would be seen as a way of living with water and the ecosystem, contrary to the Western notion of controlling water. I think about Mexico City, and how the Aztecs built their empire on a lake. They had their reasons for it, warfare, access to water, sacred and spiritual premonitions and promises by the Aztec gods. The Aztecs were able to create agriculture techniques on the lake, but also a skilful infrastructure to access fresh water for the city.

In both colonial processes, there was an element of control of the original population and over water. A control that continues to be part of everyday Western planning of a city. Moments of extreme flooding, in both cases, appear to be seen as disastrous or terrible. Other adjectives attributed to water also appear to be full of anger and emotions: rough waters, raging waters, wild

[31] Personal communication. 17th May 2021.

[32] Leah M. Gibbs, "Water Places: Cultural, Social and More-Than-Human Geographies of Nature," Scottish Geographical Journal 125, no. 3–4 (September 2009): 361–69.

[33] Emma Woodward et al., "Utilising Indigenous Seasonal Knowledge to Understand Aquatic Resource Use and Inform Water Resource Management in Northern Australia: Research Report," Ecological Management & Restoration 13, no. 1 (January 2012): 58–64.

[34] Erin O'Donnell, Legal Rights for Rivers. Competition, Collaboration and Water Governance. (Milton: Routledge, 2018).

[35] New Zealand Legislation, "Te Urewera Act 2014," 2014, https://www.legislation.govt.nz/act/public/2014/0051/latest/DLM6183601.html.

[36] Virginia Marshall, "Deconstructing Aqua Nullius: Reclaiming Aboriginal Water Rights and Communal Identity in Australia," Indigenous Law Bulletin 8, no. 26 (2016): 9–14.

[37] Gabriel Eckstein et al., "Conferring Legal Personality on the World's Rivers: A Brief Intellectual Assessment," Water International 44, no. 6–7 (October 3, 2019): 804–29.

[38] Erin O'Donnell, "When a River Becomes a Person: Polarizing Environmental Protection," in Conferring Legal Personality on the World's Rivers: A Brief Intellectual Assessment., vol. 44, Water International 6–7, 2019, 804–29.

[39] Alessandro Pelizzon, Erin O'Donnell, and Anne Poelina, "Ancestral Beings," in Jose Roca and

waters, and calm waters. This control and 'fear' of water has also influenced policies and processes. An example of this is the statutory need to put a fence surrounding swimming pools in Australia.

But water is not all benign in Indigenous thinking; water deserves respect, and water can also set the law. The Time of Chaos story by Aunty Carolyn suggests this. The effect of breaking the law and the punishment by increasing the water in the bay which formed Porth Philip Bay. Yet, this story does not focus on the rising water of the bay, but rather on the law set by the Kulin moiety. Water in this story is just doing what water does; rising and flowing.

Considerable work done, for example, by Gibbs[32] and Woodward et al.[33] incorporates Indigenous meanings and values into resource management in water-related decision-making. The legal authority has been given to many rivers in countries such as Colombia, New Zealand and India.[34] New Zealand, for example, granted legal personality to areas of cultural and ecological significance; this encompasses all physical and metaphysical elements, as framed in the Te Urewera Act 2014.[35] This act recognises the spiritual value and own identity of natural features, which are deeply embedded in Maori culture and ecological knowledge. However, in Australia, water rights and reforms have failed to recognise the water values and rights of Indigenous communities, and they conceptualise the claims and interests in water through western water frameworks, as pointed out in the work done by Virginia Marshall.[36]

Although the complexities of legal rights to rivers and other natural entities are constantly addressed,[37] in recognising the rights of Mother Earth, Indigenous cultural rights, and obligations within their ontology to Country appear to be oppositional in the western legal frameworks.

The work done by O'Donnell compares the jurisdictions in which rivers have received legal rights in different areas of the world; she argues that rivers have been given legal rights and legal personalities to enable them to have a voice in policy debates. However, she states that to protect the river's rights, "a river's voice must be powerful enough to be heard."[38] The use of the law to grant legal personality to rivers, according to Alessandro Pelizzon, Erin O'Donnell and Anne Poelina,[39] trains human beings to pay attention to rivers. According to

Juan Francisco Salazar, eds., Rivus: A Glossary of Water (The Rocks NSW: Biennale of Sydney Ltd, 2022), 26–30.

[40] "Yarra River Protection (Wilip-Gin Birrarung Murron) Act 2017," Pub. L. No. No. 49 of 2017, § Preamble, 58 (2020).

[41] Melbourne Water Corporation, "Healthy Waterways Strategy 2018-2028," 2018. Phillip, Port. "Flood Management Strategy." Melbourne Water, 2015. https://www.melbournewater.com.au/about-us/strategies-achievements-and-policies/flood-management-strategy-port-phillip-and.

[42] Within this strategy, waterways refer to rivers, wetlands, and estuaries, and even though there is an interconnected relationship of these waterbodies with the bays, ocean and groundwater, this strategy only focuses on surface-water systems.

[43] In a strategy mapping of selected waterways strategies for Melbourne, only a few documents focused on Indigenous values are incorporated into policies, as seen in Appendix 2. However, on a federal level, the Environment Protection and Biodiversity Conservation Act 1999, the National Water Initiative, Australian Government's Working on Country program all recognise the relationships and obligations of Indigenous people to water and Country, yet little understanding of what that means in a policy level is evident.

[44] Monique Ross and Peggy Smith, "Meaningful Consultation with Indigenous Peoples in Forest Management: A Focus on Canada" (XII World Forestry Congress, Quebec City, Canada, 2003), http://www.fao.org/3/XII/1001-C1.htm.

these authors, the notion of a river as a living entity has a precedent in 2017, when the Victorian Parliament made the Yarra River Protection Act 2017.

The Yarra River Protection Act 2017[40] recognises the intrinsic connection of Indigenous People with the Yarra River. The act uses words in the Woi-wurrung language, Wilip-gin Birrarung murron, which means "keep the Birrarung alive." The following passage is noted in the preamble of the Act:

> We, the Woi-wurrung, the First People, and the Birrarung, belong to this Country. This Country, and the Birrarung are part of us. The Birrarung is alive, has a heart, a spirit and is part of our Dreaming. We have lived with and known the Birrarung since the beginning. We will always know the Birrarung.
> Bunjil, the great Eagle, the creator spirit, made the land, the sky, the sea, the rivers, flora and fauna, the lore. He made Kulin from the earth. Bunjil gave Waa, the crow, the responsibility of Protector. Bunjil's brother, Palliyang, the Bat, created Bagarook, women, from the water.
> Since our beginning, it has been known that we have an obligation to keep the Birrarung alive and healthy—for all generations to come.

In Australia, water managers are enhancing their legitimacy by building community-engaging groups to protect waterways' health while acknowledging Indigenous people's values. An example is the Healthy Waterways Strategy 2018[41] to plan and manage Melbourne's waterways.[42] In this strategy, the environmental values are explicit since they are highly informed by scientific knowledge, whilst the social and cultural values are less understood, as stated in the strategy document, and are still in development. Whilst the strategy states that Traditional Owners have contributed to its development it mainly supports the agreements and decisions made by the different Aboriginal stakeholders in partnership with governmental agencies with Indigenous Water Knowledge and values not actually specified or detailed.

In a review of Melbourne's water planning and policies, only a few can be seen to focus on Indigenous values.[43] While acknowledging Indigenous people have become central to the government's reconciliation discourse, little work beyond consultation has been done. This also gives us a hint of the lack of understanding within western processes and frameworks, where consultations are understood as a democratic process originated to enhance Indigenous rights:

> Consultation is supposed to avoid or mitigate infringement of Aboriginal rights to the extent possible and involve affected Aboriginal Peoples in determining alternatives and

[45] Personal communication, October 13th, 2022.

[46] Sue Jackson, Libby Porter, and Louise C. Johnson, Planning in Indigenous Australia. From Imperial Foundations to Postcolonial Futures (New York: Routledge, 2018), 25

[47] Virginia Marshall (formerly Falk), "An Aboriginal Perspective: The 'Gaps' in Water Knowledge and Water Management of Indigenous Water Rights," accessed May 10, 2021, https://www.parliament.nsw.gov.au/committees/DBAssets/InquirySubmission/Summary/52819/26%20Falk%20-%20Attachment%20A.pdf.

[48] Woodward et al., "Utilising Indigenous Seasonal Knowledge to Understand Aquatic Resource Use and Inform Water Resource Management in Northern Australia."

[49] Berkes distinguishes that "ecological knowledge is not the term of preference for traditional or indigenous peoples themselves. In the Canadian North, for example, native peoples often refer to their knowledge of the land rather than ecological knowledge. Land is more than the physical landscape; it includes the living environment." See Fikret Berkes, "Traditional Ecological Knowledge in Perspective," in Traditional Ecological Knowledge: Concepts and Cases, ed. Julian Inglis (Common Property Conference, Ottawa, Ont., Canada: International Program on Traditional Ecological Knowledge/International Development Research Centre, 1993), 1–10.

accommodations to minimize infringement. This means that consultation must take place early, before infringement occurs. The duty to consult is triggered when a right might be infringed.[44]

Aunty Carolyn and I are in Mornington Peninsula where we have been discussing water in her Country and reviewing this thesis. I asked her how she feels about consultation as a practice in planning having been involved numerous times throughout her life. She tells me that she wished there was more than consultation. She says:[45]

People extract everything from Country, resources and knowledge, but what do they do for us? Consultation is another extraction model because there is no benefit to the community after consultation. There is a fee, and that fee will help us to support Indigenous causes, yes, but consultation in return for a fee is not enough to approve interventions in our Country that will have long-lasting effects on our community. Consultation is an economic transaction, so by giving a fee, people think they can just tick another box. There needs to be more than a consultation; we need to negotiate.

Consultation in the processes of gaining approval from Indigenous communities are likely to be shallow, as Jackson, Porter and Johnson[46] address; there is power inequality between government agencies that seek to consult and Indigenous people who are to be consulted. Consultation is a western framework. The authors of *Planning Indigenous Australia* argue that conventional planning consultations, even though they try to include different voices in the policy design process, still reproduce unequal power imbalances that take on a tokenistic approach rather than a collaborative partnership.

The result is a gap between different worldviews. Western water researchers keep viewing water as a commodity, and as we have seen in the different strategies, Indigenous Water Knowledge according to the non-Indigenous researchers is minimal. However, as Virginia Marshall explains,

the reality extracted from numerous volumes of native title reports and Aboriginal plaintiff testimony challenges this opinion. Water and the intrinsic relationship of Aboriginal peoples in Australia are strongly evident in the Aboriginal water narratives drawn from the Aboriginal oral 'passing-on of knowledge' to water, among other things.[47]

Western water policies engage Indigenous people through irregular consultations with a selective group of Indigenous representatives; water

[50] Margaret Ayre and John Mackenzie, "'Unwritten, Unsaid, Just Known': The Role of Indigenous Knowledge(s) in Water Planning in Australia," Local Environment 18, no. 7 (August 2013): 753–68, https://doi.org/10.1080/13549839.2012.665864.

[51] Marshall (formerly Falk), "An Aboriginal Perspective: The 'Gaps' in Water Knowledge and Water Management of Indigenous Water Rights."

[52] Virginia Marshall, "Overturning Aqua Nullius: An Aboriginal Perspective on Personhood," in Gabriel Eckstein et al., eds., Conferring Legal Personality on the World's Rivers: A Brief Intellectual Assessment, vol. 6–7, Water International no. 44 (2019), 804–29.

[53] Ayre and Mackenzie, "'Unwritten, Unsaid, Just Known,'" 753.

[54] The legal recognition of Aboriginal land rights in the Northern Territory, starting with the Wave Hill walk-off, has been instrumental in the returning of land rights and titles to its Traditional Owners. The Mabo and others v. Queensland successfully included traditional laws and customs, recognising the fact that Indigenous people had lived in Australia for thousands of years before colonial settlement ruling out the concept of Terra Nullius. Sue Jackson has done a thorough review on the advances of legal rights of land and resources. See Sue Jackson, "Land Rights: A Postcolonial Revolution in Land Title," in Libby Porter, Louise C. Johnson, and Sue Jackson, eds., Planning in Indigenous Australia. From Imperial Foundations to Postcolonial Futures (New York: Routledge, 2018), 12–23.

[55] Jackson, "Land Rights: A Postcolonial Revolution in Land Title," and Michael Dodson, "Human Rights and the Extinguishment of

ends up being embedded into policies that segment water into areas such as potable water accessibility, or environmental use; cultural water rights, or commercial exploitation; freshwater or saltwater, stormwater and flooding, or surface waterways. This water segmentation goes against an Indigenous view of relating with more-than-human worlds, in which they are all interconnected. The extensive work done by Virginia Marshall addresses these gaps and highlights that Indigenous water knowledge ends up being packaged into checking boxes for planning policy rather than being understood and treated within the relational ontology that characterises Indigenous worldview. Hence, this water knowledge is addressed in policies without any specific guidelines to include Indigenous knowledge into water planning. Much of the gap between water policy and Indigenous water knowledge is in the fact that water is seen as a tangible resource in the Western worldview. In contrast, Indigenous ontology considers water as an active agent with which we have a relationship, both tangibly and intangibly.

A growing research field incorporates Indigenous Ecological Knowledge[48] into a more holistic natural resource management framework.[49] In Australia, the National Water Initiative (NWI) established the consideration of Indigenous Knowledge in water planning, mandating that the government would enhance the inclusion of Indigenous interests in water policies;[50] yet, even the NWI has identified the lack of Aboriginal consultation, representation, and access.[51] Virginia Marshall[52] gives evidence to this:

> The Indigenous peoples of Australia have a primary, unique and inherent obligation to exercise the ownership, protection and management of the Australian environment, but Australian domestic laws and policies do not fully support Indigenous Australians in the exercise of such obligations. For example, in Australia's blueprint for water resource use, the National Water Initiative, Indigenous peoples do not have legal certainty and only three discretionary clauses (52, 53 and 54) to represent thousands of years of actively maintaining pristine waters, lands and respect for all living things (Council of Australian Governments, 2004).

Ayre and Mackenzie argue that water planning should involve a holistic approach to a mutual recognition of concepts and views of water from both Western and Indigenous worldviews; the "tensions reside in the challenge of working together two very different ways of knowing land and water in conventional planning processes in Australia."[53] This consideration then, asks us to bridge understandings.

[50] Margaret Ayre and John Mackenzie, "'Unwritten, Unsaid, Just Known': The Role of Indigenous Knowledge(s) in Water Planning in Australia," Local Environment 18, no. 7 (August 2013): 753–68, https://doi.org/10.1080/13549839.2012.665864.

[51] Marshall (formerly Falk), "An Aboriginal Perspective: The 'Gaps' in Water Knowledge and Water Management of Indigenous Water Rights."

[52] Virginia Marshall, "Overturning Aqua Nullius: An Aboriginal Perspective on Personhood," in Gabriel Eckstein et al., eds., Conferring Legal Personality on the World's Rivers: A Brief Intellectual Assessment, vol. 6–7, Water International no. 44 (2019), 804–29.

[53] Ayre and Mackenzie, "'Unwritten, Unsaid, Just Known,'" 753.

[54] The legal recognition of Aboriginal land rights in the Northern Territory, starting with the Wave Hill walk-off, has been instrumental in the returning of land rights and titles to its Traditional Owners. The Mabo and others v. Queensland successfully included traditional laws and customs, recognising the fact that Indigenous people had lived in Australia for thousands of years before colonial settlement ruling out the concept of Terra Nullius. Sue Jackson has done a thorough review on the advances of legal rights of land and resources. See Sue Jackson, "Land Rights: A Postcolonial Revolution in Land Title," in Libby Porter, Louise C. Johnson, and Sue Jackson, eds., Planning in Indigenous Australia. From Imperial Foundations to Postcolonial Futures (New York: Routledge, 2018), 12–23.

In the last decades, the acknowledgement of ownerships previous to colonial occupation[54] has opened new pathways for Indigenous autonomy in land and environmental resources. However, the processes of land recognition have been criticised for being intrusive of spiritual beliefs and relationships to the Country, which is not generally shared with non-Indigenous groups.[55] The lack of understanding between these worldviews suggests that to understand relationality as Indigenous people do, non-Indigenous researchers should be encouraged to create relationships with more-than-human worlds. To see them as relational beings allows us to consider them as agents of change.

Leah M. Gibbs[56] argues that socio-cultural geographies allow us to understand how to live with more than human worlds:

> Bringing together cultural, social and more-than-human geographies of nature reveals the layers of interaction and interconnection that create water places, the institutions and priorities we use to govern them, and the gap between the two. The task at hand is to find ways of enabling these different approaches, and the understandings stemming from them, to shape the way we live in and with a more-than-human world.

The work surrounding waterscapes in Australian planning needs to address these issues; however, yet another dimension is considered in this research. The collection of work done by Gabriel Eckstein et al.[57] points out a critical question: Who or what is being granted legal personality? The wetland, the river, the stream, or the whole water system? How do we deal ephemeral or intermittent streams that aren't always flowing? How do we recognise streams that don't have enough force to have a voice of their own? How do we create relationships with these waters? If we consider that all water is interconnected through a system of relationality, how can we address drained and piped water in the urban planning of a city?

3.5 Unseen waters: drained and piped waterscapes

I can't find me. I can't find any of my ancestors' markings.
–Aunty Carolyn Briggs[58]

As modern processes of urbanisation developed, the place of nature within cities, as noted by Mathew Gandy[59] began to change, hiding into a more functional realm. The watercourses that characterised the landscape in pre-colonial Melbourne were drained or piped underground, where their lack of

[55] Jackson, "Land Rights: A Postcolonial Revolution in Land Title," and Michael Dodson, "Human Rights and the Extinguishment of Native Title," Australian Aboriginal Studies, no. 2 (1996): 12–23.

[56] Gibbs, "Water Places," 367.

[57] Eckstein et al., "Conferring Legal Personality on the World's Rivers."

[58] Personal communication, May 17th, 2021.

[59] Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination.

superficial visibility has reduced their agency in the human experience of the contemporary city.

The work done by McLean et al.[60] brings into discussion the concept of "shadow waters", which highlights the privilege of certain water values to be exalted while rendering other values invisible. This demotion of certain waters, as they explain, can be literal, like groundwaters, drained and piped water, or metaphorical, like certain water knowledges that have been repressed. They explain:

> Shadow waters can be conceptualised vertically, with surface water receiving more policy and research attention than groundwater, and also horizontally, as some sub-catchments, uses and values have been ignored or undervalued in macro-catchment processes. There are also temporal dimensions to shadow waters: for example, in decision-making for water allocation processes, complex and contested histories of human–environment relations and Indigenous temporalities are often overlooked in favour of shorter-term scientific investigations.[61]

The authors challenge the dominant narratives of contemporary water management to incorporate these taken-for-granted values and water flows. The "shadow waters" notion brings essential considerations for this project, which looks at unseen watercourses in the urban experience compared to the surface watercourses that have, as O'Donnell[62] says, more voice. The work of Plumwood[63] influenced these authors in shaping their idea of shadow waters based on the concept of shadow places, which are often devoid of sentiment or worthiness but seen only for their economic implications.

Through an analysis of the politics of water management and culture on site, McLean et al.[64] seek to shed some light on the technical efforts to displace water, through infrastructural endeavours for human-centric purposes that have ethical, ecological, and cultural consequences. The research done by these authors asks us to reflect upon the multiplicity of Indigenous Knowledge, the incredible array of values and meanings of water (cultural, social, commercial, and so on), and how this complexity influences and is influenced by the socio-political and cultural context in which they are placed, allowing us to rethink water relations in a way that can reconfigure more just and inclusive water governance. We could take the concept of 'shadow waters' to an even more extreme notion of water displacement. One where water is displaced of agency, sacredness, and spiritual connections. This produces an idea that water is just an element, a resource that serves human needs, neglecting the authority that water possesses in Indigenous stories.

[60] Jessica McLean et al., "Shadow Waters: Making Australian Water Cultures Visible," Transactions of the Institute of British Geographers 43, no. 4 (December 2018): 615–29.

[61] McLean et al., "Shadow Waters," 616.

[62] O'Donnell, "Conferring Legal Personality on the World's Rivers."

[63] Val Plumwood, "Shadow Places and the Politics of Dwelling," Australian Humanities Review 44 (2008): 139–50.

[64] McLean et al., "Shadow Waters."

The last consideration should be made upon the idea of shadow waters. The notion of vertical shadowing of water offers a path to explore the depths of the Underground. "The vertical shadowing of water occurs when groundwater is rendered insignificant in planning processes and physically disconnected from surface water in water management practices."[65]

Even though this work offers a solid framework in terms of thinking about water values for this project, considering the nature and displacement of the streams and water flows that this research is interested in,[66] we need to reframe the vertical shadowing of water to a scale that allows us to relate to it, in these cases a few metres below ground, and a few kilometres on a horizontal view. To understand this concept, a historical and analytical approach is addressed through a time and space relationship, where Indigenous Water Knowledges have been marginalised and almost made extinct in the same way streams have been drained, piped, and segmented.

Summary

Focusing on the water as an element that overlaps human activity and natural underground landscape,[67] this project aims to explore Indigenous and non-Indigenous collaborations in developing tools to enable communities, designers, and planners to better understand and plan for the interaction of cultural and physical sites within the underground realm. This chapter considered three important ways of thinking about water to achieve this. Firstly, to consider water as a relational entity urges us to develop and acknowledge our relationships with water flows. Relationality building with water can make us understand the effects of the Anthropocene. Ignoring the water agency could lead to the disastrous events that we live in today, and that will most likely increment in the future with climate change.

Secondly, to recognise the agency of water as a relational entity; rivers' legal personality has enabled policies to protect and restore waterscapes; however, if a river has been drained or piped underground and forgotten through layers of concrete, the river's agency is subdued, creating potentially disastrous consequences such as flooding. The invisibility of underground water flows, even those piped, makes them more complicated to establish relations with. Therefore, they tend to be 'shadowed' in water planning compared to more visible surface water. By recognising the existence and authority that drain

65 McLean et al., "Shadow Waters," 624.

66 For example, the stream flowing from Caulfield Park is now drained and piped underground. McLean et al. researched the Goulburn and Cudgegong Rivers, where there is more visibility on issues concerning their values and meanings. Yet there is still little attention paid to the rivers and creeks that were drained during the period of European settlement.

67 Gandy argues that the layering of infrastructure networks is central to vertical urbanism. The incorporation of the subterranean realm discussed through this kind of urbanisation has shed a light on the relationships between humans and the underground. See Gandy, "Introduction," 8.

waterways have, we could develop tactics reflective of this, instead of avoiding them. This would enable us to learn about the water cycle and its relations in the waterscape. Thus, the third consideration questions our relationships with the agency of piped rivers and how we experience them in the contemporary city.

PART II. WAYS OF DOING

Chapter 4: From data to relationships

Introduction

Throughout the literature reviewed in the past chapters, there seems to be a generalised concern in the disciplines of spatial design and water management about the inclusion of Indigenous Knowledge and the responsibilities and accountabilities of researchers, planners, designers, and communities working in Country. Indigenous and non-Indigenous scholars mention the need to develop new configurations of working together with the built and natural environments to contribute to more social, cultural, and sustainable justice for water and underground management. Within this sphere, this research aims to contribute to testing new frameworks and methodologies that enable new configurations of working along with different disciplines and identities and develop pathways to create relationships of care with more-than-human worlds that can contribute to planning and design processes.

In this chapter, I discuss relational design as a framework to move beyond the Indigenous perspective from a western discipline to researching from an Indigenous paradigm.[1] A couple of considerations are discussed, such as ethics and researcher responsibilities, commitments to collaborations and relationships of care where research is considered a ceremony.[2] And finally, the chapter discusses the development the study undertook from a western methodology to a relational design.

[1] Shawn Stanley Wilson, "What Is Indigenous Research Methodology?," Canadian Journal of Native Education 25, no. 2 (2001): 175–79.

[2] Shawn Wilson states that ceremonies act as a way to bring together relationships through rituals that can uncover new ideas and increase our understanding of the world. In his thesis, "Research as Ceremony," Wilson shares his analysis and relationality through the Indigenous paradigm. See more: Shawn Stanley Wilson, "Research as Ceremony: Articulating an Indigenous Research Paradigm," (PhD diss., Melbourne, Monash University, 2004).

4.1 An Initial methodology

This PhD is an investigation into the development of new configurations of working within Indigenous paradigms. My objective is to share my experience working with Indigenous ontology, providing a detailed description of what was involved in the process.

Initially, the methodology was customised to meet the overlaps between design, ethnography, and deep time. The research design included multidisciplinary accounts of urban underground development such as history, archaeology, urbanism, landscape architecture, geography, geology, hydrology, and engineering to gather physical environment data. This initial methodology was inspired by the work of Ian McHard[3] and Anne Whiston Spirn,[4] who pioneered the development of ecological urbanism[5] in the 1980s, and the work by Matthew Gandy,[6] who incorporated a highly detailed historical approach to urbanism, landscape, and infrastructure. Mapping in these works was used to integrate different data of the environment and the urban.

4.1.1 Mapping

Cartography has several significant functions. Firstly, it is a necessary tool to understand the spatial phenomenon; it is also an effective device that contains information that aids in the comprehension of distributions and relationships. In the words of James Corner:[7]

> Through rendering visible multiple and sometimes disparate field conditions, mapping allows for an understanding of terrain as only the surface expression of a complex and dynamic imbroglio of social and natural processes. In visualising these interrelationships and interaction, mapping itself participates in any future unfoldings. Thus, given the increased complexity and contentiousness that surrounds landscape and urbanism today, creative advances in mapping promise designers and planners greater efficacy in intervening in spatial and social processes. Avoiding the failure of universalist approaches toward master-planning and the imposition of state-controlled schemes, the unfolding agency of mapping may allow designers and planners not only to see certain possibilities in the complexity and contradiction of what already exists but also actualize that potential.

Maps are described as visual representations of a territory or physical space. Nevertheless, discussions about the meanings and implications of maps

[3] Ian McHard, Design with Nature (New York: J. Wiley, 1992).

[4] Anne Whiston Spirn, "Ecological Urbanism: A Framework for the Design of Resilient Cities (2014)," in The Ecological Design and Planning Reader, ed. Forster O. Ndubisi (Washington, DC: Island Press/Center for Resource Economics, 2014), 557–71, https://doi.org/10.5822/978-1-61091-491-8_50.

[5] In his book, Design with Nature, Ian McHard proposes datascapes to analyse the site and its natural features to select the best places for development. In this sense, Ecological Urbanism aims to advance methodologies that consider the relationships between living organisms and their environment, providing a framework to address ecological threats to humanity such as climate change, energy production and consumption, environmental justice and more.

[6] Matthew Gandy, "Landscapes of Disaster: Water, Modernity, and Urban Fragmentation in Mumbai," Environment and Planning A: Economy and Space 40, no. 1 (January 2008): 108–30, https://doi.org/10.1068/a3994.

[7] James Corner, "The Agency of Mapping: Speculation, Critique and Invention," in Mappings, ed. Denis Cosgrove (London: Reaktion Books, 1999), 231–52, 214.

[8] Jorn Seemann, "Cartografias Culturais Na Geografia Cultural: Entre Mapas Da Cultura e a Cultura Dos Mapas," Boletim Goiano de Geografia. Instituto de Estudos Socio-Ambientais/Geografia 21, no. 2 (n.d.): 61–82.

[9] Denis Cosgrove, "Cultural Cartography:

have concluded that maps are a symbolised image of a geographic reality that represents certain characteristics selected by its author and influenced by the way the map will be used and its spatial relevance.[8] This has resulted in a continuing discussion of the power relations embedded into cartographic resources. Denis Cosgrove describes: "The map's 'silences,' its operations within systems of knowledge and power, and the ways that so many of the canonical maps of European 'discovery' had simultaneously used and erased the local and often non-representational forms of spatial knowledge possessed by disadvantaged and colonised populations in furthering the interests of their oppressors."[9]

Traditionally, cartography has used abstract maps to delimitate territories as static and homogenous. A critical reading of abstract maps argues that they fail to record the complexities of lived experiences, deep histories, and cultural memories, especially when Indigenous heritage and knowledge are considered. Stan Allen[10] acknowledges that the problem of representations results in substituting the intangible for the tangible; however, visual representations do not necessarily explain the relationships and complexities of the intangible, where the urban sites are no longer simply geographic.

Peter Hall[11] discusses the concept of mapping as a way to acknowledge the power and political relations within the mapmaking processes and states that the emergence of participatory, flexible and critical mapping can address the issue of dominant representation. In his work, Hall uses mapping as a teaching method to think across disciplines that allow for the involvement of communities through ethnographic research and acknowledging their nature as performative, participatory and political. Padilla[12] agrees with Hall, stating that mapping can be subject to continuous revision and that through its agency, it can work as a tool, even with its historical colonial baggage, and it could help in representing meanings as a visual source to bridge different knowledge systems.

The work by Harley[13] argues that maps should be made more responsive to social issues that can relate to the environment, to human rights and to cultural minorities. Both Harley and Hall express the importance of reflecting on mapping and express the urge to question cartography: who is making the map? For what? What are the social consequences?

If we understand the concept of mapping through Halls' interpretation, mapping – not map – proposes a means to show what has been repressed. By

Maps and Mapping in Cultural Geography," Annales de Géographie 660–661, no. 2 (2008): 159, 163.

[10] Stan Allen, "Mapping the Unmappable: On Notation," in Practice: Architecture, Technique and Representation (London: Routledge, 2009), 30–45, 36.

[11] Peter Hall, "Afterword: On Mapping and Maps," Design Philosophy Papers 10, no. 2 (November 2012): 157–67.

[12] Cristina Padilla, "La Cartografía Cultural Como Significado y Poder," in Patrimonio Cultural y Turismo, ed. Bruno Aceves, 1ra Edición, vol. Cuadernos 8 Cartografía de Recursos Culturales de México (Ciudad de Mexico: Consejo Nacional para la Cultura y las Artes, 2004), 75–82.

[13] J. B. Harley, "Cartography, Ethics and Social Theory," Cartographica: The International Journal for Geographic Information and Geovisualization 27, no. 2 (October 1990): 1–23..

[14] Simon Ryan studied the history of explorers in Australia and how they mapped the landscape. Huhndorf and Pratt researched maps through English literature, including Native Americans.

[14] Simon Ryan, The Cartographic Eye. How Explorers Saw Australia (North Sydney: Australian Catholic University, 1996).

[16] Shari M. Huhndorf and Scott L. Pratt, "Cultural Cartographies: The Logic of Domination and Native Cultural Survival," The Journal of Speculative Philosophy, New Series, 14, no. 4 (2000): 268–85.

[17] The Native Title Act 1993 sets out a legislative

including ethnographic research, we could go beyond the abstract mapping to incorporate intangible features such as cultural memory and indigenous knowledge. However, there is a growing consensus between researchers of different fields[14] who state that historically, spatial modes of registry such as cartography have been the essential resource of colonialism. Ryan[15] and Huhndorf and Pratt[16] argue that maps allowed the possibility of exploitation, dispossession, and assimilation.

4.1.2 Mapping back

In more recent times, spatial analysis has helped many communities to support their claims to the landscape; in Australia, thanks to the mapping requirements for the Native Title Act in 1993,[17] Indigenous groups started to use GIS technologies to not only support native title claims but also to record and protect sacred sites and manage the land.[18]

The western spatial-legal framework, including the cadastral model, serves to negotiate for the right to claim land. However, researchers state that throughout history, it facilitates colonialism by making territory legible, therefore, available.[19] In Australia, this model has been used for communities to delineate the boundaries of their claim using mapping practices that are, according to Potter, Dorian and Mathews,[20] "accurate, binary and conform to western notions of space." However, the authors also acknowledge that using the cadastral space framework proposed by the Native Title Act is problematic,[21] as it conflicts directly with Indigenous Australian spatial ontologies.[22] Nevertheless, urban data and research have proven to be a solid evidence base for negotiations between Indigenous groups, the government and other stakeholders.[23] This has led to the creation of new maps based on traditional Indigenous Knowledge,[24] using western science and official data to overlay a comprehensive database for cultural, social, historical and environmental evidence to support cultural heritage, to have a legal framework for supporting land ownership and claim, and to promote reconciliation[25] after the colonial dispossession. Yu[26] agrees that these maps should be fundamental in future development and urban planning schemes.[27]

Mapping has also served to visualise the repressed histories. For example, Ian Clark[28] has registered how, in some areas of Victoria, massacre sites have become scars in the cultural landscape that refuse to fade despite the repressed histories. However, they have also become sites where

framework to recognise and protect the native titles claim and allow a co-existence with the national land management. The act was proclaimed after the Mabo versus Queensland Case, in which the judgements of the High Court recognised the traditional rights of the Meriam people to their lands. Since this case, the Court acknowledges that native title should be recognised for all Indigenous people in Australia. Read more: Australian Institute of Aboriginal and Torres Strait Islander Studies, "Overturning the Doctrine of Terra Nullius: The Mabo Case" (Australian Institute of Aboriginal and Torres Strait Islander Studies, n.d.), https://aiatsis.gov.au/sites/default/files/research_pub/overturning-the-doctrine-of-terra-nullius_0_3.pdf.

18 Sandra Potter, Bruce Doran, and Bruce Mathews, "Modelling Collective Yawuru Values along the Foreshore of Roebuck Bay, Western Australia Using Fuzzy Logic," Applied Geography 77 (2016): 8–19.

19 In her book, Unlearning the Colonial Cultures of Planning (2010), Libby Porter examines the dispossession of lands in Australia and notes how the descriptions by the first explorers in Australia served as a tool to attribute value to the Native lands; Australia was considered Terra Nullius, so the land was available for colonial settlement. See Libby Porter, Unlearning the Colonial Cultures of Planning (Farnham, England; Burlington, VT: Ashgate, 2010).

20 Potter, Doran, and Mathews, "Modelling Collective Yawuru Values along the Foreshore of Roebuck Bay, Western Australia Using Fuzzy Logic," 9.

21 Noah Pleshet, "Caring

counter-narratives have served to challenge the idea of Aboriginal violence-free colonisation.

Nevertheless, the mapping of sacred and meaningful sites has been focused on the above the ground areas, while the underground and its cultural resources remain undiscussed. As the cities expand horizontally and vertically, the underground will pose new considerations that need to be addressed before the contestation of these spaces creates disputes.

Furthermore, as the Indigenous and other Australian relationships become more complex, the contestations for land and resources are more visible.[29] Pérez[30] argues that intangible heritage represents a vital source for identities deeply rooted in the landscape; hence, intangible heritage transcends territorial borders as we know them in western conceptions of space. Cartographies become a tool to map intangible cultural heritage that takes form in the natural resources we can see in the tangible landscape, and that allow for localisation, organisation, and distribution within geographic space, allowing us to understand the spatial dimension of culture.[31]

Indigenous Victorians acknowledge Country as more than just the landscape; it is a living entity with stories and histories that cannot be erased. Water bodies and minerals in the landscape strongly connect to Indigenous cultural heritage and knowledge. These geographic elements hold the stories of creation and spirits that form the identity of indigenous communities. As Hackenberg[32] explains, the Aboriginal communities have a continuing relationship with the landscape through social, spiritual, and cultural values. The need for planning strategies that can convey the meanings and symbols of the underground will create new pathways to understanding the traditional cultures, the deep histories of the soil and water and how the tangible and intangible are interconnected. However, to recognise these meanings, it is important that we break the dichotomies of western research and expand our ontology to consider Underground and water as relational beings.

4.2 Towards a relational design

Indigenous Knowledge is situated in Country. In the Aboriginal worldview, Country cannot be translated as "environment" because Country is directly related to Indigenous people through the land, the culture, the language, and ancestry.[33] Uncle Charles Moran, Uncle Greg Harrington and Norm Sheehan[34]

for Country: History and Alchemy in the Making and Management of Indigenous Australian Land: Caring for Country," Oceania 88, no. 2 (July 2018): 183–201.

22 Noah Pleshet examines the notion of Caring for Country and states that while traditional conceptions of the land are attributed to the spiritual connection with the environment, the western conceptions of land are focused on land rights.

23 As seen in Potter, Dorian, and Mathew's research with the Yawuru community.

24 In her research, programming the Intangible Cultural Heritage of the City, Teodora Konach states, "local communities claim special attachment not only to cultural objects, but to the cultural knowledge itself, and they seek full participation in the protection and management of tangible and intangible heritage." See Teodora Konach, "Programming the Intangible Cultural Heritage of the City – Paradigms and Perception. The Case of the Ancient City of Nessebar," Przeglad Kulturoznawczy 1, no. 27 (2016): 18–34, 22.

25 Indigenous research academics, such as Hackenberg (2015), and Tan and Jackson (2013), agree that the understanding of cultural diversity and community cohesion has improved the relationships with Indigenous Australians, also allowing a recognition of the past injustices to reconcile histories. See Robyn Heckenberg, "Learning in Place, Cultural Mapping and Sustainable Values on the Millawa Billa (Murray River)," The Australian Journal of Indigenous Education 45, no. 1 (August 2016): 1–10, https://doi.org/10.1017/jie.2015.23. And Poh-Ling Tan and Sue Jackson, "Impossible Dreaming – Does Australia's Water

explain that "the relationship of a people and their Country extends beyond time and is recorded in the stories laid down that are the spiritual source of knowledge essential to generations." The concept of Country is not only misunderstood by that of environment, but it is also important to understand it compared to that of site. In architecture, sites are limited by ground location and boundaries. Janet McGaw and Naomi Tootell[35] argue that western conceptions of land limit Country to boundaries, places and locations; this notion limits Country to a horizontal plane, whereas Country englobes the land below and the sky above, the connections of water throughout the landscape and the movements of the wind.

Many architectural theorists have considered the environment as more than a stable, passive, and given condition, more than simply a natural resource to be mapped, divided, organised, and exploited for construction.[36] Within the architectural discourse of site, some theorists argue that site thinking offers a pathway to critically examine historical and ideological interdisciplinary frameworks in a multi-scale manner to understand how knowledge is embedded into a site.[37] However, Indigenous scholars point to the need to decolonise design by developing interactions that result from building relationships that go beyond the human mind "because Knowledge lives in Country."[38] Brian Martin[39] suggests that the Aboriginal worldview and lived experiences are based on the practice of relatedness. In agreement, Karen Martin[40] states that research must recognise Indigenous methodological approaches. She defined 'relatedness' as "the set of conditions, processes and practices that occur amongst and between the Creators and Ancestors; relatedness occurs across contexts and is maintained within conditions that are physical, spiritual, political, geographical, intellectual, emotional, social, historical, sensory, instinctive and intuitive."

If we aim to decolonise our practice while working with new configurations of working with the built environment that can contribute to the ecology of the landscape as well as the cultural relationships with Country, we need to research from an Indigenous paradigm, where the knowledge system is built on the relationships with human and more-than-human concepts, ideas, and everything that surrounds us.[41]

Shawn Wilson[42] suggests that to do research through an Indigenous paradigm and methodology, there is a set of axiological matters that must be answered that go beyond the validity of your hypothesis to answer for all the relationships that are built through that research. He names this Relational

Law and Policy Fulfil Indigenous Aspirations?," Environmental and Planning Law Journal 30 (2013): 132–49.

[26] Peter Yu, "Process from the Other Side: Liyan in the Cultural and Natural Estate," Landscape Architecture Australia 139 (2013): 26–27.

[27] According to Peter Yu (2013, p. 26), this idea would also "apply the UN principles of 'free, prior, and informed consent' regarding development proposals on indigenous lands."

[28] Ian D. Clark, Scars in the Landscape: A Register of Massacre Sites in Western Victoria, 1803-1859, Report Series / Australian Institute of Aboriginal and Torres Strait Islander Studies (Canberra: Australian Institute of Aboriginal and Torres Strait Islander Studies, 1995).

[29] Bill Arthur and Frances Morphy, eds., Macquarie Atlas of Indigenous Australia, 2nd Edition (Singapore: The Macquarie Library Pty Ltd, 2019).

[30] Ricardo Pérez Montfort, "Down Mexico Way. Estereotipos y Turismo Norteamericano En El México de 1920," in Patrimonio Cultural y Turismo., ed. Coordinación Nacional de Patrimonio Cultural y Turismo, 1ra Edición, vol. Cuadernos 14. Planeando sobre el turismo cultural (Ciudad de Mexico: Consejo Nacional para la Cultura y las Artes, 2000), 13–32.

[31] Perez-Montfort also acknowledges that cartography is a tool for economic and social development that enhances preservation and promotion of heritage and identity.

[32] Heckenberg, "Learning in Place, Cultural Mapping and Sustainable Values on the Millawa Billa (Murray

Accountability. Therefore, some research methods fit better than others in Indigenous research; for example, yarning circles coincide with Indigenous epistemology of sharing and creating relationships, compared to the method of consultation.[43]

In his work, *Research as Ceremony,* Wilson[44] shares the multidimensionality of relatedness and how this entails relationships beyond human relations. He claims that knowledge is held in the relationships we have with the environments that surround us; this includes the spiritual relationships we create with a landscape, which is why he argues that research itself is a ceremony. He goes on further to explain that within Indigenous research, the ways we think and the ways we know are culturally based. Drawing from his work, I acknowledge too that my ways of thinking and knowing inform and impact my ways of doing. The use of epistemologies informed by identity and culture enable a space for alterity that helps the research move beyond binary positions, to be self-aware of how western ideologies and theories have eroded relationships, and finally, to address power issues.[45] Karen Martin[46] specifies that Outsiders can achieve a fulfilling relationship where honesty, respect and cooperation can be earned while maintaining their own identity and autonomy "so that relatedness is expanded and not diminished or replaced."

In the quest for developing a relationship with a Country where the research is being done, being faithful to cultural protocols as well as my own identity means that the methodology must undergo a series of changes from a multidisciplinary approach informed by western sciences to a relational design where relatedness takes the central role. The research seeks to identify the knowledge written into Country by actively engaging and learning from the environments and all the interconnections through respectful design. As explained by Uncle Greg Harrington, Norm Sheehan and Uncle Charles Moran,[47] respectful design is founded on the idea that design has agency and is alive in a system of interconnected relationships between humans and non-humans.

While architecture and planning have developed pathways to design with the environment to target social injustice, climate change and affect policy,[48] this research prioritises a relational approach to design where different ways of doing, being and knowing are embedded in daily practices and rituals that expand our understandings of an intelligent world and its connections.

River)."

[33] Brain Martin states that "For Indigenous peoples, Place precedes inquiry. Place and Country are both epistemologically and ontologically central to our ideologies and beliefs. Place is a geographical location but also a way of thinking; it is Land that has its own Subjectivity. It is here that my practice articulates the subjectivity of Country as a living thing—it informs us who and how we are." See Brian Martin, "Lived Experience, Practice, and the Academy," Journal of World Philosophies 4, no. Winter (2019): 119–23, 122.

[34] Uncle Charles Moran, Uncle Greg Harrington, and Norm Sheehan, "On Country Learning," Design and Culture 10, no. 1 (January 2, 2018): 71–79, 75.

[35] Janet McGaw and Naomi Tootell, "Aboriginal 'Country': An Implicit Critique of Terra Firma and Traditional Architectural Practices," Architectural Theory Review 20, no. 1 (January 2, 2015): 91–114,

[36] Hélène Frichot, "Environments," in Creative Ecologies: Theorizing the Practice of Architecture (USA: Bloomsbury Publishing, 2018), 17–78.

[37] Carol Burns and Andrea Kahn, "Why Site Matters," in Site Matters: Design Concepts, Histories, and Strategies (New York: Taylor & Francis Group, 2005), vii–xxix.

[38] Moran, Harrington, and Sheehan, "On Country Learning."

[39] Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge," Educational Philosophy and Theory 49, no. 14 (December 6, 2017): 1392–1400, 1392.

4.3. Ways of Knowing: My Journey

My journey to understanding how I relate to this Country (14 thousand kilometres away from mine) developed in two parallel pathways. The first one is in reconstructing my genealogy and my family's history to understand the values and principles that enabled me to care for this land and my own. And the second one is paying close attention to the daily practices of how I live and connect to Melbourne. It might seem that both pathways are spatially and practically different, but as I will explain further, they are tightly connected.

Due to the process of colonialism in Mexico and the historical violence in which mestizaje was developed, it has been a confusing space for me to acknowledge my Indigenous genealogy in the English-speaking world because, as I explained in the first chapter, Spanish colonisation in the Americas was very different to the colonisation done by England.

I remember bumping into this problem during my master's degree in England, where I was asked to tick the box that explained my ethnic background better. The checklist had around fifteen different ticking boxes, and none of them could explain or even suggest what a Latin American mestiza is.

Later, my classmates and I would discuss globalisation and the effect of tourism on local economies and cultures. I suddenly realised that my almost-enough whiteness would prevent my classmates from seeing me as the "Other" I was. And just like that, in a single class, my whole identity as a Mexican was defined as a third-world culture, to an underdeveloped one, to a less developed one, to a developing one. I had never felt more exotic and, quite frankly, more 'nobly savaged.' I became obsessed with Said[49] and the ripples his work made in anthropological work. The idea that the academic world would still reinforce these notions that made me feel like my home country was inferior to theirs opened a little Pandora's box that would impel me to rethink my own identity and its multi-dimensions. To want to

[40] Karen Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers. (Teneriffe Queensland: Post Pressed, 2008), 69.

[41] Wilson, "What Is Indigenous Research Methodology?"

[42] Wilson, "What Is Indigenous Research Methodology?"

[43] As discussed with N'arwee't Carolyn Briggs in Chapter 3.

[44] Wilson, "Research as Ceremony: Articulating an Indigenous Research Paradigm."

[45] G. Ladson Billings, "Racialized Discourses and Ethnic Epistemologies," in Handbook of Qualitative Research, ed. N. K. Denzin and Y. S. Lincoln, 2nd Edition (London: Sage, 2000), 257–77, and Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers.

[46] Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers.

[47] Moran, Harrington, and Sheehan, "On Country Learning."

[48] Some great examples include Water Sensitive Urban Design, Site Thinking and Co-Design.

[49] Edward Said, Orientalism (London: Penguin, 1977).

discuss privilege and whiteness made me relate to my Mexicaness more than ever.

Now I look back on my life before academia, and I see all the knowledge given to me by the people within my community, the elders that shared their ways, and my teachers who would encourage me to understand the knowledge embedded in the landscape. I must admit that, because that was my life before I even became an anthropologist, it wasn't until I met Aunty Carolyn that I saw how much the traditional knowledge of my community had shaped my life. Now I realise how my ancestry has changed my perceptions of extending my respects to her land.

The work done by Aunty Carolyn, following her familiar oral histories and connections,[50] inspired me to understand why I feel so connected to the words she speaks, why speaking in a circular way is familiar, and why I feel the need to create my own daily rituals to engage respectfully with her Country.

I believe a part of my father's ancestry comes from the Indigenous people that inhabited the lands of Hidalgo, a state located in the centre-eastern part of Mexico. In my father's family memories, he said that his parents and great-grandparents told him our surname came from one of the captains that arrived with Cortez in Mexico in 1519. My father was in academia himself, working on the origins of Mexican Spanish; he had previously asked himself the same questions I am asking myself now, and when I asked him about our ancestry, he said to me:

I honestly believe that our ancestors are wrong; I believe we come from the Indigenous Otomi people from the Hidalgo region because it was customary for Cortez to give big chunks of land to his captains; Lara (my surname) is one of the names of those captains. Still, I don't believe we have a kinship lineage to him; instead, as customary, all indigenous people that lived in those lands would acquire the name of their Spanish landowner.

By the time he said this, I had already sent my DNA for testing to see if my father's ancestors were right, or if indeed my father

[50] Carolyn Briggs, "Identity and Connection," Overland 240, no. Spring 2020 (2020), https://overland.org.au/previous-issues/issue-240/feature-identity-and-connection/.

had uncovered my family's heritage. DNA testing had shown little to nothing of Spanish descent, yet almost a third of my genetic inherence came from the Amerindians. Other genetic heritage in my DNA was equally surprising, as I had traces of Inuit and Melanesian. No wonder I'm in Australia, I thought; maybe I'm coming back to a side of the world that my great-great-great ancestors walked and lived on.

My mother's side was also surprising; it turns out my DNA was connected by the Northern Sea. From Ireland and Scotland to the Nordic countries, from the Flemish to the Balkans, my mum is also a mix of a lot.

This information suddenly made sense. This is the reason why it is easy for me to understand the ethics and values that are shared with me by Indigenous Australians. Going back to my ancestry and genealogy has encouraged me to keep my cultural traditions in Australia. I still celebrate the Day of the Dead every year with my hometown traditions; I still put my Pericón (although here I use another flower) cross in my entrance to keep the devil away every 28th of September; and more importantly, I still walk along natural boundaries to understand where I am.

Walking the boundaries in my hometown was something we did with one of the Elders of Tepoztlán, the father-in-law of one of my friends. We did that whenever a new "progress" development threatened my hometown's autonomy. The last time was the extension of the highway that connects the Pacific with the Atlantic in Mexico, which crosses Tepoztlán. This was a project of "development" that the government had started in 2012; it reactivated Tepoztlán Defence Activists. Tepoztlán and its people are no strangers to unfriendly aggressions by the national government, which has allowed for many "development" projects to exploit the town's natural and cultural landscapes. The most recent ones are the tourism branding of Pueblos Mágicos[51] and the highway extension.[52] The plans for the extension (now almost finished) included dynamiting the hills (the most central aspect of Tepoztlán identity) and cutting down ancient trees. Before they could start, we walked the town's boundaries (or Mojoneras as we call them) to map them and ensure the neighbouring town

[51] Pueblos Mágicos (Magic Towns) is a tourism brand that the government gives to towns in Mexico that have cultural and natural elements that contribute to the town's folklore and therefore, can be used as an attraction in the tourism industry.

[52] Ana Cristina Lara Heyns, "Lo Trágico de Lo Mágico: El Turismo y El Patrimonio Cultural En El Pueblo Mágico de Tepoztlán" (Puebla, Mexico, Universidad de las Américas Puebla, 2013).

wouldn't accept this development in Tepoztlán land. Natural features characterised such boundaries in the landscape, such as creeks, rocks, and trees. Unfortunately, the government was able to carry on with its plans after years of activism and relentless fighting from the Tepoztecans and Tepoztizos alike.

In Tepoztlán, Elders walk with their families across the mountain range to teach them the ways into the mountains, show them the important flora for medicinal use, and tell them the town's stories. Walking in Tepoztlán extends beyond the family; it is also how people engage daily, coming back from the farm crops and meeting with others in the pathways to share details and information they have encountered in their daily walk. Walking as a daily practice allows Tepoztecans to keep track of the natural changes of the landscape and how the local politics are dealing with preserving the Tepoztecan Country. Walking becomes, in Tepoztlán, a civic action of care for the mountains; Tepoztecans say they descend from "tihualahque in tepetl" – in Nahuatl, we come from the mountains.

Yet, walking has always been the practice I inherited from my family, too, as my parents are avid walkers themselves. When I moved to Mexico City for work, I would walk for hours after work to be able to contextualise the city spatially. Mexico City is big, huge. Its streets and avenues, with their buildings and landmarks, tell you so much of the history of the city, and as I walk, I learn this history that has also been shared with me by my father, another enthusiastic walker. He would tell me about his youth growing up in the big city and the life stories embedded in its streets.

My father tells me that many avenues we see today in Mexico City used to be rivers. Today we see only infrastructure, tubed rivers concreted along and between the avenues, where three to four lanes of cars drive on each side. Mexico City, like Melbourne, is a city we can know for its rivers.

4.4 Walking

Vicente Quirarte expressed the following thoughts during the conference, "Mexico, a City that is a Country":[53]

> *Reading the city is an act of love and knowledge; walking it is a way to read it. Love is the highest and most accurate emotion of continuous education and reinvention: touching the city, as if it were our first time, is emotion. (…) The city is a text, and we all contribute to writing it: the small odyssey of going through it daily is as important as the heroic epiphanies that crown our adventure.*

> *It may be due to my ambiguous interpretation of distances, but if anything, Mexico City taught me that there is no distance that cannot be crossed in the same city, even if it is one as big as Mexico City.*

> *Just like Quirarte, I have become a reader of my surroundings, beginning with the simple activity of walking. Wrapping myself in the cities and countryside with each step, I get to know the nooks and crannies that each destination offers me. I have been walking in Melbourne for five years now. In different suburbs, in different ways, walking not only allowed me to read Melbourne or to locate myself spatially in this newer environment, but it also offers me a way to create a connection with this place that I now call home.*

My initial investigation of the site was done by exploring mapping as a process of researching.[54] By combining raw data available through GIS technologies, I was able to overlay different datasets and geo-position historical maps of Melbourne to identify the urban changes in the landscape since the colonial invasion. However, it was walking that allowed me to form bonds with the landscape and see how it cohabits with infrastructure and housing alike.

Michel de Certeau,[55] just like Quirarte's poems, talks about reading the city as a text. He describes the practices of walkers and wanderers to make use of spaces that conform to the urban, even those that cannot be seen. He alludes to each way of walking (or ways of operating, of uses and tactics as he calls them) in the city as an embodied experience that composes and organises the city with each intertwining and intangible story.

[53] The conference was given at El Colegio Nacional within the framework of the activities of the Festival del Centro Histórico 2017 in Mexico City. I have translated his words. I deeply recommend this text in Spanish if you can read it; after all, he is a poet and I barely do any justice to his words.

[54] Nancy Duxbury, W. F. Garrett-Petts, and David MacLennan, Cultural Mapping As Cultural Inquiry (New York: Routledge, 2015).

[55] Michel de Certeau, "Walking in the City," in The Practice of Everyday Life (Berkeley: University of California Press, 2011), 91–111, 93.

Footsteps, as de Certeau mentions, are a style of kinaesthetic appropriation; when intertwined together, the paths formed by these footsteps give shape to spaces creating a story: "the walker transforms each spatial signifier into something else."[56] In this sense, walking becomes a practice to read and understand the knowledge, memories, and experiences of the city. He argues that the knowledge of places, like spirits, remains silent and is only learnt about when passed from one to another. Yet, walking is a tactic to read the city and its invisible knowledge; when practised in repetition, it can create memorable experiences that tell us about the city. As Tony Birch[57] suggests, we just need to pay close attention.

While de Certeau's work opens the means to think about walking as a practice and method, he focuses on the city and its human attributions. However, as we will explore further in this thesis, not only do humans share knowledge with us in the experience of the city. In the previous chapter, I discussed the agency of more-than-human worlds and how they are inscribed with meanings and connected to spaces that we share with them, because landscapes also have memories, and these memories are intertwined with humans and more-than-human interactions.[58] Tim Ingold[59] argues that places have different dimensions of meaning, and the embodied experience of walking can access these dimensions. He reflects: "in watching our step, we train our eyes on the ground, not on a virtual simulation of the earth's surface based on optical information already relayed to the eyes. In looking where we are going, we scan the horizons of the world around us, and not their imagistic or pictorial representations." He argues that the walker not only watches the steps and looks at the surface to avoid tripping but actually sees through the interpretation of these images. The idea of the image that must be rethought, as he put it, asks us to reflect upon the act of walking as more than just an ordinary practice in life where we go from point *a* to point *b*. Walking becomes an immersive activity that connects the mental and emotional dimensions to a physical space. Tangible features in a landscape (such as the rock, the creek, and the tree that we walk past in Tepoztlán to know its boundaries) are a placeholder for stories that tell us about the land. Ingold adds:[60]

> By visiting these sites one would recall the stories and meet the characters as though they were alive and present, harnessing their wisdom and powers to the task of crafting one's own thought and experience, and of giving it sense and direction. Not only were text and landscape ontologically equivalent in this regard, so too were both to buildings, which were also designed and constructed, quite deliberately, as instruments of meditation (Carruthers 1998, 254-61). In the building, every stair, arch, or cloister – like

[56] de Certeau, "Walking in the City," 98.

[57] Tony Birch, "Walking and Being," Meanjin Quarterly (blog), Summer 2019, https://meanjin.com.au/essays/walking-and-being/.

[58] Gary John Brierley, "Landscape Memory: The Imprint of the Past on Contemporary Landscape Forms and Processes," Area 42, no. 1 (2010): 76–85.

[59] Tim Ingold, "Ways of Mind-Walking: Reading, Writing, Painting," Visual Studies 25, no. 1 (March 23, 2010): 15–23.

[60] Ingold, "Ways of Mind-Walking," 17

every feature of the landscape or every word of text – offered a depository for thought.

[61] Howard Morphy, Ancestral Connections: Art and an Aboriginal System of Knowledge (Chicago: University of Chicago Press., 1991).

Compared to mapping, walking itself cannot be fixed in a specific place; walkers temporarily appropriate spaces. In the Indigenous worldview, walking means honouring a place, knowing it, and relating to it. In this view, stories known as footsteps are atemporal because the past is in the present. Many Aboriginal groups in Australia would see the direct relationship between walking and connecting to ancestral knowledge, as they would trace the original walks of their ancestors and sacred beings connecting it to the present. In this way, ancestral knowledge can give a sense of location and direction.[61]

4.5 Ways of Doing: deep listening and deep observing

We were assigned with the quest to interpret a drain system in an old colonial estate in Boon Wurrung Country, a system which I will describe in detail in the following chapters. One afternoon as we walked with Aunty Carolyn and David Johnson learning about Country, they said something that has been on my mind ever since.

A colleague of ours, Taylor, had spotted a beehive in a peppercorn tree; he is researching soundscapes, so he had previously recorded the bees. We showed Aunty Carolyn the hive, and she wondered where David was to ask him what kind the bees could be. By the time David was able to see the hive, it was too dark to recognise the kind of bees:

Aunty Carolyn: it was weirdly wonderful when we saw it. I thought you would have stopped and looked at it.

David: I look down, not up.

Aunty Carolyn: I thought it was – I know you are, and I look up.

David: That's the thing, that's why we're always knocking our heads because we're looking at other things. Aunty looks up…

Aunty Carolyn: I always look up.

David: So, we walk around, [people must think] who are those weird Aboriginal people walking along?

Aunty Carolyn: I'm looking up; he's looking down.

This little encounter made me think, how do I look at the environment when I walk?

The act of walking doesn't only remain a way of transport, but it involves a sensorial experience of all the surroundings, the weather, the sky, the surfaces of the footpath, the bustling streets, and the sounds. As Melbourne was entering winter, my walks started to answer to the weather, where clear patterns started to show. Flooding would occur in the streets, but not in all the streets. It would happen to certain streets and in certain parts of these streets. While mapping had given me the location of rivers that were drained and piped underground, walking allowed me to understand these rivers' behaviour and allowed me to see and hear them.

Shawn Wilson[62] states that Indigenous Knowledge and relationships are based on empirical data that is observable by the five senses. N'arwee't Carolyn Briggs tells me about growing up learning with her Aunties as they told her how to read Country; she said there are some things that you don't need to ask; you need to observe, listen, and make sense of it on your own.

In my journey to decolonise my thinking, practice and research, there has been recognition and complete acceptance that cultural knowledge is grounded on and through various ways of Indigenous wisdom,[63] the methods and practices are interconnected, and all together are part of my relational journey to understand drained water flows. In re-editing this chapter, I realised that I could not break my ways of doing into categories or methods. Still, I need to share with you, the reader, how my practices are based on an intuitive logic rather than a linear one we are accustomed to in western research.[64]

In the article *Situating Decolonization: An Indigenous Dilemma*,[65] the authors state that "colonial settlers need to undertake deep self-reflection to

[62] Wilson, "Research as Ceremony: Articulating an Indigenous Research Paradigm," 204.

[63] Brian Martin et al., "Situating Decolonization: An Indigenous Dilemma," Educational Philosophy and Theory 52, no. 3 (February 23, 2020): 312–21.

[64] Wilson, "Research as Ceremony: Articulating an Indigenous Research Paradigm."

[65] Martin et al., "Situating Decolonization," 8.

build relationality and to seek immersive experiences and embodied acts to help develop deep listening."

Different words are used in other parts of Australia for the notion of Deep Listening; for example, Dadirri in Ngungikurungkurr language of the Daly River and Gulpa Ngawal in the Yorta Yorta language of the Murray River in Victoria. Laura Brearly[66] says that deep listening is respectful listening; it involves many senses beyond just hearing, it can take place in silence, and it is informed by community and reciprocity. Deep Listening means listening with responsibility for the stories that are shared, partnered with self-awareness and self-accountability. The practice of Deep Listening crafts a process of becoming with ourselves, others, and the environment. As Brearly states, Deep Listening transcends what is heard and moves beyond an embodied experience to one involving deep observing, reflection, contemplation, and action. What's more, when applied to research, deep listening involves taking the time to develop relationships by listening respectfully and responsibly, because once you are gifted the time to listen to the knowledge, you become a custodian of the knowledge shared.

Judy Atkinson argues that Deep Listening is a method that can inform western methodologies, because it raises consciousness between researcher and researched, it recognises that all parts involved are essential to the whole, and understands the relationship between self-inner consciousness and the outer social world:[67]

> The principles and functions of dadirri [Deep Listening] are: a knowledge and consideration of community and the diversity and unique nature that each individual brings to community; ways of relating and acting within community; a non-intrusive observation, or quietly aware watching; a deep listening and hearing with more than the ears; a reflective non- judgemental consideration of what is being seen and heard; and, having learnt from the listening, a purposeful plan to act, with actions informed by learning, wisdom, and the informed responsibility that comes with knowledge.

In opposition to western methods of inquiry, Deep Listening requires the patience to build relationships and take silences as learnings. It is acknowledging that not all knowledge is shared with everyone, and not all knowledge is shared at all. The words of Elder Miriam Rose Ungunmerr have widely influenced Indigenous research;[68] she states that within Indigenous relationships, researchers should not ask too many questions, but rather, learn by watching, listening, and then taking action.

[66] Laura Brearly, Gulpa Ngawal Indigenous Deep Listening (Melbourne: RMIT University, 2010).

[67] Judy Atkinson, "Chapter One: Dadirri: Listening to One Another," in Trauma Trails, Recreating Song Lines: Recreating Song Lines (North Melbourne: Spinifex Press, 2002), 5–22, 16.

[68] For example, the work by Laura Brearly or Judy Atkinson.

[69] Birch, "Walking and Being."

This, too, has been an issue Aunty Carolyn and I have discussed many times. We conclude with three tasks that should encourage this research:

- *To decolonise our thinking, we must be less controlling, to be able to open our minds to learn the ways.*
- *We shouldn't ask too many questions; instead, we must spend time contemplating and reflecting on allowing ourselves to make sense of the world on our own.*
- *We must build relationships with all animated and unanimated things because we will know through those relationships.*

4.6. Ways of Being: Relationships

Indigenous writer Tony Birch[69] recounts an anecdote while walking Westgate Park in Melbourne, where he meets a postdoctoral researcher catching bugs. He writes:

> *'What are you doing?' I asked.*
> *'Catching bugs,' he said.*
> *Catching bugs. Luis captures bugs with a camera lens. He gathers them in his net, photographs them and releases them. I told Luis that I was researching and writing about climate justice. He replied that his ambition was to work with Indigenous people on ecological knowledge. I looked down at my dusty shoes and to the ground below them. It's right here; I wanted to say—the Knowledge.*

I draw on this anecdote to explain the practices that have allowed me to relate to Country, like Birch says, embedded in the landscape and its surroundings, right here below our feet. As I mentioned, Deep listening inhabits a place of understanding the world. Contemplating, reflecting, learning, and paying close attention to the surroundings and all its living agents is how we can access knowledge in Country.

Creating relationships with Country has involved a set of daily rituals practised in ordinary acts of contemplation and deep

listening, from walking in the city to following rivers, to reflecting on my ancestry to yarning with Aunty Carolyn. My being directly informs these Ways of Knowing and Doing. Having a relationship with Country and its people requires not only acknowledging my position (for example, my academic position and ancestral heritage and identity) but abiding by a code of ethics devoted to the self-determination of Indigenous Peoples.

[70] Indigenous Architecture and Design Victoria, Design Institute of Australia, and Deakin University - Institute of Koorie Education, "Australian Indigenous Design Charter: Communication Design. Protocols for Sharing Indigenous Knowledge in Communication Design Practice.," n.d.

The Australian Indigenous Design Charter (AIDC)[70] stipulates principles to which research involving Indigenous culture should adhere. Based on the AIDC, this research considers:

- To ensure the design is Indigenous-led by overseeing the development and process.
- To respect the rights of Indigenous people to oversee the representation of their culture in the design with the correct permissions granted and respect cultural ownership.
- To ensure the respect of the cultural protocols specific to the Traditional Lands in which the research is being done.
- To ensure respectful and culturally specific practices.
- To ensure awareness of the impact of the design and the implications so that they are respectful of Indigenous culture.
- To privilege Indigenous knowledge.
- To share knowledge and operate with patience and sincerity, supported by a methodical process of transparency and inclusiveness.
- To demonstrate respect and honour cultural ownership and intellectual property rights, including moral rights, and obtain appropriate permissions.
- To ensure the implementation of ethical guidelines to safeguard Indigenous integrity.

Respecting Indigenous Knowledge and integrity enables relationships of trust where all parts are valued equally, both human and non-human. Creating a relationship involves having the responsibility of recognising the resistance as part of the struggle of Indigenous Australians for self-determination.

Summary

The research design combines the analysis of physical and intangible methods that allow us to interact and develop new working configurations that include

Indigenous practices and knowledge in the western disciplines of anthropology, planning and design. This chapter aimed to share the considerations of customising a methodology based on relational and respectful design rather than western-based thinking. However, the research design started with western methods such as mapping and ethnography; incorporating Indigenous Knowledge involved considering relational ways that can enable new pathways of knowledge.

The Relational design[71] focuses on a set of daily rituals and relational practices[72] or Ways of Doing: walking, deep observing, deep listening, yarning, and building relationships; my Ways of Knowing influence that.[73] These practices allow for the research to be balanced and promote equity;[74] furthermore, they are seen as daily rituals where knowledge directly relates to how you learn about the world. By reflecting, connecting, contemplating, living, and learning from Country, the disciples of anthropology and design can develop an understanding of Country that goes beyond an extractive relationship to one of reciprocity, responsibility, accountability, and care.

Using a framework that respects Indigenous Ontology, the research goes beyond the extractive notions of Western worldviews to one where relatedness is respected. In this way, the design becomes more than simply urban[75] to incorporate the intangible features[76] such as cultural memory and Knowledge; but also accounts for the responsibility and care for Country in our Ways of Being.

[71] This relational design draws heavily from the works of Shawn Wilson and Karen Martin, two Indigenous scholars that base their research on relatedness frameworks.

[72] Wilson, "Research as Ceremony: Articulating an Indigenous Research Paradigm."

[73] Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers.

[74] Deep equity is inclusive of all identities and features because they are assumed equally alive and active. Following the Respectful Design framework, yarning provides an equal sharing space where deep equity can be achieved through dialogue. Yarning, as explained by Brian Martin, the circular movement of knowledge is not static, it's a fluid and ongoing process that Indigenous cultures use to make sense of their lived experiences.

[75] Pierre Bélanger, "Altitudes of Urbanization," Tunnelling and Underground Space Technology 55 (May 2016): 5–7.

[76] Eric Hirsch and Michael O'Hanlon, The Anthropology of Landscape. Perspectives on Place and Space (Oxford: Oxford University Press, 1995).

Chapter 5. A relational design in Southeast Melbourne, a case study

Introduction

In the beautiful work Songlines, The Power and Promise, edited by Margo Neale in the series *First Knowledges*, Neale[1] shares with us what an Inuit man called Dempsey Bob said: "the trouble with whitefellas is that they keep all their knowledge in books." As we have previously discussed, in an Indigenous worldview, knowledge is embedded in the landscape. As Dempsey Bob states it, the notion of knowledge being stored in books and not in the relationships between humans and the more-than-human world reproduces the Western dichotomy of human superiority against nature. Many scholars have critically discussed how knowledge is produced and passed on.[2] Stephen Muecke[3] reflects on his experiences learnt from his co-authored book Reading Country:[4]

> As Paddy and I were walking the beautiful coastline north of Broome, he would point out things, tell stories, call out to ancestors, and sing songs that belonged to particular places. The songs were important because they were inspirational (in the original Latin sense of a truth being breathed into someone). Their significance was, and is, multiple: they are handed down from ancestors; they tie human and nonhuman worlds together and animate those connections; they are mnemonic and practical, reminding people, for instance, that this is the place of yarrinyarri, the bush onion.
>
> But how on Earth does knowledge transfer work without a concept of mind? Understanding, for Paddy, was 'hearing' and that was

[1] In this edited book by Neale, Songlines are defined as the archives that pass on knowledges written into land, sea, and sky. Knowledge can be passed through stories, songs, dances, ceremonies, and art compared to the western notions of scientific books and articles. See Margo Neale and Kelly Lynne, Songlines: The Power and Promise, ed. Margo Neale, First Knowledges (Port Melbourne: Thames & Hudson Australia Pty Ltd, 2020), 45.

[2] Uncles Charles Moran, Greg Harrington and Norm Sheehan share their discussions on their article. "On Country Learning." Brian Martin discusses the epistemological and ontological differences between Indigenous and western worldviews and research in his article, Brian Martin, "Methodology Is Content: Indigenous Approaches to Research and Knowledge," Educational Philosophy

the word he used (as in, 'that man can't hear'), equivalent to the French entendre, which also embraces the meanings of hearing and understanding. When children accompanied us on our walks, I also saw a certain experiential pedagogy in place. Children were not encouraged to ask lots of questions: respect for elders seemed to entail not bothering them too much. These kids were learning to pay attention and thus acquire know-how, which I like to define as practical knowledge-based skills, rather than 'pure' knowledge. It's simply the difference between being told how to point out where South is, and walking outside and showing someone techniques for getting that orientation.

Muecke realises that to access the knowledge embedded in the environment, we must carefully activate a series of practices that challenge our western understanding of only human-to-human cognitive knowledge acquisition. Defying the ontology of the west to understand Indigenous worldviews requires us to incorporate relational methodologies into our research. How do we activate experiential knowledge embedded in land, sky, underground, and waters?

This research is particularly interested in the interceptions between the cultural meanings and the waterways, which trace back to the stories of the Traditional Owners of the land. As part of the project Atlas of the Underground, which focuses on Metropolitan Melbourne, the south-eastern suburbs present an interesting morphology that has been affected and modified by both deep time and contemporary urban processes. Nestled within the area, Rippon Lea Estate and the surrounding drained waterways were analysed as a clear point of reference due to the interest of the Australian National Trust in this project and the local significance of groundwater and flooding. The Australian National Trust expressed an interest in collaborating to visualise Rippon Lea Estate's unprecedented underground watering system that dates to the 1860s. Along with the existing physical environment data, Rippon Lea Estate offers the opportunity and interest to understand the connections between water and the knowledge of the Boon Wurrung. It might serve as a strategic resource to generate dialogue between communities, institutions, and local government.

I developed my relational design in this chapter to understand water flows and water knowledge in Melbourne. The focus was to create a relational tool for Rippon Lea Estate to encounter the ecological and urban history with the Indigenous knowledge of the waterways. To achieve this, relational methods drawn from Indigenous Ways of Knowing, which included yarning, deep listening, deep observing and building relationships, were explored to add to and complement the traditional western research methodologies from

and Theory 49, no. 14 (December 6, 2017): 1392–1400.

[3] Stephen Muecke, "What Aboriginal People Know about the Pathways of Knowledge.," Psyche (blog), 2020, https://psyche.co/ideas/what-aboriginal-people-know-about-the-pathways-of-knowledge.

[4] Krim Benterrak, Stephen Muecke, and Paddy Roe, Reading the Country. Introduction to Nomadology. (Fremantle WA: Fremantle Arts Centre Press, 1984).

[5] Firstly, the area of interest was located outside my five-kilometre radius, a Victorian spatial restriction. Secondly, due to this restriction and the limitation of outside group gatherings, the yarns and walks were only possible when the radius was lifted and with only one more person, in this case, N'arwee't Carolyn Briggs. Yet, the Victorian lockdowns and covid restrictions lasted more than seven months. Testing methods and iterations had to be experienced and explored through architectural design studios taught at Monash University in 2020, 2021 and 2022. These studios were co-taught with different collaborators and in other spaces within Metropolitan Melbourne. As I explain in the next chapter, the studios enabled a space for me to explore the interactions of relational design with architecture and water planning, which led to creating a course that would test the process of becoming relational in architecture students.

anthropology through an ethnohistorical approach and geography through mapping.

When fieldwork was scheduled, the Covid-19 global pandemic hit Australia, and with it, a series of spatial and social restrictions were put in place to avoid the spread of Covid variants. This inevitably influenced the way the fieldwork and testing occurred.[5] When harder restrictions were in place, alternative testing locations in the City of Banyule and the City of Darebin (within the 5km radius of where I live) served as case studies to understand water flows in the urban space, their interactions with architecture and planning, and the use of relational methods to investigate them. In the following pages, I describe the relational techniques that contributed to the making of Hidden Rippon Lea, a relational interpretation of the Rippon Lea water system.

5.1. A historical analysis of Rippon Lea and surrounding areas

Acknowledging the importance of context, cultural memory, and historical constructions of meanings and knowledge, as suggested by Indigenous scholar Lester-Irabinna Rigney,[6] the first step into a relational design was to understand the colonial history in Melbourne and its impact on the Indigenous population. Therefore, the first part of this chapter describes in detail the context and background of this case study, from both Indigenous accounts and settler colonial perspectives, which puts Rippon Lea as the core investigation for the relational design.

During the months of February and March, the climate in Melbourne gets cooler, and the rain returns, known as wygabil nye-weeny (or Old Man Sun in Boon Wurrung language); autumn is known to the Boon Wurrung people as the eel season. During these months, the female eels begin their long journey down the rivers into Port Philip Bay. Through this first leg of the journey, the eels have grown fat from all the rich food sources of the swamps, lakes, and rivers; Indigenous populations in the southeast of Australia have historically caught eels in woven traps as they swim down the rivers towards the sea.[7] Other eels that manage to get to the bay continue their trip along the East Coast towards the Coral Sea, where they breed. Glass eels (the youngest eels) travel back to the Southeast of Australia and fight their way back into

[6] Lester-Irabinna Rigney argues for the liberation of epistemologies. He mentions that Indigenous research has been widely based on settler-colonial epistemologies, negating the construction of knowledge of Indigenous peoples and cultures. Rigney emphasises that new processes of deracialisation and decolonisation of knowledge paradigms can advance cultural freedom, where research methodologies recognise the Indigenous constructions of knowledge. Understanding how oppression was set in the Australian context from an uninvited guest is only a first attempt to recognise the historical violence in which knowledge about Australian traditional owners has been produced. See: Lester-Irabinna Rigney, "Internationalization of an Indigenous Anticolonial Cultural Critique of Research Methodologies: A Guide to Indigenist Research Methodology and Its Principles," Wicazo Sa Review 14, no. 2 (1999): 109–21.

[7] Known as the world's most extensive and oldest aquaculture system of the world, the Budj Bim Cultural Landscape is registered by UNESCO as a Cultural Landscape where the Gunditjmara people would trap, store and harvest short-finned eel. This area is a great example of how Indigenous populations would manage the landscape to access their food resources. Read more: UNESCO, "Budj Bim Cultural Landscape," accessed January 12, 2021, https://whc.unesco.org/en/list/1577/.

[8] Eels are incredibly important for healthy biodiversity in Victoria, and they are part of the cultural values of Traditional Owners. While the population of eels is dramatically decreasing, there are some efforts to identify the migratory patterns of these creatures,

the swamps and lakes through rivers, creeks, and pipes, where they live their life before starting again the journey to the Coral Sea.[8] Such is the example of the lake at Rippon Lea Estate.[9]

The journey of the eels from the sea to Rippon Lea Lake and back again reminds us of the importance of waterways in this urban setting. In his thesis, titled Water and Architecture, Charles Willard Moore[10] wrote, "Water can be called the only everlasting source of continuous being." While waterbodies in Melbourne and other cities across Australia have suffered a significant displacement since colonisation, the finding of these eels navigating the surviving waterways represents a resilient element of the more-than-human system that has prevailed in Indigenous knowledge and landscape.

In her book, The Boon Wurrung Journey Cycles: Stories with Boon Wurrung Language, Aunty Carolyn Briggs[11] tells us that the eel migration provided certainty to the Boon Wurrung. The Boon Wurrung would have prosperity for centuries by taking care of the land and the sea and obeying the laws of Bundjil. However, the urban processes and land and waterways reconfigurations have rapidly affected the pre-colonial landscape. Swamps previously housed rich ecosystems that were an essential part of life for Indigenous populations. With colonisation, many swamps and natural watercourses were drained, filled or piped underground. Soon the rich resources, such as eels, which provided stability for the pre-colonial settlements, scattered and are now almost erased. Curiously enough, the Rippon Lea water system has created a new life of its own, adding to the urban wildness and preserving more-than-human worlds that can connect us to Indigenous thinking.

In an interview, Indigenous architect Jefa Greenaway[12] stated:

For me, the metaphor of the eel is quite powerful. It is a story that connects over time and place because what it talks to is the notion of resilience—resilience of Indigenous people, after 240 years, and their commitment to showcasing culture and connecting and maintaining relationships to Country. (…) The eel migration enables

as the knowledge of their spawning areas has historically avoided human knowledge.
See Department of Environment, Land, Water and Planning, "Tracking Eel Migration Using Satellites. Understanding the Migration of Eels from Freshwater to the Coral Sea.," accessed July 7, 2020, https://www.ari.vic. gov.au/ research/field-techniques- and -monitoring/tracking-eel- migration-using-satellites?_ ga=2.249484804.205637 4353.1602464328-23410 5392.1602029879.

[9] The Rippon Lea Lake was practically built for water storage, however, it also served as a recreational ornamental lake for the family since its creation. Nowadays, the lake and the surrounding ground in the Estate support locally rare flora, birds, and migratory species like the shortfin eel, which have been reported in the lake in the Biodiversity of Glen Eira report in 2018. In the effort to integrate the natural heritage within an urban area, Glen Eira City Council has created an Environmental Sustainability Strategy 2016-2021. To achieve the goals of this strategy, a Biodiversity report was created detecting hotspots for indigenous flora and fauna. The study detected 14 wild, indigenous plant species, which include the impressive trunk of a long-dead, pre-colonial River Red Gum on the bank of the lake, mentioned before. But the study also registered the presence of the Shortfin Eel, which are born in the Coral Sea near New Caledonia and then swim thousands of kilometres from saltwater to freshwater. Eels swim upstream to bodies of water that remain similar to their natural state; in this case, the stream is drained underground and 500 metres away into the Elster Canal. The pipes that pump water into the lake were built in the 1800s and are an intricate set

us to have a sense of pride, to celebrate connection to the oldest continuing culture in the world. It provides an opportunity to celebrate Indigenous culture and to showcase Indigenous culture as part of our everyday experience.

I intend to showcase the amazing and mysterious life of the eels and their migration from the Coral Sea to Australia and back because they remind me of the Mexican axolotl, which, as I have mentioned before, continues to show the same resiliency that characterised the pre-colonial landscape in Mexico. Although Axolotls[13] do not migrate the same long distances as eels, they adapt to aggression by growing back any part of their bodies that has been damaged or lost.

The story of water in Rippon Lea and its management is more than just a set of pipes built in the 1800s. The Rippon Lea Estate drainage system can tell us the story of water in the area, how it is connected to a broader ecological system, and the history of urbanisation of the south-eastern suburbs of Melbourne. Understanding its history, the natural landscape conditions and the urbanisation processes that developed throughout the last centuries, this chapter showcases important archival and ethnohistorical research to help us recognise the interconnection of cultural knowledge, natural landscapes, and urban planning.

Rippon Lea Estate is amongst the largest and most intact nineteenth-century private suburban estates in Australia.[14] It's considered a cultural treasure for its architecture (architectural firm Barnes and Reed designed the house), its gardens (considered to be an important hotspot for biodiversity of both flora and fauna), and even though we cannot see it, its underground watering system. The importance of the architecture of the house and its interiors are stated in the Conservation Analysis reports from 1988 and 1995,[15] as well as the Heritage register.[16] However, this study focuses on the layer beneath its mansion and pleasure gardens. The water system was analysed as a case study to understand "the interception of landscape and infrastructure, crossing between visible and invisible domains of urban space," as Matthew Gandy[17] suggests. Along with the existent physical environment data, Rippon Lea Estate offers the opportunity and interest to understand the connections between water and the heritage of the Boon Wurrung.

of layered networks that have been continuously restored to preserve the Estates' gardens. The fact that eels have managed to proliferate in this lake is a result of the important ecological symbiosis that Rippon Lea has created within the city.

[10] Charles Willard Moore, "Water and Architecture" (Princeton University, 1957) [ProQuest Dissertations Publishing]. http://search.proquest.com/docview/301909571/, 5.

[11] Carolyn Briggs, "Boon Wurrung: The Filling of the Bay – The Time of Chaos" (Victorian Aboriginal Corporation for Languages, n.d.), https://cv.vic.gov.au/stories/aboriginal-culture/nyernila/boon-wurrung-the-filling-of-the-bay-the-time-of-chaos/.

[12] "The Water Story — A Conversation between Jefa Greenaway and Samantha Comte," Potter Museum of Art (blog), July 7, 2019, https://art-museum.unimelb.edu.au/resources/articles/the-water-story-a-conversation-between-jefa-greenaway-and-samantha-comte.

[13] See Glossary

[14] As stated in Nigel Lewis, "Rippon Lea Conservation Policy" (Ian and Ros Coleman Consultants, August 1995).

[15] Which were made available by the National Trust Australia during the time of the research.

[16] See: "Rippon Lea Statement of Significance," Heritage Council Victoria, accessed April 15, 2020, https://vhd.heritagecouncil.vic.gov.au/places/427.

[17] Matthew Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination (Cambridge, Mass.: The MIT Press, 2014), 1.

The story of water in Rippon Lea Estate starts four kilometres away, in what we now know as Caulfield Park. Before the arrival of the Europeans, the City of Port Phillip was occupied by the Yalukit Weelam clan of the Boon Wurrung. Yalukit Weelam means river home or people of the river. According to Meyer Eidelson,[18] the Yalukit Weelam lived in a territory that was a flood plain surrounded by water near the Yarra River mouth (see Figure 5.1). Since then, it has changed a lot, but before, it was "a temperate kakadu"[19] surrounded mainly by bodies of water, sea, creeks, lagoons, and swamps.[20]

According to N'arwee't Carolyn Briggs,[22] long before the city that we know as Melbourne was built, Port Phillip Bay was a large flat grassy plain, and the Yarra River would flood out across this flat plain into the sea. The river was known to the Boon Wurrung as the Birrarrung, the river of mists. The land was covered by grass and woodland, and the people would hunt emus and kangaroos, the women would cultivate the yams and harvest the eels from the rivers and swamps.

Waterways mark important spaces for most of Melbourne's clans. "Boon Wurrung lands were mainly those with streams that flowed to the sea. The Woiwurrung or Wurundjeri occupied the lands drained by the tributaries of the Yarra and Maribyrnong Rivers"[23] (see Figure 5.2). The traditional custodians of the land, the Boon Wurrung, would trade with and welcome other groups from other parts of the Kulin Nation. They all obeyed the laws of Bundjil.[24]

[18] Meyer Eidelson, Yalukit Weelam: The River People of Port Phillip (City of Port Phillip, 2014), https://heritage.portphillip.vic.gov.au/Aboriginal_heritage/Yalukit_Willam_The_River_People_of_Port_Phillip.

[19] Tim Flannery calls Melbourne in the 1830s a "temperate Kakadu" due to its watery landscape. Read more: Tim Flannery, "Reimagining Australia's 'Temperate Kakadu,'" Foreground (blog), 2018, https://www.foreground.com.au/planning-policy/reimagining-australias-temperate-kakadu/.

[20] For example, as told by Meyer Eidelson (2014), Fisherman's Bend had sand deposits by the Yarra River since the end of the last Ice Age, and high ridges gave the name to Sandridge to the area. Much of the area was flood prone with dense shrub. Just a mile inland was the Port Melbourne Lagoon, a known aboriginal site, that was filled in 1890 to create the lagoon reserve and Edwards Park.

[21] Based on Nigel Bertram, "The Swampy Lowlands of Melbourne," in In Time with Water: Design Studies of 3 Australian Cities, ed. Catherine Murphy, Nigel Bertram, and Catherine Murphy (Crawley, WA: UWA Publishing, 2019), 79–154, 106-107.

[22] Briggs, The Boon Wurrung Journey Cycles: Stories with Boon Wurrung Language.

[23] Eidelson, Yalukit Weelam: The River People of Port Phillip, 8.

[24] See The Time of Chaos Story in Chapter 2, in which N'arwee't Carolyn Briggs shares the laws of Bundjil.

[25] Read the full story: Carolyn Briggs, "Boon Wurrung: The Filling of the Bay – The Time of Chaos" (Victorian Aboriginal Corporation for Languages,

Figure 5.1. Modified 1864 Map of Melbourne and Hobsons Bay by H. Cox, c. 1866.
Retrieved from State Library Victoria. Modified by Ana C. Lara Heyns (2022).

Modified map;[21] highlighted are the swamps and lagoons and subsequent modifications produced in the last decades of 1800s. Rippon Lea can be delimited in the low right side for reference.

In the lower right corner, Rippon Lea is located for reference.

Figure 5.2. Map of Port Philip Bay and Indigenous traditional lands, with wetlands, rivers and creeks networks.
Produced by Ana C. Lara Heyns (2022)

Based on The Time of Chaos story by N'arwee't Carolyn Briggs,[25] we can appreciate the acient river courses inside the bay. Rippon Lea (in pink) is also visible.

In N'arwee't Carolyn Briggs' book *The Boon Wurrung Journey Cycles: Stories with Boon Wurrung Language*[26] we can find important descriptions of the land; she writes that the land was covered with swamps, rockwells and pools, rivers, and creeks on open grassy country thinly timbered. Wildlife abounded in this land. Aquatic birds would proliferate in the swamps. The local fauna was hunted for food as well as for the manufacture of clothing and implements.

Shellfish and fish were also important resources to the Boon Wurrung. Middens can be found throughout the coastal areas[27] which tell us about the settlement sites of the Indigenous people. During autumn, the communities would capture eels that would do their annual journey downstream towards the bay, providing an important food resource.

The land surrounding the bay provided the Boon Wurrung with a rich source of food and materials. Some native plants were essential to the Boon Wurrung, such as the Murnong, also known as 'yam daisy', which was a staple food for the communities, and was later destroyed by the colonial graziers, affecting the Indigenous population in the 1800s.[28]

The bay, peninsula, and surrounding region of what is known today as Melbourne contains different ecological zones that produced food and material sources for the Boon Wurrung and visiting groups year-long. But it was the access to water that would enable clans to settle. The Indigenous population would migrate depending on the resources available in the different seasons of the year, which were known not by a calendar but by the movement of the stars.[29] Along with these movements, the resources would appear or change; by spring, the snapper would return to the bay, and for summer, billabongs and rivers would dry, moving the clans towards the coast. Then the people would move along the coast towards the swamps for eels.

When the hot weather finished, the rain would come, and the new season would arrive. During this season, the Boon Wurrung would burn the areas where the grass would grow thick; this burning allowed the new tubers to grow for the seasons to come, starting a new cycle of permaculture for the Boon Wurrung.

n.d.), https://cv.vic.gov.au/stories/aboriginal-culture/nyernila/boon-wurrung-the-filling-of-the-bay-the-time-of-chaos/.

[26] Briggs, The Boon Wurrung Journey Cycles: Stories with Boon Wurrung Language.

[27] Victorian Government, "Fact Sheet: Aboriginal Coastal Shell Middens," Aboriginal Victoria, accessed October 27, 2020, https://www.aboriginalvictoria.vic.gov.au/fact-sheet-aboriginal-coastal-shell-middens.

[28] Other important food sources were the tree fern and the silver wattle. Other plants provided medicine such as the bark of the muyang, which was boiled in water to treat rheumatism. Plants also provided the raw materials to use in everyday utensils; the fibre from the inner bark of the silver wattle was used to make strings for fishing spear throwers. Trees would provide hard woods for shields.

[29] In 2008, Glenn Romanis created the Constellation Sculpture in which Barraimal (Emu) is depicted as a constellation, showing how it was part of Indigenous Ontology. Barraimal can be seen using the Southern Cross, the Pointer, Scorpio, Sagittarius and the Coalsack Nebula to create its head, neck and back. Scorpio shapes the body, and the nest and eggs are shaped by Sagittarius. N'arwee't Carolyn Briggs explains that this way the Boon Wurrung would notice in the sky when a season was over and a new one would begin. Barraimal would be sitting in his nest; the constellation is visible from June to August. For more information: Bayside City Council and Carolyn Briggs, "Coastal Trails Indigenous," n.d., www,bayside.vic.gov.au/trails.

5.1.1 The changing flow of water through urbanisation

The landscape where the settlers arrived was an abundant one; indigenous inhabitants would tend to many productive wetlands, creeks and waterways and their vegetation. Permanent European settlement in Melbourne began in 1835, and grazing lands were permitted just two years later in 1837, rapidly affecting the traditional food sources for the Indigenous populations.[30] But particularly, the growing population and rapid urban processes changed the ways of water.

As seen in Figure 5.3, when the Europeans started to settle in Melbourne, Caulfield Park was known as Paddy's Swamp. In the surrounding area, other swamps were known; towards the east, Black Swamp was visible in what we now call East Caulfield Reserve; to the south of Black Swamp was Lemans Swamp, which later became Sugarworks Swamp and then the Koornang and Lord Reserves. Towards the bay, Elsternwick Park was also swampy, and Elwood Swamp provided important flora, wildfowl, and eels to the local communities. Carrum Swamp took over a vast area towards the south, and the Port Melbourne lagoon was bigger than what today we call Albert Park Lake.

**Figure 5.3. Map of South-eastern suburbs of Melbourne.
Produced by Ana C. Lara Heyns (2022)**

RAMSAR Wetlands are identified by their early colonial names. Rippon Lea Estate is highlighted (in pink) for reference.[31]

[30] Historian Denise Gaughwin and archaeologist Hilary Sullivan researched Mornington peninsula and Western Port catchments to study the environmental impacts and cultural resource management to complement archaeological surveys of these areas. An interest of their study was to identify clan boundaries, which resulted in a very patchy description; as the authors state, little information was available from protectorate assistant William Thomas. However, they conclude that the migratory routes of the Boon Wurrung were mostly due to social and ceremonial reasons rather than economic ones. While great information is recorded about the wide variety of resources exploited in the area, this study is evidence of the lack of understanding from Western disciplines of Indigenous concepts of border and boundaries, one that is common in western cartography, but not in Indigenous spatial knowledge.
See: Denise Gaughwin and Hilary Sullivan, "Aboriginal Boundaries and Movements in Western Port, Victoria," Aboriginal History Journal 8 (January 2011).

[31] Colonial names of the swamps. Based on Peter Murray and John Wells, From Sand, Swamp and Heath... A History of Caulfield. (Melbourne: J&D Burrows for City of Caulfield, 1980).

Important springs and water holes spotted the area, as well as freshwater streams that were so important for the movement of the Boon Wurrung on their land. Later graziers would use the local knowledge of the water to create their routes in the 1830s.[32]

Rising from the wetlands, geological structures provided bigger and drier locations for the Indigenous populations to camp, celebrate ceremonies and manufacture tools. Higher grounds served as lookout spots. Some of these lookout points include Point Ormond Hill, the Esplanade bluff, the ridge of St Kilda Hill and Emerald Hill. Inland, the landscape was somewhat flat; only Kooyong Hill and Bambra Hill would stand out further east until Dandenong Road, which is the boundary of Elster Creek Catchment (see Figure 5.4). From then on, Gardeners Creek and Scotchman's Creek catchments present a much more rugged landscape.

The geology of Elster Creek Catchment is characterised by structures of sand, gravel and clay, and other structures of mud, quartz sand, silt, and clay. Stone, silicate, basalt, and quartz were important materials for the Boon Wurrung people. N'arwee't Carolyn Briggs[33] states that these resources were available at rivers and creeks, and ochre would be taken from pits around Sandringham, Black Rock and Beaumaris. Ochre provided pigment for ceremonies and artwork. This kind of geology (see Figure 5.5) of the coastal plains and ridges and dunes to the south creates swamps and lagoonal deposits that result from rivers and streams.[34]

[32] Ruth Gooch, "Why Did Aboriginal Guides Co-Operate? Settlers and Guides in Victoria 1835–1845," History Australia 15, no. 4 (October 2, 2018): 785–803,

[33] Briggs, The Boon Wurrung Journey Cycles: Stories with Boon Wurrung Language.

[34] Agriculture Victoria, "Victorian Geomorphological Framework (VGF)," 2007, http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/landform_geomorphological_framework.

[35] The location of both Bambra and Kooyong Hills are based on mappings, according to Murray and Wells, From Sand, Swamp and Heath… A History of Caulfield.
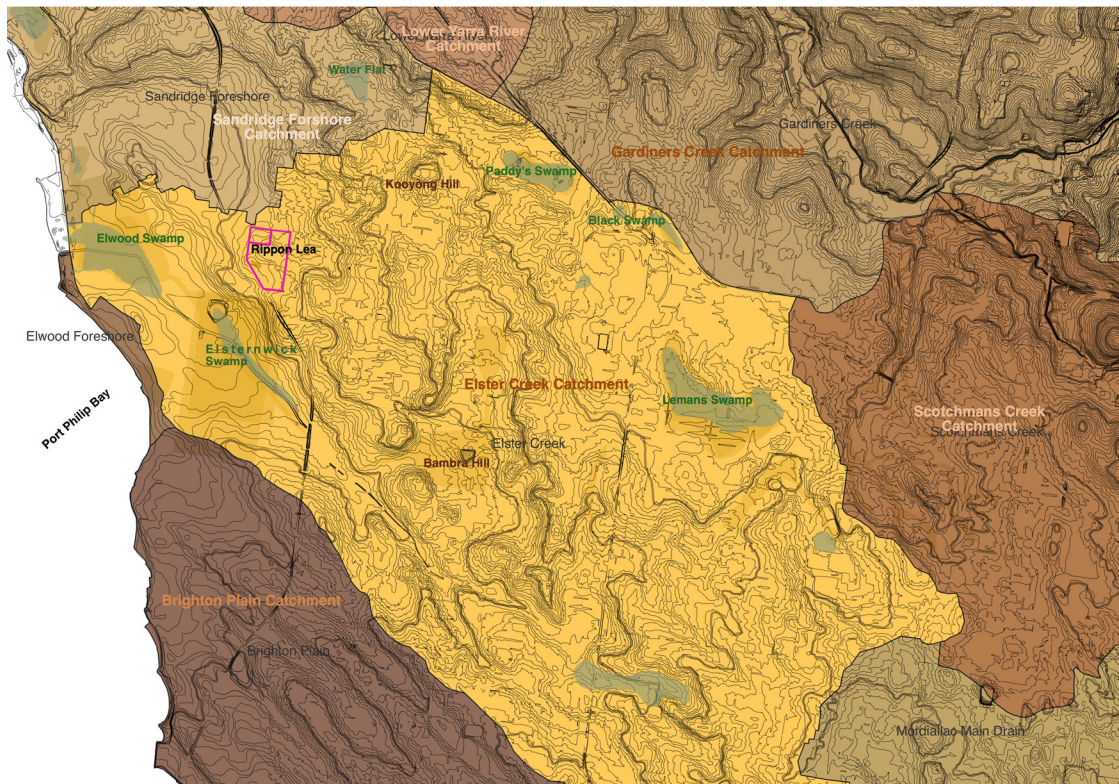
Figure 5.4. Contours and wetlands of Elster Creek Catchment.[35]
Produced by Ana C. Lara Heyns (2022)

Rippon Lea highlighted (in pink) for reference.
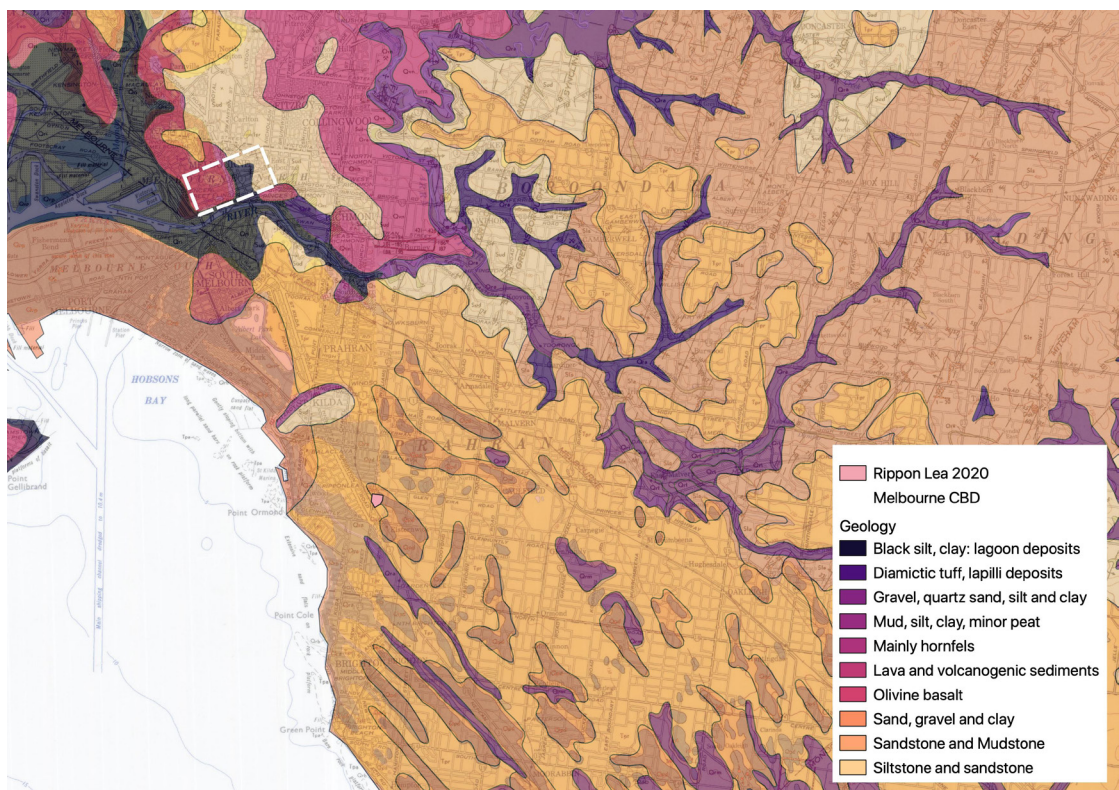
Figure 5.5. Geology of South-eastern suburbs.
Produced by Ana C. Lara Heyns (2022).

Geological map based on the combination of geological datasets and geological maps, Rippon Lea and Melbourne CBD are shown for reference.

With the settler's urbanisation came the changes in the landscapes; the railway lines would cut reserves in half. Such is the case of the Black Swamp, which, on the other side of the line, would later become the Caulfield Racecourse; or a reserve on Hotham and Glen Huntly Road which disappeared after being split by the Brighton Railway line.[36] The water springs (as seen in Figure 5.6) were sold to private owners after being used by graziers in the early 1830s. Caulfield had no roads, which made it difficult to access and only by tracks full of holes would residents be able to move around the area; those holes were filled up by residents to make it easier, many of which — unknown to the settlers — might have been rockwells to access spring water.

In the 1850s, roads were delimited but interfered with natural drainage patterns as well as the first private houses, whose owners would cut off the natural drainage provoking frequent flooding on the roads.[37] An example of this was Paddy's Swamp, which was lowered to be able to build Balaclava Road to Dandenong Road. The lake at the racecourse was linked to Paddy's Swamp by drains that were cut off, increasing the flows on the creek and provoking flooding. The lowering of the swamp created an overflow in the creek, which would flood Glen Eira Road at St Mary's, right in front of Rippon Lea, an event that was possibly seen by Rippon Lea's owner Frederick Sargood who was starting to build his mansion by that time.

Figure 5.6. Rock well located in Beaumaris, VAS Site number 78223/074.

Image retrieved from Presland's Archaeological Survey of the Melbourne Metropolitan Area, 1983.[38]

[36] Murray, and Wells, From Sand, Swamp and Heath… A History of Caulfield.

[37] Gary Presland, "An Archaeological Survey of the Melbourne Metropolitan Area" (Aboriginal Affairs Victoria, 1983), https://search-informit-com-au.ezproxy.lib.monash.edu.au/documentSummary;dn=309960458494177;res=IELIND.

[38] Murray, and Wells. From Sand, Swamp and Heath… A History of Caulfield.

[39] Frederick Thomas Sargood (1834-1903) arrived in Melbourne in 1850. Sargood briefly worked in the Public Works Department before joining the wholesale soft goods company of his father. He spent some time in the Mount Alexander goldfields and ran the family business in Castlemaine and Bendigo area. Both he and his father were members of the Legislative Council, his father for St Kilda and Melbourne, and he was part of South Yarra, which then led him to become Victoria's first Minister of Defence. He contributed to many military developments in Victoria. He was also named Commissioner of water supply between 1884 and 1886 and served as vice-president of the Board of Land and Works a decade later. Read more: John Rickard, "Sargood, Sir Frederick Thomas (1834-1903)," Australian Dictionary of Biography, National Centre of Biography, Australian National University, 1976, http://adb.anu.edu.au/biography/sargood-sir-frederick-thomas-4538.

Streams and natural water flows were drained into underground systems, which would re-enter the freshwater system. By the end of the 1800s, many diseases appeared in the area due to the lack of health laws. Swamps, considered unsafe and filthy spaces, were not popular in the rapidly growing settlement. By draining and filling the swamps, the pre-colonial landscape was being displaced as well as the Boon Wurrung population, who saw the swamps as an important source of life.

5.1.2 A brief water story of Rippon Lea Estate

In 1868, Frederick Thomas Sargood (1834-1903)[39] build the mansion and pleasure gardens known today as Rippon Lea Estate, in the south-eastern suburb of Elsternwick. The mansion was designed by Joseph Reed,[40] a renowned architect of the time. The gardens are thought to be designed by landscape designer Edward La Trobe Bateman, who worked closely with Joseph Reed.[41]

The lake in Rippon Lea Estate did not exist before the house was designed. From different sources such as journals and diaries from earlier settlers, oral accounts from the Boon Wurrung, and photographs and topography presented before, it could be that the area where the lake sits was prone to inundation but did not form a swamp itself. The landscape surrounding the estate was a wet one, as seen in Figure 5.7 (next page); a photograph taken somewhere along Glen Eira Road serves as an example of the landscape that Sargood must have encountered when he purchased the land for Rippon Lea. Sargood had a keen eye for the landscape as he and William Sangster excavated the land to turn the puddle into a manmade lake.[42]

[40] Joseph Reed was part of the Reed and Branes firm. He designed many important buildings in Melbourne, including the Wesley Church, Lonsdale Street, and the premises of what became the Royal Society of Victoria. He also introduced the brick Lombardy architecture style in Melbourne, evident in his designs for Collin Street Independent Church, St Jude's and Rippon Lea. However, his work returned to the classism of the Second Empire for the Melbourne Town Hall. For more information of Joseph Reed see David Sauders, "Reed, Joseph (1823–1890)," in Reed, Joseph (1823–1890) (Australian Dictionary of Biography, National Centre of Biography, Australian National University, 1976), http://adb.anu.edu.au/biography/reed-joseph-4459.

[41] Anne Neale, "Rippon Lea: Bateman and the First Garden," Australian Garden History 9, no. 5 (April 1998).

[42] John Foster, Victorian Picturesque: The Colonial Gardens of William Sangster, Melbourne University History Monograph Series, no. 3 (Parkville, Vic., Australia: History Dept., University of Melbourne, 1989).
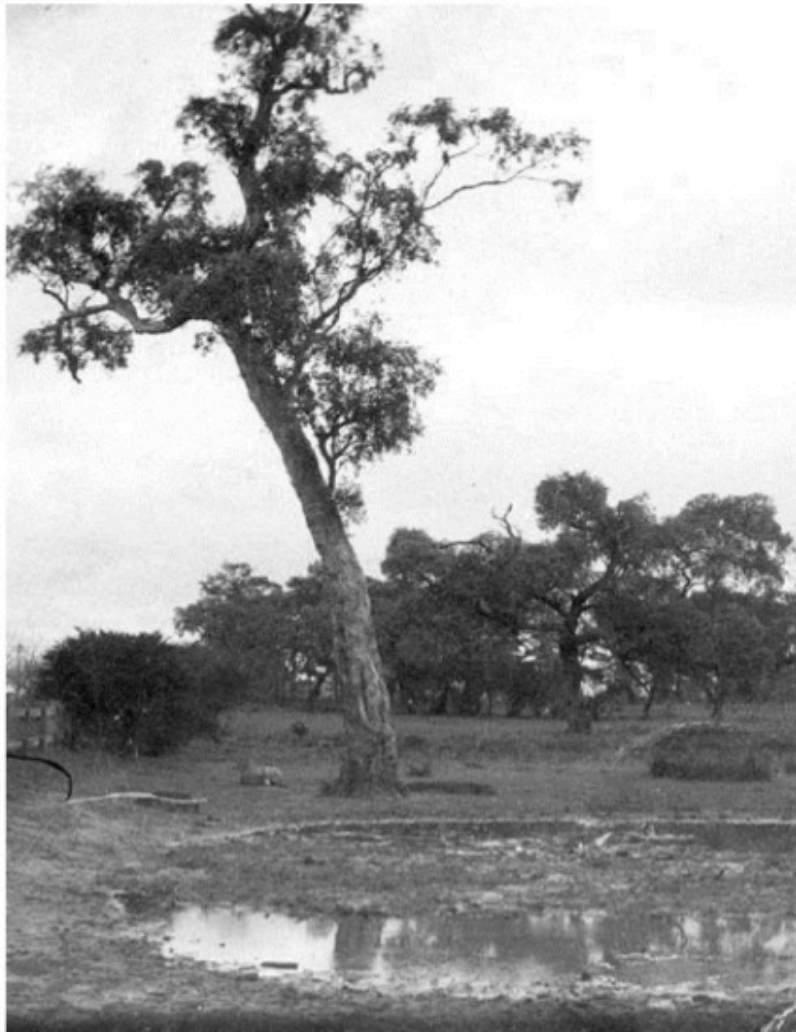
Figure 5.7. Gum tree and swamp in Glen Eira Road, c.1909. University of Melbourne, Bishop Family, item number 1965.0017.00145.

Taken somewhere along Glen Eira Road, this photo is particularly interesting since we know the area was swampy and prone to flooding. This might have been what Sargood saw in his garden and which inspired him to develop the lake.

Physically, there are a few visible hints that also allow us to evidence of this man-made lake. The islands where two big old red gum trunks still stand today used to be the limits of the puddle (see Figure 5.8), which, after being turned into the lake (Figures 5.8a and 5.8b), became islands in 1884, when the lake was extended three times bigger; the ashy bottom of the lake sealed it and of course, the carefully created underground pipes are connected to the lake.

Figure 5.8a. Rippon Lea Lake.
Photograoh by Ana C. Lara Heyns (2020).

Figure 5.8b. Island at Rippon Lea Lake with old River Gum Tree trunk.
Photograoh by Ana C. Lara Heyns (2020).

According to Neale,[43] the first design of the water drainage system would be supplied by tapping into the main drain of the stream at Glen Eira Road in a pit that gravity fed through a 9-inch diameter glazed clay pipe to a well in the property. A windmill would pump the water around the grounds for irrigation, as seen in Figure 5.9. The house would use rainwater collected from the roof. Conceived as a closely integrated water management system that used on and off-site water made the estate almost totally self-sufficient in its water requirements.

[43] Anne Neale, "Rippon Lea Conservation Analysis Report," Prepared for the National Trust of Australia (Victoria) (Rosly and Ian Colamn Consultants, 1988).

Glen Eira Rd

Hotham St

Outlet

Railway

Outlet
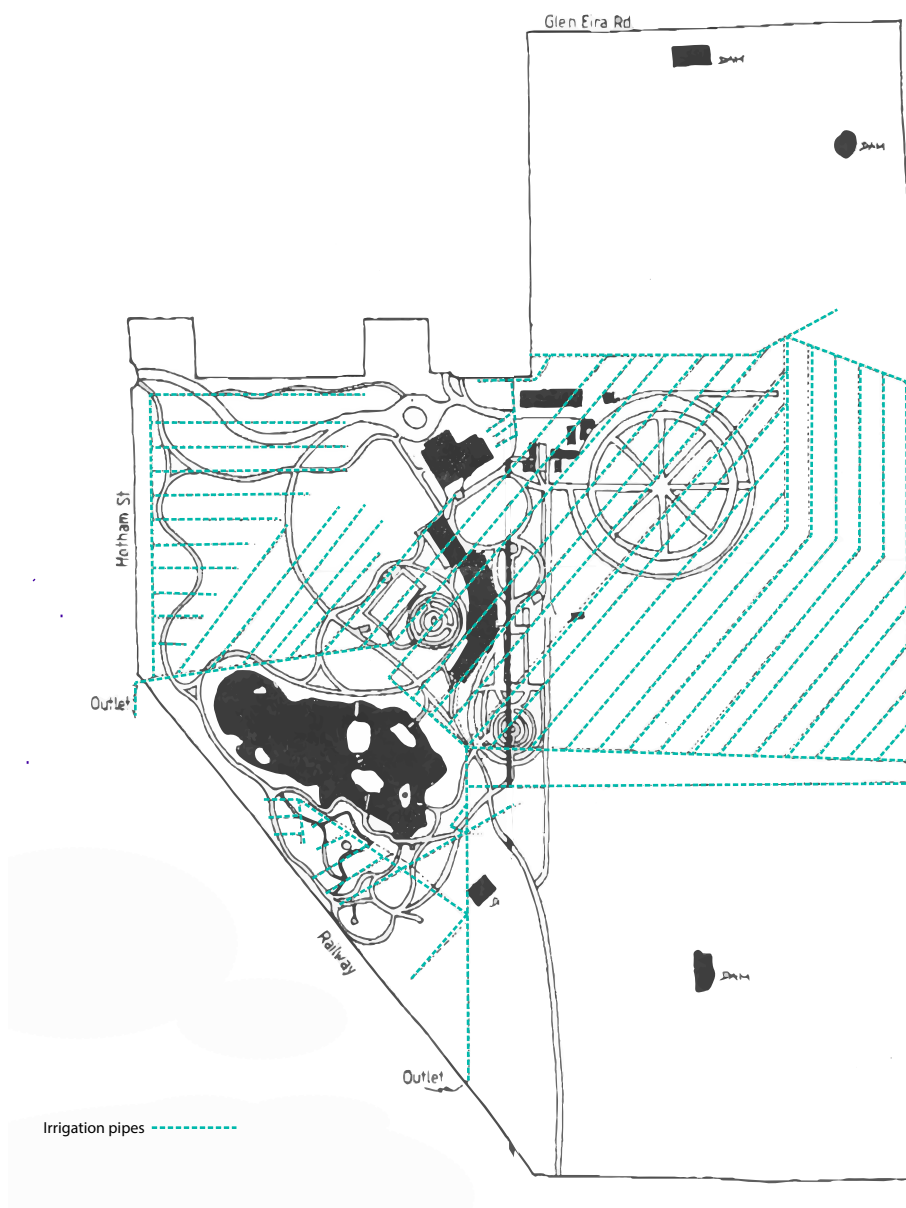
Irrigation pipes ----------

Figure 5.9. Irrigation pipes map of Rippon Lea.
Produced by Ana C. Lara Heyns (2022) based on 1885 map extracted from plan held by University of Melbourne archives. Provided by National Trust Australia.

5.1.3 The Deep Urban Ecological history of Rippon Lea

Rippon Lea presented itself as a localised space where these connections are made evident. What is fascinating about the drainage system at Rippon Lea is that it works as a catchment itself (see Figure 5.10), allowing for the natural flows of water to be maximised as well as restoring important ecological connections, such as the biodiversity richness in the estate. The Rippon Lea drainage system is also greatly connected to the historical development of Colonial Melbourne, which included the filling and draining of swamps and the diversion of natural creeks and rivers to facilitate housing and road building. Yet, it is possible that Rippon Lea owner Frederik Sargood was able to use the landscape to his advantage by capturing the run-off water and remaining water flow of the drained creek to water his pleasure gardens.
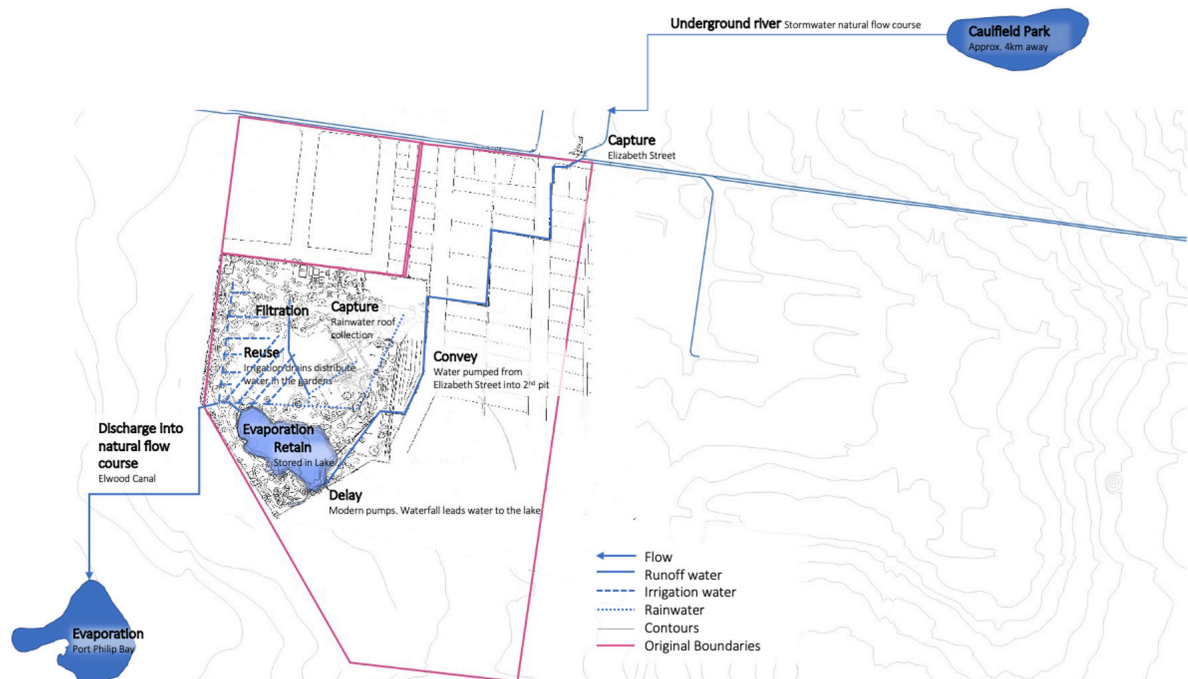
Figure 5.10. Rippon Lea Estate as a Catchment.
Produced by Ana C. Lara Heyns (2021)

The area where Rippon Lea is situated is vulnerable to pluvial flooding; its neighbour suburb Elwood also suffers from periodic pluvial and coastal flooding, which is predicted to increase in frequency and scale due to climate change.[44] There has been considerable work done to speculate on the future of low-lying cities and the future architectural and urban forms.[45] I argue that, to understand the future, we must consider the historical water flows of the past.

To understand these connections and analyse the significance of water on Rippon Lea as a case study, an ethnohistorical approach to mapping was undertaken.

The first part of the research was based on information gathered from different disciplines to understand the research context. Initial mapping focused on geomorphologic, hydraulic, and urban qualities that can be appreciated in the first part of this chapter. However, it was important to me to re-trace the original water bodies that existed in the 1800s (see Figure 5.11) to understand how the urban fabric has affected the waterscape in the Southeast of Melbourne, where Rippon lea is located. To achieve this, different archives and libraries were visited in Melbourne.

[44] Nigel Bertram, "A Geomorphological and Hybrid Approach," in In Time with Water: Design Studies of 3 Australian Cities, eds. Catherine Murphy and Nigel Bertram (Crawley, WA: UWA Publishing, 2019), 41–78.

[45] Cooperative Research Centre for Water Sensitive Cities, "Realising the Vision of a Water Sensitive City," CRC for Water Sensitive Cities (blog), accessed July 9, 2021 https://watersensitivecities.org.au.

Figure 5.11. Current urban fabric with retraced streams and swamps that existed in the last 200 years, including RAMSAR wetlands.
Produced by Ana C. Lara Heyns (2022)

Rippon Lea's original boundaries are highlighted (in pink) for reference.

Layering the different old maps using QGis (as seen in Figure 5.12, 5.13 and 5.14) shows the changes in the landscape historically and helps to see patterns and understand the connection of Indigenous heritage and indigenous knowledge to landscape and deep time.

Figure 5.12. Retraced waterways in Elsternwick. Selection in Map of Elsternwick by 1851. Retrieved from Public Record Office Victoria. Produced by Ana C. Lara Heyns (2022)

Figure 5.13. Map of Caufield Park by 1879, retrieved from State Library Victoria. Produced by Ana C. Lara Heyns (2022)

Figure 5.14. Selection in Map of East Elsternwick by 1853 with retraced waterways. Retrieved from Public Records Office Victoria. Produced by Ana C. Lara Heyns (2022)
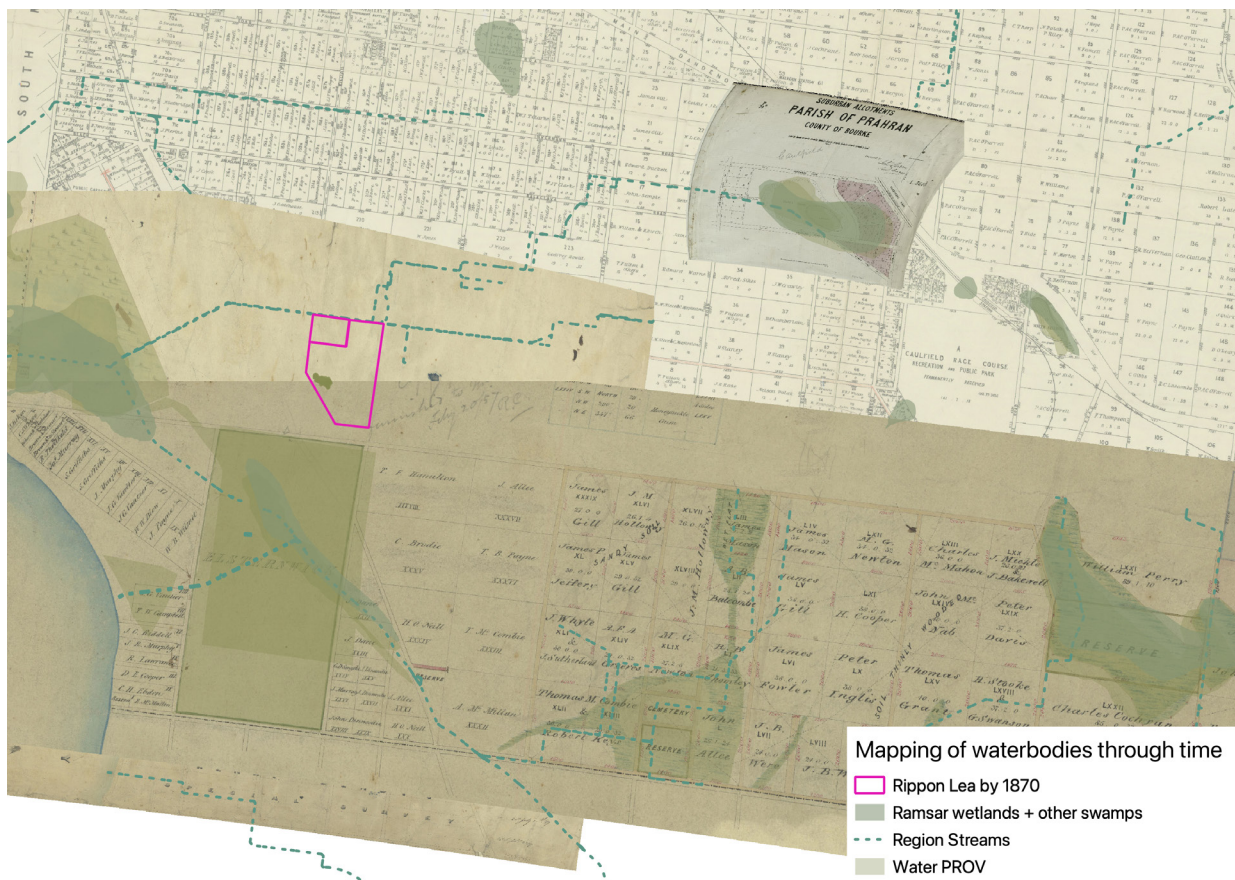
Figure 5.15. Superimposed maps retracing waterbodies and creeks that characterised the southeast suburbs of Melbourne.
Produced by Ana C. Lara Heyns (2022)

It was important to understand the flows of water in the area, to undertake an ethnohistorical approach to mapping, not only using old maps, but also historical accounts which would indicate the existence of water flows throughout the landscape. From rockwells[46] to creeks and rivers, that disappeared with the changing urban development of European settlements in the last two centuries.

As seen in Figure 5.15, the first century of colonial settlement in Melbourne rapidly changed the urban fabric. With the filling and draining of the swamps, land speculation grew, and new dwellings were built. The population grew rapidly, and so came other developments such as the railway and sewage. Roads started to fill the land, cutting into reserves and wetlands, splitting the natural watercourses that ran through the suburb to the bay.[47] To share some insight into the landscape and these developments, photographs (see Figure 5.16) were included in this analysis to visualise the landscape throughout the ages.

[46] In the Archaeological Survey of Melbourne Metropolitan Area, Gary Presland records the location of 2 of the 7 native water wells previously registered by Massola in 1959 as The native water wells of Beaumaris and Black Rock.

[47] Murray and Wells, From Sand, Swamp and Heath... A History of Caulfield.

138

Figure 5.16. Looking towards Rippon Lea.
Photograph: Johnstone, O'Shannessy & Co. (1903)

In this photograph, we can see the southern area of Rippon Lea Estate, this paddock was originally used to drain the excess water from the Estate before the lake was created. Later, the Australian Broadcasting Company built its studios there, which eventually cause disputes over Rippon Lea in the 1960s, which led Rippon Lea Estate to be bequeathed to the National Trust Australia.

Figure 5.17. Mapping of ethnohistorical sources and oral histories of south-eastern suburbs of Melbourne.
Produced by Ana C. Lara Heyns (2020)
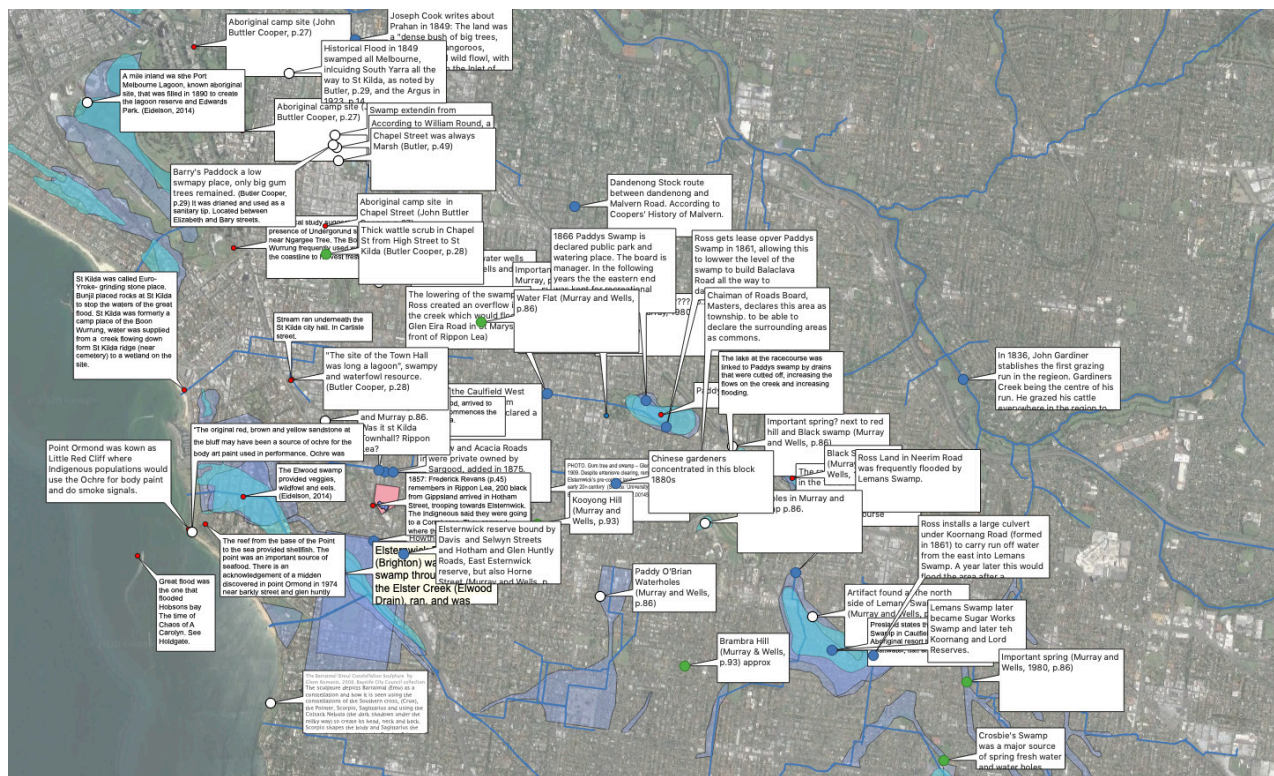
Gathering all the different ethnohistorical sources involved mapping events throughout the landscape. By adding notes categorised by the source of knowledge, I learned the histories of the land, from Indigenous knowledge about Country to urban developments since colonial settlement (see Figure 5.17).

Interweaving different ethnohistorical accounts showed the dislocation of waterways. The swamp where the river that supplies water to Rippon Lea originates in Caufield Park, called Paddy's Swamp (as seen in Figures 5.18 and 5.19) by the settlers, was physically dislocated and filled to provide the recreational areas that we see today.

Figure 5.18. Water tracings of Paddy's Swamp and original creek in Caulfield Park.
Produced by Ana C. Lara Heyns (2020)

Records state that in 1861, the Chairman of the Board of Works, Murray Ross, allowed the lowering of the swamp to build Balaclava Road all the way towards Dandenong Road; this eventually caused the overflowing of water in the river that supplies water to Rippon Lea. By the 1870s, the swamp had already been filled and contained in the current park boundaries. We can appreciate the stream, which was probably drained around that decade.

Early Interventions in Paddy's Swamp
- Ramsar wetlands + other swamps
- Region Streams
- Water PROV
- Google Satellite

Flood path 1860 From Caulfield Park to Rippon Lea
- Rippon Lea by 1870
- Ramsar wetlands + other swamps
- Region Streams
- Floodareas 2m
- Water PROV
- Google Satellite
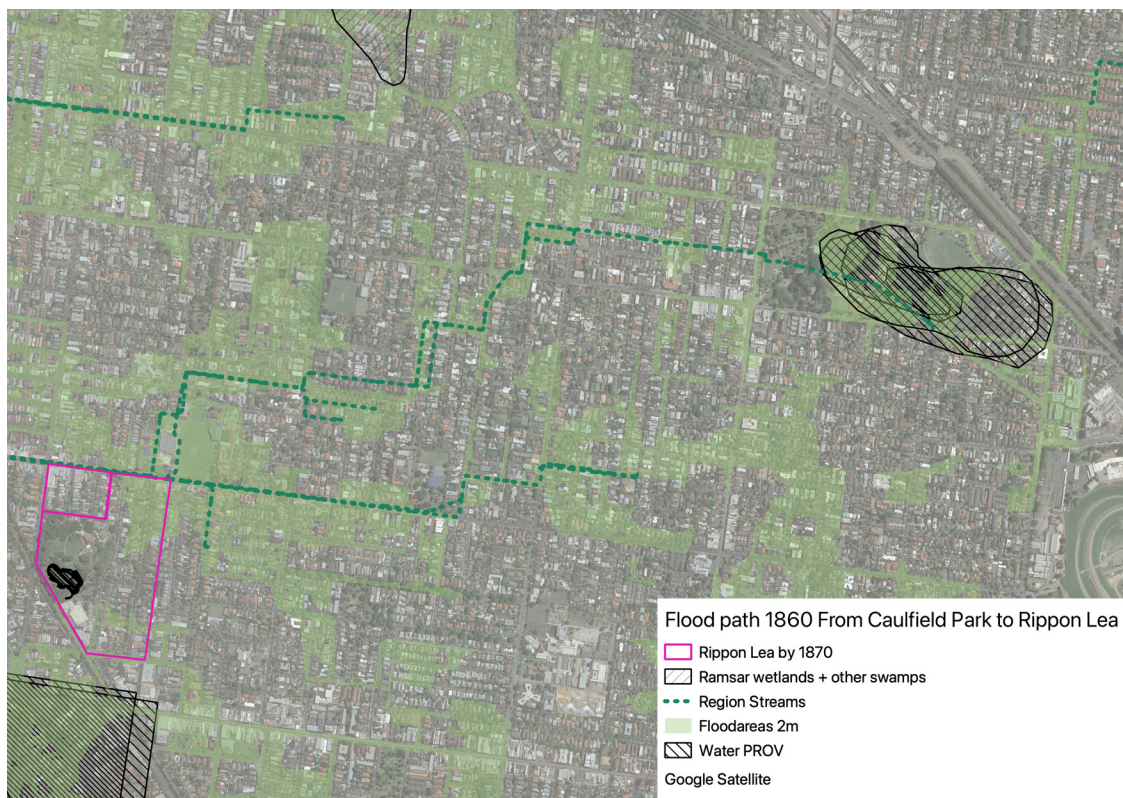
Figure 5.19. Overflooding of the creek in the northern area of Rippon Lea, traced in water histories.
Produced by Ana C. Lara Heyns (2022)

The floods caused by the lowering of the swamp in 1860 inevitably caused overflooding in the northern area of Rippon Lea Estate, as we can appreciate in this map. Overlaying this information gives us a hint of how it would have been seen by Sargood and his gardeners at the time they build the property in the same years. Due to flooding and the landscape conditions of the area, it is possible to think that this event is what inspired Sargood to develop his underground watering system.

Incorporating this ethnohistorical approach into mapping has shown patterns in the urban landscape. Adding to the previous mappings, it was important to consider past flooding events and current flooding interactions. These were retrieved from Glen Eira Municipal Storm and Flood Emergency Plan[48] and layered with the other datasets, such as flood paths and flood areas, as seen in Figure 5.20. Including historically mapped water bodies from written accounts and other maps as mentioned before. We start to discern the patterns of how water has been flowing throughout time, giving an indication of where water might eventually return in one way or another.

Retracing the water flows across time in a spatial form through an ethnohistorical approach suggested a way forward into relational design: exploring relational methods to build relationships with these drained waterways.
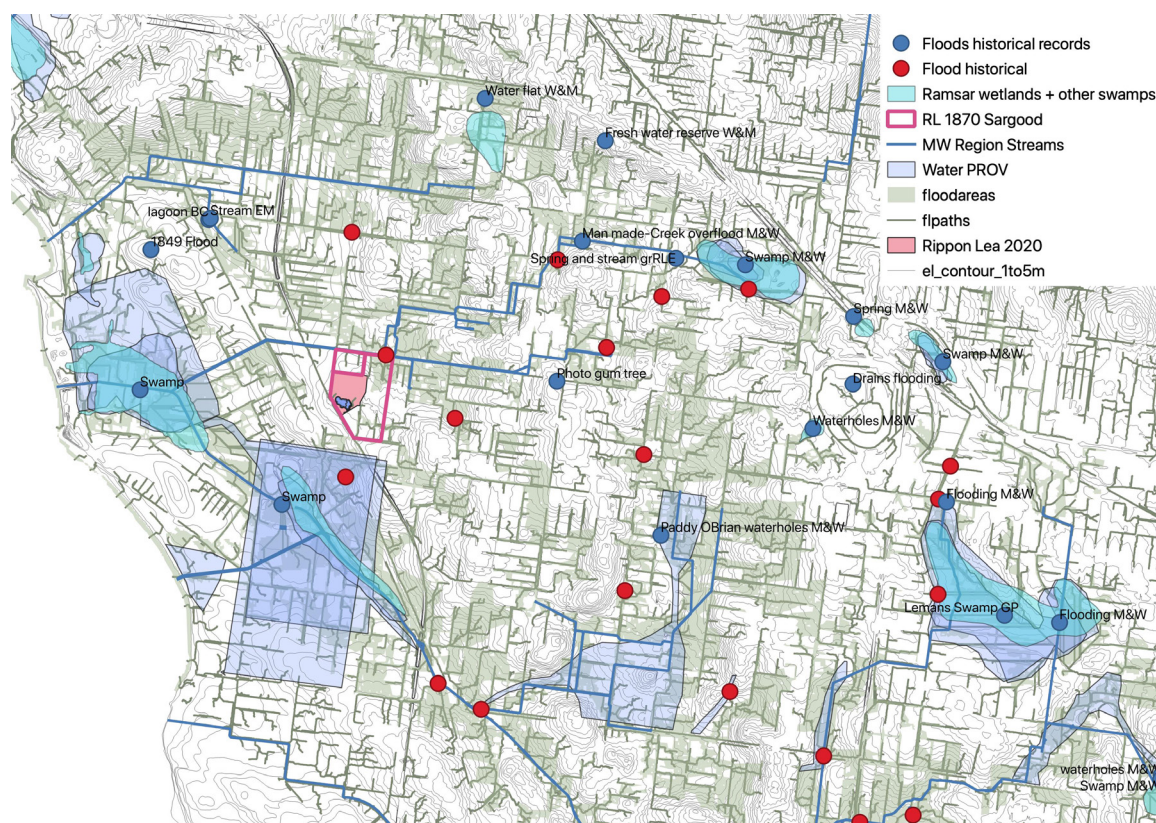
Figure 5.20. Historical floods according to historical records, streams, and old waterbodies. Rippon Lea highlighted (in pink) for reference. Produced by Ana C. Lara Heyns (2020).

Historical floods according to historical records (mapped in blue) with historical floods retrieved from Glen Eira municipality intersect where streams continue to flow underground.

5.2 Walking with water: Tracing underground waterways through Banyule and Darebin

> You know, they straightened out the Mississippi River in places, to make room for houses and liveable acreage. Occasionally the river floods these places. "Floods" is the word they use, but in fact, it is not flooding; it is remembering. Remembering where it used to be. All water has a perfect memory and is forever trying to get back to where it was.
>
> – Toni Morrison, "The Site of Memory."[49]

By tracing the water flows in the urban space, we can discern the tensions and contradictions that underlie the development of the modern city. Water provides a link between the body and the built environment; its fluidity and agency serves to disrupt and challenge simplistic understandings of how complex urban societies function. In a relational design, we acknowledge the agency of all human and non-human entities; water flows become agents with whom we can develop relationships. Uncle Charles Moran, Uncle Greg Harrington and Norm Sheehan[50] state that "The intelligence of Country reveals itself to us if we listen well, observe these connections closely, speak softly, and be ourselves." Matthew Gandy[51] has also suggested a more embodied experience to understand the cultural meanings of water in the urban form. He states:

> By tracing the history of water in urban space we can begin to develop a fuller understanding of changing relations between the body and the urban form under the impetus of capitalist urbanisation. This interdisciplinary task involves exploring changing relationships between the body, architecture, and ideological conceptions of nature as part of a broader project to expand our understanding of modern cities and their cultural meaning.

Drawing from these two ideas and connecting to my own stories of relatedness, walking, and tracing the rivers through the urban fabric facilitated a series of embodied experiences that historical mapping does not provide: experiencing Water Country.

> *It's been four months since the Global pandemic was declared, and the Victorian government implemented hard restrictions that limit my fieldwork in the Southeast of Melbourne. I guess this is something I will have to acknowledge in my dissertation, since I feel like I'm losing a great amount of time to experience the*

[49] Toni Morrison, "The Site Of Memory," in Inventing the Truth: The Art and Craft of Memoir, ed. William Zinsser, 2nd edition (Boston/New York: Houghton Mifflin, 1995), 83–102.

[50] Moran, Harrington, and Sheehan, "On Country Learning."

[51] Gandy, The Fabric of Space Water, Modernity, and the Urban Imagination, 9.

space physically. Don't get me wrong, mapping has been quite interesting, but there is nothing like experiencing the area with all the senses.

Today is a normal lockdown day. After an early start with the PhD, I take a break to take Caesar, my dog, for a walk. Lately, I feel like it's him taking me for a walk. We have been walking every day to Seddon Reserve and then down the road across the bridge to walk along Darebin Creek. It's winter, which means no snakes in the path and no eels to be seen swimming by, not that I've seen any in this part of the creek. But still, I keep watching attentively when I stop; perhaps, today could be my lucky day. As I walk along the creek every day, I notice the change of colours of the water. Some days it's very dark, which means sediments from burned areas are falling in. On other days, the creek's water volume is astonishing after a few rainy days.

I walk on the left side of the creek, on the side of Thornbury and Preston, which belongs to the City of Darebin. The paved road finishes and I take the dirt road by the creek, or should I call it the mud road after this week's rain? Caesar doesn't mind, of course. A few meters after the mud road started, we bump into another concrete infrastructure, the outlet of stormwater drainage. It's been raining so there is a good amount of water trickling down. I climb up the concrete wall to check out the drain; it's a dark muggy space, a little bit smelly. Not bad, just the pungent odour of stale water and moving water. I can't really go inside the drain as the wall continues up to where I believe the drain comes down the roads. Caesar and I continue our walk. This is not the only outlet we see, although it's the biggest infrastructure of all. On this side of the creek, I hear the rumbling noises of different factories that inhabit the space next to the river, until we reach Fez's Wetlands. The wetland was artificially created to treat the stormwater runoff in Thornbury, where the many factories are. The wetland has created a habitat of Indigenous and aquatic plants teeming with birds and aquatic creatures. On the warmer days of spring and autumn, I've seen many kookaburras looking for worms and snakes. The wetland is beautiful, and the water can be heard filtering through the swamp.

I don't want to disturb the local fauna, so I take Caesar across the bridge to the City of Banyule side of the creek. On this side, the surrounding area is purely residential, compared to the factory-filled area of Darebin. The noises come from the trees and bushes, their leaves dancing in the breeze. Birds are tweeting, and the water is crackling against the rocks. From across this side, the big outlet we explored earlier looks more majestic, with flooding measurement poles suggesting the volume of the creek increases a lot. I can see this along the creek, today there is a fair amount of water, but it's not making a mark on any of the poles. Caesar is panting by now, and I need to go back to my work.

The Covid19 Victorian Restrictions limited my ability to trace the rivers in the south-eastern suburbs of Melbourne. As an alternative, a parallel field study was proposed within a 5-kilometre radius of my home. The northern suburbs of Melbourne are morphologically different to the ones near the coast. For one, the catchments are more pronounced so the creeks that run south are visibly bigger. The proximity of Yarra River, Merri Creek and Darebin Creek, along with the contours sliding down, create billabong patterns in these rivers; therefore, reserves such as Fez's Wetlands, the Darebin Parklands, and the Yarra Bend (to name a few) encompass great areas of land. The geology is also very different, as apparent in Figure 5.21 (next page); The southeast is compiled of clay, sand and silt undulations created by wind, water, and time, making the soil porous enough to drain into the upper aquifers. The clay and silt contents allow for soaks to develop on the lower undulations, which could have been the case in the south-eastern suburbs where the contours are not too drastic. An example discussed with N'arwee't Carolyn Briggs is, the presence of springs and Indigenous-made rock wells in the southeast suburbs that have been recorded in archaeological surveys. These rock wells would have to be managed and maintained by the Indigenous people to access clean water in such a sandy area. However, the filtration provided by the sandy loam would aid in accessing clean filtrated water.

In contrast, the northern suburbs' geology consists of newer volcanic-like olivine basalt, sandstone, and sand. Sandstone and salt have better filtration and porosities, so the water drains quickly. The presence of basalt rock, in combination with the steeper contours of the north, would cause the water to flow downstream into the creeks more effectively.
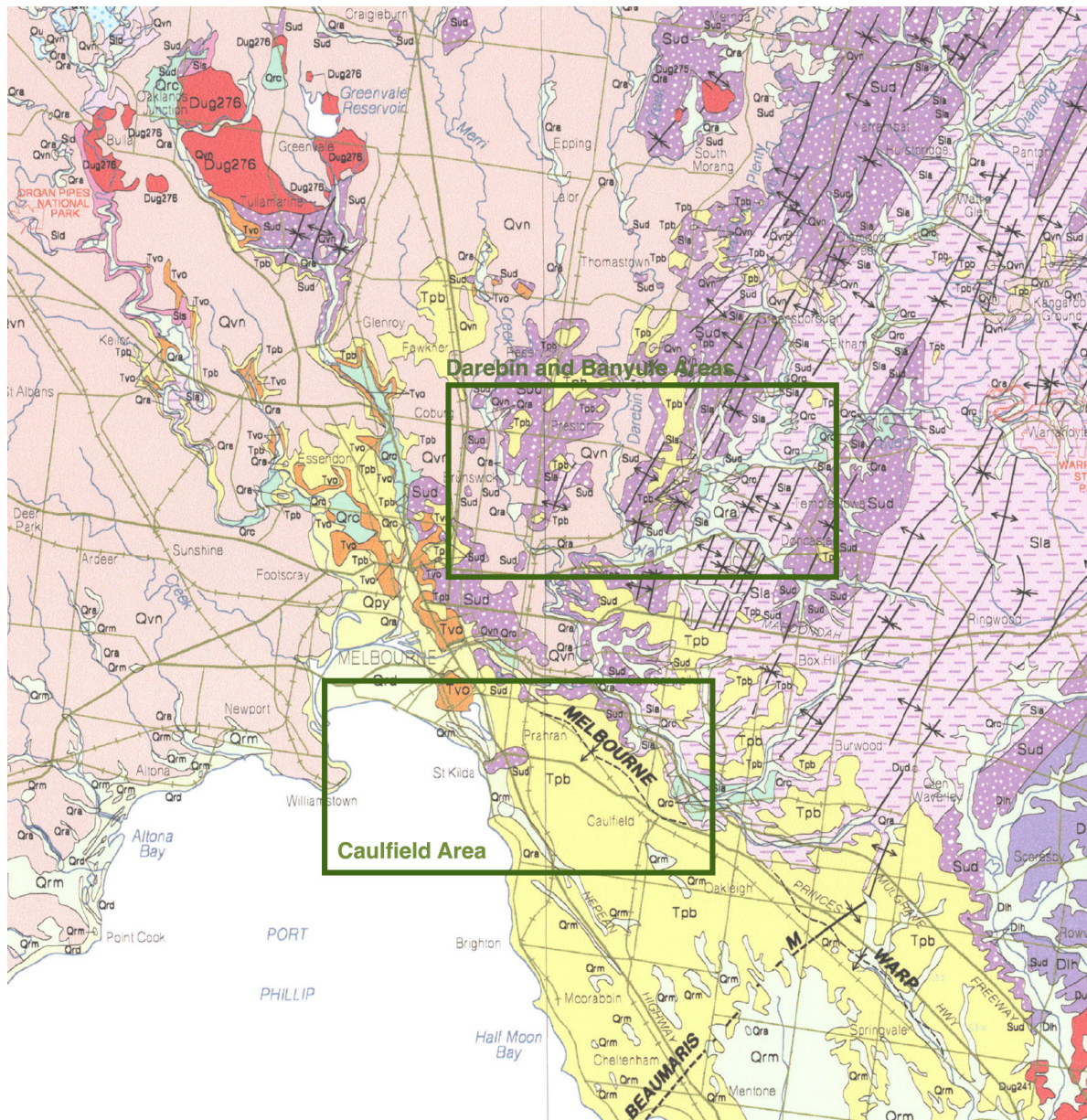
Figure 5.21. Geology map of areas of exploration.
Selection of Geologic Map of Melbourne.
Retrevied from Geology Survey of Victoria,[52] modified by Ana C. Lara Heyns (2022)

Yet Darebin and Banyule have different land use, which creates different flows of water that span across these councils. In the same way in which Caufield and Elsternwick were investigated through historical mappings, Darebin and Banyule's old records showcase a few of the now drained waterways that join the creek (see Figure 5.23, page 148), such as the outlet I mention above.

PLAN
OF THE
PARISH OF JIKA-JIKA
IN THE
COUNTY OF BOURKE—

SCALE 2 INCHES TO A MILE

Figure 5.22. Parish of Jika Jika by 1830.
Retrieved from State Library Victoria.

We can see the main rivers in the north suburbs of Melbourne (from left to right):
Moonee Ponds, Merri Creek, Darebin Creek and Yarra River. The movement of these
rivers in the north created an expansion of their watery bodies, billabongs, and wetlands.

Looking at the flooding strategy of Darebin Council, I selected a few streams to trace, as shown in Figure 5.23. Two in the City of Darebin: Bell Street MD and the Quarry Street Drain; and a long stream on the City of Banyule.

On the Darebin side of Darebin Creek, walking explorations were done following a drained river that originates in Bell Street. The historical maps suggest the origin of this stream could have been in the Reserve, as seen in Figure 5.24

[53] City of Darebin and VICSES Unit Northcote, "City of Darebin. Storm and Flood Emergency Plan: A Sub-Plan of the Municipal Emergency Management Plan" (City of Darebin, 2019).
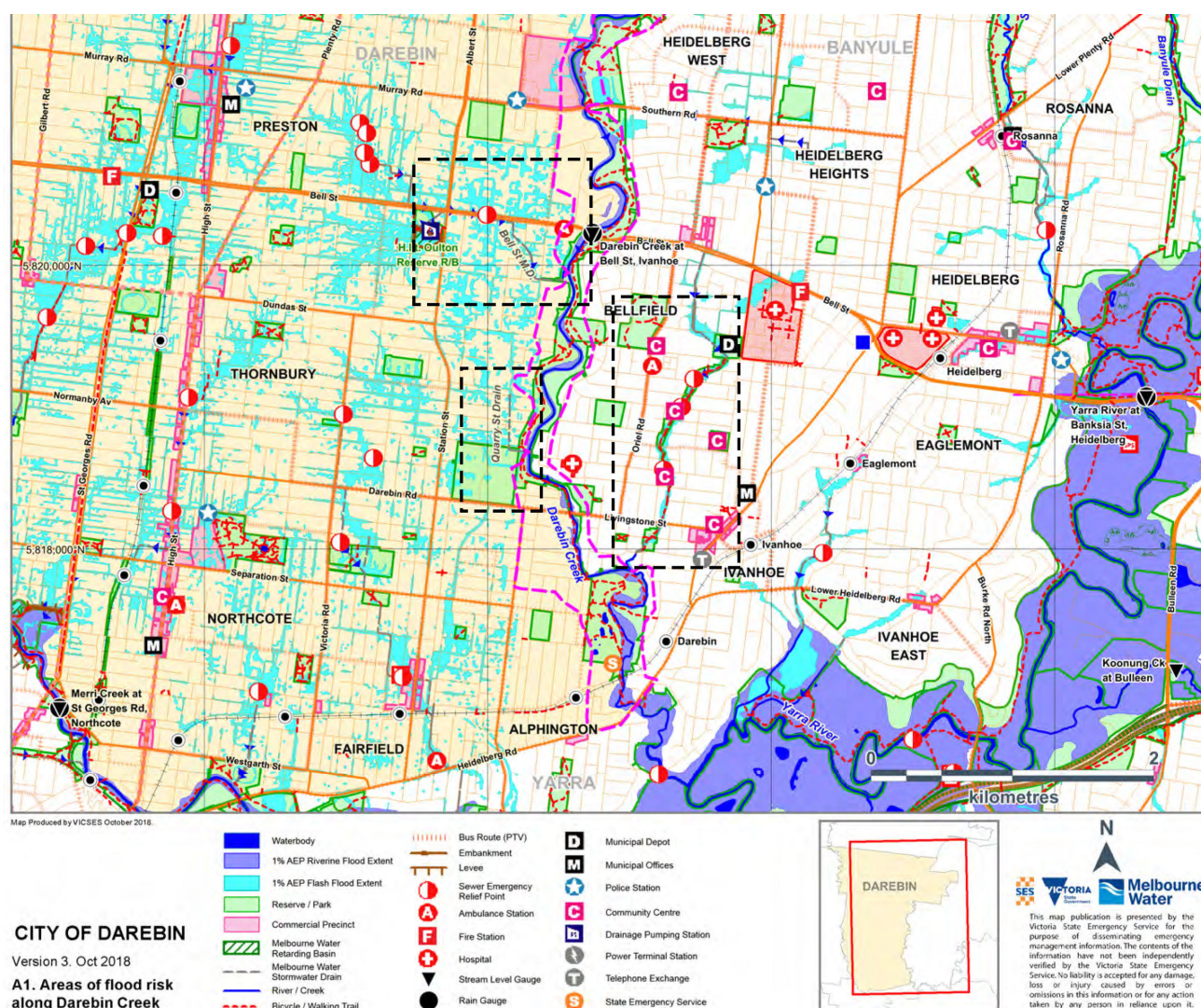
Figure 5.23. A portion of a map indicating areas of flood risk and selected creeks for tracing from the City of Darebin Storm and Flood Emergency Plan 2019.[53] Map modified by Ana C. Lara Heyns (2021).

Drains selected for method exploring are highlighted in black.

**Figure 5.24. Darebin on Creek Map.
Retrieved from State Library Victoria.
Modified by Ana C. Lara Heyns (2022)**

The reserve mapped in this map (highlighted in green) could indicate the origin of the stream that goes into the creek from Bell Street.

Figure 5.25. Tracing water in Quarry Street Drain.
Produced by Ana C. Lara Heyns (2020)

The Quarry Street Drain, like the Bell Street Drain, continues its way into Prestons' industrial landscape (see Figure 5.25). This drain shows explicitly the connections between the above-ground infrastructure and below waterways path.

Through mapping and walking these drained rivers, we can discern construction patterns that have been influenced by the below environment. Site number 4 (see Figure 5.25) shows the building restrictions above the stream drain. Throughout the walk, there are plenty of rain gardens, registers, and swales to drain the puddles of rainstorm water into the drains, which eventually follow its natural course into Darebin Creek.

The evidence of Quarry St Drain showed clear impacts of these water flows in the built environment as shown in Figure 5.26. While the building restrictions on industrial land use in Darebin are evident, the waterways on the Banyule (Figure 5.27) show a different pattern.

Figure 5.26. Close up to site number 4 in the Quarry Street Drain and eagle-eye view locating these examples.
Produced and photographs by Ana C. Lara Heyns (2020)
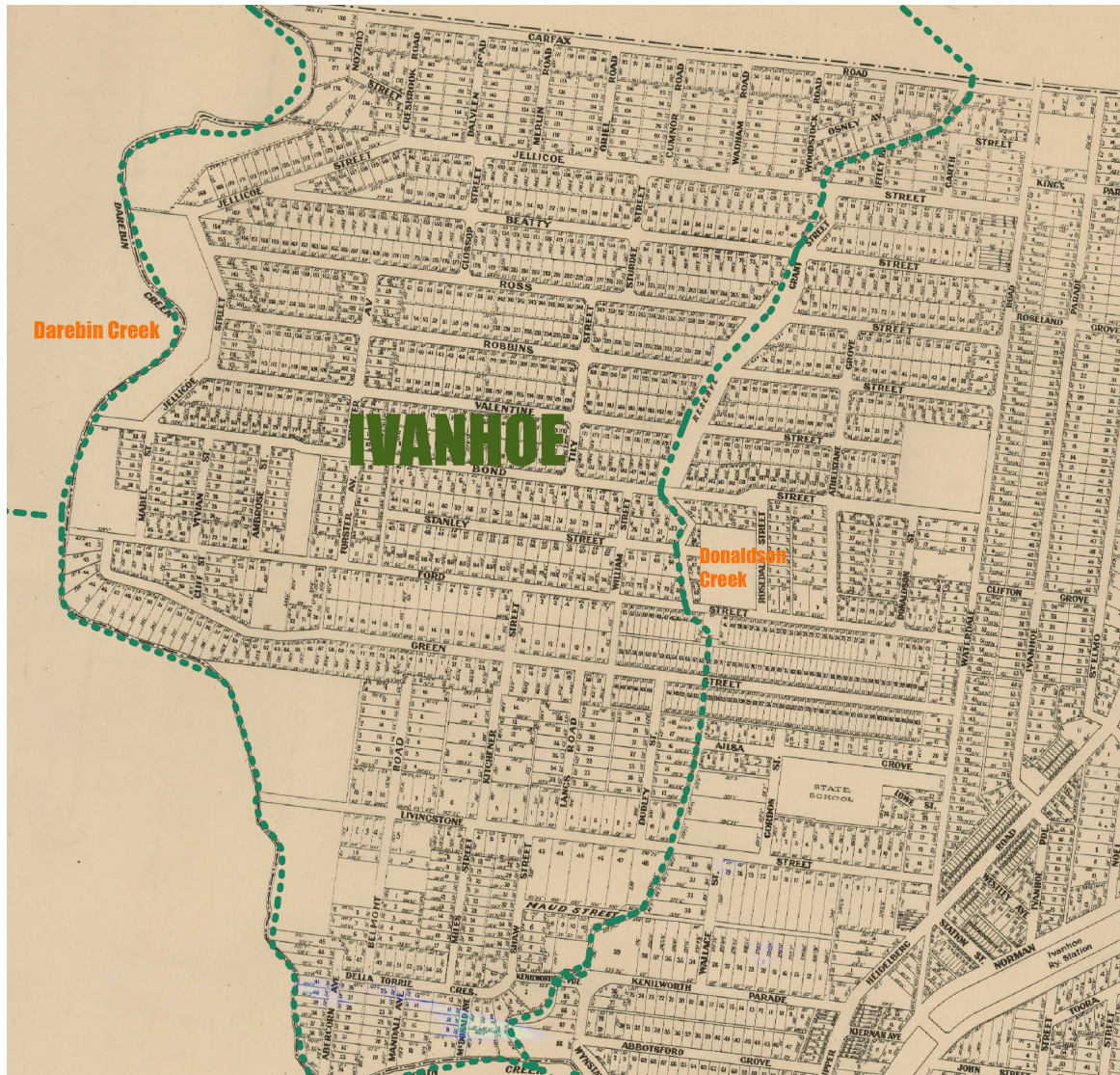
Figure 5.27. Overlaid map of Banyule by the 1950s showing Donaldson Creek. Produced by Ana C. Lara Heyns (2020)

Donaldson Creek is shown in green crossing the residential area of Ivanhoe.

I've been walking in Donaldson Creek reserve multiple times, finding new ways in which the water makes an appearance. It breaks the pipes one day; it lingers in the pathways another. Sometimes you can hardly see it. Some other times, you just hear it rushing below. It all started chasing puddles, waiting for a good storm to pass by to go out and trace the movement of water. Later I realised that no rain had to come for me to see the obvious imprints the water makes. Instead of looking down at the pathway for a glimpse of water, I started to walk down the water pathways looking around me and seeing its grooves in the land. When you walk like the water, you start to reflect on your own speed, on the many times I would need to walk these lands to be able to make my own imprint on the soil. How fast will the water flooding the grooves end up in the drains? How fast will it trickle down the soil through the strata and into the aquifer?

I've been taking photographs (Figure 5.28–5.34) from the pathway and from the grooves; the soil is influenced by the water flows and speed. Some passers-by see me with the camera looking into the complex patterns of the grooves and looking thoroughly at them from side to side. They come closer and ask me what I see; 'just puddles', I say. They look unimpressed and confused. I'm so focused on the mud that the walkers continue their walk. They must think I'm crazy. We take for granted the knowledge that is there, right there in front of us. When I look closely, deeply observing the imprints on the soil, the suburb morphology makes more sense.

Figure 5.28. Donaldson Creek drains.
Photographs by Ana C. Lara Heyns (2021)

Stormwater drain feeds into the drained creek, as seen in these photographs.

Figure 5.29. Water grooves from the pathway of Donaldson Creek.
Photographs by Ana C. Lara Heyns (2021)

Figure 5.30. Water pathway from the grooves of Donaldson Creek.
Photographs by Ana C. Lara Heyns (2021)

**Figure 5.31. Water pathway from the grooves at Donaldson Creek.
Photographs by Ana C. Lara Heyns (2021)**

**Figure 5.32. Stormwater pipe breakage in Donaldson Creek.
Photographs by Ana C. Lara Heyns (2021)**

The walking explorations of Banyule and Darebin materialised the interaction of drained waterways with the built environment and shared some insights into water management issues when the infrastructure impacts the natural courses of water.

5.3 Walking with water in Southeast Melbourne

When applying immersive tracing to the Byron Street Drain (see Figures 5.33, 5.34 and 5.35), the stream that originates in Caufield Park and connects with Elwood Canal, supplying water to the Rippon Lea pipe system, we can see some of the same urban patterns identified in Banyule and Darebin. Both places are residential and have instances where these drained waterways impact the built infrastructure above the ground.

The tracing of these waterways also showed the water memory through flooding. As we can see in Figures 5.35 and 5.36, tracing the Bryon Drain flow, we can visualise the flooding that has been left behind in the water memory of a once-upon-a-time creek.

Figure 5.33. Tracing the waterways in Byron Drain through Caulfield.
Produced and photographed by Ana C. Lara Heyns (2021)
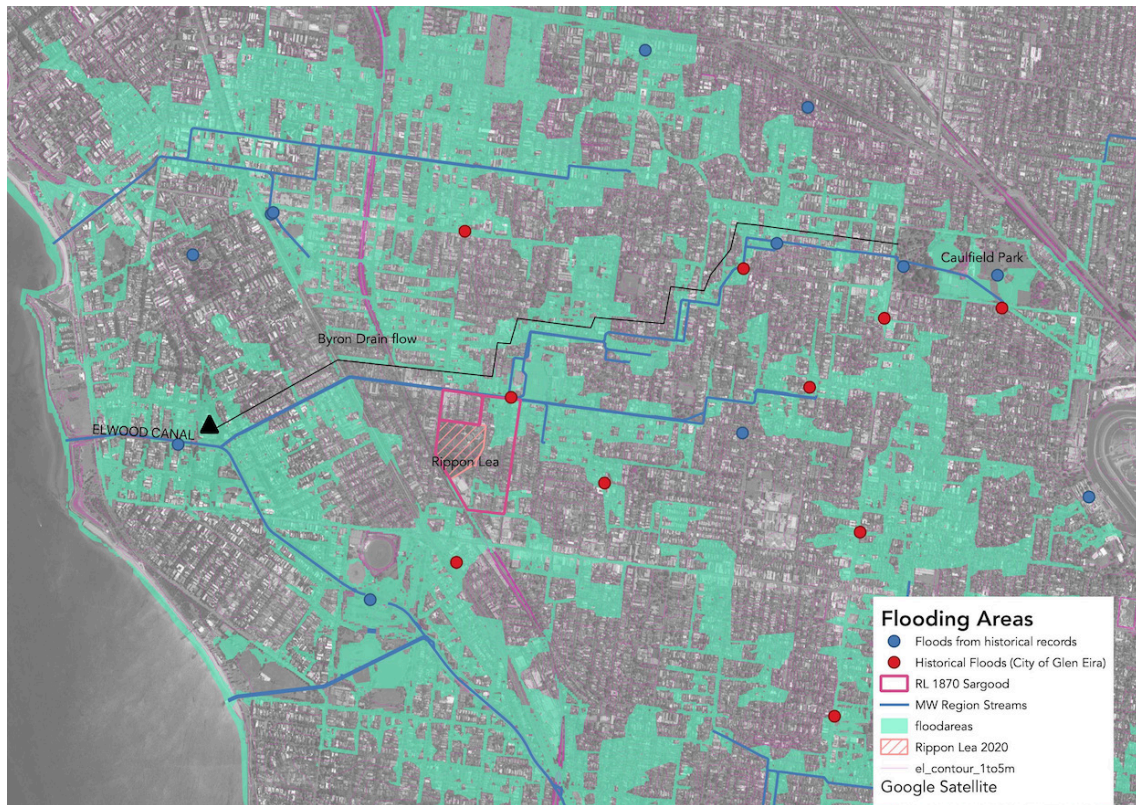
Figure 5.34. Byron Drain flow and flood areas in Caulfield.
Produced by Ana C. Lara Heyns (2021)

Figure 5.35 Puddles form and remain only where the drained watercourse lies below; the rest of the pathway dries quickly after the rain.
Photographs by Ana C. Lara Heyns (2021)

After the explorations made by mapping and immersive tracing, I started to reflect and see how my own behaviour in the city was changing. The sounds of the rivers belowground were louder to me, their watery bodies started to become less invisible. I also started to identify puddles, the ones that rivers make. The land seemed to tell me stories of its past, not knowing how many years, maybe decades or centuries of suburban development. My own walks started to follow the pronounced grooves in the soil as if I were water, making with every step another flood, pressing the sediments in the earth a bit more.

When you walk like water, the perspective of the surroundings is very different to the human perspective. Things like "erosion," "flooding," and "movement" depend on how the water moves and acts. Water is no longer just an element, but has its life with a strong agency that can change even the hardest materials.

Astrida Neimanis[54] was up to something with hydrofeminism; as you start to walk like water you suddenly recognize your own liquidity. Aunty Carolyn told me once that her country was like a body, with all its organs connected through systems of water. Creeks, rivers, lagoons, and swamps. Yet it was important to understand how to "read" the land, how to acknowledge Country as part of yourself and you as part of Country. Walking with Aunty Carolyn was also a space for us to yarn and share our experiences of Country and water.

[54] Astrida Neimanis, "Hydrofeminism: Or, On Becoming a Body of Water," in Henriette Gunkel, Chrysanthi Nigianni, and Fanny Söderbäck, eds, Undutiful Daughters: Mobilizing Future Concepts, Bodies and Subjectivities in Feminist Thought and Practice (New York: Palgrave Macmillan, 2012), 96–115.

INTERLUDE

Yarns with Aunty Carolyn

This research is a collaboration with Boon Wurrung elder Professor N'arweet Carolyn Briggs AM PhD, it is a great honour to learn and share knowledge with her through walks, yarns and sketch making. In this section, I invite you to read through a few excerpts of our yarns as a way of knowledge sharing.

It's Monday, Aunty Carolyn and I are discussing the methods while we look at some maps, and I show her some of the records I've been gathering from my walks along the Byron Creek Drain.

Ana: *I've been thinking about your welcome to Country; you say: Come with a purpose. And it keeps coming back to my mind, I realised that the way for me to relate to where I come from was through walking in the hills and knowing the boundaries of my hometown, and you know, being aware of wildfires, for example.*

Aunty Carolyn: *That's why I think the problem is waterways and fire because fire is also part of the natural resource of the land. But water is more damaging than fire.*

Ana: *Well, because water has a lot of agency, it's a complete entity that does whatever it wants, and it's everywhere.*

Aunty Carolyn: *Flooding, well, it's usually a catastrophe for the world, let alone pandemic and all, because people built halfway, they have colonised water.*

Ana: *Exactly, for example, some of these walks that I've been doing to trace these waterways, I've been recording different parts of the walks, and you can see through different things in the built environment that we can see those water courses. No matter how much the environment has changed, it always [floods] in the same area. (…) as much as we try to change the ways of water, water has its ways.*

It is a Thursday afternoon. The sun shines yet is still cold enough to wear a coat. We are at Rippon Lea Estate, and we are to explore the gardens following the watercourse captured through the system of pipes. We are tracing this waterway while we share some stories, and Aunty Carolyn tells us about Boon Wurrung Country and how knowledge of Country has

Aunty Carolyn: *But it's always been trying to develop a different way of creating our own narratives in our way and bringing back*

our ancestors' stories about place, and our connection to place…

We've done a lot of actions for doing something and reclaiming that back. One of the recommendations was l anguage, reclaiming our language, and also reclaiming our rights to have a voice that has been silenced.

Our Elders, these voices were silent, but we've been able to glean lots of the old records and our historical stories through our oral traditions and validate them with western material. That's what that was about.

Ana: *Yeah. I imagine - I mean being here, at this moment, this whole area was full of swamps and creeks. Waterways are so important.*

Aunty Carolyn: *Yeah, and in particular seasons, because everything operates under the Bundjils Law, the law of the land which is mother earth and our wonderful skies. It is about understanding how everything is guided and how nature informs us. That was our storyboard. It wasn't written. It was always how stories were told. How you had to learn to look up. How you had to look down and how you had to be observant and be aware of how you see yourself and place. That's what that was all about. So, I had to retrace my child in me.*

Retrace the memories. The deep memories of place. So that's where that was, and that's what it was about. Being - a lot of my ancestors were moved from one place to another on missions and reserves. So, the only thing they had was stories and memories. I had to unpack those memories and follow their journey. Because there's nothing written about it.

So, I actually tracked. There were snippets of records. The old records, mission reports. It took us - a lot of historical records, particularly government records on us, are locked up for about 50 years.

So, it's only been in the - under the western systems, all these documents are hidden in archives, and suddenly, when they're released, you've got to know what you're looking for and where you have to go. It's my big journey that I went on. I took myself on those journeys to map her. I'm the product of being from the sealing and whaling industry that once inhabited our great Western Port—learning about how that bay filled up.

I wrote the story of Time of Chaos, and then science tells me their story about how that bay filled up. Western science

*found out that it was a river before it was a bay. So, they
validated what my ancestors had told the early settlers.*

*Everything has to be valued and validated in a format to
understand people and place and how you inform Story. So,*

*I'm rigorous - I should have been a forensic [investigator]
because I travelled everywhere to follow my ancestors, the
white ones and my black ones and checked it all out and was
able to find some records that validated those things. I often
wondered how my old people knew that stuff.*

Ana: It is a lot of knowledge.

Aunty Carolyn: It is knowledge holding. They were the knowledge
holders. So, I went and followed her [ancestor Louisa Briggs]
footsteps in travelling around this state and also in Tasmania,
where they were taken by the sealers.

Ana: In recognising these paths that she walked and her life in
general, I imagine that knowledge also comes through when
you're in Country.

Aunty Carolyn: When we're in Country, and I think it gives you that
sense of being - wellness too. I think Country, when you start
to sit with it and understand the complexities
of what's occurred, the memories are still there.

*There might be buildings, but underneath there are many
layers of stories, and I think that's one of the things you did,
Ana, was unpack that and look at those Stories of control.*

*It is control. A control of the waterways. That probably
strengthened this estate. I think that's okay. I suppose that's
how people operate. But - now - and I think it's very clever
that the eels can still find their way home. They'll always find
their way home.*

*It's like us. Just keep mapping. Keep mapping for water
springs. We keep mapping for understanding how we read
our land. (…) Like the old people say, what's up there and
what's down there, it's like a mirror image of what - the stars.
But they also nothing is forever. So, it's how you navigate
through that space in between. It's the in-between.*

Ana: It's great that you mention it because water remembers, no?

Aunty Carolyn: Water has got a great memory. If you play music and
your body starts to sing, you know the water that your body
is made up of; it resonates with the sounds of the very natural
efforts, emphasis on your being. It's a healing process for you

too. So, if people start to listen to sounds of the waterways, and I found that Louise when she was coming back to Country back in the 1850s, '60s, she sang these water songs to come back from that island. Like good anthropologists or archaeologists or historians, they had to check that it was a Victorian language song. So, she obviously maintained that memory as a child, when she was taken with her mother and her grandmother to that island and how she could describe Melbourne before settlement.

That was quite evident when they did that soil profiling and what they did with the exhibition buildings. Then she described Melbourne when it had only three houses.

Somewhere, a friend of mine who has the hot springs, his father had the drawings of the three houses. The first three houses of Melbourne! Because I was telling him about my trying to prove evidence that she describes Melbourne. So those drawings or those illustrations were done in 1836. She was born in 1830. So, her memory was maintained there. What else have you got? You've got no TV, no books. You're just surviving.

You know everything you need to know about your environment, what you responded to, food, stars… So, they were able to sail back here for a different life from what was happening out in the Bass Strait.

I think that's pretty amazing. So that's handed down. Songs are handed down. I didn't realise until my cousins, they're 96 years old but they still had the songs. I saw them as lullabies, but they were songs that they grew up with from her. (…)

Unless you get down and be active and look after Country.

Don't talk about it. Care for her. Look after her. Celebrate her. Celebrate all the gifts that you've been given.

We continue to wander around the Estate, as we yarn about waterways and its connection to food and material resources.

Aunty Carolyn: *So, if food is valued, the land is valued, people have their own amazing stories about waterways. But they don't get the opportunity to talk about waterways like me.*

Ana: *What is interesting about this place, in particular, is recognising these waterways that were sealed up on drains and now people can see them.*

Aunty Carolyn: *I said unplug them! [She laughs].*

Ana: *Let them see! [I laugh]*

Aunty Carolyn: *I said let people live around waterways. Bugger this. We had to. But that's why I did it. I think it's something - many, many ponds should be unplugged because it's beautiful down that way. When I go out there and we were out at Royal Botanic - Royal Gardens. What is it? Down behind the children's hospital. Royal Park. They're going on about they can't get this grass area growing. I said, well, burn it and revegetate it. They can't make it happen.*

So, if water is our life, well how do we honour her? Honour the water that flows through us? So, allow all these things to be a natural - I know people have got to place their estates on properties and things like that but obviously, here, they're reticulating the water and moving that around, so it's not overuse of the - turning the tap on and exploiting all that water that comes, that we pay big rates on.
But it's those things that we need to think about when we're watering our gardens and for what purpose do we need to water gardens?
I think about certain plants that don't need too much water.

I think about lots of things that - I think if we think about - look at this, it closes off a lot of the sun, eh? They're used to it. I think spaces, open spaces. Thinking about - I'm trying to get people to think about reclaiming - putting back natural grasslands and more plants that grow that don't need as much water. Given that we're talking about climate change. But it was interesting, they were all talking about water, and I said, well, did you know the planet is not earth? It's water. So, to think about what we need to replenish ourselves is water. So how do we think about the two, that collection of ourselves within it?

Ana: (…) So, it's interesting to think that, coming back to this idea
       that water remembers.

Aunty Carolyn: Water remembers like the body remembers.

Ana: Exactly. So, it still floods this area!

We continue to walk around Rippon Lea. We followed the
watercourse through to the fernery and all the way to the lake, I show
Aunty Carolyn how the pipe system works.

Aunty Carolyn: Oh. So, they've gone back to the old way of looking
       at things? See, you've got to understand the past to inform
       the future. That's good.

Ana: That's why it's so interesting to see that waterway. That feeds
       into the…

Aunty Carolyn: Obviously, it continues to live. That's probably very
       good. So, you had to go back to look at the way things were.
       That's interesting. So, the past is informing you for the future.

The sun is setting, as well as the cold Autumn evening. We keep
walking, arriving at the lake after crossing the fernery.

Ana: It is tricky, no? because they really made use of how the
       landscape worked with the waterways…

Aunty Carolyn: So, they must have had what do you call those
       hydro- hydraulics?

Ana: Hydrologist?

Aunty Carolyn: Hydrologist, that's what I was looking for. So, then
       understand the way the system operates. They had a lot
       longer in their country, didn't they? Yeah, they had to because
       they were reshaping their world.

Ana: They say that when they - so, Paddy's Swamp when they tried
       to lower it, that caused an overflow of that river that comes
       all the way here, so when that happened, flooded a lot, a big
       part of the estate and that was around the same time that the
       first owner was building the house. So, he must have seen

that there was a lot of water flooding, and then he created this system because of that flood.

Aunty Carolyn: *That's amazing, so he had an understanding by watching.*

Ana: *He was watching.*

Aunty Carolyn: *That says something about his ability to understand.*

Ana: *Plus, knowing that when the water would flow from the lake, it would continue its natural course.*

Aunty Carolyn: *Down. To the, to the Delta creek. Gosh, we're going to write great things, aren't we? (…)*

That's the river. By accident, he's become an ecologist, like hydrology of understanding water systems.

5.3 Yarning walks with N'arweet Carolyn Briggs about, with and on Country

'Reading' Country is a curious notion. As I mentioned in Chapter 4, walking becomes a tactic to read the landscape. After walking like water, reading does not fully capture the understanding one gains from walking in and with Country. Walking on Country can conceptually be understood as reading Country, as de Certeau, Ingold, and Quirarte mentioned (see Chapter 4), but walking with Country, walking like water, involves a deeper understanding of that reading; it means meaning-making.

Walking with Country requires us to investigate the past and see towards the future, making sense of the world around us. It involves understanding the relationships in the land. For humanity, these understandings of the natural world have been translated into sacred connections, materialised in the ceremony. In the same way my friend's father would stick a knife in the ground to stop the rain from coming, rituals are the vehicle for humans to be in unison with Country.

Aunty Carolyn and I walked and yarned about her knowledge of Boon Wurrung Country, and how she has come to terms with working between two worldviews.

When making sense of immersive and relational methods in this research, I realised that walking with Water and Country goes beyond a simple reading of the environment. My relationship with these rivers develops the more I walk with the landscape. My yarns with Aunty Carolyn and bringing my own experience of Country into my practice directly shaped the methodology. This methodology is created through a relational design that involves a set of daily rituals: walking, deep listening, deep observing, yarning, and building relationships. I call them rituals because they require a deep connection to the action, the thought and the consequence of these doings.

The daily rituals of my methodology have become my way of wandering in the city through a process of Knowing that involves contemplating, reflecting, learning, connecting, and living. These

Ways of Knowing and Doing inform Ways of Being responsible and respecting relatedness, where reciprocity and accountability allow us to develop relationships of Care.

The diagrams and iterations that we developed during our yarns served as a starting point to discuss concepts, language, and practices. In my relational design (see Figure 5.36) methods such as yarning were directly inherited from Australian Indigenous ways of doing, while walking was the way of doing that I learnt from my family and community in Tepoztlán. It was important to include Indigenous methodologies in the research, such as deep listening and yarning, to expand on the field of knowledge by indigenising my research. Drawing from Rigney's[55] work, by adapting, borrowing, and modifying methods, a relational design can be applied anywhere but must be relational to each of the researchers who might use it. It was then that I sought to test how different designers would create their own relational design and see what kind of design decisions they would make to relate better to Country and provide pathways to create relationships of Care.

It was important to me, as a foreigner and as a guest in N'arwee't Carolyn Briggs's Country that I could find my way to understand my place in Country. Not only did N'arwee't Carolyn Briggs teach me to reconcile my own Indigeneity and position myself in her Country, but she opened a door to understand the importance of building relationships of Care. Care involves actions of reciprocity, ordinary acts that can nourish our relationships. Soon, other concepts started to appear in our discussions which took the form of yarns, while we drafted diagrams. Concepts we needed to address in our traditional languages, both Boon Wurrung and Spanish.[56] Acts of Care would be like dancing or ceremony, *Ngargee* in Boon Wurrung; *Ngarn-ga* – Understanding; *Noogal* – Belonging; *Barreng* – tracking; *Ngargerr-moon* – memory, and more. Some concepts in Spanish came from the Nahuatl language that I have learnt throughout my life: *tequio,* for example, which means labour without payment that you do in an organised manner within and for the wellness of your community; or *apapacho*, which derives from Nahuatl and means embrace with the soul, an act of care.

It was through the yarns with N'arwee't Carolyn Briggs and negotiation of what the project would be with The National Trust and the creative team that we agreed to foreground important key information about the Estate through a relational design that could privilege these notions of care.
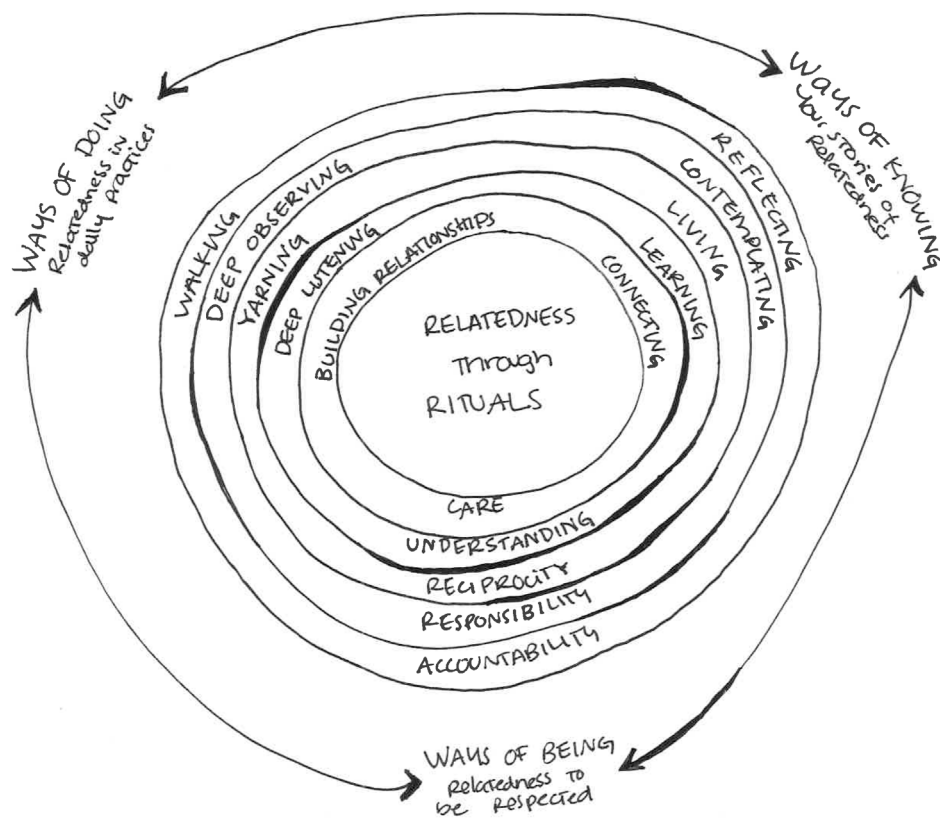
Figure 5.36. Diagram of relational design.
Produced by Ana C. Lara Heyns (2021)

172

5.4. Hidden Rippon Lea: a relational design to foreground hidden waterways.

The Rippon Lea project posed an interesting and conflicting space where I was able to analyse these relationships on a one-on-one scale. It also served as a case study to develop an outlet that would advance reconciliation through the sharing of knowledge in my yarns with N'arwee't Carolyn Briggs. Rippon Lea presents a geographic space to analyse the interceptions of colonial history, Melbourne's urban formation, and Indigenous Knowledge. The National Trust was eager to confront the colonial history of the estate and reconcile its Boon Wurrung history. The National Trust commissioned an interactive phone application to assist visitors to experience hidden aspects of Rippon Lea landscape. It was my intention that this phone application would privilege the rituals of relatedness and Indigenous Knowledge in a place that is heavily marked by colonial history.

Hidden Rippon Lea started with the mapping and ethnohistorical mapping approach, described at the beginning of this chapter. Various site visits allowed me to understand the effects above ground of the system. This underground watering system involves an intricate set of pipes that collect rainwater from the buildings' roofs and runoff stormwater from the northern area of the Estate, which, as we know from the records, was prone to flooding due to the natural watercourse that is now drained into Byron Street drain. The water is stored in the man-made lake and redistributed across the gardens to support the property's lush flora and fauna. This made it an unprecedented water-sensitive system since its creation (Figure 5.10). Nowadays is one of the biodiversity hotspots of the City of Glen Eira.[57]

Originally, the systems pipes are made of clay (See Figure 5.38), they are connected through a series of pits, as shown in Figures 5.39-41. There were around 85 pits across the grounds, but nowadays only a third of them are still working, thanks to continuing restoration of the National Trust Australia.

[57] Graeme S. Lorimer, "Biodiversity in Glen Eira" (City of Glen Eira: Glen Eira City Council, 2018), https://www.gleneira.vic.gov.au/media/3008/biodiversity-in-glen-eira-2018.pdf.

Figure 5.37. Clay pipes at Rippon Lea. Photograph by Ana C. Lara Heyns (2020)

Figure 5.38. Justin Buckley, manager of Rippon Lea, opening te pits to the underground pipe system. Photograph by Ana C. Lara Heyns (2020)

Figure 5.39. Pit door.
Photograph by Nigel Bertram (2020)

Figure 5.40. Looking down at the well.
Photograph by Ana C. Lara Heyns (2020)

The pits can be opened through a ground door, and the water runs 3 to 7 meters down underground, depending on the morphology of the area. In the image on the left, we can see the ground door that opens into the well (image on the right) located next to the windmill.

Figure 5.41 and 5.42. Lake flooding exits.
Photographs by Ana C. Lara Heyns (2020)

The water is stored in a man-made lake which is then redistributed the water to the irrigation system. Excess water in the lake, however, creates flooding in the northern area of the lake, which then continues its natural watercourse onto the rail and joins as runoff water to the Elwood canal, finishing up at the bay.

The information was carefully analysed to craft a story of the river that supplies the water to the Estate and the infrastructural endeavours of Frederik Sargood and his gardeners to create the underground watering system (in Figure 5.42, we can discern the flooding exits form the lake that allows the creek to continue its natural watercourse). It was of utmost importance to create an experience where Indigenous Knowledge and voices were privileged.

Based on this premise, the research methodology used walking and yarning as an exploration tool to situate oneself, and deep listening and deep observing to allow oneself to 'tune in' with the practices inscribed in Country. Through these practices, relationships with humans and more than humans were created and strengthened in these ordinary acts of relatedness. It was imperative that once the user could explore the gardens at Rippon Lea through these methods, the design would enable sensible actions that would further the understanding of one in relation to Country: reflecting, contemplating, living, learning, and connecting.

After the ethnohistorical approach to understand the precolonial and colonial histories, Elder N'arwee't Carolyn Briggs and Indigenous archaeologist David Johnson came to explore and yarn around the gardens with me (Figure 5.43). As we walked and yarn, human geographer Taylor Coyne[58] recorded the yarns and water sounds throughout the estate (Figure 5.44). Following our yarns and walks, sound artists David Chesworth[59] and Sonia Leber[60] recorded the stormwater pipes and different soundscapes. The goal was to 'tune in' a vertical soundscape from underwater to above the tree canopy. By using sound, movement, time and storytelling, the design aimed to include subliminal moments of repairing these relationships through ethical considerations: using the time to let the stories be patiently told, with the audience required to deeply listen and contemplate; those actions require us to be responsible for our actions, and therefore, for what and how we listen and what we do with those stories shared. The goal is to become a custodian of that shared experience of place.

[58] Taylor Coyne is a human geographer and PhD candidate at University of New South Wales.

[59] David Chesworth is a sound artist, Vice-Chancellor's Postdoctoral Fellow at RMIT University.

[60] Sonia Leber is a sound artist and Senior Industry fellow at RMIT University.

Figure 5.43. Yarning Walks with N'arweet Carolyn Briggs
Photographs by Laura Harper (2021)

Figure 5.44. Taylor Coyne (UNSW) recording the Rippon Lea drains. Photograph by Ana C. Lara Heyns (2021)

Custodianship becomes the motor for human beings to care for this knowledge, which we hope will enable and strengthen relationships of Care and eventually change our western conceptions of humans in Country towards one of the humans *as* Country.[61]

Hidden Rippon Lea allows its visitors to explore by walking around the gardens and the underground water system. By using their smartphones, the visitors are advised to hear the sonic landscape that was created by David Chesworth and Sonia Leber with recordings made on-site and contributions by Taylor Coyne. The sonic landscape changes on a vertical axis, showcasing the sounds of birds in the canopy, the urban environments, the lake, and finally, the underwater landscape and the pipes (see Figure 5.45). Understanding that knowledge of Country can be learnt through listening well, observing the connections closely, contemplating and reflecting, if visitors linger enough time in one of the vertical segments, storytelling and yarns with N'arwee't Carolyn Briggs can be heard.

[61] Bawaka Country et al., "Caring as Country: Towards an Ontology of Co-Becoming in Natural Resource Management," Asia Pacific Viewpoint 54, no. 2 (August 2013): 185–97

In addition to the sonic landscape, visitors can also visualise the underground water pipes in an Augmented Reality (AR) abstraction (as seen in Figure 5.46). The app and AR technology was developed by Oscar Raby,[62] with whom I worked closely to develop a narrative for both App and Website. The work with Oscar Raby was enriched by Marilu Melo Zurita,[63] Laura Harper,[64] Xavier Ho,[65] and Taylor Coyne.

Brainstorm sessions were developed to finetune the narrative of this experience, in which Marilu Melo Zurita, Oscar Raby and I acknowledged our positions as Latin-Americans as a third space. Crafting the conceptual narrative of the experience from this space of alterity – we thought– would allow for users of any cultural background to relate to the space and the yarns of N'arwee't Carolyn Briggs.

It was important for us Latin Americans that, as non-Australian citizens, not Indigenous Australians, to develop relationships with this land we now call home. Thinking about this project through a relational approach, we aimed to enable spaces for other third identities to care for Country, which perhaps could also influence the relationships non-Indigenous Australians have with Country.

Aunty Carolyn, Laura, Oscar, and I are back in Rippon Lea, it's a sunny day. What a wonderful space to do fieldwork. But even better, to discuss it with Aunty Carolyn and learn from her point of view how colonialism has displaced the natural and chaotic features that characterised her Country. She sits down and listens carefully to the soundscape and smiles. I see her moving the smartphone vertically and horizontally, amused by the abstract pipes that come into view. No one else has seen this version of the app; today, we are testing it.

It's funny, isn't it? To have to use earphones to hear better a soundscape that is already there. But it is not, since people do not normally stay quiet and contemplate a landscape for long enough to recognise the sounds of the breeze and the different birds. How crazy is it to depend on technology to show others how to deeply see and deeply listen to what is just in front of their eyes? The pipe system is something visitors can't physically see; Oscar designed the abstracted versions so that people would have to use their imagination to fill in the aspect of the system itself. You can only see liquid effects where the pipes should be. Aunty Carolyn's stories are also the knowledge that one cannot access easily and, more importantly, are the knowledge that has been repressed since colonisation.

[62] VR Film Maker and Director of VRTOV Virtual reality Studio, also a PhD Candidate at Monash University.

[63] Senior lecturer in Human geography at UNSW, and fellow Mexican anthropologist.

[64] Architect and lecturer at Monash University, also my supervisor.

[65] Interaction designer and creative software researcher at Monash University.

For an everyday visitor, the connections between the colonial urban interventions in the landscape, the urban ecologies and the Indigenous knowledges are not evident, if not even thought of. If you look around the Caufield suburb, you wouldn't even imagine there is a creek that sometimes roars like a strong ephemeral river rushing below its streets. Even the residents seem to forget the connections between storms and their flooded streets, or they see it as an infrastructure failure, not what I now realise is water memory.

I think now, months after we workshopped the narrative for Hidden Rippon Lea, that perhaps technologies such as augmented reality and recorded soundscapes are the vehicle to bring into view and increase the volume of stories and knowledges that have been forgotten, repressed, displaced, and erased. Technologies do not crash against old memories. Instead, they bring them back into our life. When we thought about us, uninvited guests in Aunty Carolyn's' Country, conceiving the narrative for this application, we thought of using Indigenous methods to activate relational acts so that the everyday visitor would start to see the landscape through relational eyes.

The visitors will not know they're practising relational methods by walking, exploring, deep listening, and deep observing. We hoped that with this experience, we could spark some interest to continue reflecting on their relationships with this land, perhaps even nourishing these relationships so that they could make space for Care.

Figure 5.45. Augmented Reality of the pipes using Hidden Rippon Lea AR App.
Photograph by Oscar Raby, (2022).

Figure 5.46. N'arwee't Carolyn Briggs experiencing the app hearing the sonic landscapes and her stories.
Photographed by Oscar Raby (2021).

Summary

Through a series of experimental iterations of a methodology that started with a traditional approach to research to develop a relational design of research, this chapter describes in detail the development from data analysis to the relational approach. The core study, Rippon Lea Estate, was thoroughly explored through ethnohistorical and GIS mapping and traditional western pathways to understand the political, social, and cultural implications of the European settlement and the urbanisation of Melbourne and its waterways. However, the development of the Hidden Rippon Lea Augmented Reality app and online version allowed me to test relational methods and see how a relational design can be explored in practical outcomes. Creating a relational design has been my way to understand my position in Country, and how I can move forward in my discipline and methods.

Hidden Rippon Lea was developed respectfully on the understanding that design is ancestral and alive in Country. As Uncle Charles Moran, Uncle Greg Harrington, and Norm Sheehan[66] explain, "Respectful Design seeks to identify the knowledgeable practices written into Country, engaging with learning environments and reactivating the cultures of repair." Being able to relate to Country also enables other actions that allow us to connect and understand ecological knowledge and perhaps enable relations of affection with these drained, shadowed rivers.

[66] Moran, Harrington, and Sheehan, "On Country Learning," 76.

Chapter 6. Pathways to relational thinking: A course design approach

Introduction

The Rippon Lea case study was an interesting way to acknowledge the water infrastructure in the underground, a network of pipes that once were creeks and rivers in the pre-colonial landscape. In the process of urbanisation, the tangible and intangible values of these waterways were lost; they have been converted into stormwater pipes, losing their creek identity to become a nuisance of failed infrastructure that leads to flooding.[1] Curiously enough, the Rippon Lea drainage system is a localised space that has proliferated in its own waterscape, and with virtual experiences such as Hidden Rippon Lea, one can unearth the piped waterway that is so important to the ecology of the area.

[1] Matthew Gandy (2014) suggests that relations of humans with water infrastructure are normally invisible except in instances of failure, for example, flooding, or hazards. See Introduction, p. 6 of The Fabric of Urban Space. This invisibility has somehow denied a relationship with the drained creeks, a vertical shadowing of water as McLean et al (2018) suggest as discussed in Chapter 3.

Thinking on a larger scale, Melbourne's geomorphology and deep history have shown the changing landscape conditions that have displaced water through different design and planning interventions in the city; some of them respond to the contemporary planning approaches that have gained momentum globally, such as water sensitive urban design, urban greening, and rewilding. Despite these approaches being used in Melbourne, water memory keeps surfacing, inviting us to reconsider our human and more-than-human relations.

In this chapter, I describe the learnings and reflections through yarns with N'arwee't Carolyn Briggs, where we discussed water memory in the city. We discuss how Indigenous Knowledge can influence planning approaches to water management and what ethical regulations should be considered. Following this, I describe how these yarns informed my design in a series of Country-connected design courses. Throughout the course of the PhD, opportunities arose to test this framework in architectural studios, where students would explore my methods and eventually create their own relational approaches.

This chapter analyses some of the planning and design approaches globally used to incorporate water into planning methodologies, unfolding what gaps can be complemented with the Indigenous worldview. The chapter also describes the educational methodologies that I developed to test and explore relational thinking, which explores ways in which a Country-connected course can add to decolonising and indigenising practice in the field of architecture.

6.1 Country-connected design: yarns and lessons with N'arwee't Carolyn Briggs

Aunty Carolyn and I yarn and discuss our languages. I suggest to her how I understand what happened to the creeks and rivers that now rest under the concrete, some constantly battling with the pollution of stormwater drainage that has been blended with the waters. I sketch some sections to show the changes in Caulfield regarding water management in the last century. From the draining and filling of the swamps (Figure 6.1) to the creation of flooding management and tactics of water-sensitive urban design (Figure 6.2). We discuss the lack of Indigenous water knowledge in the current urban strategies, and we ask ourselves, how could these approaches be influenced by Country? How could the water sensitive urban design (WSUD) measures expand to nourish our relationships with Country?

1800s EARLY SETTLEMENT
WESTERN MODERN PRACTICES

FILLING

SWAMP

FLOODING

DRAINING

• NEED FOR ROADS
• LAND SPECULATION
• SWAMPS as HAZARDS
• DISPLACEMENT, DRAINING, FILLING & PIPING OF WATERWAYS

→ FLOODING
→ POLLUTING THE BAY
→ DISLOCATION OF BIODIVERSITY
→ SHADOWING OF WATER
→ SHADOWING OF LOCAL INDIGENOUS KNOWLEDGE AND PEOPLE

DISRUPTION
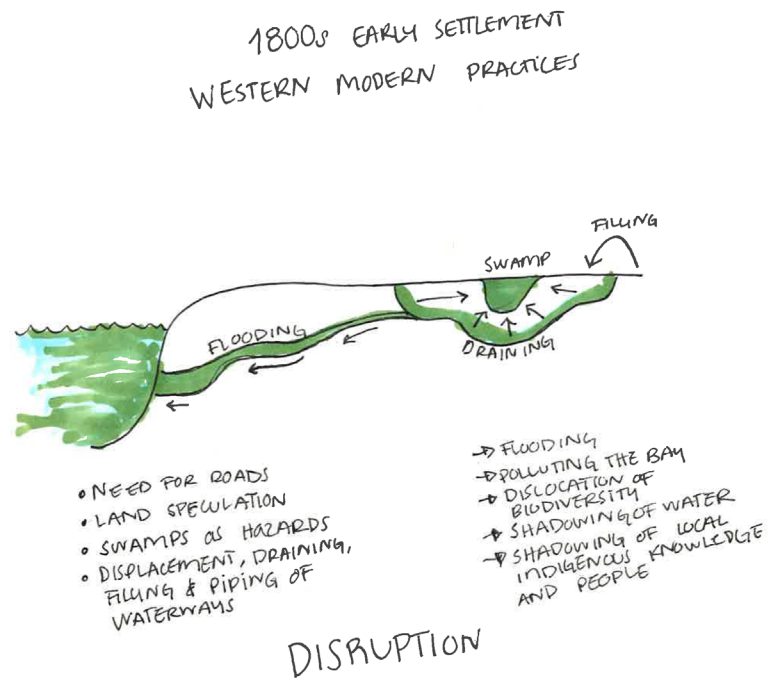
**Figure 6.1. Western modern practices of water in the 1800s in Caulfield.
Sketching with N'arwee't Carolyn Briggs. Produced by Ana C. Lara Heyns (2022).**

1970's→CONTEMPORARY APPROACHES
FOR WATER IN ARCHITECTURE & DESIGN

Man-made wetlands

CAPTURE

FLOOD MITIGATION

Filtration

• CLIMATE CHANGE
• SEA LEVEL RISE
• DROUGHTS
• FLOODING

→ LOW IMPACT APPROACHES:
→ GREEN INFRASTRUCTURE
→ WSUD MEASURES
→ UNDERSTANDING OF WATER CYCLES
→ RESTORING BIODIVERSITY
→ ADAPTATION & MITIGATION

RECONCILIATION & REPAIR
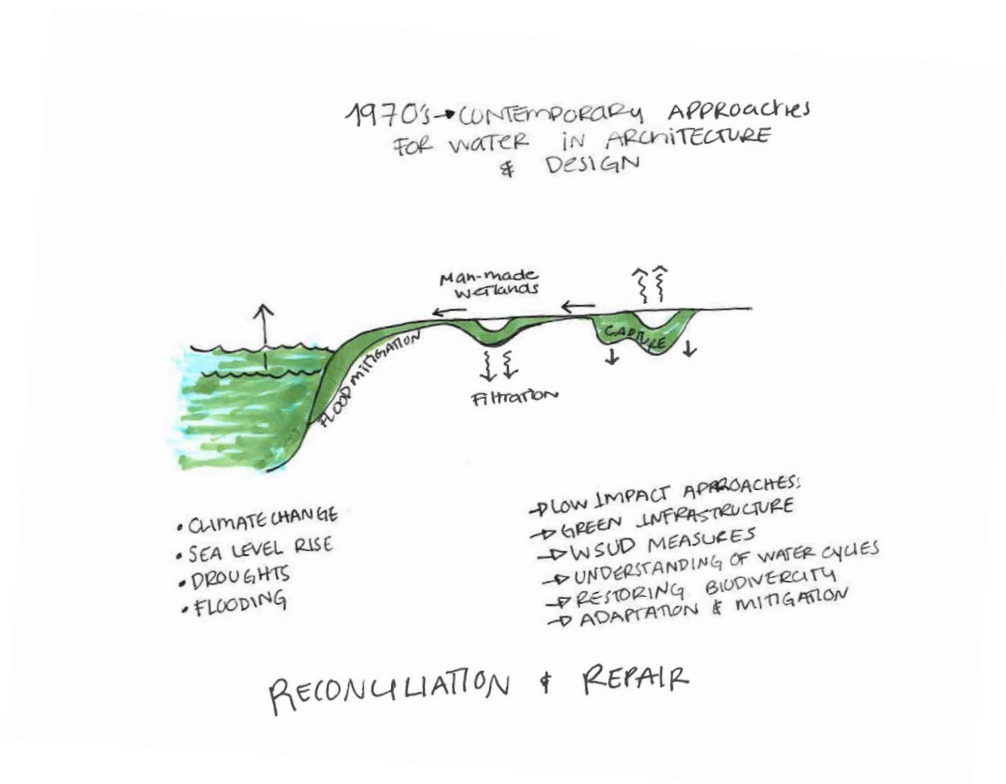
**Figure 6.2. Contemporary practices of water in urban design.
Sketching with N'arwee't Carolyn Briggs. Produced by Ana C. Lara Heyns (2022).**

We conclude that if planners and architects are to privilege Country, they need to think about having both a relational and transactional relationship with Country and rethink the extraction of resources regardless of their materiality or immateriality: rock, soil, tree, water, knowledge, or heritage. When Aunty Carolyn talks about a transactional relationship, she means a relationship when the extraction of a resource benefits the community, but in return, the community should repay with care, and must give back. This symbiotic transactionality, in the Indigenous worldview, creates a balance in which we are all responsible for our well-being. Tequio, as I explained before, can be an example of this relationship. It doesn't necessarily refer to the neoliberal consumption of resources on earth, which have been decimated to extractivisim (see glossary), and it doesn't oppose a relational balance, but in fact, contributes to this symbiosis.

Having a relational balance and commitment can change the western view of Country as a commercial construct to one where Country is an agent itself and where our relationships with Country would have commercial, cultural, economic, social and political dimensions, transactionally and relationally. If we could see these dimensions, Country becomes a relational entity that we all must care for and nourish.

Designing with Country means caring for Country throughout time and space, according to Country's time. N'arweet reflects on the life of the eels, or the Mutton Birds, and how their life cycle is forever circular.[2] I ask Aunty Carolyn, while we are sketching time, what would a political term (four years) be in Country's time? Aunty Carolyn smiles and says, "about 4 seconds!" How about a hundred years? "Two hours of a day in our time." We wonder if the trends in design such as the WSUD have been around for a few decades, how long will it take for a design to become relational, to understand the time of Country, the ways of water, and the agency of knowledge?

[2] In fact, N'arwee't Carolyn Briggs has greatly reflected upon cycles of life throughout her writings in The Journey Cycles of the Boon Wurrung (p. 2), where she shares the stories of her Country through the seasons. She mentions that by retelling the stories of her Country, she reconnects to the stories of her people. In this example, we can understand the circularity of storytelling, connecting past, present and future, and connecting heritage and knowledge.

"FAST" APPROACHES TO URBAN

4 yrs / = 4 sec / 1hr in IKT

50-100 yrs = 2hrs / day IN IKT

LOW IMPACT APPROACHES

EELS & MUTTON BIRDS LIFECYCLES

IKT = Indigenous knowledge Time
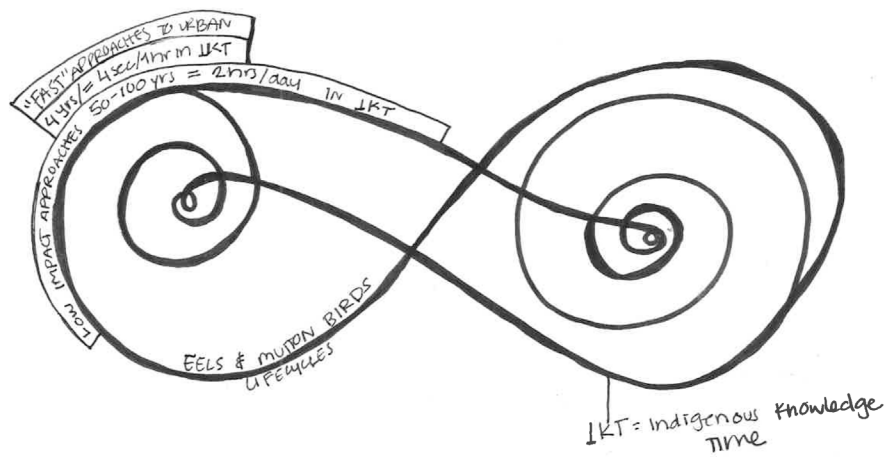
Figure 6.3. Diagram of Time of Country through Traditional Knowledge. Sketching with N'arwee't Carolyn Briggs. Produces by Ana C. Lara Heyns (2022).

N'arweet Carolyn Briggs suggests that a design should take into consideration the *Dhumbali* commitments. In Boon Wurrung's ways of knowing, Dhumbali commitments see the environment as interdependent with humans, humans as Country. The wellness of the community thrives on the ecological systems and how we take care of them. When one relationship is not nourished, the balance breaks, as seen in The Time of Chaos story in Chapter 2.

Aunty Carolyn tells us that the laws of Country are three, which are based on the commitments to yourself and commitment to the Country you are on:

Obey the laws of Bundjil
Respect and do not harm the Children of Bundjil
Do not harm the lands and waters.

Aunty Carolyn calls these three commitments Dhumbali, the responsibilities we have as part of Country to nourish and care for Country. As we chat about these commitments and responsibilities, I tell her about the civic obligations in traditional cultures in Mexico, which we call Tequio. The Tequio is the collective work a community does without payment for the betterment of the community. In Tepoztlán, this could be restoring the communal boundaries or the tecorrales, a rock-piled wall that helps separate the lands but also keeps the animals from crossing into houses or even holding back water and landslides. It could also be cleaning the roads or building something for the barrio. Both Tequio and Dhumbali are based on the premise of respecting the community as united and diverse, respecting the connection to Country by honouring our ancestors and their traditions, respecting and being responsible for the knowledge our ancestors have passed on, passing it down to newer generations, and moving through Country, respecting its seasons for everyone's wellbeing.

The responsibility of learning the knowledge and passing it down in the Indigenous worldview involves more than merely translating and sharing the knowledge with others; the responsibility requires a level of commitment to take care of that knowledge, of becoming a custodian of the knowledge. In this way, western notions of owning knowledge differ from that

of being a custodian. The way we learn this responsibility is also part of the caring relationship we have with the content. Laura Brearly invites us to listen with a sense of responsibility in her book Gulpa Ngawal;[3] Judy Atkinson expands on this notion in her work Trauma Trails, Recreating Songlines.[4] Knowledge is a purposeful action that is informed by the wisdom and responsibility that comes with knowledge.

At the beginning of this thesis, I mentioned a series of considerations that led me to my research question and aims (see Chapter 1). These considerations guided the research to explore methods under specific research premises to decolonise our thinking, which was discussed with Aunty Carolyn. These premises were the base of my own responsibility to learn from Aunty Carolyn's knowledge:

Learn to be less controlling and make space to learn the ways. Research by asking less and making space for more contemplation and reflection.

These guiding research premises allows us to make sense of the world on our own, to create relationality with the whole world, which will lead to knowledge. To do research within an Indigenous paradigm requires us to create relationships of care and responsibility, of accountability to and for ourselves and to and for Country. It requires us to know where we came from and what is our agency.

Shawn Wilson[5] says that to research from an Indigenous paradigm, we need to respect and privilege relationality. This requires us to consider the neutrality researchers take to be objective in their research. He states that it's not possible to be accountable for your relationships if you try to be objective. Being objective from a research perspective tends to break down the data to thoroughly examine it. However, when we are researching from an Indigenous paradigm, we need to understand the data as a whole and the interconnectedness that all the parts have in their relationships. To understand the data, we don't need to break it down into pieces, we need to build a relationship with the data and then understand their relationality. In this way, every part of the research holds its truth, and respecting that truth makes us relationally accountable.

[3] Laura Brearly, Gulpa Ngawal Indigenous Deep Listening (Melbourne: RMIT University, 2010).

[4] Judy Atkinson, "Chapter One: Dadirri: Listening to One Another," in Trauma Trails, Recreating Song Lines (North Melbourne: Spinifex Press, 2002), 16.

[5] Shawn Stanley Wilson, "Research as Ceremony: Articulating an Indigenous Research Paradigm," (Monash University, 2004).

There are a series of implications in being held relationally accountable; the first and foremost is to understand our position as human beings in the research and context. This requires us not to compromise our personal integrity. To avoid this, we must contextualise ourselves in all the parts of the research, which is why my stories are embedded throughout the research. At the beginning of the thesis, I presented myself and share some stories that have made me who I am, not only because I wanted to make a point, but because I wanted to keep my integrity to respect my ancestors and my Ways of Knowing.

Karen Martin[6] states the different contexts of being held accountable: to your integrity as a member of your community, to the community you are researching with, and to the institutions that mediate the share of this knowledge; for example, the University, the ethics committee, and my supervisors. In making this context known and the accountabilities stated, I aim to respect relational accountability in a far more rigorous way than that of the formal approval of institutional ethics. I draw from Martin's research regulations to put forward mine:

Respect Country
- Care for Country: land, sky, underground, water, animals, plants, and people.
- Do not extract part of Country from its place.

Respect Country Laws:
- Honour the laws of Country, and respect peoples' customs and culture.
- Keep my word.

Respect the people:
- Ask permission from Elders to work and research in their Ancestral lands.
- Keep Elders informed on what the project is doing and how it's being done.
- Accept Elders' teachings and comments on how the design could be improved.
- Accept Elders' time and energy and do not force relationships.
- Commit to relationships that are built on trust.
- Give priority to the well-being of Country and Elders.
- Build genuine relationships where equity is privileged.

[6] Karen Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers (Teneriffe, Queensland: Post Pressed, 2008).

Respect the knowledge:

- Share what I know and how I know to help others respect Country and the people, wherever I am.
- Understand and act upon the responsibility of learning, informed by the wisdom of that knowledge.

Respect my integrity:

- Critically reflect on my practice and agency.
- Respect and elevate my own cultural ancestry.

[7] Norman W. Sheehan, "Indigenous Knowledge and Respectful Design: An Evidence-Based Approach," Design Issues 27, no. 4 (October 2011): 68–80.

With the above-mentioned considerations in mind, I suggest that planning policies, design interventions, architectural proposals, and ethnographic research should consider their own accountabilities and critically reflect on their practice and understandings of the world to inform their system of thinking. By informing these disciplines through relationality practices, I hope to share new configurations of working with the built environment that can contribute to the ecology of the landscape as well as the cultural relationships with Country.

6.2 Relationality gaps in dominant approaches in design and architecture

The opportunity to develop a course based on relational frameworks allowed for methodologies of relatedness to be explored by students using design as a tool. Norman Sheehan[7] mentions that design fits well with relational frameworks because it is a tool that can create a deeper situational awareness where innovation and knowledge can flourish. Relationality frameworks invite us to nourish relationships with everything that is Country. This research proposes how relational and respectful design can complement design approaches to water management of the city.

The design studios were co-taught with different architects and environmental managers that incorporated notions of some of the dominant approaches in planning and architecture, including WSUD, rewilding, greening and more-than-human cities.

a) Water Sensitive Urban Design (WSUD)

Water Sensitive Urban Design attempts to improve the quality of water, reduce and mitigate flooding, and plan for sea-level rise. According to Coyne et al.,[8] the aim of WSUD is to improve urban environments through systems that can capture, filter, re-use, store and maximise the use of water, which eventually can help reduce the degradation of urban environments. WSUD can be implemented at any scale, and it has been proven to reduce stormwater from entering waterways, prevent floods, improve stormwater quality that can be used to irrigate green spaces, and improve biodiversity as a result of better water quality in gardens and wetlands, as well as decreasing urban heat island effect.[9]

However, WSUD depends on the efforts of multiple stakeholders to become relational. Firstly, the different kinds of water should be considered, and their agency and identity should be privileged (creeks, runoff stormwater, swamps). This notion would intercede in legal frameworks within which rivers, seas or swamps can be given legal personality. As discussed in Chapter 3, the agency of water would require important reconfiguration of the ways in which we value water culturally, economically, and politically.

Secondly, WSUD has yet to incorporate local knowledge of water and land. This would involve learning and respecting Indigenous knowledge of water and local lore, designing for the community and its continuous stories. Designing according to the Time of Country requires a great understanding of deep time, history, and geology. Therefore, a multidisciplinary approach to water management through Indigenous ontologies is required for effective water-sensitive and relational design. Water-sensitive measures would have to adapt to local areas instead of global trends. Caring would effectively change our ideas of resilience, since resilience requires an effect from one entity to another – hence the capacity to recover. Caring would become a symbiotic effect upon the unity between humans and more-than-human worlds. Resilience and adaptation are concepts that would need to be redressed through the understanding of the Indigenous Country management and care.

b) Rewilding

If care can go beyond resilience, then restoration approaches would also have to be reconsidered. An example of this is the movement of rewilding. The rewilding movement seeks to restore integrity to environments that have been decimated by human infrastructure. Some of the conservation activities

[8] Taylor Coyne, Maria de Lourdes Melo Zurita, David Reid, and Veljko Prodanovic. "Culturally Inclusive Water Urban Design: A Critical History of Hydrosocial Infrastructures in Southern Sydney, Australia," Blue-Green Systems 2, no. 1 (2020): 364–82.

[9] City of Melbourne. "What Is Water Sensitive Urban Design?" Urban Water (blog), accessed February 24, 2020. http://urbanwater.melbourne.vic.gov.au/melbournes-water-story/water-sensitive-urban-design-wsud/.

[10] Wendy Steele, Planning Wild Cities: Human-Nature Relationships in the Urban Age, Routledge Research in Sustainable Urbanism (Oxon & New York: Taylor & Francis Group, 2020), 85.

within rewilding include the re-introduction of species and the reconstruction of ecosystems.[10] Rewilding offers a pathway in which humans "allow" nature to take over and take care of itself. Even though the efforts of conservation and restoration of natural spaces are applauded, the notion of human agency "stepping back" becomes a dichotomy between nature and humans; this contradicts our thinking of humans as Country. Rewilding also predisposes that all human activity is detrimental to natural spaces, whereas Indigenous Australians have been able to live and create ways in which to restore spaces with human intervention to keep natural spaces healthy. An example of this is the alliance of fire and Indigenous Australians;[11] as Bill Gammage[12] writes, "fire was planned. Guided by experts, ancestors and neighbours, elders would discuss what, when and how to burn." Pascoe states that fire would provide habitable land to farm and live on, promoting the regeneration of plants that would proliferate after a fire. But casual burning was a ceremonial affair, as it depended on the intimate relationship between communities, land, and lore.

c) Greening

Greening in Australia has focused on the benefits it creates for the citizens, such as heat reduction through canopy cover, increased exposure to ecologies, and the economic benefits of ecosystem service provision. Urban Greening and Green Infrastructure (see glossary) consider the inclusion of nature in the building and planning of cities to promote a healthier green city. However, many scholars have discussed at length how greening is often detached from the local histories, political economies, power relations and social processes of the city.[13] Urban planners Libby Porter, Julia Hurst, and Tina Grandinetti[14] argue that the idea behind urban greening and green infrastructure positions nature as 'raw' and 'wild' resources 'outside' human society. Whereas the city is lacking nature (raw, and wild), urban greening offers a solution to increase access to a manageable nature in the city for the service of human society. The authors state that the greening approaches often ignore Indigenous people and knowledges, as they conceive nature as separate to our human-centric lives of the city, contradicting Indigenous ontologies of humans as Country.

e) More than human cities

There is a growing interest in geography that decentres the concept of the human world as autonomous of the natural world. This movement conceptualises the urban as a more-than-human space where the relations of humans and non-humans are intimately entangled. Some authors suggest that this model reconfigures cities as a hybrid, networked, and entangled system instead of the oppositional and binary categorisations of modernity.[15]

[11] A deep relationship with fire allowed the Indigenous people across Australia to maintain, regenerate and benefit from the land, but it required a strong relationship to understand the fire behaviour, its speed and intensity, to know what kind of fire would be needed depending on what was the purpose and why. These aspects would be considered by Elders and experts among the communities in a ceremonial manner. See Bill Gammage and Bruce Pascoe, Country: Future Fire, Future Farming., ed. Margo Neale, First Knowledges (Port Melbourne, Victoria: Thames & Hudson Australia Pty Ltd, 2021).

[12] Bill Gammage, "Holding the Spark," in Country: Future Fire, Future Farming, edited by Margo Neale First Knowledges (Port Melbourne, Victoria: Thames & Hudson Australia, 2021), 107.

[13] Benjamin Cooke shares a critical reading of the politics of greening in Australia and sheds a light in some of the issues that this approach has caused. From the displacing of low-income housing through green gentrification disguised as green space projects, to the lack of First Nation engagement and cultural sensitivities. Read more: Benjamin Cooke, "The Politics of Urban Greening: An Introduction," Australian Geographer 51, no. 2 (April 2, 2020): 137–53.

[14] Libby Porter, Julia Hurst, and Tina Grandinetti, "The Politics of Greening Unceded Lands in the Settler City," Australian Geographer 51, no. 2 (April 2, 2020): 221–38.

[15] Wendy Steele, Ilan Wiesel, and Cecily Maller, "More-than-Human Cities: Where the Wild Things Are," Geoforum 106 (November 2019): 411–15.

Bruno Latour explains this with his concept of the Great Divides, where the 'West' divides itself from the 'Rest,' this sees Western sciences characterised by dividing nature from society and non-western societies, labelled as 'premodern' by Latour, as unable to separate knowledge from society and that from nature.[16]

An analysis of the more-than-human cities requires challenging dominant ways of knowing and understanding our world,[17] yet, according to Libby Porter, Julia Hurst, and Tina Grandinetti,[18] a common thread in more-than-human geography is that it generalises the discourse of 'discovery' which holds that non-human beings are sentient and agentic,[19] excluding the consideration of the traditional knowledge passed down generation to generation by Indigenous people. An oversight which this thesis addresses in detail. Although the notion of more-than-human worlds allows for a pathway towards relatedness, if this notion is conceived as just that, it could potentially lose the multidimensionality of relations attributed to knowledge and lore.

6.3 A relational approach to architecture and design studios

The analysis of planning and design approaches to water management in the city, discussed above, pointed out the need for relational practices that could expand our knowledge of water management in the city through the recognition of water agency and memory. Although some great efforts have been made to challenge the normative design approaches to water in cities,[20] the western 'gaze' over Country continues to reproduce its binary categorisation of the world through its settler-colonial psyche. Such efforts have yet to centre Indigenous Knowledge as a pillar for practices of care of waterways in the city. Although some initial interrogation of this gaze is brought forward by Cooke, Landau-Ward and Rickards,[21] Porter, Hurst, and Grandinetti,[22] Coyne, Melo Zurita, Reid, and Prodanovic,[23] and others, my interest was to experience firsthand what planning codes and commercial and housing developments in Melbourne would look like if relationships with forgotten and displaced waterways were to be privileged through relationality focusing on cultural diversity. As an anthropologist and not a designer, I wanted to explore how architecture, design and planning would be influenced by a relational approach.

[16] Bruno Latour, We Have Never Been Modern (Cambridge, Mass.: Harvard University Press, 1993).

[17] Cecily Maller, Healthy Urban Environments. More-than-Human Theories, Routledge Studies in Environment and Health (Oxon & New York: Routledge, 2018).

[18] These authors examine the engagement of other urban political ecology approaches with Indigenous sovereignties. Read more: Porter, Hurst, and Grandinetti, "The Politics of Greening Unceded Lands in the Settler City."

[19] For example, French thinker Bruno Latour argues that the distinction between object and subject, Nature and Society, is irrelevant, he instead suggested the idea of nonhuman to widen the scope of what is an object. According to Latour, nonhumans include animals, divinities, technologies, and objects, that can be participants in social life. See Albena Yaneva, Latour for Architects: Thinkers for Architects, 1st ed. (London: Routledge, 2022).

[20] In the article "Culturally Inclusive Water Urban Design: A Critical History of Hydrosocial Infrastructures in Southern Sydney," Taylor et al. propose Culturally Inclusive Water Urban Design (CIWUD), which recognises rivers as more-than-human agents that should be part of the processes that affect them.

[21] Benjamin Cooke, Ani Landau-Ward, and Lauren Rickards, "Urban Greening, Property and More-than-Human Commoning," Australian Geographer 51, no. 2 (2020): 169–88.

[22] Porter, Hurst, and Grandinetti, "The Politics of Greening Unceded Lands in the Settler City."

The multidisciplinary approach where my research sits allowed me to test relational processes in design through a course where architecture students are challenged to develop their Country-connected projects. Using design and architecture as vehicles to discuss relational approaches, as Norman Sheehan has suggested,[24] a series of studios were taught in 2020, 2021 and 2022, in which relational methods built on the current planning and architecture approaches to water-sensitive design and waterscape management. Although none of the studios was part of the PhD research per se, they provided opportunities for me to design a curriculum based on what I've learnt in the PhD project. They also provided opportunities for reflection on how relationality could be experienced through design, which forms part of my PhD.

The first studio, called Flow Interventions, was co-taught with Gyongyver Engloner in semester 2 of 2020 for third-year level students in the Bachelor of Architecture degree. This studio sought to analyse the built and natural environments in Elsternwick with the aim of developing strategies that communicate the cultural and historical transformations the area has undergone since the colonial settlement in Melbourne.

The site of focus was within Rippon Lea Estate's current and original boundaries, where students visualised water systems according to the natural flow of groundwater and the human-made systems in Rippon Lea, which have been working since colonial times. Students were encouraged to consider the material and tangible qualities of the land, the history of development in the area, and the local Indigenous knowledge about the land to better understand the movement of water. As a studio co-taught by an architect and an anthropologist, students incorporated concepts and methodologies of ethnography while using GIS to map the landscape so as to understand the complex urban environment and waterways to inform their projects. Gyongyver Engloner,[25] whose PhD work investigated catchment-scale thinking as an approach to exploring the integration of water landscape in urban infill areas, shared her knowledge to encourage students to explore architectural strategies that work with land qualities. Furthermore, the proposals had to consider conservation guidelines to address the National Trust's interests in visualising the underground water system. Although the students' work produced in this studio is not part of the thesis itself, Flow Interventions studio gave me the freedom to test and explore mapping water flows in architectural strategies. The students engaged with the drained water flows surrounding Rippon Lea through the Water Sensitive Urban Design (WSUD) approach.

23 Coyne et. al, "Culturally Inclusive Water Urban Design."

24 The use of design as a mode of process and discussion has been explored in Chapter 2.

25 Gyongyver Engloner, "Water Imprint – Catchment Thinking as a New Approach to Rethink Urban Densification Strategies" (Monash University, 2020), https://bridges. monash.edu/articles/ thesis/Water_Imprint_-_ Catchment_thinking_as_a_ new_approach_to_rethink_ urban_densification_ strategies/11728989.

The Flow Interventions studio researched the deep history of the area, understanding the urban interventions that the colonial period created. The need for roads, the notions of wetlands and swamps as a health hazard, and the control over land and the people that traditionally inhabited it were some of the impacts the students needed to address through their speculations. These speculations focused on WSUD's strategies to mitigate and adapt to sea-level rise and flooding, yet the understanding of the relational ways of Country was yet to be addressed. A clear challenge in this sense was to develop a way in which students would feel safe in addressing issues of inclusivity and Indigenous knowledge. Although it was not the aim of the studio, it had to be a consideration for studios to come.

Immersive methods such as tracing drains informed a second architectural studio called Undrained, co-taught with Mark Romei and Nicolas Guerra Tao, both PhD colleagues at Monash University. The studio, taught in year 3 of the bachelor's in architecture, explored ways to rethink the connections of Merri Creek with the urban experience of the northern suburbs through the drained waterways that feed into Merri Creek. This studio informed this research to actively explore further speculations through a third studio called Unearthing Waterways.

The students in Undrained followed some of the exercises previously explored through my research and the Flow Interventions Studio, such as UWSD and the ethnohistoric approach to mapping. The aim of exploring students' speculations regarding water memory through walking and mapping was to investigate what the urban fabric would look like when considering the drains and rivers as active bodies that travel above and below. Students were encouraged to trace these rivers and start to think relationally about waterways. In my later reflections about this studio, I felt that the course couldn't provide pathways into relational thinking, as the core of the course since the studio focused on the use of the space and programs for the different demographics that inhabit the area surrounding Merri Creek. The course needed to address positionality, deep history, and self-awareness of water to discern how students could position themselves on Indigenous land, how to avoid falling into tokenistic approaches, and how to identify their own positions within the design in the Country's system of relatedness.

6.4 Unearthing relatedness: a relational framework in design studios

The aftermath of the previous architectural design studios was a third studio, developed with Dr Laura Harper in 2022 for Master of Architecture students. My aim in this course was to challenge the students to develop their own relational approach to design. We called the studio Unearthing Waterways, as the goal was to unearth waterways that have been displaced, marginalised, erased, and covered up by the urban processes of Melbourne and human, infrastructural interventions. This was a great opportunity for me to analyse how others could rethink their practice and thinking by delving into more-than-human relationships and how they would influence architecture and design.

The students selected different areas from St Kilda to Beaumaris in the southeast of Melbourne, in which streams had been drained and piped, swamps filled, and rockwells forgotten. They were encouraged to design for and with water as an agent. To achieve this, they had to develop their own relationships with water, acknowledging their positions and backgrounds. Through mapping, tracing waterways and researching archival documents and historical accounts, the students created their own relational design to incorporate their relationships with more than human entities, including the geomorphological context. Because the studio was centred around water, students learnt to design with a water-sensitive approach to developing a series of projects, including residential typologies, commercial developments, and public spaces.

Students were encouraged to rethink how their own agency as architects and how their relationships would play a role in their designs. To develop their relationships with their site of study as well as reflect on water, students did multiple walks in their site and in other areas to reflect upon the ways in which they could unearth waterways in their projects. For some students, by combining walking, tracking, and mapping, they were able to localise forgotten waterways such as rockwells and speculate on possible futures where the traditional knowledge of water care in these places could be re-envisioned.

The studio challenged students to think relationally through different tasks (see Table 6.1) that invited them to reflect and explore ways of understanding the land, water, and knowledge to incorporate them into their speculations. Some of the tasks included different creative approaches different to design, from story development to collaborative drawing. Other tasks required students

to reflect and develop diagrams, drawings and designs that would showcase their own positionality, relationality, and accountability. Principles that I chose to foreground as part of the relational design course are set out in Table 6.1.

	CONCEPT	METHOD	GOAL
TASK 1	Relationality	Exquisite Corpse (Written and drawn)	To understand how knowledge is connected through storytelling.
TASK 2	Decolonising the site	Historical Mapping	To understand the political and socio-economic implications of the colonial settlement in their areas of study.
TASK 3	Deep Observing	Walking and tracing water	To engage with Indigenous Ways of Knowing and relating to Country.
TASK 4	Water relationships	Diagramming and sketching	To identify their own positions within their relationships with water, acknowledge them and relate to ways in which other people could also engage with water in their designs.
TASK 5	Positionality	Undergorund Entry	To explore through design how their positionality and cultural experiences could enable spaces for cultural diversity, more-than-humans, and water to come together.
TASK 6	Time of Country	Future Speculations	To incorporate future speculations based on the Time of Country discussions with N'arwee't Carolyn Briggs on how the flora and fauna, climate chnage and the different human programs would interact with the site.
TASK 7	Cultural Protocols	Research and development of personal ethical guidelines	To reflect on the ethical considerations of working in unceded lands and how architecture can have responsibility for Indigenous Knowledge.
TASK 8	Relational Accountability	Reflections	To reflect how design would be held responsible for Country and what would happen if not.

Table 6.1. Tasks, methods, and goals of unearthing relatedness. Produced by Ana C. Lara Heyns (2022).

First task: Relationality

To invite students to reflect on how everything is interconnected, the first task was to create an Exquisite Corpse in which they would create both a collaborative drawing and a story by taking turns in writing and drawing on a sheet of paper. Every time the student would add their collaboration, they would fold the previous collaboration so that the next participant wouldn't see it. The Exquisite Corpse game is widely known for its creative momentum in the 1920s when it was adopted by surrealist artists. The aim is to understand how different knowledge could be connected in a creative way. Each folding was also a way to rethink time in a story, a metaphorical mode of understanding deep history.

Although students were already aware of what the studio was about by the time this task was done, it was evident that their subconscious was already thinking about issues such as climate change, drains and pipes and other infrastructure, urban environments, trees, watercourses, human innovations, actions and thinking.

Using the exquisite cadaver as a mode of storytelling, (see Figures 6.3 and 6.4, in next page) this first task invited the students to think about how knowledge is created and how stories can inform our understanding of the world. The Exquisite Corpse helped them to understand how different knowledges can be connected, and through the reading or viewing of all its parts, it can show us a whole system of knowledge, as suggested by Wilson and Martin.[26] Even though it was a creative and fictional exercise, through its relations, students could start to understand the whole of the task and that how it was created was greater than each of their own collaborations.

[26] Shawn Wilson and Brian Martin explore how the Indigenous paradigm and worldview of relationality understand knowledge as a whole, in which all its parts (relationships, environments, ideas, concepts) are inseparable from one another. See Shawn Wilsons' Research as Ceremony, and Brian Martins' Methodology is Content.

As I walked through the campus I observed a lot of grasses that complement the short trees. The trees all appear not to cross above a certain height. ~~Tanned artificial~~

LEVELS & HEIGHT WERE THINGS I HAD NOT INITIALLY CONSIDERED WHEN OBSERVING WATER, BUT AS SOON AS THE PUDDLES & POOLS FORMED IN EACH HOLE, IN NEARLY EVERY ROCK WE OBSERVED, THAT WAS WHEN WE UNDERSTOOD THE MALLEBILITY OF SUCH A SUBSTANCE.

As I walk along the campus I've became more conscious of how abundantly present water is in our surrounding. From deliberate control of water through pipes, drainage to spontaneous accumulation of water through puddles, crevices in man-made structure, droplets on surfaces. Water is essential and a fundamental building-block to life.

Additionally, water acts as a fundamental corner-stone in other aspects of living, including supply chain, industrial, economical, social and cultural relations. Water connects the world together without difference as simple changes in design or politics can alter the flow of living.

Water is connected to many ecologies & biological needs of systems that live within nature. The systems of piping and drainage can be implemented in clever ways to address many factors of floods by drawing water back into its natural systems.

Areas affected by floods at the moment could greatly benefit from the aforementioned systems, areas such as QLD, NSW and certain areas of VIC. Though climate change is largely seen through rising temperatures and dryness, there is still anomalous wet weather to account for, such as La Niña.

As i ponder the vast change in my landscape, how can we grow and adapt to this situation? I wonder how we can better prepare for this drastic and unfamiliar environmental change.

And I went to my daughter and said: "Mia, we'll go through it, we'll save this planet."

Figure 6.4. Exquisite Corpse story.
Produced by master's in architecture, Monash University, (2022).

Figure 6.5. Exquisite Corpse drawing.
Produced by master's in architecture, Monash University, (2022).

Task 2: Historical mapping

Drawing from Rigney's'[27] invitation to understand the historical context in which Melbourne was created as a first step to decolonise our approach to research, students were required to engage with mapping as a tool for analysis of urban interventions. Using GIS to combine and overlay datasets with historical maps (as seen in Figure 6.5), students were able to see what the political and socio-economic implications of the colonial settlement of their areas of study were.

As I mentioned in Chapter 4, using mapping as a teaching method to make visible complex understandings of urban interventions through time, students were able to learn the chronological events that influenced the urban decision-making of their sites. Students focused on understanding what the infrastructural endeavours were that caused waterways to be displaced, drained, or piped, and mapping allowed that information to 'come into view.' The juxtaposition of historical maps with landscape datasets (examples of these datasets includes flooding, geology, contours, catchments, vegetation, and waterbodies, among many more) invited the students to delve into the contradictions of the 19th century urban development and the continuously overwhelmed natural landscape. While, unfortunately, there is little evidence of what the pre-colonial landscape looked like, students had to engage with ethnohistorical accounts found in oral histories and early settler diaries to explore how the waterscape in their area behaved further back in time, and what relationships the Indigenous populations had with the waterscape. An interesting example from one group of students was to map the Indigenous rockwells that enabled access to water in Beaumaris, which were forgotten and built over with the colonial settlement. This first step of research allowed these students to actively look for these rockwells, which were later located in space through walking explorations of the site as part of their next task (see Figure 6.6).

SCALE 1:25000

LEGEND

▬ BOUNDARIES (POSTCODE)	▬ REGISTERED ABORIGINAL PARTY (BUNURONG)
▬ PUBLIC TRANSPORT (BUS, TRAM)	▦ CULTURAL SENSITIVITY AREA
▬ RAILWAY LINE	◯ RAILWAY STATION
▬ ROAD NETWORK	▢ VICTORIAN HERITAGE REGISTER

Figure 6.6. Map of overlayed ethnohistorical maps.
Produced by master's in architecture students Madeleine Edwards, Ellen Mooney and Paaniz Hosseini, Monash University, (2022).

Super-imposed image from 1997 and present time.

'We noticed a change in the hardness under our feet. Beginning to find a gounding in our search to connect to this part of history. Covered in sand and erased like this didnt serve a life giving purpose. Connecting to the scape, we indentified the beach shrubs that where only placed on one portion of the beach front and in the image we where going off. Under these shrubs and limestone facade laid a water patch under neath an opening. AT last ... a well'
– LM (personal exprience)

A rock well, that was used by indegious people that own these lands.

15

Figure 6.7. Re-tracing historical accounts on a walk to look for the rockwells in the Beaumaris. Produced by master's in architecture student Lauren Meintjes, Monash University, (2022).

Task 3: Walking and tracing waterways

By thinking of walking as a tool for exploration, students followed piped waterways and displaced watercourses in their selected areas. The task involved creating a derive (unplanned journey, usually through an urban landscape, with drawings or photographs, registering the moments in which the displaced waterway could be seen in the contemporary experience of the city.

With the dérive exercise, based on my own exploration tracing rivers in Darebin, Banyule and Caufield, as described in Chapter 5, students were asked to walk the same watercourse throughout the duration of the studio and keep reflecting on their relationships within the land, as inspired by Indigenous writer Tony Birch. By walking multiple times on the same waterway, students could see the changes in seasons and wet and dry conditions.

Walking and tracing watercourses that are not visible above the ground required a thorough exploration of the landscape that had a direct or indirect relationship with water. Some students (as seen in the dérive in Figure 6.7) noticed cracks in the concrete where the water has been filtrating, the water trickling sounds they could hear in the outlet of the pipes, the kind of materials found on the streets, and the different housing typologies that surrounded their area. The walks worked as a vehicle for Indigenous methods to be explored; for example, deep listening to the sounds of water in the urban infrastructure or deep observing moments where water has impacted the urban landscape.

The continuous walks throughout the term were proposed intentionally so that students would start to develop relationships with the paths in which the watercourses ran. Learning and appreciating different tangible and intangible objects and emotions they perceived and approached in their different walks made the water walks a ritual of connecting to the environment and learning from it. Through this task, students could start to build on their own reflections and relations with water.

DERIVE04 BEAUMARIS WATERWAYS
WESTERN WATERWAYS

Local Dwellings
Close to beach
Pools
Partitioned
Chlorinated
Man-made
Why?
Grass
Shallow
Impermeable

AGNES

NAUTILUS ST

ANITA ST

RESERVE RD

BEAUMARIS BEACH

Textures of Beaumaris
Sandy
Subtle and soft
Harsh urbanisation
Worn concrete
Flaky
Rusted Metal
Fed
Fragile
Renewal
Unheard Stories

SOUNDS OF BIRDS, WAVES FROM
THE OCEAN AND PEOPLE PLAYING
AND WALKING ON THE BEACH

VEGETATION POKING THROUGH
BUILDINGS AND CLIFFS

SHELLS, RUBBISH AND SEAWEED
SCATTERED ACROSS THE SAND

Figure 6.8. Dérive tracing water.
Produced by master's in architecture students Zoe Swoboda, Micah
Carganilla and Lauren Meintjes, Monash University, 2022.

208

Task 4: Water relationships

To understand and design for water relationships, students were asked to reflect on their own relationships with water. Their thinking about an element that most people take for granted brought their backgrounds and family values into position. In this sense, positionality, water agency and relationships were central to their designs.

The task involved creating a diagram where they could add their tangible and intangible experiences with water and understand how personal values, positionality and experiences could influence their designs. I asked the students to think about any rituals they each had with water, from tea ceremonies to dancing in the rain; the aim was to start to catch a glimpse of how water is a relational entity in each of their lives.

To recognise the different identities in the class, this task invited inclusivity and privileged cultural difference. The students could identify their own positions within their relationships with water, acknowledge them and relate to ways in which other people engaged with water in their designs.

Other students acknowledged their backgrounds as personal experiences of water in the city, wanting to re-connect the water relations for residents of the suburb in both housing and commercial typologies. Addressing cultural diversity in architecture, students delved into notions of positioning other identities in today's Australian diversity, reconciling with Country and Traditional Owners. In my experience of teaching in bachelor's and master's studios, addressing positionality when designing in Traditional Lands has been conflicting for both Australian and international students as they don't know how to position themselves respectfully. I was curious to know how both identities (the Australian and the international) would be able to bring their own ethnicities into their projects while designing with care.

Relational thinking

What is water to me?

Childhood   Play   Life

Connection & togetherness

DOING

Rituals with water

Necessities
Drinking
Cooking

Routine
Showering   Feeding
Washing, cleaning   the fishes
Growing,
Planting crops,
gardening.

Meditative Leisure
Walking, cycling along
creeks and rivers with family

Sight seeing with friends

Swimming
Unwind at the beach

Way of being

Creating channels and tunnels
in the sand for water to flow
into.
Sand-castle building
Waves flooding the sand-castle   Beach

CHILDHOOD & PLAY

Memory

Swimming

The **taste** of salty ocean air.
We used to live close to the
beach and have usual visits
there.

Experience
Senses

Pond   Fishing   Aquarium

We had a fish pond in our backyard and I would
hear the **sound** of flowing water in the garden

'Drain-hoping'

As a kid, me and friends
would climb into the large
open drains around the
neighbourhood, where we
would fish for fishes and
tadpoles.

*My connection to water stems from
my childhood of playing in the open air
drains back home.*

Background:

I am from Malaysia, which is a more tropical
humid environment with lots of rain,
moonsoon seasons. This contributes to my
strong childhood connection with water.

Diffused rain drops hitting my face.
Taste like:

The **smell** before and after heavy rain...

Metalic
Plants
Earthy,

The thunderous **sound** of heavy rain
crashing on the roof of the house.

RAIN & FLOOD

Childhood fascination **observing** water...

Flooding of drains   Rain drops hitting on car window,

I was fascinated by how the   Large puddles in the street
large drains would disappear
under the overflowing of   Flooding of streets
rainwater.
As a kid, I would stare out of the car window
during heavy rains and gaze at the overflowing
of rainwater in drains.

Figure 6.9. Diagram of water relationships.
Produced by master's in architecture student Timothy Kai Wong, Monash
University, (2022).

Task 5: Positionality

Once the students determined their own relationships with water through their lived experiences and walking explorations on-site, such as tracing water, they were tasked with the development of projects that would open the underground realm through a series of water-sensitive design tactics, as water flows vertically and horizontally through different dimensions. Linking their positions in Country and water, their designs needed to address cultural inclusivity.

While initially, the students had to create a catalogue of 'Underground Entries' and then use them to design their own entry that would connect the surface experience with the underground waterways, their designs could include more than human relationships instead of designing for only human experiences. This first architectural design was the result of the previous tasks to identify ways to approach water in the city and their personal experiences of water. In this task, students could explore through design how their positionality and cultural experiences could enable spaces for humans and more than humans and water to come together.

Some students included some personal values of water that suggested a ludic experience of urban waterscapes, specifically regarding drained and piped creeks. An example of this was a student, Timothy Kai Huan, recalling his experience playing in the drains of his home city in Southeast Asia. His design started from his approach to human and water relationships during his childhood on a one-on-one scale. As seen in Figures 6.9 and 6.10, an axonometric view of a drain, the student explored the dry and wet conditions in which a passer-by would engage with an open drain through his own recollections of a ludic experience of drains in Malaysia.

Entry to underground proposal

The series of artefacts from the catalogue is combined and kit-bashed into a new design while still retaining the open-air drain qualities of the original.

Public square during normal.

During non-raining days, the detention pond will be empty, allowing people to use the pond as a public space of gathering.

A small amount of water would still flow through the square but people are able to co-exist withtin the space, enabling opportunity for interaction and play with water.
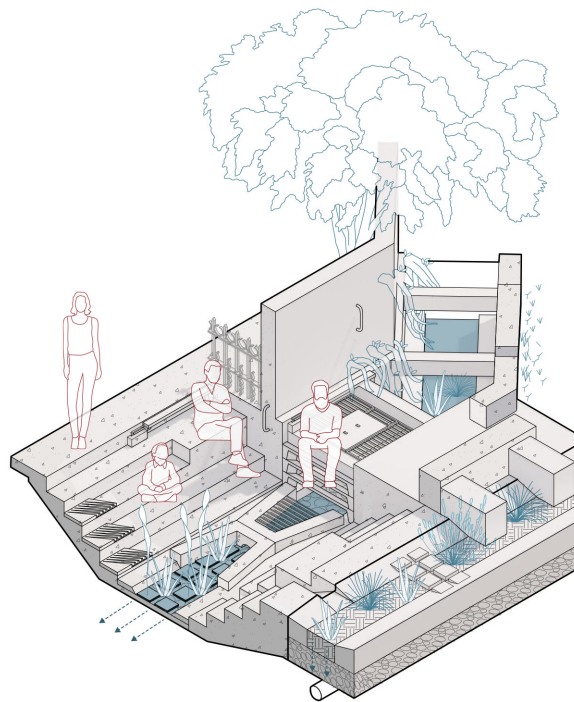
Figure 6.10. Soft boundaries, dry conditions.
Produced by master's in architecture student Timothy Kai Huan, Monash University, (2022).

Detention basin and rain garden when raining.

During storm events, the square acts as a detention pond that holds and slows down the flow of rainwater runoff to prevent flooding along the suburbs.

The rain garden adds permeability and helps filter the rainwater runoff from streets, pavements of pollutants before releasing it back into the sea. It funnels water into the detention pond through an overflow channel.

Detention basin

Rain garden

Overflow channel

Filter Layer

Drainage pipe
flows to storm water drain
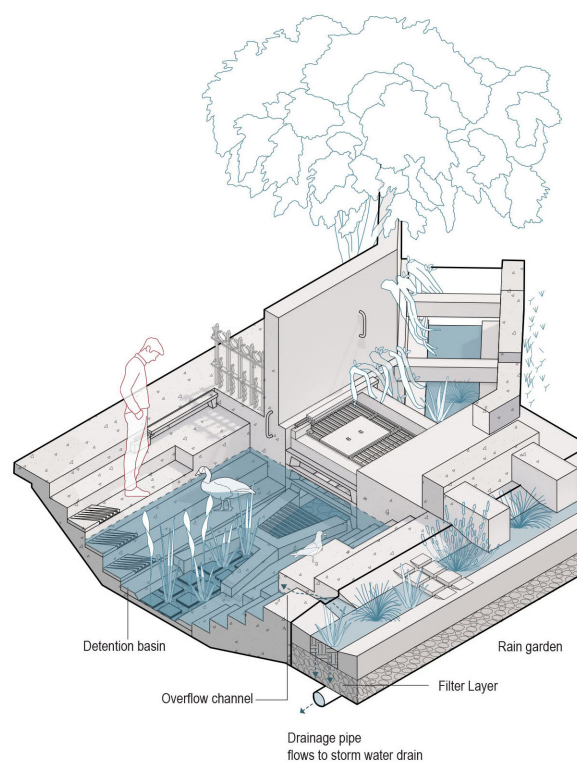
Figure 6.11. Soft boundaries, wet conditions.
Produced by master's in architecture student Timothy Kai Huan, Monash University, (2022).

Task 6: Acknowledgement of the time of Country

To expand their design projects, for this task, students had to develop a master plan that would consider the natural flows of water through catchment thinking and WSUD. Their masterplans also included a set of concepts that were drawn from Indigenous Knowledge, such as relationality, positionality, and accountability, but also understanding the time of Country. Through their walks and the different tasks described above, students started to understand the interrelationships of more-than-human beings and the environment. In understanding the infrastructural, human interventions in the southeast suburbs, they would need to investigate the past to understand how their project would work in the future.

The task was to incorporate future speculations on how the flora and fauna, climate change and the different human programs would interact with their site (see Figure 6.11). Thinking of the Time of Country (as yarned with N'arwee't Carolyn Briggs earlier in this chapter), their speculations had to go from current times to 50 years ahead and then to 200 years ahead in time (as seen in Figure 6.12).

Through Water Sensitive Urban Design, historical analysis of mapping, and immersive tracing of water, they responded to the studio brief of designing for and with water. Notions of water management, flooding and quality of water were challenged. In this sense, the ideas of adaptation and resilience depended more on concepts of Country caring, where Indigenous notions of time had to be considered instead of seeing flooding as a water form to be controlled.

Some students were challenged by the idea of designing for flooding instead of against it. The changes in seasons and stories of flooding and sea level rise in Port Philip Bay as told in the story of the Time of Chaos written by N'arwee't Carolyn Briggs holds important water memory kept for thousands of years. Students suggested adapting to instead of purely mitigating floods, integrating water knowledge for future design speculations. For example, students proposed a building typology that could adapt and extend gradually over time, using prefabricated modules that can adapt to flooding and vegetation growth; the buildings would adapt to climate change and mitigate its effects by incorporating WSUD tactics (see Figure 6.13).

Legend

Visitors + Animals

- Elsternwick Primary and Elwood Primary Students
- Walking Groups (Elsterniwck + Brighton)
- Tawny Frogmouth Researchers (primary research period)
- Eel Researchers (primary research period)
- Tourists (primary visiting period)

The diagram's seasonal wheel labels:

GRASS FLOWERING SEASON · KANGAROO SEASON · DRY SEASON · EEL SEASON · WOMBAT SEASON · BLACK FALCON · WILLY WAGTAIL · EASTERN ROSELLA · TADPOLE SEASON · ORCHID SEASON

SPRING · SUMMER · AUTUMN · WINTER

SEPTEMBER · OCTOBER · NOVEMBER · DECEMBER · JANUARY · FEBRUARY · MARCH · APRIL · MAY · JUNE · JULY · AUGUST

Outer labels: SHORT FINNED EEL · GOULD'S WATTLED BAT · NANKEEN NIGHT HERON · EASTERN GREAT EGRET · SUPERB FAIRY WREN · AUSTRALIAN WOOD DUCK · HOARY HEADED GREBE · TAWNY FROGMOUTH

Figure 6.12. Integrating human and more-than-human programmes according to Boon Wurrung seasons.
Produced by master's in architecture students Madeleine Edwards, Ellen Mooney and Paaniz Hosseini, Monash University, (2022).

215

Future Projections - 50 Years ---------> Future Projections - 100 Years ---------> Future Projections - 200 Years

Flood Extent 2072

Flood Extent 2172
Flood Extent 2072

Flood Extent 2222
Flood Extent 2172
Flood Extent 2072
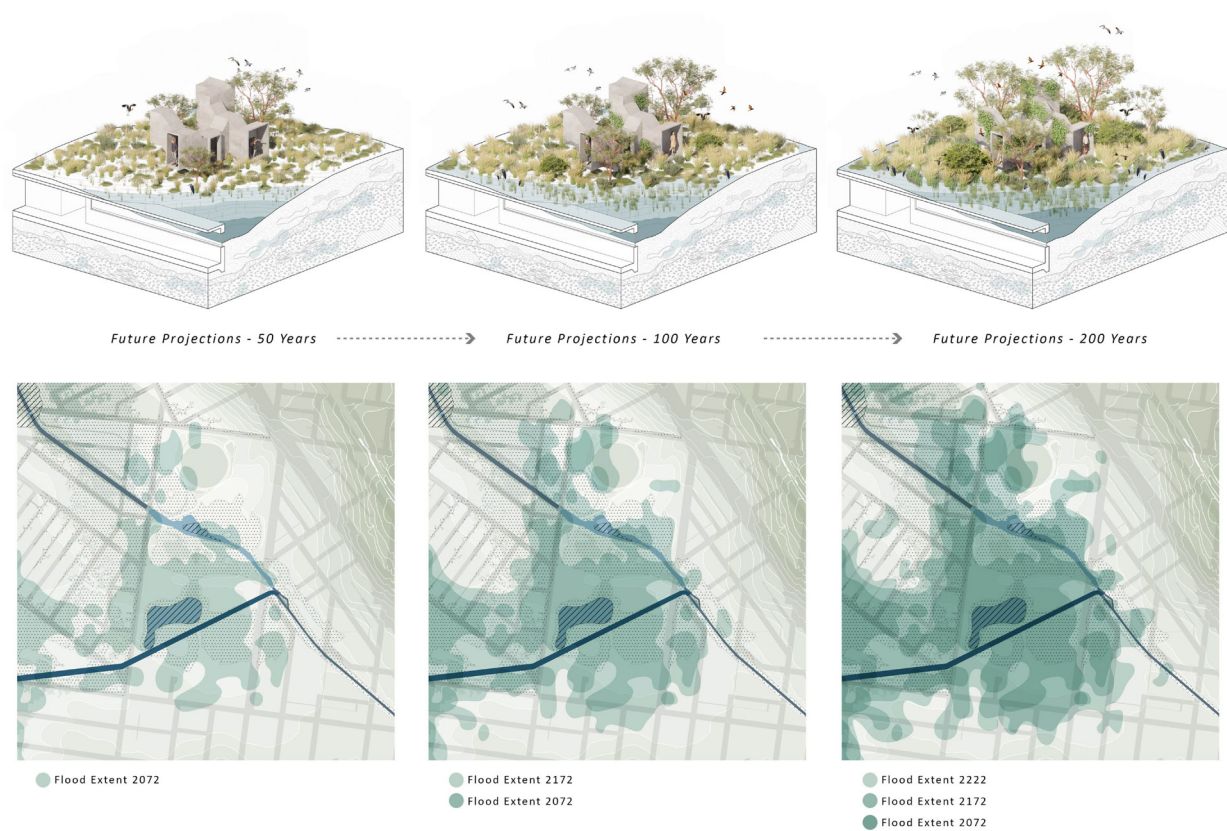
Figure 6.13. Future speculations predicting sea level rise in Elsternwick. Produced by master's in architecture student Madeleine Edwards, Monash University, (2022).

ADAPTIVE ARCHITECTURE

| CURRENT CONDITIONS | 4 - 50 YEARS CARING FOR WATER | 100 YEARS INTEGRATED LANDSCAPE |

MODULAR APPROACH · ADAPTIVE ARCHITECTURE · LIVE, ADAPT, CARE
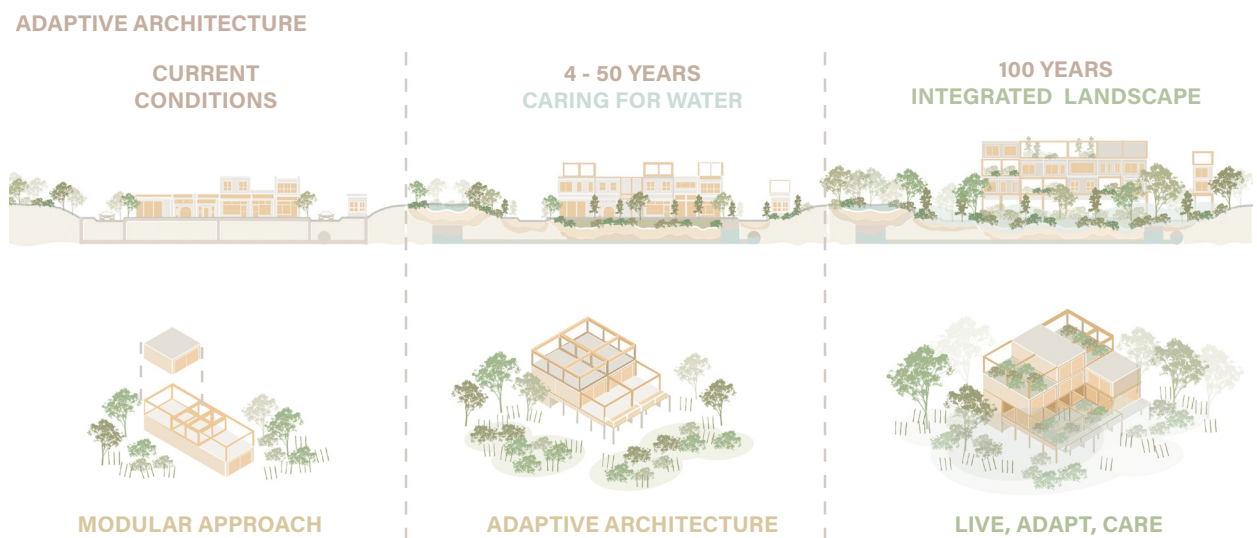
**Figure 6.14. Modular architecture to adapt to flooding.
Produced by master's in architecture student Micah Carganilla, Monash
University, (2022).**

Task 7: Cultural Protocols

Following the work by Shawn Wilson and Karen Martin on accountability, the next task encouraged students to reflect on the ethical considerations of working in unceded lands and how architecture can take some responsibility for Indigenous ways of Knowing.

To start, students had to develop their own positionality statements addressing who they were and where they were from. They had to recognise what the intentions of their designs, life, and practice were. Students researched preceding case studies of different firms and institutions that have their own cultural guidelines and had to create protocols that would influence the designs throughout the course.

Students were to ask themselves the following questions:

Ethical considerations:
- What is the intent of the design?
- How does it elevate reconciliation? How does it elevate repair?
- Does it understand the time of Country and design in accordance with it?
- Does it respect the values of the community?
- Does it respect and privilege Indigenous Knowledge and voices?
- Does it have a methodology for relatedness?
- How is it accountable and responsible?
- Does it change your practice and system of thought?

Based on their research, relationality and positionality, students developed different cultural protocols towards respect through their designs. For example, in the isometric diagrams above, the students had to reflect on how their own position would be understood within Country to nourish their relationships with and on Country. Learning from Country and taking care of Country. This task also set guidelines for them to become relationally accountable.

By practising ethical and moral protocols, our relationality gives continuation to our own connections to Country. In this sense, our relational accountability becomes self-regulating. Karen Martin[28] states that self-regulation renders agency and sovereignty to Country and people. The stronger these self-regulation understandings are, the more adjusted the research and researcher becomes to and with Country. Many scholars researching form this Indigenous

[28] Martin, Please Knock before You Enter, 138.

[29] Bawaka Country, Sandie Suchet-Pearson, Sarah Wright, Kate Lloyd, and Laklak Burarrwanga, "Caring as Country: Towards an Ontology of Co-Becoming in Natural Resource Management," Asia Pacific Viewpoint 54, no. 2 (August 2013): 185–97, https://doi.org/10.1111/apv.12018.

[30] Martin, Please Knock before You Enter, 138.

approach call this transformation from being unknown or an outsider to 'co-becoming'[29] or coming 'alongside' with Country.[30]

Protection of Country

Admiration + Respect for Country

Openness to Country

Belonging to + Understanding Country

Ensuring that all physical entities that live within the land are protected from harm and suffer no further harm from present and future projects

Acknowledging and being aware of the Country's past to proactively prepare for the future

Collective embrasure of all aspects of Country to develop and maintain a relationship to the land

The ability to reflect on Country and translate that into a meaningful understanding for all which reside within it

Figure 6.15. Isometric diagrams showcasing the values and protocols. Produced by master's in architecture student Sofya Savenkova, Monash University, (2022).

Task 8: Relational accountability

After the designs were almost complete, this task asked students to reconsider how their cultural guidelines and protocols were to be visualized in their designs. While most students included protocols easily used in bigger overarching strategies in governmental and architectural institutions, asking them to keep their protocols as guidelines and suggest how their designs would be held responsible for Country required an introspective view of their design and tactics.

A Country-connected design invites all stakeholders to engage in relational thinking, not by using the local cultures in a tokenistic approach, but by decolonising our structures to break down the boundaries that the western worldview has built up. Through the understanding of the lack of Country-connected design in Melbourne, students were able to understand the future implications of this gap.

Not many students were able to grasp the challenge of being held accountable, while some of them thought of materials and how to extract them, to Care and to be responsible for their designs. Others continued the popular approach to including Indigenous people in their design and reflected upon how the model of consultation could be relationally accountable. However, I wanted students to go beyond this approach towards one where they could either metaphorically or directly be responsible for their relationships and design. One dystopian speculation (Figure 6.15) showcased a future of poor waste management, pollution, and negligence of Country in a future where everyone in Country today does not learn to Care for Country. *Abandonment* instead of Care. From this point of view, we can understand the need for Indigenous ontologies to be taught and passed on. Values and knowledge can trespass political and economic structures while welcoming paths towards a more sustainable and culturally just future. By indigenising our thinking, other disciplines and identities can contribute to a Country-connected design from their own positions within Country.

Figure 6.16. Dystopian speculation of when the protocols are neglected.
Produced by master's in architecture student Sofya Savenkova, Monash University,
(2022).

Summary

Three architectural studios served as explorations of different methods that I developed through the yarns with N'arwee't Carolyn Briggs to position relationality practices in design and architecture. While *Flow Interventions* focused on UWSD, *Undrained* incorporated walking as an exploratory method to develop relationships with Country. It was, however, in *Unearthing Waterways* that students engaged in relational design to speculate and respond to social and cultural water management issues through architectural proposals. The use of studios to explore teaching considerations in design and architecture to respond to Country caring demonstrated the gap in Indigenous Knowledge in design and a challenge to decolonise the disciplines in the teaching institutions. However, by indigenising the curriculum through a relational design approach to teaching courses, students could reflect and rethink water relationships in the city and promote culturally sensitive proposals privileging their relationships with Country.

Western conceptions of *nature, time, space, knowledge, resilience,* and *adaptation* were questioned through the paradigm of relationality. Through the process of reflecting and rethinking design and architecture, the relational design course could make porous the boundaries between western and Indigenous thinking. Furthermore, centring relationality as the process to understand the world would promote equity and balance not only for First Nation Peoples but for more-than-human entities as well.

While the incorporation of design approaches such as WSUD, greening and rewilding of the cities, could promote ecological advances in the city and suburbs, these approaches could highly benefit from the reconciliation with the Indigenous paradigms (see Figure 6.16). Looking at design and architecture from an Indigenous lens can progress the adherence to local protocols where new trends in decolonising, or even better, indigenising the disciplines can redress the history of colonisation, not only in Australia but worldwide. This means that architecture should be site-based, not only geomorphologically but also culturally.[31] Would that mean the incorporation of rituals in architecture? Yes, perhaps; but in an ontological sense. The challenge lies in accepting diversity in this reconnection of culture with design. Exploring relational design in this research has resulted in understanding the conscious practices in design that can nourish our connections to Country, not really delving into the cultural knowledge of one specific Indigenous group, as non-Indigenous scholars have

no right to that knowledge. But rather, in focusing on care as the centre of all relationships.
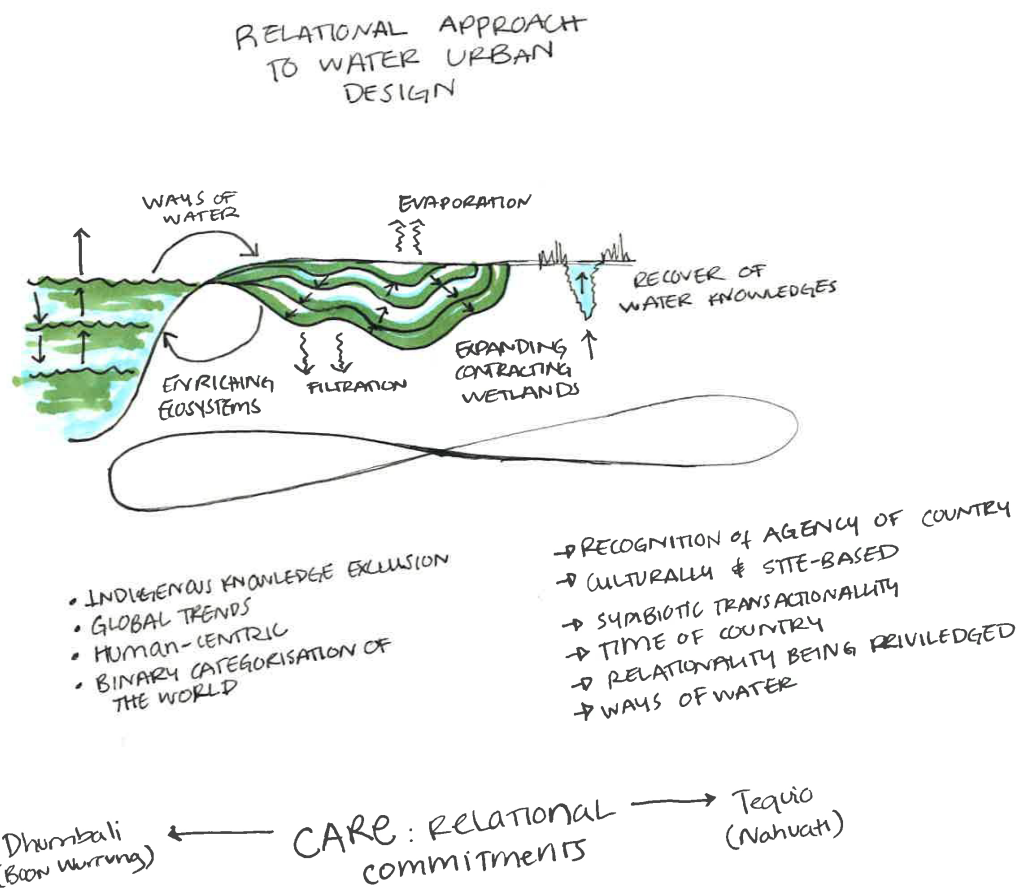
Figure 6.17. Towards a relational approach to water urban design.
Sketching with N'arwee't Carolyn Briggs.
Produced by Ana C. Lara Heyns (2022).

PART III: Ways of Being

Chapter 7. Learnings and conclusions

Introduction

This study's aim was to contribute to more sustainable management of urban waterways as well as better protections for layers of cultural meaning embedded in the underground through the Indigenous paradigm of relationality.

Initially, the PhD focused on the underground realm and was influenced by the work done in ecological urbanism (see glossary), where methods such as deep city and underground urban space dominate the subterranean planning schemes (as discussed in Chapter 2). However, these approaches do not include the meanings that cultures around the globe embed in their surroundings, both horizontally and vertically. Focusing on water as a resource that crosses multiple tangible and intangible dimensions, this research explored water as a vehicle to access the complex space below the ground and the deep cultural meanings often neglected in the planning field.

Studying the underground from an interdisciplinary point of view while acknowledging my own cultural background led me to undertake relational methodologies grounded on the Indigenous Ways of Knowing, Doing and Being that expand our knowledge and experience of water in the city. By understanding my own stories of relatedness, my daily relational practices and

how relatedness should be respected, the study shed light on how a relational design could inform other disciplines across academia but also in other geographies across the world. This study is my lived experience, the pathways into relational design, the learnings we can share through the intersection of design, anthropology and Indigenous frameworks, and how conventional and unconventional outputs can be developed and expanded with relational methodologies.

Relationality, as I have argued in the previous chapters, requires us to develop responsible and caring relationships with Country. The last chapter tested and explored a series of methods to develop and propose a relational framework that can be used and adapted in other research areas to acknowledge diversity and multiculturality. Instead of creating a 'how-to' manual on working with Indigenous peoples, which is already discussed, and official guidelines developed,[1] this research shares my learnings through reflections and lived experience to suggest to researchers' ways to build their Knowing, Doing and Being with Country to create more sustainable and culturally just futures.

The research proposes a relational and Country-connected design as a new configuration of working with the built and cultural environment. This relational design pays close attention to the landscape and cultural relationships with Country to contribute to different disciplines such as planning, design, and anthropology. However, as the research has shown, the opportunity for multidisciplinary research suggests that relational design can be adapted to a wide range of disciplines. Nevertheless, there are a series of implications for this research that I want to acknowledge. In the first part of this chapter, I share the learnings and reflections on what the study involved, but also some challenges and considerations that need to be acknowledged to conclude.

In the second part of the chapter, I answer the three main aims of the study, concluding with how relationality offers an alternative configuration for working with the built environment. I demonstrate how water has aided in the understanding of relationships with more-than-human worlds that can effectively help contribute to architecture and design by thinking through a Country-connected approach. Finally, the chapter ends with suggestions for future research, identifying the considerations that should be taken to include relational design in design, architecture, and anthropology.

[1] For example, the Australian Indigenous Design Charter, or the Ethical Conduct in Research with Aboriginal and Torres Strait Islander Peoples and Communities: Guidelines for Researchers and Stakeholders, by the National Health and Medical Research Council.

7.1 Challenges

Countless times, people have asked me how I ended up doing a PhD in Architecture. In the contemporary academic world, there is a common consensus on the need for a multidisciplinary research approach; but once one finds themself in that position, things seem to get a bit more complicated. For example, I didn't have visual skills as architects and designers do, so of course, as much as it sounds interesting to have an anthropologist on board, it was quite a challenge for me to think spatially from a design perspective, not only regarding maps, but in visualising my research through diagrams and plans.

Although it was not a surprise for my supervisors or for me that I lacked architectural skills, I did need to clarify what the research was going to involve and how I would undertake it in the first years of the PhD. And even now that I'm writing this page, I recognise that the multidisciplinary approach was challenging enough for the short time that the PhD took (three years and six months). Not only because of the crossing of different disciplines, but also because of the nature of underground research and Indigenous frameworks. While I worked all my life as an ethnographer, it wasn't until arriving at Monash University that I actively engaged in planning and designing for the underground.

As an ethnographer, too, I had experience working with traditional communities, starting with my very own, so effectively, working with Boon Wurrung Country and Aunty Carolyn was a great pleasure. Yet, it took some time to understand how Indigenous ontologies and knowledges have been obscured by the historical violence in which Australian institutions were developed. Coming from a very different colonial history, as I explained at the beginning of this thesis, I encountered the need to understand the history of Indigenous people in Australia and how European settlement and the current political landscape have displaced and concealed Indigenous knowledges. This impacted how the research was undertaken, as serious ethical considerations had to be developed thoroughly to avoid falling into tokenistic and extractive notions of working with Indigenous peoples and Country. Therefore, ethics approval took longer and

required more detailed information. Yet, now that the research is over, I have realised the lack of ethical understanding that ethics processes have and the urgent need to develop a more consistent approach to working with Indigenous Knowledge.

I would like to acknowledge that in working with Indigenous People, we need to understand the boundaries of what is being shared and what is not. This is part of working with Indigenous Knowledge that avoids extractivism and tries to privilege one's positionality rather than the anthropological practices that developed in the 1900s. This way of working understands the limits and boundaries of my own relationality in this Country and with Aunty Carolyn. This, of course, is not acknowledged in ethical applications in Western-organised institutions such as the university.

At the time of the research, Aunty Carolyn was in a legal battle to acquire the Native Title of Boon Wurrung Country, which neighbouring clans have contested highly. This battle not only defines who speaks for Country in Western law but also who represents the ancestral knowledge of the Boon Wurrung people. This limited the boundaries of what knowledge was accessed and in what form. I recognise that this challenge limited the collaborative work with N'arwee't Carolyn Briggs and her knowledge, restricting the research to what she knows and doesn't, instead of accessing the wider Boon Wurrung community. Acknowledging this constraint also produced a thesis that is guided by the learnings of a senior elder and knowledge holder, rather than objectifying the Boon Wurrung people or Aunty Carolyn as an object of study. The role of N'arwee't was to guide me, co-create in the context of my knowledge to inform my relational practices and ontology, not to use her knowledge of Country to inform scientific research about a particular thing. Barkandji woman and Indigenous scientist, Zena Cumpston[2] states that non-Indigenous science does not understand that communities and places hold knowledge, not individuals, and knowledge learning is an experiential one. And even those learnings we were also limited by the constraints of time and space in doctoral research.

[2] Zena Cumpston, "Looking Back, Moving Forward," in Plants: Past Present and Future., ed. Margo Neale, First Knowledges (Port Melbourne, Victoria: Thames & Hudson Australia Pty Ltd, n.d.), 30–50.

The explorations, crossing from one discipline to another, from one ontology to another, into the restricted space of underground and water knowledge turned out to be a true odyssey. Working with the underground from an epistemological approach lacks tangible samples of what is in the underground. Water, in turn, was the vehicle for understanding a space connected to a broader landscape. The case of Rippon Lea, bounded by its current property boundaries and natural ones, such as above and below, also had knowledge restrictions. The system of pipes has been disrupted by the newer urban development of the suburb, the building of the surrounding houses, and the superseded pipes that not even the National Trust can map and remain hidden. This was also why by focusing on water and more-than-human entities that inhabit the area, we could re-trace current connections of the state to the bay, for example, through the movements of eels. However, the scope of the research is also limited by time and skills in understanding the role biodiversity plays in such understanding of the underground.

If the multidisciplinary approach and reconfigurations of research paradigms and thinking weren't enough, in January 2020, Australia declared the spread of SARS Covid 19, which delayed the fieldwork due to multiple lockdown restrictions. My mental health was also impacted by the distance from my family and community in Mexico, which could only increase with periods of anxiety throughout the research.

The five-kilometre radius restriction meant that some methods had to be explored within my spatial limits, and yarning walks with Aunty Carolyn had to be postponed until we could both walk with health measures. In this sense, it is important to mention that as access to the memory of place resides only in the knowledge holders, I had to establish strict personal guidelines regarding my access to that knowledge from Aunty Carolyn, always avoiding interfering with her Ways of Doing, Knowing and Being. In this sense, time was constricted, and I soon realised that the structures of the PhD are too fixed and do not recognise the non-linear processes of working from an Indigenous perspective,[3] where time is not linear but circular. Researching within this circular

3 For exmple, the formalisation of boundaries by the Australian government requires Indigenous people to organise themselves into Registered Aboriginal Parties (RAPs) which are responsible in managing heritage, providing advice and cultural services. However, this appointment has caused many contestations among Indigenous groups, who recognise the movement across Country regardless of boundaries set by colonial structures. It has also put pressure on who speaks for Country.

During the time the PhD was being done, N'arwee't Carolyn Briggs was fighting the enforcing of such set boundaires, as it reproduces the Western organistions of the Indigenous world.

Read more: Rachel Eddie, "Traditional Owners Formalised in New Boundaries Covering Central Melbourne," The Age, July 1, 2021, https://www.theage.com.au/national/victoria/traditional-owners-formalised-in-new-boundaries-covering-central-melbourne-20210701-p585vg.html.

Figure 7.1. Understanding research from an Indigenous lens requires us to understand its circularity.
Produced by Ana C. Lara Heyns, 2022.

paradigm should make space for deep listening and patience to learn Indigenous ways of perceiving time and approaching knowledge.

7.2 Opportunities

Even if the challenges in undertaking this thesis were significant, they opened pathways of opportunity, the most urgent one being the need to challenge the conventional practices of western academia. From reconsidering how knowledge is created and understood to how time and relationships are built, the PhD urged me to rethink the timelines and pressures of western disciplines, understanding that the time of Country is essential for relational designs to be relationally accountable.

From this viewpoint, it is important to keep pushing towards researching from an Indigenous paradigm which de-centres humans and centres Country as the system to which all humans and more-than-humans belong. Therefore, caring for Country is caring for humans and more-than-humans' welfare, as we are all with Country.

What was most interesting for me in this regard was the space I, as a visitor from another culture, was taking in Boon Wurrung Country, which perhaps enabled authentic and genuine relationships to emerge to co-create this work. A process of co-learning and co-teaching in a circular relational design and being from another culture and researching in a multidisciplinary way, filled in some gaps that kept emerging throughout the research: the much-needed research from an Indigenous lens in the field of design; the critical reflection of the ethical intentions in anthropological research; and finally, the cross-disciplinary approach to research about the underground, water, and Indigenous frameworks.

Yet, as the third identity in this space (not Indigenous Australian, nor Australian settler either), my opportunity to bridge together different knowledge systems from my ancestry and as a visitor in Boon Wurrung Country and Australia enabled a pathway to reconcile my ancestry and allowed me to position myself within Country, learning how to care for it and nourish it.

This kind of work was the opportunity to weave Indigenous knowledge into a traditional thesis. Storytelling and yarns allow one to make sense of the world and relate to what is exposed in this study. Relational methods such as deep listening, deep observing, walking, contemplating, and reflecting also enabled a multidimensional approach to the city, where we can acknowledge our agency in the Country's system of relationality.

Finally, by privileging Indigenous voices and authors in the thesis, I hope the reader can immerse in non-western discourses about Indigeneity. When the opportunity arose, global south authors were also cited to open our views to other thinking.

[4] Martin, Please Knock before You Enter. Aboriginal Regulation of Outsiders and the Implications for Researchers, 138.

7.3 Implications

As I explained earlier, the research had to respond to the initial question I had when I was invited to the Atlas of the Underground: how do we respect the traditional knowledge of this land in the project? As architects, planners and designers use materials to build on lands that have not been ceded, we need to ask the disciplines how their practitioners can be held accountable for their relationships with Country. To go beyond the western discourse of reconciliation, we need to work from an Indigenous paradigm, in which responsibilities must be considered to respect the laws of Country. Following the work of Karen Martin,[4] I believe that self-regulation is a crucial principle to working with and alongside Indigenous Peoples.

Self-regulation included using Indigenous research methodologies suited to the time and space in which the research was undertaken. Methods were informed by ethical consideration before, during and after their enactment. Figure 7.1 gives a few clues into what kind of methods and ethical requirements the research applied.

You will have seen that throughout the thesis, I avoided recording knowledge that belongs to traditional custodians. The reason for this is both ethical and moral. Institutions such as the Heritage Act and the Australian Indigenous Design Charter establish that only traditional owners are entitled to their cultural knowledge, and it is up to them to record and register it. In recognising that Boon Wurrung knowledge is not my own to register, the thesis centred on my experience as a third space

identity that establishes relationships with Country rather than extracting the cultural knowledge of the Boon Wurrung, which would only fall into the western extraction of knowledge that I am trying to avoid.

By sharing my lived experience of co-becoming, I hope to contribute to challenging western conventional practices and encourage designers, planners, and architects to work with Indigenous communities and ontologies by understanding their position in Country's system of relationality.

7.4 Relational design: a new configuration of working with the environment

Jackson, Johnson, and Porter write in their book, *Planning in Indigenous Australia*,[5] that postcolonial planning should strive to meet Indigenous peoples' aspirations and needs, and for that to happen, the planning system, technologies and practices would have to be done very differently. A relational design, such as the one that this study proposes, based on knowledge embedded in our practices in Country, can enable a balanced relationship between people from different backgrounds and ancestry, fields of study, and human and more-than-human relationships. While I believe that there is no 'how-to' manual to challenge the colonial foundations in which planning and design have been established, in the same way that there are no visible paths to break the chains of neoliberalism's effects on the underground and its resources, this study proposes a series of ethical and reflective considerations that ask us to rethink our relationships, our practices and the way we see the world, offering my lived experience learning from and walking alongside with water in the traditional lands of the Boon Wurrung people.

In this alternative configuration of working with the built and natural environment, I learned new and embedded old practices of relatedness grounded in knowledge through the Indigenous paradigm of relationality. Until today, planning history has tried to redress its colonial foundations with frames of treaty and reconciliation, as discussed by Jackson, Porter, and Johnson. However, I argue that, for colonial fields such as design and anthropology to be compatible with Indigenous Ways of Being, we need a deeper understanding of meanings and relationships that we can only learn through Indigenous Knowledge and practices. Thus, I propose prioritising relatedness as a pre-step in any reconciliation effort to Indigenise our understanding of the world.

This study has shown the need to go beyond reconciliation, and one way of doing so is researching from an Indigenous paradigm where relationality is respected. This study suggested a relational design that focuses on a set of daily rituals and relational practices or Ways of Doing. These practices were developed by my own stories of relatedness as a Mexican mestiza and *tepoztiza*. In my experience, these Ways of Doing explored walking, deep observing, deep listening, yarning, and building relationships because these are my ways of learning about my surroundings, influenced by my Ways of Knowing, which allows me to reflect, connect, contemplate, live, and learn from Country. In this way, the design would welcome the incorporation of intangible features such as cultural memory and Knowledge; it would offer some examples of how a person from a different identity could account for the responsibility and care for Country through self-regulation and cultural protocols. Ways of Being, as the third part of this thesis, invites the reader to reconsider our ethical positions in order to promote equity in all our relationships. Yet it is through Ways of Doing that I explored this relational design as a process of co-becoming, understanding the agency of Country, and acknowledging how the ways I think and know are culturally based. As discussed in Chapter 4, using epistemologies informed by cultural identity enables a space for alterity that expands our worldview beyond the binary positions founded on western ideologies and theories that have historically eroded relationships.

So, what is a relational design? A relational design is founded on the understanding that everything has agency and knowledge, and we can learn this knowledge through a series of practices that can be done bodily; they enable a deeper understanding of the world in a continuous reflective and contemplative manner. A relational design is inspired by designing respectfully, as Normal Sheehan proposes,[6] recognising the cognitive processes of humans and more-than-humans through our system of relationships.

This study had the opportunity to develop an unconventional output through relational design and test this methodology through the augmented reality and website experience for the National Trust of Australia at Rippon Lea Estate. This case study was useful, as it combined the different dimensions, constraints, and contestations of the underground, which included its inaccessibility and the broader connection of a localised site with its waterscape in the city, while bringing in the water memories and knowledge that are part of Boon Wurrung land and heritage. Both the AR app and website

versions are aimed at welcoming the audience into different relationships with Country through soundscapes, yarns, walks, observations, and contemplations.

Nevertheless, there were constraints to this new configuration of working through relationality. The augmented reality application, Hidden Rippon Lea, could be an example of how design practices could be rethought and developed through a relational approach. It also shows some of the constraints of this work and how the design field would have to incorporate measures to tackle them. The methods used to gather the historical accounts, the connections, and relationships to Country required a long time to develop. From tracing the waterways to mapping, listening to N'arwee't stories and the drains themselves, to working with a collaborative team, the app's development exceeded the expected timeframe. The client, the National Trust, saw this project as an opportunity to expand our knowledge of heritage on-site, and perhaps because of the aims of this institution (focused on heritage), we could focus on the appropriate ways of working from an Indigenous methodology rather than a set delivery.

Architectural and design projects focus on delivery, setting specific budgets and timeframes. The boundaries of a site limit them, and so they rarely work on a broader scale, let alone in a waterscape that can be immense and complex. They are also limited to a client's specifications, not the understanding of a whole system that includes human, non-human, past, present, and future. These projects are also limited by the capitalist economic models in which we are embedded, whereas an Indigenous view of economics entails respecting the cycle of Country, focused on seasons also impacted by climate change.

The time of Country, discussed in the last chapter, embraces change as a constant of time. Because Indigenous knowledge in Australia goes back thousands of years, it seems complicated for non-Indigenous scholars to grasp the immensity of the time of Country. The examples of the journey of the eel, or the life cycle of the mutton bird, are ways in which N'arwee't can measure the seasons, which, in yesteryears, would dictate the access to resources and hence their economics.

The app links the vertical scale of the underground to the canopy in the trees, and the horizontal scale connected by water from Rippon Lea Estate to Caulfield Park and the bay. Fortunately, the National Trust commissioned the project, which privileges heritage and knowledge above a commercial asset, an aspect that not many architectural and design projects would be lucky to have.

7 Jon Henley, "Hunger Stones, Wrecks and Bones: Europe's Drought Brings Past to Surface," The Guardian (blog), August 19, 2022, https://www.theguardian.com/world/2022/aug/19/hunger-stones-wrecks-and-bones-europe-drought-brings-past-to-surface.

If we were to rethink the design practice through relationality practices in projects, we would have to extend the timeframe and budget to enable a space for relationship building. This would then include practices such as deep listening to Country and knowledge holders, walking, and tracing the connections of the site to a broader scale. The projects would also have to invest in ethical and cultural protocols for ways of working on Country and/ or working with Indigenous people. This effort is constantly viewed as a nuisance that has been tackled by ticking boxes on reconciliation acts rather than a genuine relationship based on trust and collaboration.

When I started the PhD and wanted to focus on what Indigenous custodians thought about the underground, my peers would mention how hard it would be to engage with Indigenous people and the difficulties of the ethics application. This was when my morals and integrity as part of a traditional community allowed me not to see it as an effort but as an integral part of the research. Yes, it took time for the ethics application. Yet, this structure did not specify the ontological morals that come with working with Indigenous knowledge, which I hope can be addressed with a better understanding of Indigenous ways of Knowing, Doing and Being.

Another aspect is the commitment to be accountable for the knowledge that is shared and acknowledging the limits of one's own positionality. This, in turn, would acknowledge the areas that need to stay unknown for non-Indigenous peoples and projects.

7.5 Walking with water: a relational approach to understanding water memory in the city

In the river channel of the Elbe, one of the major rivers that cross central Europe, there are multiple carved stones. Once every few years, the inscriptions of these stones are visible. "If you see me then weep" is one of the translations; another one says, "when this goes under, life will become more colourful again." The stones are commonly known as the Hunger Stones, expressing the consequences of droughts. The early recordings date back to the 1400s. When I first read this news in The Guardian,[7] I couldn't help thinking how little attention we have put onto the landscape in our everyday lives, yet so much knowledge is there, carved

236

or not. While the Hunger Stones are inscribed with knowledge, I believe that other knowledges are embedded in the landscape. Even though no explicit words indicate it, it is through noticing the landscape that this knowledge comes into view.

In the Indigenous worldview, Elders teach the youth how to notice things, the Laws of the Land. In the book The Land is the source of the Law, C. F. Black[8] describes how her family had witnessed the western human interventions in the landscape of her family's traditional lands. The author shares:

> *However, even though my mother's family witnessed the human-induced climate change of her traditional lands, and therefore had to adapt to the imposed culture, she was still able to pass on to me the habit of noticing nature. What I mean by this is that it was a subtle way, if not a subliminal intent, to pass on the importance of the Land as the Law, in a world bent on turning a paradise of natural environmental wealth into a poverty stricken concrete mass of shining lights, high-rise apartments and artificial parks and waterways. My mother and her siblings had little chance of impacting on, or even comprehending, what was going on and what it would lead to. But then very few people are in a position to have such foresight, and still to this day are not in a position to see the impact of such madness. Perhaps, therefore, it might appear more sensible to consider that the planet is in a constant state of change and that the madness will also change over time and other priorities will supplant those of the present day. The knowledge to assist in that change comes from remembering stories from long ago, and that would appear to be my responsibility to my clans – to remember the stories.*

I remember when Aunty Carolyn said, "I can't find the markers of my family; I can't see myself in this landscape." I also remember how she shared with me how she began her journey into her family history to understand where she came from and what were the stories in the landscape. I would show her some of the maps I had started to compile of old waterbodies that spread across her Country, and she would tell me how she knew about them. She

recognised an old creek because she once saw eels travelling the
drains underneath St Kilda Townhall or the swamp in Caulfield.
After all, it always floods when it rains. I figured that when
Indigenous people tell you how they 'notice' things, it means they
have deeply observed and seen the connections of events in the
landscape, how they are all intertwined and related.

The relational approach to design opens new pathways to understanding water memory in the city. While the first step of the research was to map old waterbodies through ethnohistorical records, it was through walking that I could 'notice' the ways of water in the city. Walking, deep observing, deep listening, and mapping were efficient methods that, combined, gave an overview of the different infrastructural interventions that water has been put through in the city's development. Walking *with*, *alongside*, and *like* water was the space to learn from Boon Wurrung Knowledge through the yarns with N'arwee't Carolyn Briggs, but it also was the way to understand how water moves, its speed, and its qualities. To experience the meanings of intangible features that people impute into their surroundings, but also to revive my own stories of relatedness with water and be able to see myself in N'arwee't Carolyn Briggs' traditional land.

A relational approach to understanding water memory in the
city also necessitated reflection upon the collaborative nature
of creation of knowledge. As has been argued earlier in this
thesis, a relational practice understands the connections between
people and places, and between me and others. Being relational
allows us to reflect upon the practices that include not only the
relationship with water, which this work highlights, but also the
exploration of the relationships that came to being through the
research process.

Working with a multidisciplinary team in the creation of
the Rippon Lea AR App, for example, enabled conversations
with other fellow Latin American to share our feelings of being
migrants, and that this identity enabled us to understand some
of the Indigenous struggles related to the historical violence our
homelands have also been through, and as a product of mestizaje.
Sharing thoughts with Chilean Oscar Raby and fellow Mexican
Marilu Melo Zurita, facilitated dialogue about what it means to
be a third identity, and the recognition of the complexity of our

positionality in Country. These reflections inspired me to introduce the complex history of my own indigeneity in the preface. They also have been a pillar for my own understanding of how to present myself as a mestiza, recognising that a part of me is Indigenous, which in Australian terms I could embrace, but not in the historical context of the formation of the Mexican state. The process of recognising where I sit in this system of relationality has strengthened my integrity as a member of a community back home and taught me not to take advantage of my indigeneity in Australian contexts.

These thoughts are also reflected continually by my group of peers, forming an activist collective. We have developed our praxis manifesto understanding that we are not Indigenous or Australians but that we have something to share and learn in Australia, as locals and migrants. That we can produce knowledge in collaboration. The collective has been an inspiring space for me to expand my networks and relationships beyond my academic life and still practice privileging relationality.

The architectural studios were also a way to explore learning and share knowledge with others. The students' design proposals based on Country-connected design showed me how relational practices could inhabit and expand design strategy. The students' identities, life, imaginaries, and ideas were entangled in their design production and were challenged by recognising the agency of each connection.

In all instances, the studios, the collective and the Rippon Lea app team, relationality was privileged by recognising the polyphony of ideas and practices. The shared learnings and motivations made the work even more meaningful for me.

7.6 Contributions from a Country-connected approach to architecture and design

Focusing on water memory in the city brought up a series of considerations that question different practices on their practice protocols. How would an anthropologist adopt Indigenous methods to ethnographic work? How can

a designer understand the temporalities of Country? How can an architect design according to relational approaches? How can all these disciplines be held relationally accountable? The yarns with N'arwee't Carolyn Briggs about water memory had several implications that I was able to explore through the development of a Country-connected design studio. Studio settings allow the exploration of design speculations that can challenge our western design and architectural approaches to the city. While I acknowledge that studio settings were established as part of the western design culture, their use to explore a Country-connected approach in architecture fits with Norman Sheehan's idea of respectful design, as it provides opportunity for negotiation, reiteration, and co-creation. Sheehan[9] states,

[9] Norman W. Sheehan, "Indigenous Knowledge and Respectful Design: An Evidence-Based Approach," Design Issues 27, no. 4 (October 2011): 68–80, 70.

[10] Nigel Bertram, Shane Murray, and Diego Ramirez-Lovering, "Expanded Design Research," in In Time with Water: Design Studies of 3 Australian Cities (Crawley, WA: UWA Publishing, 2019), eds. Nigel Bertram and Catherine Murphy, 15–27.

[11] Bertram, Murray, and Ramirez-Lovering, "Expanded Design Research," 25.

> Design continues as a universal human process of engagement with the world through materials culture utility and possibilities. Design has always shown respect for the outside appearance of things because design acknowledges the "interior" social and cultural significance of utility. Respectful Design requires a slight shift in this conception, so that design learns to inform material and social production concerning the "inside" cultural shifts that enable life-affirming utility with the "outside" world of natural systems.

Using design studios to undertake these explorations was highly beneficial, as these allow for reiteration of the project in a non-linear manner that fits well with Indigenous thinking. Design studios are common in the design field but were unknown to me as an anthropologist. Nevertheless, I agree with Architects Bertram, Murray and Ramirez-Lovering,[10] who state that design-led approaches allow designers to immerse themselves through experiencing and observing, collaborate to expand and engage, speculate through experimenting, reflecting, and adjusting, debate through discussing and listening, and analyse through drawings. In *Expanded Design Research*,[11] the architects say, "Traditional research engagements often follow discernible, linear casualties and trajectories. Problem definition is followed by a research question, a literature review, methodology, data collection, analysis and articulation and dissemination of outcomes. However, design research follows a different trajectory." Research by design can open new pathways towards a circular knowledge process, inviting other disciplines to bring in their expertise to create new outcomes. Extending the collaboration to a multidisciplinary approach invites us to re-think, reconsider, and recombine the projects, understanding the circular relationship between process and outcome.

In my explorations of Country-connected design, my relational thinking privileges ritual to connect my behaviour and culture to the traditional lands

of the Boon Wurrung. Rituals are the meaningful practices that relate me to Country. Throughout the explorations of different methods in architectural studios taught at Monash University, privileging ritual in architecture and design meant that the students had to rethink their own relationships with water and recover their consciousness of water to position themselves in their design propositions. Our consciousness of water depends on who we are and where we come from, what is our cultural ancestry and what are our contemporary experiences of water in the city. Through sensorial methods such as walking, tracing water, deep observing and deep listening to waterways, the students engaged in the process of contemplating and reflecting on the water, reflecting on what architecture and urban design would look like if their client were the water itself. Students embedded their heritage and water relationships into their own architectural proposition and designed them according to the geomorphology and urban context on site.

The studio setting suggested several distinctions that should be made from a relational worldview. Firstly, designing with Country should not be confused with merely designing with nature, the environment or/and landscape from an ecological and technical point of view; it is about designing with a cultural paradigm where nature is embedded in this system with its agency and knowledge. Secondly, understanding, and respecting Country knowledge and temporalities require us to nourish our relationships within this system. To answer the question of how to privilege relationality, the research proposes that relational thinking to design centres Country over human-only experience. In understanding ourselves as part of these relationships, relational design will change according to each researcher's behaviour, culture, background, action, and agency.

Thirdly, Country-cconnected design in time and space means understanding the seasons, the cycle of all life, and the agency of all things. It means building and nourishing relationships beyond a timeframe or a project. It means reflecting upon each of our positions in Country, what are our values and guidelines, and how they regulate our relationships.

Finally, Country-connected design moves beyond reconciliation discourses and repairing ecosystems to advance toward a balanced relationship where relational commitments and accountabilities guide our practice, thinking and, eventually, the system. It makes us all custodians of our caring relationships and how we know the ways. A Country-connected design bases its development on collaboration rather than extraction; it recognises the

intellectual property of each collaborator. The mode of autoethnography, or in this case, polyethnography, privileges the voice of N'arwee't Carolyn Briggs, the agency of our knowledge sharing through yarns, and my own voice and knowledge. This way of working, when agreed upon by all parties, specifies the aims of each participant and what they are hoping to get out of it. N'arwee't Carolyn Briggs wanted to explore the waterscapes in her Country, while I wanted to learn about her Country with her. This was a fortunate scenario, that I acknowledge may not be easy to replicate. The research was founded on the idea of co-creation and collaboration, empathy and coherence.[12] Still, the aims and relationships have gone beyond doctoral research to a prolific body of work transcending this relationship. This, from my point of view, is what I meant by changing my way of thinking, working, and doing.

7.7 Suggestions for future research

The outcomes of this research are practical for designers, planners, architects, and anthropologists in the urban environment. Research like this can expand the way to meet eye-to-eye with different worldviews and explore cultural dimensions in the landscape. Relational design can be modified, applied, and developed for different creative outputs, pedagogical courses, and research methodologies. While relational design fits well with the research commonly used in the design field, incorporating relational methods can lead to a new configuration of working with the built environment, encouraging the inclusion and agency of cultural and intangible values of the natural and built environment. Researching by design for anthropologists opens a world of possibilities for the field in visualising and understanding complex problems through drawings and iterations.

However, it would be pertinent to continue exploring relational design as a driver of change in policy and planning codes. Relational design is culturally inclusive by nature because it privileges diversity and relationships. Models of Indigenous engagement that fail First Nation Peoples and are traditional to planning and design, such as consultation, would cease to exist, because all stakeholders would have equal agency in the process making, balancing power dynamics. This recognition of different knowledges would present a challenge in future post-colonial planning, as more-than-human entities would also have to be considered as part of the process. This would require a deep involvement of humans across time and space to understand and create relationships with more than human worlds to translate this knowledge into planning policy. Here

[12] These values and properties of relationalisty are deeply discussed in Mary Graham's work on relationality. Read more: Mary Graham, "Aboriginal Notions of Relationality and Positionalism- a Reply to Weber," Global Discourse 4, no. 1 (2014): 17–22.

is where the notion of deep time invites us to look closely at this relationship between time and space;[13] it proposes culturally and ecologically sustainable and just futures.

Relational design would also require a longer project timeframe and a slow scholarship, which goes against neoliberal and capitalist planning schemes. Including Country and Indigenous Ancestral Knowledge will challenge our western conceptions of time,[14] yet the future outcomes could potentially create a better understanding of the world in which we live today in terms of conservation, sustainability, and human and more-than-human rights.

There is hope; although some of these challenges seem too radical to be implemented, the Country-connected studio showed that disciplines could start to connect with the world around us through relational methodologies. Indigenising curriculums, including cultural diversity in decision-making processes, and making time and space for these engagements to happen are some of the steps we could take toward a culturally just future. These steps can also be taken at different times and scales, which facilitates what seems to be a longer process.

While seeing how this could play out was outside of the scope of the thesis, further research that involves a relational approach could facilitate better engagement with Indigenous people in planning and design, because, although different meanings will be formed through the different identities, this thesis demonstrated that this approach could create a better understanding of intangible meanings and features in the landscape that are so often overlooked by conventional practices in these disciplines.

[13] "They've gone back to the old way of looking at things. See, you've got to understand the past to inform the future," as N'arwee't Carolyn Briggs said in one of our yarns, see Interlude.

[14] As I have mentioned in the discussion of Country temporalities on Chapter 6.

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List of Figures

Chapter 6.

List of Tables

Chapter 6

Table 6.1. Tasks, methods, and goals of unearthing relatedness.
Produced by Ana C. Lara Heyns (2022)

APPENDIX

Appendix A.

Table A.1. Review of relevant water strategies in Melbourne and their focus on Indigenous Knowledge and values.

Name	Leading institution	Summary	Indigenous Focus	Were Indigenous stakeholders involved?	Does it focus on Indigenous knowledges and values?	Does it have any direct actions and indicators that focus on Indigenous values and Knowledges?
Healthy Waterways Strategy 2018-28	Melbourne Water	The strategy focuses on a vision for Westernport and Port Philip regions for the health of rivers, statuaries, and wetlands.	Commits to working with Traditional Owners to protect and promote their cultural and historical connections with waterways.	Case study working with Wurundjeri people to identify the cultural significance of Bolin Bolin. According to the strategy, Melbourne Water and the Victorian Environmental Water Holder (VEWH) are working with The Wurundjeri Tribe Land and Compensation Cultural Heritage Council Incorporated, Manningham Council and Parks Victoria to propose better management of public lands. Doesn't expand on how.	The strategy recognises Indigenous values as ecological and cultural.	The strategy identifies 7 performance objectives that focus on the involvement and co-design with the RAPs across the region: Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation and approved by the Bunurong Land Council and Wathaurung Aboriginal Corporation.
Melbourne Water System Strategy	Melbourne Water	Focuses on a system view of water resource management across Melbourne and the surrounding region over the next 50 years.	Their goal is to develop a long-term strategic engagement plan in partnership with Traditional Owners but doesn't clearly state how.	A case study where Wurundjeri elders were engaged to identify environmental values, such as animals, plants and places that are culturally significant in the Yarra River.	1 out of 38 benefits is focused on Indigenous knowledges and values.	One of their actions is to consider the information each year to incorporate it into their seasonal watering proposals to the Victorian Environmental Water Holder.
Water for a future-Thriving Melbourne	Melbourne Water	Overview of how Melbourne's metropolitan water industry is working together to secure water supplies for the next 50 years.	Its goal is to work in collaboration with the water sector to develop long-lasting meaningful relationships with the Traditional Owners in the metropolitan region to integrate cultural water needs into water resource management.	Its aim is to aspire to develop actions to co-create, co-design and co-manage water resources. Doesn't specify how.	1 out of 15 key actions is focused on Indigenous values	N/A
Water for Victoria Water Plan	Victorian Government	Focuses on adapting to climate change and safeguarding water resources for their availability in the future.	Focused in partnering with Traditional Owners to include Indigenous water interest into water planning and management.	Investment in eight projects led by Traditional owners to define and document Aboriginal values, uses, and aspirations of Victoria's waterways and catchments.	9 out of 69 key actions, with only one being complete and now business as usual.	N/A
Flood Management Strategy Port Phillip and Westernport 2021-2031	Melbourne Water	A 10-year strategy to enhance flood resilience in Port Phillip and Westernport region.	No indication of Indigenous focus other than reference to N'arwee't Carolyn Briggs the Time of Chaos Story.	N/A	N/A	N/A
Aquatic Value Identification and Risk Assessment (AVIRA)	DELWP	The Aquatic Value Identification and Risk Assessment (AVIRA) contains the definitions of values and threats associated with rivers, wetlands, and statuaries.	Focuses on environmental, social, and economic values of statuaries and wetlands, yet not indication of focus of Indigenous values and knowledges.	N/A	N/A	N/A
Victorian Floodplain Management Strategy	Victorian Government	Sets the direction for floodplain management in Victoria	Sees flooding as a risk to Aboriginal Cultural Heritage	Strategy mentions that consultation is essential with Aboriginal communities in assessing and mapping flood risk.	1 of 26 objectives focuses on Indigenous cultural heritage.	To follow the consultation and engagement processes outlined in the *Victorian Waterway Management Strategy* (2013).
Victorian Waterway Management Strategy (2013)	Department of Environment and Primary Industries	To ensure the Victorian waterways continue to provide environmental, social, cultural, and economic values.	The strategy recognises the UN Declaration of Rights of Indigenous Peoples.	Strategy mentions that consultation with Traditional Owners was done through the Victorian Traditional Owner Land Justice Group. yet it recognises that every Traditional oner group have their own operating framework. Input and advice from Native Title Services Victoria, Aboriginal Affairs Victoria, and the Victorian Aboriginal Heritage Council.	N/A	To ensure that Traditional Owners and Aboriginal people be partners and active participants in waterways management.

274

Resources

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