

# Chapter 9

## Regenerative Urban Development Paradigms in a Time of Climate Change and Ecological Crisis



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**Abstract** In this chapter, we draw attention to the need for, and yet radical nature of, embracing regenerative urban futures in the context of the climate and biodiversity crisis. This is a mission-oriented vision that recognises the need to fundamentally reconceptualise cities and urban regions as living entities that must be supported by more regenerative ways of imagining the role of urban nature cultures and multispecies justice. This is an emphasis on the “livingness” of cities and the urgent need to shift *away* from extraction, devaluation, and displacement practices that affect both humans and non-humans. Genuinely addressing a regenerative future vision demands that cities are co-designed with, and for, the flourishing of more-than-human communities. The chapter draws on the Three Horizons approach to put forward a paradigm shift to regenerative futures, which is framed as alternative ways of governing our cities, and illustrates this shift with examples of regenerative practices in Australia. The need for urban regeneration as a transformative mission within the Australian context is highlighted.

**Keywords** Cities · More-than-human · Multispecies · Regenerative futures · Climate crisis

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## 9.1 Hot Cities in Crisis

The need for radical transformations in cities and urban regions to address the climate and biodiversity emergency is already upon us. Emissions are rising fast, and the planet is rapidly heating up, taking global heat temperatures into “uncharted territory”, with catastrophic consequences for life on Earth—human and non-human. This crisis requires actively shaping and co-creating more inclusive and sustainable futures as a central societal mission (see Mazzucato 2021). This chapter focuses on the need to build regenerative urban futures that serve to fundamentally transform the future of “living” cities and wider urban settlements.

As major greenhouse gas emitters, cities—and the activities and practices that sustain them—exacerbate climate change impacts such as urban heat island effects, as well as urban floods and fires (Solecki and Marcotullio 2013). The Sixth Intergovernmental Panel on Climate Change report stressed that the impact of carbon-intensive cities will “intensify human-induced warming locally”. Unchecked urbanisation, together with more frequent heat-related extremes, will increase the severity of heatwaves and extreme sea-level events, with rainfall and river flow events exacerbating the likelihood of flooding and landslide disasters (IPCC 2021).

The catastrophic fires that have ravaged human settlements and unique ecosystems around the world are an example of our changing climate and the severity and intensity of events. In Europe, Canada, the United States, India, Pakistan, and Africa, unprecedented fire and heat events in the last decade have also prompted calls for critical changes to urban settlement and development trajectories (Steele et al. 2023). Temperatures as high as 47 °C have caused deaths and prompted large-scale evacuations in Algeria, Croatia, Greece, Italy, Portugal, and Spain, devastating communities in the natural and built environment (Kwai 2023). The number of extreme heat days in Australia is increasing, particularly in cities, with estimations showing a 471% increase in heatwave-related deaths by 2080 in a high-emissions trajectory (Guo et al. 2018).

In Australia, the Black Summer fires of 2020 burnt through millions of hectares, destroyed infrastructure, and killed 400 people and over one billion animals. Alongside ecological world heritage places and rural areas, urban and peri-urban areas also suffered devastating losses, with days that registered the worst air-quality indices in the world. These climate impacts draw attention to the complex interactions between climate change, urban areas, and biodiversity. The fires stopped the nation, inciting deep considerations of the way Australians live, and the implications for urban futures (Norman et al. 2021).

In this chapter, we draw attention to the “livingness” of cities and the urgent need to shift away from extraction, devaluation, and displacement practices that affect both humans and non-humans. Genuinely addressing a regenerative future vision demands that cities are co-designed with, and for, the flourishing of communities—both human and non-human. This is framed as an alternative paradigm that will transform cities into more-than-human regenerative futures. The chapter draws on the Three Horizons (Sharpe et al. 2016; 2020) approach to put forward a new way

of governing cities. This framework is a simple approach for navigating complexity that offers insights into the nature of transformation by engaging with patterns of the present and the future (Sharpe et al. 2016; Sharpe 2020). A recent review of futures-thinking literature identified that transformative change is critical to address the challenges of the Anthropocene (Cork et al. 2023). The proposed horizons are tied to existing regenerative practices within the Australian urban context that serve as examples of achieving regenerative futures. The chapter concludes with the implications for regenerative governance policy and planning as a transformative mission within the Australian urban context.

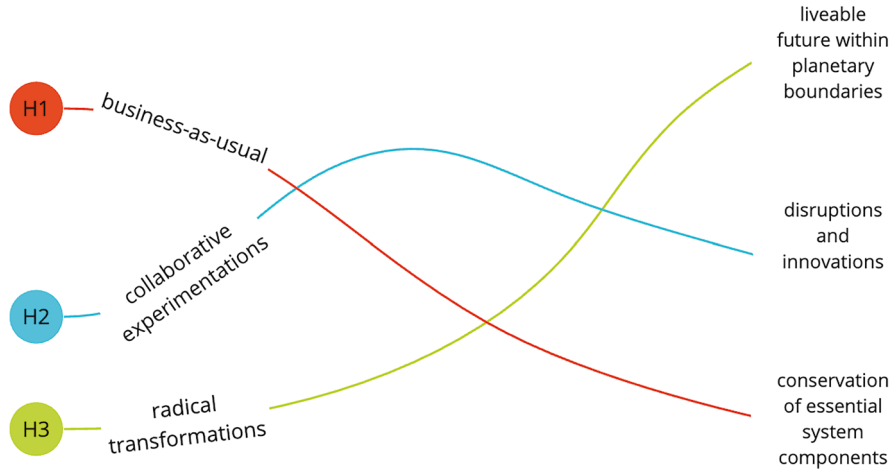
## 9.2 Alternative Urban Futures

As climate change continues to unfold, multispecies injustices will multiply, with the most vulnerable and marginalised suffering the greatest (Celermajer et al. 2021; Pineda-Pinto et al. 2022; Tschakert et al. 2020). The changes caused by development and growth underpinned by extractive and profit-driven actions lead to displacement, inequity, and deprivations. This is a challenge underpinned by an urgent need for transformation away from the extractive pathways that affect both people and the living planet in increasingly perverse and violent ways and towards more sustainable and regenerative futures.

One way to progress and co-create solutions for more regenerative cities is to develop future-oriented visions, or urban imaginaries. In an urbanising planet, cities as multispecies habitats and spaces for protecting and recovering threatened and vulnerable species—both human and non-human—require a new trajectory in urban policy and planning. A focus on futures involves *looking backwards*, to understand how cities have brought both opportunities and costs; *looking to the present*, to spotlight how cities are finding new ways to work together to create impact; and *looking forwards*, to determine how regenerative practices can be more clearly reflected in urban governance (Sharpe 2023).

The future is not static or separate but inextricably linked to the past and present. A focus on regenerative futures within the context of the climate and biodiversity crisis implies making decisions about what to let go of, what to conserve, and what to radically reimagine or change. This approach to futures thinking is summarised through the *Three Horizons Futures Framework* by Bill (Sharpe et al. 2016; 2020) (Fig. 9.1), which has informed the work of Kate Raworth, author of *Doughnut Economics* and advocate for creating more just and regenerative economies. The Three Horizons model explores different futures coexisting in the seeds of the present. Horizon 1 maps a business-as-usual approach; Horizon 2 focuses on emerging positive changes evident in the present; and Horizon 3 is the reimagining of the present into sustainable and regenerative urban futures.

In *Horizon 1*, cities are key actors in the global effort to address climate change and socio-economic inequalities and to protect biodiversity—but they are also a large part of the problem. Cities are deeply rooted in extractive, colonial practices



**Fig. 9.1** The Three Horizons framework for mapping the current system, including what elements will be lost and retained (H1) and which innovations and disruptions will create new pathways and opportunities (H2) for taking us to Horizon 3 (H3), which involves shared visions of viable futures. (Adapted from Sharpe 2019, 2023)

(Lea 2020; Porter 2020). These have led to the devaluation and displacement of vulnerable human and non-human communities. A central message from research on the role of cities in the climate crisis is the need to radically change the path-dependent patterns of unsustainability (Bai et al. 2018; Frantzeskaki et al. 2017). As the global heat crisis unfolds and the world grapples for ways to move forwards in the climate emergency, there is growing recognition that cities must urgently regenerate for the planet to survive.

This leads to *Horizon 2*, where the mission for cities is increasingly clear: they must meet the urgent need to find creative ways to support more regenerative and more equitable futures in the context of the climate emergency. This is about ethical innovations in thinking and practices. These innovations emerge from alternative paradigms that are usually rooted in indigenous ways of being and doing and/or those that are grounded in an ethics of care and interconnectedness. *Buen Vivir*, for example, is an Andean way of being that seeks the transformation of post-extractivist futures through leading “a good life”: a “vision and a platform for practising alternative futures focused on lived practice, that is connected to global movements that promote economies of sharing and care” (Salazar 2015, p. 1).

Catherine Walsh (2010) highlights how alternative paradigms when applied in practice can be challenging due to the entangled nature of ongoing settler colonial practices, the difficulties in applying these paradigms to diverse cultural contexts, and the inconsistencies and contradictions that emerge in everyday practices where these alternative approaches to sustainability-led transformation are co-opted by the State as a new paradigm for development. The question is, then, how do we enact

new urban paradigms and practices that disrupt the status quo? As the Royal Society for Arts (2023) emphasises:

The future doesn't just happen, it's up to us to create it. As we face the challenges of climate change, inequality and environmental degradation, we know to simply sustain is not enough. We want to see a world where people and communities harness their potential to be sources of health and regeneration for all life on earth. Because people and planetary needs are intertwined, our problem solving should be too. We need to regenerate (p. 1).

*Horizon 3* points to the need to radically reimagine more regenerative and more equitable futures, including the need to address in meaningful ways the complex interactions between climate change, cities, and the biodiversity that sustains life on Earth. Lefebvre (2014), for example, called for a planetary-scale urban metamorphosis. If the urban is “the sum of the productive practices and vehicle for new values and an alternate civilization”, then, according to Lefebvre, without a major metamorphosis in the urban, society’s “hopes are fading”. The difference between “change in society” and “metamorphosis in the world” is also outlined by Beck (2016), who argues that a metamorphosis is the overhaul of the social contract in ways that were unthinkable in the past, have become real in the present, and will be critical for the future. This metamorphosis will require leverage points—“...places in the system where a small change could lead to a large shift in behavior”—which are counterintuitive and require deep cultural changes, a shift in society’s paradigms (Meadows 2008; Ch. 6 para.1).

All three of these horizons draw attention to the need for greater awareness and recognition of the *intentional* frames for transformation for regenerative urban futures, that is, the intentions needed to repair and heal the already existing more-than-human urban environments. This will require creating opportunities for multi-species life systems to flourish in harsh, new, hot city environments based on recognising and acting on the need for uncertainty and to be out of our current comfort zone; attending carefully to the power of business-as-usual practices and an alternative understanding of what constitutes “progress”; listening deeply to Indigenous communities and cultures that seek to honour and embrace all life on Earth, or on Country; and disrupting the current unsustainable development logics through the creation of new joined-up multispecies and urban-nature imaginaries.

This is not new, as First Nations leadership and knowledge systems demonstrate. Powerful, Earth-centred paradigms and ecological cosmologies already offer alternative understandings of being and seeing in and of the world that differ radically from the ideologies and values that lie beneath the development histories of the world’s cities. In Australia, all cities are built, and continue to be developed, on Aboriginal and Torres Strait Islander land, which was never ceded by First Nations people. This is a shared climate crisis—First Nations and colonisers, human, and non-human—but with very differentiated histories and therefore ethical responsibilities. The following section draws on the Three Horizons frame to outline different pathways to regenerative futures, with a focus on the urban governance, policy, and planning implications for multispecies justice and the vital role of our rivers and waterways.

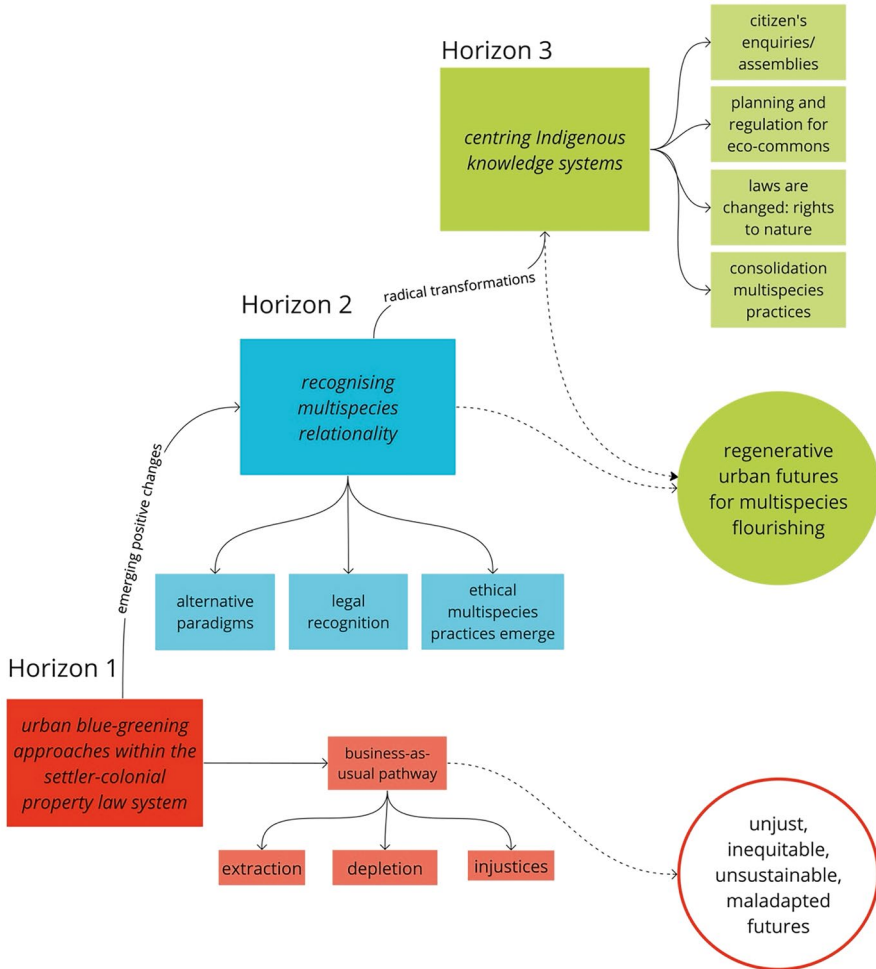
### 9.3 Pathways for Multispecies Flourishing

The climate and biodiversity crisis is forcing cities and their inhabitants to recognise the shared nature of the more-than-human climate crisis. Cities can change in response to this across the Three Horizons in ways that recognise what values, policies, and practices we need to let go of (and which to keep) (Horizon 1); the new experiments and innovations that are taking place to address the changing climate and impacts that are simultaneously environmental, cultural, social, and economic (Horizon 2); and the radical prospects for transformative change that are needed to achieve sustainable urban settlements in which humans and non-humans are able to survive and flourish (Horizon 3). We propose that the horizon pathways can enable a new set of paradigms for achieving regenerative urban futures (Fig. 9.2). An example of each will be outlined below. The Three Horizons framework, as opposed to other futures-thinking models, creates a “triangle of change” that builds a space to visualise how Horizon 1 pathways start to fail; how and when, and through which innovative actions, change starts to emerge in Horizon 2; and how changes in values and beliefs start to gain influence (Curry and Hodgson 2008). Within this space, it is possible to identify conflicts and power dynamics and visualise divergent views and underpinning values that shape a desired future (Curry and Hodgson 2008).

#### 9.3.1 *Horizon 1: The “River with a City Problem” (Brisbane)*

In her account of the 2011 Brisbane floods in the Australian state of Queensland, historian Margaret Cook (2019) makes clear that human decisions and actions were the drivers of the disaster, not the “wrath of mother nature” or “weather of mass destruction”. And not just any humans, but specifically colonial settlers who built cities on flood-plains. The Brisbane River meanders, and as Cook points out, the riverbed, banks, and floodplains are made of mud, sand, and silt that move and shifts as needed. The floodplains are a living ecosystem, and the overflow of water is part of the cycle that changes with the seasons and, in doing so, supports the cycle of biodiversity that exists symbiotically both in the water and on land. The term “flood”, she argues, is a highly anthropocentric term relating to the overflow of water that affects human settlements.

Since colonisation, Australian cities have traditionally relied on big engineering solutions for their water security. The impact of property rights on water access and use and the privatisation of water and water authorities has reinforced a maximum of consumption and profits and increases in both access and supply. As Troy (2008, p. 1) highlights, “now the cities must cope with the stresses these policies have imposed on the eco-systems from which they harvest water, into which they discharge wastes, and on which they are located. Residents are having to pay more for their water, while the cities themselves are becoming less sustainable”. More broadly, the approach to urban water has reflected a presumption that urban



**Fig. 9.2** The Three Horizon pathways for achieving urban regeneration for multispecies flourishing

development will be able to control “nature”—the case of water, through the building of dams, desalination plants, seawalls, and the like.

The settler-colonial property law system in Australia emerges from and serves neoliberal markets and economies. This causes two key problems: first, markets do not capture social-ecological dynamics that emerge and are entangled in the land and thus fail to recognise the interests of the more-than-human—they are focused on the individual; and second, individual private-property rights supersede the rights of the public or the commons (Schuijers and Bush 2022). In trying to find ways to green the city to “bring nature back”, adapt to or mitigate climate change, or enhance biodiversity, urban blue-greening approaches within the private-property system do

not accomplish social-ecological justice in cities (Cooke et al. 2019; Schuijers and Bush 2022). This is also in opposition to Indigenous and First Nations jurisprudence or law:

Aboriginal jurisprudence has no equivalent notion of private property. Being bound –not binding—is the sine qua non of Aboriginal jurisprudence: being bound is a reciprocal movement of obligations and duties between both humans and non-humans. In light of the discussion in the previous chapters, Country is not land and neither is it soil. It is law, as bonds, matter and life fused in knowledge and relational practice (Lay 2016, pp. 255–256).

The Australian approach to *Aqua Nullius*, or “no-one’s water”, denies the existence of Aboriginal and Torres Strait Islander sovereignty, connection to Country, and ancestral laws that position them as the custodians of living waters (see Marshall 2017; Taylor et al. 2022). It follows, then, that there needs to be a shift in the liberal conceptions of property and a move towards laws that bind or bring together living beings and systems through practices of multispecies reciprocity (Lay 2016). This becomes critically important when considering the impacts of climate change and its effects post-disasters. The importance of enabling displaced and otherwise affected communities by engaging with multispecies entanglements and becoming-world practices that acknowledge a shared common condition and enable an ethical and political process of creating the world together affectively and ensuring the well-being of all need to play a stronger role (Houston et al. 2018). This would help create new models of land ownership and property rights that facilitate land to be “donated”, or returned to the interspecies commons, or land that has been abandoned or decimated by climate change impacts to be reclaimed by novel ecologies.

Indigenous perspectives, developed on Country in holistic ways incorporating lore and law, have a particularly valuable contribution to make to address the settler-colonial legacy and capitalist DAMAGE: that is, “**D**ualism (of humans and nature), **A**nthropocentrism, **M**aterialism, **A**tomism, **G**reed (individualism gone mad), and **E**conomism (the myth of no boundaries and limitless opportunities)” (Bosselman et al. 2010). While this is a relatively new concept in Australia, similar “rights of nature” laws, which change the legal status of nature, exist in New Zealand, Ecuador, Bolivia, Colombia, India, and Uganda, to name a few. A shift to more regenerative futures requires far better legal recognition of the role of traditional owners, which includes cultural and environmental heritage protection, in the governance, policy, and planning of cities and urban regions. As Cook (2019) describes in the Brisbane context:

For millennia the Brisbane River followed its own hydrological rhythms with floods replenishing the Estuarine environment and regenerating the floodplains. For 60,000 years the Turrbal and Jagera people had a spiritual connection with the country, respecting and accommodating the river’s life cycles. British colonisation in 1824 brought a problem for the river: settlement of the society on a floodplain by a people imbued with notions of human superiority over nature, a mindset that viewed nature as bounty for progress. To the colonists, riverine floods brought a moment of disorder as the river left its “proper place” with catastrophic results, shattering the ideal of the linear path of progress (pp. ix–x).

### 9.3.2 *Horizon 2: A Swimmable Birrarung in Naarm (Melbourne)*

The pathways to regenerative urban futures begin with embedding new thinking and practices in cities, which include tangible actions to shift cities from business as usual towards addressing climate change and biodiversity loss in creative and collaborative ways. These include the creation of climate and biodiversity-responsive cities where an ethic of care is central to building community, sharing responsibilities, and bringing together spaces and opportunities that facilitate multispecies flourishing. Finding ways to develop eco-social commons is a critical agenda for regenerative futures. This includes developing socially innovative forms of governance and planning that place ecological or multispecies rights at the forefront of justice and decision-making (Metzger 2016).

Current examples of this include supporting different forms of community and nature land trusts that model providing affordable shelter, alternative sources of food, and protect ecosystem functions through stewardship, community participation, and multistakeholder ownership. These types of more-than-human communing practices, based on shared responsibilities, duties, and custodianship, can be acts of “quiet activism” such as reclaiming vacant and abandoned land or creating gardens in street verges. These efforts are already present in Australian urban regions in the shape of urban wildlife habitats in private gardens, long-standing community gardens, and informal tactical urbanism blue-green spaces that are tended and used by local communities. These experimental earth-centred practices can be amplified to increase their impact, replicability, and acceptance through community engagement and local council support (Steele et al. 2021).

An example of this can be found in the innovative projects of Regen Melbourne (RM), a not-for-profit movement committed to addressing systemic problems by building alliances between unusual actors from the business, non-profit, government, and university sectors and the general public in Naarm (Melbourne, Australia). RM’s (2023) argument is that our urban systems are not currently built for this type of collaboration. They describe the need to “break out of siloes and increase collective ambition, create new structures that reactivate and reorganise systems, and initiate ambitious, tangible projects that chart a collective course to a regenerative and resilient future” (p. 1).

The Regen Melbourne “Swimmable Birrarung” project, for example, is a novel adaptation of a broader global movement on how cities undertake transitions towards environmental sustainability, by “daylighting”, or working to bring back and restore, urban rivers, waterways, and ecological habitats that have been built over or hidden underground (Lerner 2019). Their aim is much more than restoring the possibility of swimming for the purposes of human leisure; instead, they aim to establish a collective way to address climate change in Melbourne by “reorienting our city to recognise our waterway as a living entity, as a place inextricably linked to health and biodiversity, and working as a coalition of action supporting the holistic regeneration of the lifeforce that is the Birrarung” (p. 1).

Aboriginal author Tony Birch writes that in the context of the Birrarung, there is the great privilege of being on Wurundjeri land and paying respects not only to their elders, past, present, and emerging, but to all of the Wurundjeri people and their sacred Country including the rivers, waterways, lands, air, and other living species. Tony grew up next to the Merri Creek and has written powerfully about the impact of the south-east freeway development on local waterways, biodiversity, and community:

Before the outsiders arrived in Wurundjeri country the billabong enjoyed a vital ecological connection with other waterways on country. Many of them have since been suffocated by occupation and development. The vast network of wetlands surrounding the Birrarung, from its birth in the mountains to its mouth at what we now call Port Phillip Bay, previously acted as both a repository of life and a sponge, absorbing and distributing water across large tracts of land. These days the river is governed, held in place, against its will. The same could be said for the billabong. If our river and creek valleys are “the lungs of the city”, historically we have forced them to breathe toxins. Over the following 40 years, many more freeways and extensions have been built, crisscrossing and extending the infamous Melbourne sprawl—a city that has undergone more than one quadruple bypass which is yet to save the patient (pp. 18–19).

In response, communities are starting to advocate for the rights of nature to exist, thrive, and evolve. In Naarm (Melbourne), under the *Yarra River (Wilip-gin Birrarung murrn) Act 2017*, there is legal recognition of the connection between the traditional owners and the river. (In the Woi-wurrung language of the traditional owners, Wilip-gin Birrarung murrn means “keep the Birrarung alive”.) As the 2020 preamble to the act states, “This Act recognises the intrinsic connection of the traditional owners to the Yarra River and its Country and further recognises them as the custodians of the land and waterway which they call Birrarung”. The following statement (in the Woi-wurrung language and in English) is from the Woi-wurrung people:

Woiwurrungbaluk ba Birrarung wanganyinu biikpil Yarrayarrapil, manyi biik ba Birrarung, ganbu marram-nganyinu Manyi Birrarung murrondjak, durrung ba murrup warrongguny, ngargunin twarnpil Birrarungwa nhanbu wilaunganyinu Nhanbu ngarn.ganhanganyinu manyi Birrarung Bunjil mungguny biik, wurru-wurru, warriny ba yaluk, ba ngargunin twarn Biiku kuliny mungguny Bunjil Waa marnakith-nganyinBalliyang, barnumbinyu Bundjilal, banyu bagurk mungguny Ngarn.gunganyinu nhanbu nyilam biik, nyilam kuliny—balit biik, balit kuliny: balitmanhanganyin manyi biik ba Birrarung. Balitmanhanganyin durung ba murrupu, ba nhanbu murrondjak!

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 (Wilip-gin Birrarung murrn Act 2017, pp. 1–2).

### 9.3.3 *Horizon 3: Centring Indigenous Knowledge Systems in City-Regions*

Horizon 1 practices outlined here demonstrated how settler-colonial actions of control and domination over living systems, such as rivers and other social-ecological systems, have resulted in the displacement and destruction of people and nature. Currently, these practices are maladapted to a changing climate and have only aggravated the culture-nature divide and deepened injustices. From this, however, complementary forms of nature-based actions and alternative forms of governance have emerged as practices that have led the way to innovative changes in the Horizon 2 pathways (Newton and Bai 2008). These, in turn, are starting to give way to, and are a foundation for, more radical paradigms that envision regenerative cities and regions through a pluralistic, planetary politics grounded in the achievement of eco-social well-being on Earth. First Nations and Indigenous cosmologies have long recognised the interconnected nature of a living planet that includes the sea, sky, weather, and species including flora, fauna, algae, and other microorganisms. For vital, thriving cities and regions to occur, a more expansive understanding of urban nature is needed within the context of the climate crisis that is driven by cities that are still being developed against, not with, Nature.

Aboriginal and Torres Strait Islander approaches to Country offer an ethics of intergenerational, multispecies care and repair. Care for Country in the context known as Australia is a deeply felt ethic and sacred alternative to the borders and boundaries of settler-colonialism that separate out civilised versus wild, human versus non-human, past versus future, and cities versus nature so cruelly and crudely. Indigenous spaces and places within cities and regions do not exist as a separate entity from the urban land, sea, sky or weather. Through the sharing of stories, sculpture, and yarnning, Uncle Bud Marshall, a Waambung man of the Baga baga bari, in collaborative research with Fabri Blacklock and non-Indigenous geographers Lara Daley and Sarah Wright, describes the infinite ways in which “no place, no matter how colonised or urbanised, exists outside of, or separate to, Aboriginal relational ontologies and more-than-human sovereignties” (Marshall et al. 2022).

A working example of this type of resistance can be seen in *The Australian Peoples’ Tribunal (APT) for Community and Nature’s Rights*. This is a unique forum for ecological and social justice that has emerged in Australia, inspired by the first International Rights of Nature Tribunal in Quito, Ecuador, in 2014. Through citizen enquiry, the APT hears Ecological Justice Cases brought on behalf of flora, fauna, ecosystems, bioregions, and local communities around Australia, involving First Nations Peoples, lawyers, community representatives, and scientists (Australian People’s Tribunal 2022). Three citizen enquiries have been undertaken (in 2016, 2018, and 2019) on industrial-scale agriculture and bioregional impacts at the community scale, including the Murray-Darling River Basin, Australia’s largest river system, cultural homelands to Indigenous nations, and internationally protected wetlands, all which are lifelines for Australian cities.

The 2022–2023 citizen enquiry focuses on the healthy regeneration and flourishing of Australia’s biodiversity and ecosystems. The enquiry is also focused on how policy and planning laws can be transformed to ensure that people live within their ecological limits and balance so as to restore and regenerate the living world upon which they depend. The Tribunal has a strong focus on enabling Indigenous people to share their concerns and solutions about land, water, and culture with the global community. This is underpinned by a commitment to the Rights of Nature to support living ecosystems and communities in existing and flourishing and to imagine a future that creates the conditions for multispecies flourishing in the climate crisis through an expanded vision of cities as shared commons advanced by acts of solidarity-building (Fitz-Henry 2022).

Cities have been built on discriminatory, exclusionary, and displacement practices. An important action towards multispecies inclusivity and integration is to unpack, identify, and make visible those exclusionary and violent precepts that are present in planning laws and regulations. Reimagining zoning, for example, can serve as a mechanism to protect nature-cultures and vulnerable communities, particularly in areas predicted to be affected by climate change or that have been extremely extracted and degraded and are at risk of more impacts. Rezoning for ecological recovery and reparation can help reconstruct degraded urban habitats to build social-ecological resilience, create habitats for climate-displaced species, and provide temporary shelters from climate and other anthropogenic-related impacts. Planning for an eco-social commons must be attuned to how ecosystems and diverse communities function, including the sovereign rights of Indigenous groups to reclaim, reformulate, and reconstitute their “right to the city” (O’Malley 1996; Yates et al. 2022), particularly in the climate crisis. Horizon 1 practices are focused on technological, engineering solutions that continue to be extractive but begin to solve at small scales our grand urban challenges. They provide the socio-economic foundation for new technological and social-ecological innovations to emerge, experiment, and put forward alternative ways of being and doing. However, Horizon 3—regenerating cities and regions by transforming planning and governance paradigms—is not achieved through technology and engineering solutions. It requires a radical change in human behavior at the individual and collective scales (Newton and Bai 2008). Accordingly, individual- and system-level behavior change should be positioned as a critical element in research and practice, allowing resistance, innovation, experimentation, shock, loss, and recovery to be part of the systems transformation.

#### **9.4 Regenerative Urban Futures: Mission (Im)Possible?**

Within the context of the climate emergency, there is a radical need for change in the way cities and settlements are understood and experienced. As a result of the climate crisis, global catastrophes will increase in number and frequency and cities will become increasingly uninhabitable (United Nations Environment Programme

2022). Achieving regenerative urban change requires creating opportunities for multispecies life systems to flourish in harsh, new, hot city environments; listening deeply to Indigenous communities and cultures that seek to honour and embrace all life on Earth, or on Country; and disrupting current unsustainable development logics through the creation of new joined-up multispecies and urban-nature imaginaries.

In a regenerative future, shock- and loss-driven communities will be able to form new identities, collectives, and ways of being in and with a landscape (Schlosberg et al. 2020). Identifying and creating mechanisms that can confront powerful structures that try to undermine established or emerging collective eco-social interests is critical. These counterhegemonic social-ecological practices include the recognition that other life forms affected by global catastrophes will need protection and assistance in recovery and adaptation if they are to survive. Recognising that other species are climate or ecological refugees leads to very different urban futures and prospects (Christmas 2017).

Guided by the Three Horizons future visions, this chapter has focused on specific examples of new paradigms to activate a multispecies city flourishing in climate change. The Three Horizons pathways are presented as a roadmap to see into the future through multiple horizons. By identifying our current failures and the inadequacies of our “worth-sustaining” governance and planning structures, we can bring a paradigm of multispecies, regenerative, Indigenous-centred governance. The future of urban regions demands a mission-oriented vision that addresses the urgent need to transition *away* from the extraction, devaluation, and displacement of business-as-usual city practices and *towards* imagining and enacting urban sustainability. Regenerative urban practices are a transformative response to short-term thinking and profit-driven urban development. Achieving regenerative futures will require transformative changes that spring from a co-collective understanding of the present to a co-imagining of the pathways for achieving these futures (Cork et al. 2023). In the Australian context, the mission of achieving regenerative futures recognises the need to reimagine “living cities and regions” in close collaboration with Indigenous leadership and knowledge systems. This is the critical recognition that the past is already present in the future of cities and regions.

## References

- Australian People’s Tribunal (2022) Community and Nature’s Rights—Australian Hearings. <https://tribunal.org.au/sessions/>
- Bai X, Dawson RJ, Ürge-Vorsatz D, Delgado GC, Barau AS, Dhakal S, Dodman D, Leonardsen L, Masson-Delmotte V, Roberts D, Schultz S (2018) Six research priorities for cities and climate change. *Nature* 555(7694):23–25
- Beck U (2016) *The metamorphosis of the world: how climate change is transforming our concept of the world*. Polity, London
- Bosselman F, Eisen J, Rossi J, Spence D, Weaver J (2010) *Energy, economics and the environment: cases and materials*. Foundation Press, Goleta, CA

- Celermajer D, Schlosberg D, Rickards L, Stewart-Harawira M, Thaler M, Tschakert P, Verlie B, Winter C (2021) Multispecies justice: theories, challenges, and a research agenda for environmental politics. *Environ Polit* 30(1–2):119–140. <https://doi.org/10.1080/09644016.2020.1827608>
- Christmas M (2017) How the warming world could turn many plants and animals into climate refugees. *The Conversation*. <https://theconversation.com/how-the-warming-world-could-turn-many-plants-and-animals-into-climate-refugees-72722>
- Cook M (2019) *A river with a city problem: a history of Brisbane floods*. University of Queensland Press, Brisbane
- Cooke B, Landau-Ward A, Rickards L (2019) Urban greening, property and more-than-human commoning. *Aust Geogr* 51(2):169–188. <https://doi.org/10.1080/00049182.2019.1655828>
- Cork S, Alexandra C, Alvarez-Romero JG, Bennett EM, Berbés-Blázquez M, Bohensky E, Bok B, Costanza R, Hashimoto S, Hill R, Inayatullah D, Kaper Kok K, Jn Kuiper J, Moglia M, Pereira L, Peterson G, Weeks R, Wyborn C (2023) Alternative futures in the Anthropocene. *Annu Rev Env Resour* 48:25. <https://doi.org/10.1146/annurev-environ-112321-095011>
- Curry A, Hodgson A (2008) Seeing in multiple horizons: connecting futures to strategy. *J Fut Stud* 13(1):1–20
- Fitz-Henry E (2022) Multi-species justice: a view from the rights of nature movement. *Environ Polit* 31(2):338–359. <https://doi.org/10.1080/09644016.2021.1957615>
- Frantzeskaki N, Broto VC, Coenen L, Loorbach D (2017) Urban sustainability transitions: the dynamics and opportunities of sustainability transitions in cities. In: Frantzeskaki N, Broto VC, Coenen L, Loorbach D (eds) *Urban sustainability transitions*. Routledge, London, pp 1–20
- Guo Y, Gasparrini A, Li S, Sera F, Vicedo-Cabrera AM, et al. (2018) Quantifying excess deaths related to heatwaves under climate change scenarios: A multicountry time series modelling study. *PLOS Medicine* 15(7): e1002629. <https://doi.org/10.1371/journal.pmed.1002629>
- Houston D, Hillier J, MacCallum D et al (2018) Make kin, not cities! Multispecies entanglements and “becoming-world” in planning theory. *Plan Theory* 17(2):190–212
- IPCC (2021) Summary for policymakers. In: Masson-Delmotte V, Zhai P, Pirani A et al (eds) *Climate change 2021: the physical science basis. Contribution of working group I to the sixth assessment report of the intergovernmental panel on climate change*. Cambridge University Press, Cambridge
- Kwai I (2023) Extreme weather hits Europe, and it’s not over yet. *New York Times*. <https://www.nytimes.com/article/europe-heat-wave-forecast.html>
- Lay B (2016) *Juris Materialium: empires of earth, soil and dirt*. Atropos Press, New York
- Lea T (2020) *Wild policy: indigeneity and the unruly logics of intervention*. Stanford University Press, Redwood City, CA
- Lefebvre H (2014) Dissolving city, planetary metamorphosis. *Environ Plann D Soc Space* 32(2):203–205. <https://doi.org/10.1068/d3202tra>
- Lerner D (2019) Many urban rivers are hidden underground—“daylighting” them would bring nature back to cities. *The Conversation*, 10 December. <https://theconversation.com/many-urban-rivers-are-hidden-underground-daylighting-them-would-bring-nature-back-to-cities-128441>
- Marshall V (2017) *Overturning aqua nullius: securing aboriginal water rights*. Aboriginal Studies Press, Canberra
- Marshall B, Daley L, Blacklock F, Wright S (2022) Re-memembering weather relations: urban environments in and as country. *Urban Policy Res* 40(3):223–235. <https://doi.org/10.1080/08111146.2022.2108394>
- Mazzucuto M (2021) *Mission economy: a moonshot guide to changing capitalism*. Penguin Books, London
- Meadows DH (2008) *Thinking in systems: a primer*. Chelsea Green Publishing, Vermont
- Metzger J (2016) Cultivating torment: the cosmopolitics of more-than-human urban planning. *City* 20(4):581–601

- Newton PW, Bai X (2008) Transitioning to sustainable urban development. In: Newton PW (ed) *Transitions: pathways towards sustainable urban development in Australia*. Springer Science & Business Media, Dordrecht, pp 3–19
- Norman B, Newman P, Steffen W (2021) *Apocalypse now: Australian bushfires and the future of urban settlements*. NPJ Urban Sustain 1:2. <https://doi.org/10.1038/s42949-020-00013-7>
- O'Malley P (1996) Indigenous governance. *Econ Soc* 25(3):310–326. <https://doi.org/10.1080/03085149600000017>
- Pineda-Pinto M, Frantzeskaki N, Chandrabose M, Herreros-Cantis P, McPhearson T, Nygaard CA, Raymond C (2022) Planning ecologically just cities: a framework to assess ecological injustice hotspots for targeted urban design and planning of nature-based solutions. *Urban Policy Res* 40(3):1–17. <https://doi.org/10.1080/08111146.2022.2093184>
- Porter L (2020) *Indigenous Cities*. In: Rogers D, Keane A, Alizadeh T, Nelson J (eds) *Understanding Urbanism*. Palgrave Macmillan, Singapore. [https://doi.org/10.1007/978-981-15-4386-9\\_2](https://doi.org/10.1007/978-981-15-4386-9_2)
- Regen Melbourne (2023) *Swimmable Birrarung*. <https://www.regen.melbourne/swimmable-birrarung>
- Royal Society of Arts (2023) *Join the re-generation*. <https://www.thersa.org/regenerative-futures>
- Salazar JF (2015) *Buen Vivir: South America's rethinking of the future we want*. *The Conversation*, 24 July. <https://theconversation.com/buen-vivir-south-americas-rethinking-of-the-future-we-want-44507>
- Schlosberg D, Della Bosca H, Craven L (2020) Disaster, place, and justice: experiencing the disruption of shock events. In: Lukasiewicz A, Baldwin C (eds) *Natural hazards and disaster justice*. Palgrave Macmillan, pp 239–259. [https://doi.org/10.1007/978-981-15-0466-2\\_13](https://doi.org/10.1007/978-981-15-0466-2_13)
- Schuijers L, Bush J (2022) Stewardship: retrofitting private property with the public interest in ecology. In: Graham N, Davies M, Godden L (eds) *The Routledge handbook of property. Law and Society*, Routledge, pp 312–324
- Sharpe B (2019) Three horizons mapping, facilitation guide, *H3Uni.*, 2 August. <https://www.h3uni.org/facilitation-guide/three-horizon-mapping-guide/>
- Sharpe B (2020) *Three horizons: the patterning of hope*. International Futures Forum. Triarchy Press, Axminster
- Sharpe B (2023) *Seeing and thinking in three horizons*. H3Uni, 2 August. <https://www.h3uni.org/foundational-insights/seeing-and-thinking-in-three-horizons/>
- Sharpe B, Hodgson A, Leicester G, Lyon A, Fazey I (2016) Three horizons: a pathways practice for transformation. *Ecol Soc* 21(2):47. <http://www.jstor.org/stable/26270405>
- Solecki W, Marcotullio PJ (2013) Climate change and urban biodiversity vulnerability. In: Elmqvist T, Marcotullio PJ (eds) *Urbanization, biodiversity and ecosystem services: challenges and opportunities*. Springer, Dordrecht. [https://doi.org/10.1007/978-94-007-7088-1\\_25](https://doi.org/10.1007/978-94-007-7088-1_25)
- Steele W, Hillier J, MacCallum D, Byrne J, Houston D (2021) *Quiet activism: climate action at the local scale*. Palgrave, New York
- Steele W, Handmer J, McShane I (2023) *Hot cities: a transdisciplinary agenda*. Edward Elgar City Series, London
- Taylor K, Poelina A, Grafton Q (2022) The lie of aqua nullius, “nobody’s water”, prevails in Australia Indigenous water reserves are not enough to deliver justice. *The Conversation*, December 23. <https://theconversation.com/the-lie-of-aqua-nullius-nobodys-water-prevails-in-australia-indigenous-water-reserves-are-not-enough-to-deliver-justice-195577>
- Troy P (ed) (2008) *Troubled waters: confronting the water crisis in Australia's cities*. ANU Press, Canberra
- Tschakert P, Schlosberg D, Celermajer D, Rickards L, Winter C, Thaler M, Stewart-Harawira M, Verlie B (2020) *Multispecies justice: climate-just futures with, for and beyond humans*. Wiley Interdiscip Rev Clim Chang 12(2):e699
- United Nations Environment Programme (2022) *Emissions gap report 2022: the closing window—climate crisis calls for rapid transformation of societies*. UNEP, Nairobi. <https://www.unep.org/emissions-gap-report-2022>

- Walsh C (2010) Development as Buen Vivir: Institutional arrangements and (de) colonial entanglements. *Development* 53(1):15–21. <https://doi.org/10.1057/dev.2009.93>
- Yates A, Dombroski K, Dionisio R (2022) Dialogues for wellbeing in an ecological emergency: wellbeing led governance frameworks and transformative indigenous tools. *Dialog Hum Geogr* 13(2). <https://doi.org/10.1177/204382062211029>

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