

AN HISTORICAL GEOGRAPHY OF URBAN FOREST PROJECTS IN AUSTRALIA

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Abstract

The urban forest is commonly defined as the sum of all the trees in our city streets, parks, private gardens, and public reserves. It is also typically represented as the percentage of tree canopy covering a metropolitan or local government area. We justifiably think of urban trees making an urban forest and seek to capture its character with quantitative measurements. In a few cases, however, research alerts us to the qualitative character of urban forests and suggests they might be apprehended in a more malleable way. This paper pursues this possibility by exploring the development of urban forestry in Australia since the 1970s. It specifically focuses on qualitative change and maps the emergence of three urban forest 'projects' called the *forest in a city*, the *city forest*, and the *city in a forest*. The paper concludes by reflecting on this finding and considering its consequences for how we apprehend the urban forest.

Introduction

"How many trees make a forest? We think of trees making a forest, but in 19th-century Australia it was grass that made a forest. Although there was some variation in the word's use, 'forest' generally described a woodland area fit to graze. It was a term invested with the pastoral vision...it was an open landscape with large trees, little undergrowth and abundant grass" (Griffiths, 2002, p. 379).

Local governments in Australia's major cities and regional centres are increasingly embracing the practice of urban forestry in their arboricultural policies and planning strategies. Rather than treating trees as unrelated individuals, urban forestry supports a holistic style of arboriculture where local governments seek to manage the city's trees as an integrated urban forest. This concept of an urban forest is commonly defined as all of the trees in a locality's streets, parks, private gardens, and public reserves (Miller et al., 2015). The "sum of its parts" is a shorthand description of the urban forest (City of Sydney, 2013, p. 4) and it is typically represented as the percentage of tree canopy covering a metropolitan or local government area (Jacobs et al., 2014).

We primarily think of urban trees making an urban forest and seek to capture its character with quantitative measurements. History, however, alerts us to the qualitative character of urban forests and suggests they are not wholly defined by the presence of urban trees. Australian forests were once defined by their grass cover and their form and function has shifted over time with changes to our political, economic, and cultural conditions (Dargavel, 1994; Griffiths, 2002). Europe's tradition of town forestry has similarly managed peri-urban woodlands defined by diverse historical meanings and functions (Konijnendijk, 2008). Most recently, urban foresters have been implicated in the transformation of urban trees from instruments of beautification to assets that provide ecosystem services (Davison & Kirkpatrick, 2014).

These changes point to the possibility of finding multiple ways of defining and making the urban forest over time. This paper pursues this possibility by examining the development of urban forestry in Australia. Beginning in the 1970s, the paper describes some of the key problems, actors, and events that have shaped the purpose and practice of urban forestry. It specifically focuses on qualitative change and maps the emergence of three urban forest 'projects' called the *forest in a city*, the *city forest*, and the *city in a forest*. These three projects or styles of urban forestry have different, but overlapping ways of defining and materialising the form and function of the urban forest. The paper concludes by reflecting on this finding and considering its consequences for how we apprehend the urban forest.

The Urban Forest in Australia

The discipline of urban forestry emerged from the arboricultural crisis created by Dutch elm disease. Through the mid-twentieth century, Dutch elm disease decimated tree populations in the eastern towns and cities of Canada and the United States (Dean, 2009).

Chemical treatments were having limited success and the University of Toronto created a research laboratory to explore alternative solutions. Spearheaded by Erik Jorgenson, a professor of forest pathology, the laboratory extended forestry principles and practices to urban tree management (Dean, 2009). Urban forestry was a term coined to convey the laboratory's concern with tree and forest management at municipal and city-wide scales (Jorgensen, 1986). The term quickly travelled to Australia where the concept of an urban forest has developed in the context of our social, economic, and environmental problems and conditions.

The Forest in a City

Urban forestry first came to Australia in the 1970s. This was a period of significant change in Australian cities. The city and the forest were still commonly seen as mutually exclusive spaces (Banks & Sheperd, 1977), but people were fighting to protect urban bushland and large numbers of native trees were being planted in our city streets and gardens (Burgmann & Burgmann, 1988; Timms, 2006). There was a revaluing of Australia's environment at a time when increasing rates of urbanisation and consumption were enhancing the demand for forest access, products, and services (French, 1975). This situation led forestry researchers and practitioners to argue for the creation and conservation of multi-functional woodlands on the urban fringe (Banks & Sheperd, 1977; Ovington & Hamilton, 1969). One of them, John French, took this proposal even further by arguing for the adoption of urban forestry in Australia.

Inspired by emerging work from Erik Jorgensen, French (1977) suggested urban forestry could reduce the pressure on Australian forests and help address our urban planning challenges into the future. He believed it was possible to create multi-functional urban forests that served aesthetic, recreational, economic, and ecological purposes (French, 1975, 1977). These urban forests would be composed of professionally cultivated trees in areas ranging in size from 0.2-800ha (French, 1975). Larger urban forests could be created on city fringes and additional trees and smaller woodlands planted in densely populated areas. Native trees could also be cultivated for timber along nature strips, transport networks, and in recreational areas like parks and golf courses (French, 1975, 1977).

French (1975, 1977) suggested urban forests would be primarily created for their aesthetic and recreational benefits, but could also be managed for wildlife habitat and to produce harvestable food and wood products. In practice, the results were more modest and reflected the revaluing of Australia's environment and increasing enthusiasm for planting native species in the city. Early forays into urban forestry aimed to create what urban foresters were calling BOBITS—bits of bush in the suburbs—that looked like simplified versions of Australia's native forests (Baird, 1986).

Currently the major aim of urban forestry in Victoria is the development of simple stands of trees and understorey that resemble natural forests and cover areas greater than say a typical house block (about one-tenth of a hectare)...Often we are trying to recreate a simple type of stand—something that looks like the bush. Say two or three tall eucalypts, a few shorter tree species such as wattles, sheoaks, paperbarks and teatrees and perhaps some ground plants like grevillea, hopbush, bursaria and tree violet. Plant them all fairly thickly so that in due course they will suppress the grass, reduce the need to mow and look, well, ecological (Baird, 1986, pp. 10-11).

There was a similar approach in Sydney (Duggin & Bartlett, 1976; French, 1983), but urban forestry flourished in Victoria as a policy response to the unemployment and urban decline created by the de-industrialisation of western economies. During the 1980s, the planning and construction of Victoria's urban forests was concentrated in Melbourne's western suburbs (Figure 1). A government review concluded that enhancing the landscape and increasing space for recreation were key to the area's renewal (Gribbin, 1986). A job creation scheme, the *West Parks Program*, was initiated to plan and construct urban forests in the western suburbs. This would provide work for the unemployed, while ameliorating the social and environmental conditions that were producing policy problems in these areas (Anon, 1984; Gribbin, 1986).

These urban forests, in other words, were not just bits of bush in the suburbs. They were political and moral technologies that manifested old ideas about nature's remedial effects on working class people. Early advocates of public parks believed they would improve the health and moral well-being of the city's "humbler classes" (Forrest & Konijnendijk, 2005, p. 33). City Beautiful and Garden City planning movements also presented urban trees and green spaces as a way of achieving more productive societies (Freestone, 2001).

The concentration of urban forests in Melbourne's de-industrialising western suburbs suggests they manifested similar ideas. Urban forests were used to beautify the landscape, create space for recreation, and make work for the unemployed. Their function was to change individual behaviour as one response to the local effects of a structural change in the global economy.

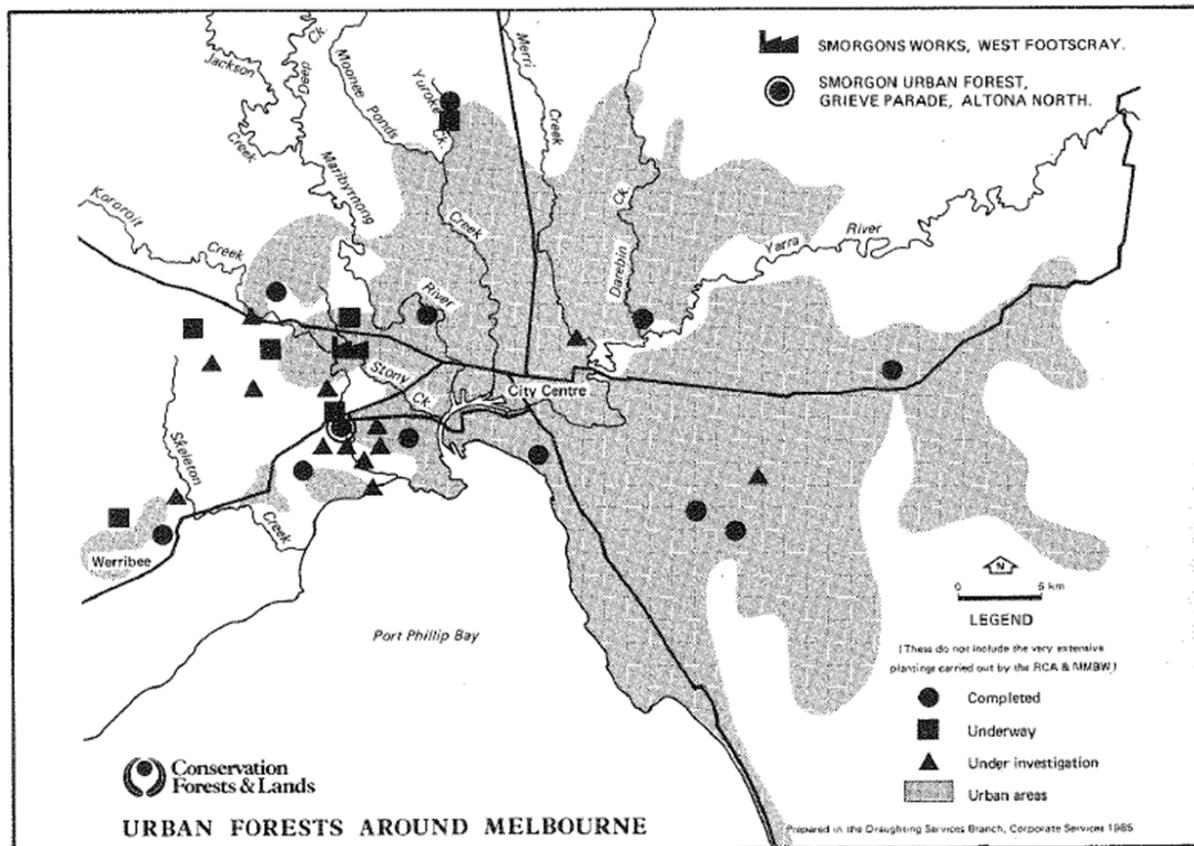


Figure 1. Map showing the location of urban forests in Melbourne that were completed, under construction, or being investigated by 1985. Source: Gribbin (1986).

Creating urban forests as a local response to global problems continued in the 1990s. Australia's federal government took an interest in urban forestry as part of their wider response to climate change and sustainable development. The Brundtland Report (WCED, 1987) put the global environment onto the political agenda and the federal government turned to tree planting in pursuit of an ecologically sustainable future (Hawke, 1989). The Prime Minister announced a plan to plant one billion trees across Australia and develop a national strategy to reduce greenhouse gas emissions (Hawke, 1989). This strategy was called *Greenhouse 21C* and it included a range of actions to reduce emissions from Australia's major cities. One of them was to construct urban forests in a \$7.5million expansion to the one billion tree program (DEST, 1995).

These urban forests would enhance amenity, water quality, and help conserve biodiversity (Stevens, 1996). Their primary purpose, however, was to sequester greenhouse gases and so they were ostensibly different to the BOBITS created in Victoria a decade before. The federal government program would create carbon sinks by planting trees along waterways, industrial areas, parklands and parking lots (Stevens, 1996). They were not formally creating the bits of bush that were simplified versions of our native forests. They were planting a cope of native trees that more closely resembled French's (1975) call to plant harvestable trees along nature strips and transport networks. Rather than producing timber, though, these urban forests were a political technology. They were created to address the global problem of climate change in pursuit of an ecologically sustainable future for Australia and the world.

Conceiving and constructing urban forests as a solution to the problems created by our capitalist mode of organisation is what unites these two iterations of urban forestry.

While there were some differences in form and primary purpose, these urban forests also shared a spatial consistency in that they were made and managed as individual areas of forest within the city. They were a *forest in a city*—the name we can give to this particular urban forest project or style of urban forestry that was first proposed in the 1970s.

This project was first championed by a forester and eventually taken up by state and federal governments.

It was inspired by emerging ideas in North America, it reflected changing environmental values, and gained impetus as a solution to the problems associated with urbanisation, increasing consumption, economic de-industrialisation, and global environmental change.

The City Forest

The city in a forest is a style of urban forestry that matured in the 1980s and 1990s. As it did, another way of making the urban forest was becoming visible with developments to urban forestry in North America. Formal definitions of the urban forest were emerging there that reflected a more holistic and comprehensive approach to urban tree management. Jorgensen (1986) defined the urban forest as all of the trees and wooded spaces in the area utilised by an urban population. He identified a “horticultural habitat” of individual trees, a “forest habitat” of large woodlands, and saw both components as part of a unified urban forest (Jorgensen, 1986, p. 187). This line of thinking shifted the concept of an urban forest from a forest in the city towards a forest encompassing an entire urban area. This shift was identified in Australia from the late 1980s (Gray, 1988) and gradually gained impetus as municipal arboriculture embraced the concept and presented urban forestry as a new professional paradigm.

Foresters like John French were the first advocates for urban forestry in Australia. However, there was a broader lack of involvement from the forestry profession and arborists, planners, and other land managers were taking charge of the discipline (Gray, 1988). Lyndal Plant, for example, was trained in forestry and working in municipal arboriculture with Brisbane City Council. She was an early advocate for urban forestry in local government and used the ‘urban forest’ to describe all of the vegetation in her municipal area.

The urban forest within the city boundaries is composed of a unique combination of natural and purposely planted vegetation. Fringes and fragments of natural vegetation remain on the hillsides, gullies and along watercourses. The purposely planted ‘forest’ of native and exotic amenity trees occupies the backyards, streets and parks among the developed low lands of the city (Plant, 1996, p. 6).

Following Jorgensen (1986), Lyndal Plant defined Brisbane’s urban forest as a collective body of vegetation with horticultural and natural forest components. She also emphasised its multi-functionality and pointed to a wider range of benefits beyond recreation and carbon sequestration. Plant (1996) suggested the urban forest had economic benefits and enhanced urban liveability by providing shade and cooling, reducing air pollution, conserving water, providing animal habitat, adding colour and character to the city, improving property values, and attracting visitors and business.

Plant (1996) felt the future of Australia’s urban forests depended on increasing the community’s awareness of these benefits, but the urban forest she described was initially consolidated through the efforts to convince other practitioners and policy-makers of urban forestry’s merits. At a series of national conferences, arboricultural researchers and practitioners like Phil Hewett and Gregory Moore called for a new professional paradigm. The urban forest was emerging as a descriptive term in what Hewett (2002, 2005, 2007) felt was a dysfunctional, reactive, and inefficient management regime. The perilous condition of urban tree canopies was highlighted alongside the processes posing serious threats to their future (Hewett, 2002; Moore, 2000). Hewett (2002, 2009) argued local governments were not equipped to deal with this problem because they conceived of trees as unrelated individuals that only existed as a cost and risk centre (Hewett, 2002, 2009). There was little consideration of cumulative impacts and local governments costed the planting and maintenance of trees without doing the same for their benefits and services (Hewett, 2002; Moore, 2000).

Like urban foresters in North America (McPherson et al., 1994), Australian arborists were responding to this problem by experimenting with software and formulas that financially quantified the services provided by trees from the late 1990s (Hewett, 2002; Killicoat et al., 2002).

Developments in remote sensing technologies, geographical information systems, and software packages like i-Tree were making this process easier and more accessible (Davison & Kirkpatrick, 2014). Practitioners were able to map, measure, and communicate important features of the urban forest like canopy density and financial cost-benefits. This supported the continuing metrification of the urban forest. Policy documents partly defined the urban forest as a measurement of tree canopy cover and presented it as a form of infrastructure that delivered quantifiable services and benefits to the city (City of Newcastle, 2007a; NSW LGA, 2003).

This way of conceptualising the urban forest had more expansive dimensions and numerical qualities than the urban forestry practiced by state and federal governments in the 1980s and 1990s. Within the sphere of municipal arboriculture, another style of urban forestry had emerged that we can call the *city forest*. The city forest was a more holistic project in that the BOBITs built in places like Melbourne's west became individual parts of a wider urban forest that included all of the trees in a municipal or metropolitan area. New technologies supported metrification and the urban forest came to be represented by quantified measurements of canopy cover and financial cost-benefits. The city forest is a multi-functional project, it can be directed towards a range of problems, but its primary purpose was to reform municipal arboriculture and help address the perilous position of urban tree canopies. It was a style of urban forestry that aimed to secure a more sustainable future for the urban forest. It reflected disciplinary developments in North America, gained impetus from technological advancements, and responded to the professional and material problems facing Australian arboriculture at the end of the 20th century. It also formally entered local government policy and became part of the conditions that might be giving rise to another urban forest project.

City in a Forest

The city forest was an urban forest project that emerged at an opportune time. Arborists recognised sustainable development goals were an opportunity to promote the value of urban trees to local governments (Johnson, 2003). They also suggested it was a critical time to institutionalise urban forestry because local governments were rethinking how they planned and managed the city to meet the challenges of the 21st century (Hewett, 2002, 2005). Urban forestry would contribute to this rethinking process by offering a metabolic vision of the city that increasingly informed the discipline's practice. This vision would complement an entrepreneurial mode of governance and help create the conditions for another urban forest project to enter the horizon of thought and practice.

The development of urban forestry in the 1990s was supported by landmark studies measuring the influence urban trees have on the flows of water, energy, and pollutants through a city (McPherson et al., 1994). Urban foresters embraced a model of ecosystem management and presented the urban forest as a way of controlling the city's metabolic flows (Rowntree, 1998; Rowntree et al., 1994). Australian arborists were alert to these developments and discussed new evidence of the moderating influence trees have on a city's chemical, hydrological, and social conditions (Hewett, 2002, 2007). This metabolic vision of the city was written into the urban forest policies developed for organisations like the NSW Local Government Association (2003) and the City of Newcastle (2007a, 2007b). In these cases, the services provided by urban forests are described as essential for sustaining human life in an urban ecosystem where dynamic and complex interactions occur between humans, natural processes, the built environment, and other living organisms. The urban forest is presented as a primary element in this wider urban ecosystem. Its moderating influence on the way a city works and feels has meant local governments now see the urban forest as having an "important role to play in achieving a healthy, liveable, and sustainable city" (City of Newcastle, 2007a, p. 3).

The orientation of urban forestry towards health, liveability, and sustainability points to the fixing of an extended set of functions for the urban forest. While the city forest sought to reform municipal arboriculture, the urban forest is quickly becoming a technology governments can use to condition the city and its population at increasingly macro and micro scales. The City of Melbourne (2012), for example, foregrounds the multiple contributions trees make to people's physical health and emotional well-being. It also suggests the urban forest will encourage active and satisfying lifestyles, greater community cohesion, and help create a shared sense of identity. This goes well beyond job creation or carbon sequestration to intervene in the atmospheres, identities, and interpersonal relations that are intimate features of people's everyday life. It turns the urban forest into a political technology for shaping populations at very fine scales while it is also directed at the macro level of the city as a whole.

As they have overseas (Heynen & Perkins, 2005), Australia's local governments are enrolling the urban forest into competitive place-making processes. They situate the urban forest in wider strategies for giving their city a clean, green, and marketable image that will help them compete against other cities for flows of people and capital (Sweeney, 2009). In Brisbane, for example, creating a distinctly sub-tropical looking landscape is part of a plan to become Australia's "new world city" (Brisbane City Council, 2013, p. 1). Melbourne, by contrast, is seeking to create a "city within the forest rather than a forest within a city" (City of Melbourne, 2012, p. 5).

This vision speaks to the broader process in which the dimensions and qualities that define the urban forest seem to be shifting again. Emerging from the rise of the city forest in local government policy, another urban forest project is taking shape that we can call the *city in a forest*. This project would bring urban forestry full circle in Australia by reversing the relationship between the city and the forest it began with. Although it is yet to be fully realised, the vision of an ecologically resituated city in a forest is supported by the metabolic thinking and entrepreneurial governance shaping urban forest policy. The urban forest is increasingly framed as a critical tool for moderating and controlling the biogeochemical flows through a metropolitan ecosystem. It is also being invested with additional functions as part of the shift from managerial to entrepreneurial modes of urban governance (Harvey, 1989). This shift has intensified inter-urban competition and governments focus on creating the right climate for capital by making cities seem innovative, global, healthy, liveable, and sustainable (Harvey, 1989; Jonas & While, 2007). In this context, the city in a forest project frames the urban forest as a technology for achieving competitive advantage in the service of capital accumulation. While the city forest is primarily a solution to the problems with urban canopy cover, the city in a forest invests the urban forest with responsibility for building a city's brand and helping to lure "highly mobile and flexible production, financial, and consumption flows into its space" (Harvey, 1989, p. 11).

Conclusion

The development of urban forestry in Australia has been shaped by an evolving set of actors, events, and problems to which the urban forest has been offered as a solution. It was first championed by a forester looking to reduce growing demand for forest access, products, and services. It was enlisted by state and federal governments to address the negative effects and externalities of our global economic system. It entered the sphere of municipal arboriculture and was promoted as a new professional paradigm needed to help address the perilous condition of urban trees. It is now increasingly part of local government policy where it is becoming enrolled into entrepreneurial modes of urban governance.

From this partial history the paper has discerned three urban forest projects called the forest in a city, the city forest, and a nascent city in a forest. Each of these projects is marked by a qualitatively different way of conceiving and creating the spatial form and function of an urban forest. These qualitative changes point to the ongoing production of the urban forest as different actors, events, and problems coalesce in particular contexts. It also suggests we can apprehend the urban forest in a more dynamic light. Rather than just the sum of its trees, the urban forest can be viewed as a mobile, mutable, and even multiple phenomenon.

Different urban forest projects can be contemporaneous, overlapping, and even mutually supporting. The nascent city in a forest project can be seen in the City of Melbourne (2012) and City of Sydney's (2013) urban forest policies, but these documents simultaneously represent a sophisticated response to the threats facing urban trees in the 21st century. In this case, the city forest and the city in the forest can be concurrent styles of urban forestry emerging from the same organisation. The urban forest is multiple, rather than singular, and this multiplicity can be a catalyst for conflict or coalition building with other actors that have a stake in the future of Australia's urban forests.

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