

# ARBORISTS AND ARGUMENTS IN THE URBAN FOREST: A SYNTHESIS

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## Abstract

The framing of urban trees has shifted from adornment or obstruction to a key asset in the delivery of ecological, economic and social services. This transition has been interwoven with the rise of the profession of arboriculture from the ashbed of tree lopping and naive nativism. Arborists are working to improve the sustainability of Australian cities by integrating the management of grey (built) and green (living) infrastructure in a context in which space for trees is in a severe decline and different segments of the population vary in their attitudes towards them. On-ground tree managers and residents are more emotionally engaged with trees than planners. While the general public barely notices the existence of publically employed arboricultural professionals, the professionals have strong opinions about public attitudes and behaviours related to trees, in particular believing that the public over-estimates risk. There are four types of potential conflict within and between the public, the arborists and the planners: between those who see trees as cost-effective machines for achieving urban goals and those in love with them; between those who have ideological attachments to different types of trees; between those scared of trees and those sanguine about their risk; and, between adjacent land owners. Our interviews with tree professionals suggest that the first type of conflict could be avoided by appropriate selection and management of trees, the second mitigated by consultative planning processes, the third by education of the public and the fourth by arboricultural advice and legal means. Most tree professionals felt that there was considerable room for improvement in tree management in cities, but they disagreed strongly on the effectiveness of different options for tree conservation. The relative effectiveness of the wide variety of mechanisms used to maintain and enhance tree coverage in Australian cities needs to be determined.

## Introduction

The present paper provides a synopsis of the results of the work that we have been involved in during the last two decades, with each other and many colleagues and students, on urban trees, the urban forest and tree professionals in Australia. First, we address the history of Australian urban trees, including the history of the arborist profession, followed by a discussion of the desirability, or otherwise, of trees in cities, the variation in attitudes between private tree owners, arborists and planners, the way that attitudes of people affect tree planting and removal, including the roles or risk perception and taste in fashioning the urban tree estate, and, the planning and management implications of our observations.

In many places in the following discourse, we repeat or paraphrase sentences or paragraphs from books and papers of which we have been author or co-author without cluttering up the text with quotation marks.

## History of urban trees

The only temporally comprehensive account of the European history of trees in any Australian city pertains to Melbourne [1]. In a series of cameo chapters, Anna Wilson documents the removal of trees as obstacles as Melbourne was established, their widespread planting for disease prophylaxis in the nineteenth, subsequent disillusionment with trees as machines, the interwar planting of trees for beauty and romance, the sidelining of trees by post-war development and the protective reaction of tree lovers.

Rapid suburban expansion from the 1950s onwards resulted in enormous tree loss [2]. Although Robin Boyd [3] characterized postwar suburban pioneers as vehement arboriphobes, my own recollections of childhood in the fifties in the expanding Melbourne working class suburb of Moorabbin was of ubiquitous tree planting irrespective of individual socio-economic status [1], and of people fighting to retain native trees where suburbia infiltrated bush [4].

British-style tree preservation orders were imposed by local governments in Victoria [4] and New South Wales [5] during the 1960s and 1970s. These local orders placed restrictions on the removal of specified amenity trees in both public and private land, and were adopted as environmental planning instruments in the 1979 NSW Environmental Planning and Assessment Act [5].

An attachment to native trees and bush became politically powerful with the Green Bans of the early 1970s [6]. In the 1970s and 1980s, large native trees were planted in public areas in a chaotic fashion [7] and native gardens became fashionable [8]. Over the next decade, the Landcare movement involved local community groups in the rehabilitation of urban bushland [9].

Between the 1960s and the 2000s, the density of trees increased dramatically in Australian cities, in both gardens and streetscapes [10]. The increasing cover of hard surfaces in the twenty-first century has probably reversed this tendency, on private land at least, with leafy gardens and spreading houses replaced widely by tightly packed neo-brutalist or faux-Georgian two story units.

At the same time as trees were being replaced by ugly units, they were being increasingly positively perceived, as in the nineteenth century, as machines; this time for economic benefit as well as prophylaxis. Software was developed to economically value urban trees. One council [7] calculated its trees to have a replacement value of over 22 million dollars and a net annual return in benefits of over 3 million dollars [5]. Machines needed tenders, who are largely the modern arborists.

The scientific profession of arboriculture originated in the US and Canada in the 1960s and 1970s, representing a significant break from prior focus on both nonurban forests associated with cities and individual trees in urban environments [5]. The defining mission of this new profession was the scientific management of trees and tree populations as an integral component of the urban system [5]. Influenced by developments in North America, CSIRO forester John French developed a vision of urban areas of productive forest was grounded in traditional forestry practices, chiefly timber harvesting [5]. French [11] anticipated compact city arguments in envisaging dense housing clusters embedded within public forest [5].

While there was considerable interest in planting and retaining urban trees during the 1970s and 1980s, urban tree management was not thought to require special skills [12]. During the 1980s, tensions began to emerge between those trained in modern arboriculture in North America, Europe and elsewhere and those they characterized as ‘tree-loppers’, ultimately resulting in the 1989 formation of the lopper-free National Arborist Association of Australia (NAAA), and the contemporary dominance of the arborist in maintaining ‘green infrastructure’.

## **Desirability of urban trees**

There is social and cultural variation in perceptions of the benefits and disadvantages of trees in cities [10,13–16]. There are places within Australian cities where any tree plantings are first resisted then vandalised [10]. Trees induce nervousness in places exposed to bushfire and cyclone [15], often resulting in the post-disaster felling of trees that actually help mitigate disasters [17].

## Variation in attitudes

Among Australian city gardeners, we have those who predominantly perceive urban trees as sacred, utilitarian, decorative or hazardous and those who are indifferent to urban trees, or see most of them as growing out of place [14, 18].

Some gardeners are 'aesthetes' who plant trees to improve the beauty of their house and garden and who may respond to the cultural dictates of fashion [14]. They are the least likely people to plant trees for food production or remove them for firewood, to appease neighbours, or because they are shady. They do not like dense trees in streets [14].

The 'tree huggers' [14] value trees for everything and see them as a problem for nothing. They know their tree species and like streets full of trees. They place a high value on the intrinsic worth and spirituality of trees [14, 18].

The 'practical tree lovers' [14] are equally as fond of the aesthetic qualities of trees as aesthetes and tree huggers, but are more practically than spiritually inclined, having the highest propensity to plant trees for food, to plant for a windbreak, to plant to minimise garden maintenance, to remove environmental weeds and to remove trees to prevent damage to infrastructure. They also highly value trees as wildlife habitat, for recreation and as contributors to the resale value of properties [14].

The 'arboriphobes' [14] are the least likely to plant trees to attract birds and animals, and the most likely to remove trees for most reasons. They want to remove trees that block light, messy trees, dangerous trees and trees that are a traffic hazard. They are the least likely to value trees, except for recreation and property values, and are the most likely to see trees as a problem, except in relation to fire hazard [14].

The 'native wildlife lovers' [14] have the highest propensity to plant to encourage native wildlife, and are not inclined to remove trees because of fire hazard or other dangers. They are especially fond of native street trees [14].

The 'tree hazard minimisers' [14] plant trees to attract birds and animals, but remove trees that interfered with powerlines or infrastructure, are diseased or have potential or actual tree or limb fall. They do not use trees for privacy and remove trees they perceive to constitute a fire hazard. They place a low value on trees for recreational use and to improve property values. A lack of regard for the aesthetic qualities of trees also distinguishes this group [14].

The 'tree indifferent' [14], have a low opinion of the spiritual value of trees, are among the most inclined to see trees as a fire hazard, dislike eucalypts as street trees, and think that there are too many street trees in general [14].

There is no significant variation between the above seven attitude groups in propensity to remove trees. There is significant differentiation in tree planting, with the greatest deviations expected from a random distribution being for the tree huggers, few of whom had planted no trees in the last five years, and the arboriphobes, a large proportion of whom had planted no trees in the same time period [14].

Age, country of birth, ownership status, housing type, block size and time at present address do not differ between the above attitude groups [14]. The best discriminator between these attitude groups is median household income, with income declining in the order: aesthetes, tree huggers, practical tree lovers, arboriphobes, native wildlife lovers, the risk averse and the indifferent [14]. The proportion of the tertiary-educated and the proportion of females are higher among the tree huggers, practical tree lovers and native wildlife lovers than among the rest [14].

Our classification of tree professionals across all Australian States except Western Australia on the basis of their statements in qualitative interviews indicates five attitude groups [19]. One group of passionately critical Queenslanders state that they: 'fight for/protect trees', 'infill/densification/development is destroying trees' and that 'trees are valuable for biodiversity'.

This group has the highest average number of negative statements (critical of present conditions), the lowest percentage of positive statements (approving of present conditions) and the equal lowest positive/negative ratio. The group also had the equal highest average percentage of emotional statements (containing words denoting strong feelings) [19].

The second group largely consists of local government employees from Melbourne. The statements 'Trees irrationally removed because of fire risk', 'maintaining old trees is an important management challenge', 'water/drought issue important' and 'trees need to be in the right place' best distinguish this group from the others [19].

The professionals in group 3 are largely strategists and planners. They have the highest percentage of positive statements and the lowest percentage of both negative and emotional statements. The statements that best distinguish the members of this group from others are utilitarian, such as: 'trees mitigate urban heat island effect' and 'trees important for storm water' [19].

Privately employed arborists constitute most of group 4. They have the equal lowest positive/negative statement ratio and the equal highest percentage of emotional statements. 'Developers try to corrupt arborists' and 'problems with effectiveness of some tree protection mechanisms' are statements that distinguish this group from others [19].

The professionals in group 5 are concentrated in Brisbane and Hobart. They are mainly tree managers. They are equal lowest on the positive/negative statement ratio with those in groups 1 and 4. The statements that best distinguish them from other groups were: 'risk aversion makes for more careful tree management', 'people scapegoat innocent trees', 'some people/councils exaggerate tree risk' and 'old people do not like trees' [19].

The most common opinion of urban residents held by urban tree professionals is that some people hate trees, or, at least, some tree species, an attitude that did not vary among groups, although there was much disagreement about the reasons for arboriphobia, the demographic correlates of arboriphobia and the species most likely to provoke arboriphobia [19]. The next most commonly expressed opinion, that people exaggerated tree risk, discussed in depth in Davison and Kirkpatrick [17], does vary, with a strong peak in group five [19]. Two other opinions about people that varies between groups are also most strongly held by those in group 5; that older people do not like trees and that people scapegoat innocent trees. The opinion that 'trees were irrationally removed as scapegoats for fire or for fear of fires' also varies between groups. This opinion peaks in group two, which was dominated by Melbourne arborists who were interviewed within months of the 'Black Saturday' fire that devastated parts of peri-urban Melbourne in 2009 [19].

More than a fifth of the tree professionals held the views that 'people irrationally fear trees', 'people need educating about trees', 'immigrants do not like ornamental trees', 'immigrants no different to anyone else in attitudes to trees', 'people do not like trees because they are messy', 'street trees improve social/community relationships', 'most people love trees', 'low income people do not like trees', and, the 'public are increasingly aware of the value of trees' [19].

## Variations in Actions

Attitudes do not necessarily translate into practices [e.g. 20–22], and practices thought to be consistent with attitudes do not always achieve outcomes consistent with attitudes [23].

The aesthetes are more likely than expected by chance to neither remove nor plant trees and less likely than expected to have done both. The tree huggers well exceed expectation in planting, but are markedly in deficit for removal. The practical tree lovers plant and remove and plant more than expected, the mirror image of the arboriphobes and the tree indifferents. The wildlife lovers removed trees less than expected, while the tree hazard minimisers conformed to expectations [14].

The aesthetes, tree hazard minimisers and tree indifferenters remove many more eucalypts than they plant, while tree huggers plant many more than they remove. Tree huggers are most likely to plant wattles, while native wildlife lovers are the least likely to have done so. The arboriphobes and tree indifferenters plant no scleromorphic native trees while the practical tree lovers are most inclined to plant them. There is no differentiation between groups in the planting or removal of broad-leaved natives. More people plant fruit trees than remove them in all groups except the aesthetes, with the excess of planting over removal being greatest in the tree huggers. There is no differentiation between attitude groups in planting and removal behaviour for deciduous exotics, evergreen exotics, arboreal monocots or gymnosperms.

The differences in attitudes to trees and action related to attitudes is manifest in a highly variegated suburbia, in which adjacent gardens are highly unlikely to share species or type of trees, unlike the situation in North America, where there is a high degree of spatial contagion [24].

The motivations for the planting of trees are very different between private landowners, on the ground arborists and planners [19]. Although all recognize beauty and shade as primary motivations for tree planting, the planners emphasise the attributes of trees as green infrastructure, as in storm water management, the on ground arboriculturalists recognize effects on property values, and residents largely have motives related to desired appearance and nature conservation [19].

## **The role of risk and taste in tree death**

Although it is yet to be properly tested, circumstantial evidence suggests that much tree death on private land in Australian suburbs is related to change of ownership every decade or so interacting with different preferences for types of trees among consecutive owners [15]. A size class analysis at the species level [25] was able to detect species no longer planted, and those presently fashionable, indicating that preferences change through time as well as differing between contemporary attitude groups.

Tree-related risk has, in part, worked against urban greening activities by reducing tree size and age. Conversely, the rise of cultural concern about risk has encouraged the development of the profession of arboriculture, which, in turn, has pioneered sophisticated ways, familiar to neither engineers nor ecologists, of ensuring the cohabitation of people and trees [17]. Risk is only one of the problems associated with big and old trees. The cost of their maintenance is considerable, compared to smaller and younger trees. For example, cheap access to crowns for pruning of dangerous branches has a height limit, and morbidity, and therefore the cost of treatment, increases with aging [19].

## **Implications for conflict management and planning**

Our data suggest that there are several types of conflict about trees in cities. The most common conflict seems to be between those who are emotionally, morally or spiritually attached to trees and those who see trees as a subject of cost-benefit equations. The former will fight hard to save trees that are considered cost-ineffective by the latter. The second type of conflict is between those who want an urban forest with very different dominant strata or structures, for example, those who would rather have local native street trees versus those who would rather have elms versus those who do not want street trees. A third type of conflict is between those whose knowledge of trees allows them to realistically appraise tree risk, and the balance of tree risk with tree benefit, and those who disproportionately associate risk with trees. The latter will fight to destroy the 'dangerous' trees that the former wish to protect. The fourth type of conflict is territorial, with trees on adjacent properties, parks or roads perceived to have negative effects on the territory and/or life of the complainant.

Thus, people fight with their local government or neighbors to get trees removed that they perceive, among many other possibilities, to crack their paths, block their drains, cut off their light, drop messy leaves, cause allergic reactions or suck goodness from their lawns.

Planners and strategists see the solution to their conflicts with tree lovers to be not to plant trees that could create conflict. Many residents suggest that trees needed to be selected to suit particular locations, an option they believed that had not been adopted in the past.

By itself, the above strategy tends to exacerbate the second type of conflict, in that the trees that are likely to get large and brittle are less liable to be chosen than trees so diminutive that they almost do not deserve the name. Small exotic trees are not likely to produce public spaces that appeal to the more romantics, nativists, or contribute to the architecture of urban landscapes in a way comparable to large trees.

The majority of arborists and planners saw the solution to such conflicts to lie in an improvement of planning and governance processes. One quarter of the tree professionals saw a need for better governance and planning structures for trees within and between municipalities and one third thought that there was a need to improve planning processes to protect trees and increase tree cover. Participatory planning processes require tree professionals to listen to the concerned public and the public to listen to the tree professionals, theoretically allowing widespread acceptance of solutions that are necessarily compromises.

The major solution offered by tree professionals to conflicts about risk was better education of the public. They saw their role to be 'changing people's attitudes to trees'. However, exaggerated fear of risk is difficult to shift when it is constantly reinforced by media and other cultural representations of tree-related risk. Improved arboricultural education and better communication between tree professionals was advocated by many.

Arborists see themselves as effective mediators of disputes between neighbours. The legal process for tree conflict resolution developed in New South Wales is highly approved of by many arborists and planners. However, there are major differences of opinion on the effectiveness and appropriateness of legislative and regulatory mechanisms for tree protection. These differences of opinion may relate to the different tree protection mechanisms adopted by different local government areas and States, varying from laissez-faire to rigorous and expensive tree removal permission processes [19]. This variation offers the possibility of future tests of effectiveness for particular goals of different options. Our research suggests that there will be few options suitable for all groups of people in all places, but that locally derived approaches that recognise diversity in attitudes and behaviour will be required.

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