DEVELOPING SUSTAINABLE CITIES: VISIONS, JOURNEYS AND TREES

DR PHIL McMANUS

INTRODUCTION

Imagine having to travel just to see trees – not because you want to, but because it is the only way that you can get to see real, live, growing trees. It sounds like an absurd idea you might think. In October 2006, Australia's biggest property developer Harry Triguboff claimed that Sydney has "too many forests and parks". He wanted to build apartments along the coast. Trees would be maintained in the Blue Mountains so that urban residents could visit this area if they desired. This dystopian vision is unlikely to gain widespread acceptance and could be dismissed out of hand, but it does highlight a more immediate issue. All of Australia's largest cities are attempting to restraint growth at the fringe of the city. This means making the existing built-up areas more compact. Given the challenges for tree management in the current Australian cities, what does this suggest for tree management when cities are proposed to be consolidated with, for example, 445 000 new dwellings in the existing areas of Sydney by 2031?

This paper highlights the importance of trees in cities, discusses some visions for Australian cities and presents ideas for not just maintaining trees and vegetation cover in cities, but to increase the quantity and quality of trees and vegetation. The paper commences with a perspective on sustainable cities. It then introduces a comparison between the functional perspective of trees and the discursive construction of trees and nature in relation to the sustainability of Australian cities. The following section of the paper introduces the visions of Ebenezer Howard and Le Corbusier to move towards a utopian, rather than dystopian, future. These visions are used as a basis to develop alternative ideas for trees in cities. A number of ideas are introduced, with the goal being to offer a positive, utopian styled vision for the future of Australian cities, accompanied by ideas of how to implement such a vision.

SUSTAINABLE CITIES

The move from environmentalism to sustainable cities is an important step, both globally and in Australia. It challenges the meaning(s) of "the environment", but it has also challenged much of the planning and the planning history in Australian cities. The concept of sustainable cities has generated a significant body of literature since the early 1990s. It is an extension of the concept of 'sustainable development', a term that was first used in the World Conservation Strategy in 1980 but has similarities to the notion of conservation espoused by Gifford Pinchot in the late 19th century. In 1987, the World Commission on Environment and Development (WCED) released its report which promoted the idea of 'sustainable development' and defined it as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987, 8). As Button (2002) noted, the emphasis in this definition is temporal rather than spatial or geographical. This presents challenges when the implementation necessarily involves spatial and geographical considerations, including the unique context and character of Australia's major cities. The particular interest of people at this conference, one assumes, in trees, very much involves the intersection between spatial and temporal elements of sustainability.

Many of the initial approaches to implement the idea of sustainable development often seemed to be an extension, or perhaps even a repackaging, of what used to be called 'environmental management'.

The ‘environment’ was often equated with the ‘natural environment’ or ‘nature’. Sustainable development appeared to have a lot to do with forests (outside of cities), mountains, rivers and oceans, but less to do with cities. If the concept did include cities, it was often thought of in terms of the environmental quality or the environmental assets of cities (McManus, 2005). The idea of the city being intricately linked with the surrounding region, and with what Wackernagel and Rees (1996) has called the “distant elsewhere”, while not new, took time to gain credibility. Importantly, the idea that our cities are nature, albeit transformed, has taken even longer to take hold. This is highlighted through the dystopian vision of Harry Triguboff, but I suspect held implicitly by many other people, where there is a traditional separation between the city (civilization as Meriton apartments) and nature (wilderness, uncivilized spaces, danger). Part of the move to erode these discursive boundaries is to recognize the functional benefits of trees, so that there is an incentive to avoid the dichotomous civilization versus nature perspective of Harry Triguboff.

FUNCTIONAL PERSPECTIVES ON TREES

While trees may be understood in various ways, and considered of value in their own right, they may also be seen from a functional perspective. This functional perspective could be environmentally-orientated, but this is not always the case. Trees have been recognized as providing many “ecosystem services” and other services to humans (Sexton, 2003; Gorman, 2004; Lohr, et al, 2004; Wolf, 2005; Leal, 2006; Barkham, 2007). For example, trees;

- Provide shade,
- Reduce temperatures,
- Have biodiversity value,
- Provide habitats,
- Filter pollutants to improve air quality,
- Reduce the urban heat island effect (thereby helping to reduce the number of lightning strikes in cities),
- Reduce urban desalination,
- Have an aesthetic appeal,
- Enhance economic values by promoting shopping and raising house prices,
- Have a psychological calming capacity

Sometimes these functions may conflict with each other, or with other activities in cities. When thinking about the role and significance of trees in cities it is important to adopt a functional perspective about trees and to use this approach to distinguish between the terrain and the map. The map is often labeled with terms such as “open space”, or the policy documents refer to “vegetation”. Open space is the area coloured green on a map. It may contain trees, or it may be notable due to the absence of trees. Vegetation refers to plant life as a whole. Beyond the basic differentiation of a tree from other forms of vegetation or classification of space by function, there is great diversity in the physical character of trees, the roles of trees, the understandings and symbolism of trees and the perception of trees in cities. The important functions of trees, eg. shade, cooling, habitats, and so on, cannot easily nor adequately be provided by grass and shrubs.

The functional benefits of trees are significant when discussing the preservation of trees and various understandings of the importance of urban nature (see Daniels and Tait, 2005; Hinchliffe, et al, 2005; Davison 2006; Davison and Ridder, 2006). An approach based on functionality has benefits in overcoming the civilization versus wilderness divisions that exist in the minds of people like Harry Triguboff, and on some urban planning maps, but it has limitations. There is an important distinction between “greening cities” (Johnson, 2003), which is often about reintroducing vegetation for reasons of aesthetics and thermal comfort, and projects of urban nature that question the role of humans and focus on humans living with other species in cities (Hinchliffe, et al, 2005; Davison and Ridder, 2006).

The urban nature projects that question the role of humans are often premised on a different construction of nature – one that recognizes various cultural understandings and the agency of nature.

THE DISCURSIVE CONSTRUCTION OF TREES

Understandings of trees are deeply cultural. There are different types of trees, but the significance and worth assigned to them are cultural. This notion includes the economic value of trees, which is based on material properties and the cultural valuing of various properties of trees (such as grain, leaf colour, preference for fruit, depth of roots, hardness of the wood, and so on). These understandings have changed over time. Individual trees may be valued for their size or trees may be valued or feared for safety reasons. Environmental conflicts about trees, such as the work by McManus (2006) that highlighted how mangroves in Rozelle Bay trap sediments, creating the conditions for their own expansion and thereby changing the character of an area, can be understood through what is known as a culture-nature perspective. This perspective sees trees as having agency (acting), but not with intentionality.

Current debates about the efficacy and desirability of trees in Australian cities are closely related to the agency of trees, particularly in the uplifting of footpaths, the dangers to powerlines and the penetration of tree roots into underground pipes. This is manageable, but only if we follow Jim (2005, 383) who concluded that "the need to have the concurrence of the tripartite –site, tree and management - and the persistence of the union through time, cannot be more strongly emphasized". The discursive construction of trees, especially when the functionality of trees is recognized, enables an articulation between trees, sustainable cities and the lives of people and other species to be characterized by multiple visions, needs and ways of relating. It is possible to use this approach to nature to consider how different urban visions have been developed, and may be adapted, to offer something of value for Australian cities into the future.

VISIONS

In this section of the paper I introduce three visions of cities from among the many possible visions. Two of these visions were intended to be utopian, although at least of one of these visions is used frequently as a dystopian warning today. The three visions are Ebenezer Howard's Garden City vision, Le Corbusier's high density city plans as in la Ville Radieuse, and the dystopian vision found in the cult-film *Blade Runner*.

Ebenezer Howard, in his 1898 book *Tomorrow: A peaceful path to real reform,* offered a vision of not just the city, but of humanity. His vision was of a person who worked in nature, but enjoyed the comforts and opportunities offered by the towns. The town/country magnet brought human society and nature together, and the urban form Howard designed to accommodate this union was the Garden City. Among other things, the Garden City contained a central park, houses with gardens, allotments and new forests. The Garden City was the physical manifestation of a vision about people, political-economic systems and justice. The Garden City integrated the built environment with the living environment – trees on streets, lots of parks, and so on. In the context of nineteenth century English industrial cities, this vision offered, in Howard's own words "real reform". It is important to recognize, however, the context of this vision was the 19th century crowded industrial city. Howard's vision offered space (and hence sunlight) but it also required space. One of the followers of Howard, who was influential in his own right, Raymond Unwin (1912) summed up the position with the title *Nothing Gained by Overcrowding*. The 21st century sustainable cities cannot be feasible if they require large amounts of space. Alternative visions are required.

The Swiss-French architect Le Corbusier, was actually promoting open space, vegetation and trees in his designs. Although only parts of le Corbusier's cities were high-rise, this is the dominant imagery. These designs appear at first to be totally different from Ebenezer Howard's Garden City, and in many ways they are, yet they share a concern about the need for open space and nature.

Le Corbusier abhorred the dark, old, inefficient cities, and sought to provide light, space and nature by developing high-rise living spaces, modern transport systems, and leaving 95 per cent of the site as open space (Rudlin and Falk, 1999). The theme was “the skyscraper in the park”. This is very different from Harry Triguboff’s “vision” of the apartment block among other apartment blocks, and forests in Katoomba. The discrepancies between Le Corbusier’s utopian vision and the dystopian character of what was built are well known. This is not unusual when utopian visions are attempted to be implemented in an imperfect world (Hardy, 2000). One notable change between le Corbusier’s plans and the actual construction of dwellings based on his ideas was the response to financial and demographic pressures in the post World War 2 era, which often produced “the public housing skyscraper in the car park”. There were fewer trees, and less open space, than envisaged by Le Corbusier.

This is the theme of dystopian movies such as *Blade Runner*, where Los Angeles in 2019 is a city devoid of trees. There are many signs of decay – including the darkness, the absence of trees and animals, and the perpetual acid rain. Dystopia has many symbols, but it is interesting and significant that the absence of trees is symbolic of both urban and societal decay. Dystopian visions are helpful in they warn about potential consequences of actions, and highlight what we should avoid. Sometimes to dystopia is created by everyday practices, as noted by Barkham (2007) in relation to the loss of trees in London. Interesting the title “chainsaw massacre” highlights the destruction, yet the article explains that this is not due to a tree-hating ogre, but everyday attitudes and practices that eventually combine to create a reality that nobody necessarily planned or envisaged.

ALTERNATIVE VISIONS FOR TREES IN CITIES

In the future Australian cities will be of high building density, and most likely to higher population density allowing for life-cycle trends. The town-country vision of Ebenezer Howard, while admirable, is unsustainable and inequitable in the existing cities. Elements of Howard’s vision will persist where heritage values can be invoked, but otherwise densification is likely to occur. This means a likely loss in trees in the city, and space for people to enjoy nature.

Le Corbusier’s vision of people living in high-density cities amongst parkland has more to offer, but it is not surprising that it is equated with the dystopian visions in *Blade Runner*. For this high-rise vision to have any hope of acceptability, the geometric and impersonal appearance of concrete towers must be replaced with high-density buildings that respond to the place in which they are situated and relate to people’s preferences for identity in their dwellings. It is also important to integrate nature into the buildings, because above the first few storey’s what became apparent from the environmental psychology literature was that residents in high-rise towers could not relate to the parkland in which their building was located. The logic of Le Corbusier’s vision was at odds with the lived experience of the residents of the buildings.

What does this mean for Australian cities? First, the need to use space effectively means that dwellings and other buildings must become ecologically productive. This means roofs having solar cells, rooftop gardens and so on. The walls of buildings need to be used more effectively to help cool the city, sites for plants, and so on. The current construction of rooftop gardens (as intensive and extensive) is not particularly helpful. What would be more useful is to understand the benefits of rooftop gardens, and to integrate these spaces with other trees in the city.

I’ve started with rooftop gardens to highlight the geometric features of the higher-density sustainable city. The rooftop garden is a plane, but one that is above the ground. This highlights the need to think four dimensionally, including the dimension of time. Ebenezer Howard’s vision and Le Corbusier’s vision can be integrated by introducing city/nature together in three dimensions, thus overcoming the critiques of Le Corbusier’s tower in the park approach.

High density cities should have some high-rise buildings, but high-rise buildings could easily include mid-level gardens (every few floors, or by having rooftop spaces included in the building design from its initial stages).

Second, the linkages between the planes are crucial. This involves hanging gardens, street trees, landscaped entrances specifically designed to connect the inside and outside of buildings, undercover gardens, and so on. The challenge involves developing new linkages so that when the existing mature trees die, their replacement does not become enormously expensive nor leave unsightly gaps in the city.

Third, the spaces outside the highest density parts of the city should be developed to include clusters of trees. I have previously termed this idea “copse planning” which, similar to the notion of parkettes is a way of introducing small areas of trees into cities where space for large parks is limited. Ideally the trees in a copse should be an ecological community exhibiting interdependence, rather than an assemblage of plants that require high levels of maintenance by humans. Copses provide an ideal opportunity to reintroduce some endemic species into the city, because the conditions for their survival (space, light, soil, and so on) can be optimised in these spaces.

Copse planning and street tree projects would be mutually supportive and together constitute part of an urban forest. By locating copses at relatively short distances from each other, and connected through a system of street trees, they would physically, perceptually and functionally form part of an urban forest.

Various cities are making progress in some of these areas. I’ll briefly mention two examples in this paper. Chicago is important because of the work being undertaken in making the city “green”. Chicago has more rooftops planned and built than all other U.S cities combined. The idea of using rooftops for urban agriculture, cooling purposes, and so on, is not crazy – what is crazy is that we are not doing more of these activities in our cities. This approach is part of a wider approach to urban forestry, and changing both the physical character of Chicago and the image of the grimy, mid-western city.

Sustainable development in Hong Kong is premised on the notion of the high-rise city. Technological development is used to make the new buildings more energy and water efficient, to separate waste streams, and so on. While conflated with other values, particularly surveillance of children, the high-rise project is appropriate in the Hong Kong context. Importantly, while not suggesting we redevelop out cities to be like Hong Kong, we can learn a lot from higher density cities to improve Australian cities.

CONCLUSION

The idea of <u>having</u> to travel to the Blue Mountains, or anywhere else for that matter, to see trees is absurd. Of course not all types of trees, or the number of trees, can be grown as easily in cities, and it may be desirable to use sustainable forms of transport to travel and experience trees such as are found in the Blue Mountains.

There should be no need to travel to see trees. City dwellers should be living in an urban forest, because of the functional benefits of trees to humans and because the separation of cities from nature does not make sense on many levels. Imagine the journey to experience trees being as little as walking onto the balcony, up to the rooftop garden, and so on.

This vision of walking into the urban forest from your dwelling is under threat in Australian cities due to increasing densities being developed, and further proposed, in our cities. The reduction of available private space in individual lots, as well as the move away from single residential dwellings, means that other spaces in the city need to be used more effectively to grow trees. These include copses, rooftop and mid-level gardens, and the walls and other spaces that can assist in connecting the otherwise isolated islands of vegetation.

"Sustainable city" as an idea is about much more than being "clean and green". It is about the physical planning of the city, the operations of the city through functions such as transport, communications, and so on, and about the lived experience of citizens. Urban residents who can walk and enjoy healthy cities are much likelier to be happy people. Integrating trees, buildings and other spaces and activities into cities is an important part of a sustainable city, which in turn should contribute to a sustainable planet. Without suitable visions, and the ability to implement these visions, the future of our cities looks bleak. Fortunately, we can avoid dystopia if we can realize some of the positive elements of previous utopian thought, but do so appropriately in a 21st century context that recognises the specificity of each Australian city.

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