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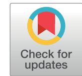
Review

The dimensions of urban green equity: A framework for analysis



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ABSTRACT

Urban vegetation, and in particular urban forests, provide a wide range of ecosystem services to urban societies and may thus be classified as environmental goods. Their status as goods suggests that urban societies' interactions with urban vegetation should be subjected to equity analyses to determine the fairness of such interactions. However, despite good evidence that the distribution and governance of urban vegetation are inequitable in many cases, there is no urban forestry-specific framework for analysis of urban green equity: how we access and govern urban vegetation. To begin to fill this gap, this paper reviews research in the fields of ethics, social and environmental justice, political ecology, and urban forestry research and practice, with a focus on urban forestry, and presents a discussion of the dimensions and sub-dimensions of urban green equity. The principal dimensions that emerged from the analysis were (1) the spatial distribution of urban vegetation, and (2) recognition in urban vegetation decision making, defined here as acknowledgement of participants' difference, existence and validity in decision-making processes, both formal and informal, and the inherent inclusion and power associated with that acknowledgement. Sub-dimensions of spatial distribution included temporality, condition, preference, and ownership, and sub-dimensions of recognition included representation and procedure, and the desire and ability to participate in decision making processes. These dimensions provide a framework for future urban green equity analyses and can help inform public conversations on urban green equity.

1. Introduction

Urban vegetation, and urban trees in particular, provides a wide range of ecosystem services to urban societies, such as mitigating the urban heat island effect (McPherson et al., 2005; Oke, 1973), reducing localized flooding (McPherson et al., 2011; Roy et al., 2012), improving air quality (Escobedo and Nowak, 2009; Nowak et al., 2006), mitigating climate change (Nowak and Crane, 2002), reducing residents' stress levels and improving psychological health outcomes (Annerstedt et al., 2012; Lottrup et al., 2013; Ward Thompson et al., 2012), improving physical health outcomes (Mitchell and Popham, 2008; Ward Thompson and Aspinall, 2011), and increasing property values and commercial activity (Gatrell and Jensen, 2002; Nesbitt et al., 2017). While it is important to acknowledge that urban vegetation can also provide disamenities, such as damage to property, and thus not all urban residents perceive urban vegetation as positive (Fraser and Kenney, 2000; Heynen et al., 2006), much of the literature suggests that urban vegetation is generally a social, economic, and environmental good. Its nature as a good, for which there may be competition in society, indicates that societies' interactions with urban vegetation should be subjected to an equity analysis to determine the fairness of such interactions.

Despite the clear importance of urban vegetation to various aspects of urban quality of life, research to date suggests that the distribution and governance of urban vegetation are inequitable in many cities around the world (Buijs et al., 2016; City of Vancouver, 2014; Heynen, 2003; Heynen and Lindsey, 2003; Landry and Chakraborty, 2009; McConnachie and Shackleton, 2010; Ogneva-Himmelberger et al., 2009). Urban parks and woodlands are more often located in wealthier neighbourhoods (Poudyal et al., 2009) and require leisure time to enjoy as they can be located some distance from urban residents' homes (Harnik, 2010). The size and abundance of trees on private property are often higher in high-income neighbourhoods (Kirkpatrick et al., 2011) and there is evidence that lower levels of canopy cover across all land ownership types are more often associated with lower-income and racialized neighbourhoods (Landry and Chakraborty, 2009; Nesbitt and Meitner, 2016; Schwarz et al., 2015). In some cases, socioeconomically disadvantaged and racialized urban residents are less likely to engage in urban vegetation stewardship activities, to participate in urban forestry decision making, and to have control over urban vegetation resources

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(Buijs et al., 2016; Heynen, 2003).

While issues of equity in urban forestry are of clear importance in a just society, there is no urban forestry-specific equity framework to guide equity analyses. To begin to address this gap, we present a discussion of the dimensions of urban green equity, broadly defined here as fair access to and governance of urban vegetation regardless of differentiating factors such as socioeconomic status, race, culture, or age (Nesbitt, 2017), drawing from theory in the fields of ethics, social and environmental justice, political theory and political ecology, and urban forestry research and practice. These dimensions may be used to structure urban green equity analyses and help provide a common framework for the social dialogue that accompanies such analyses.

1.1. A recent history of social and environmental justice research

Social justice, and environmental justice as an application of social justice in the realm of environmental issues, have historically been concerned with the distribution of social rights and goods (Schlosberg, 2007). Rawls' classic text, *A Theory of Justice*, provides a strong basis for this distributional focus, defining justice as 'a standard whereby the distributive aspects of the basic structure of society are to be assessed' (1999: 9). This definition is based on the liberal ethical conception of freedom and equality as the foundations of equity, applied in such a manner as to promote the wellbeing of the members of a society (Rawls, 1999). These principles are fundamental to the concept of equity but are sometimes in tension with one another. Freedom is focused on the wellbeing of the individual and her/his capacity to behave in a manner that promotes that wellbeing. Equality is focused on the wellbeing of the collective members of society and the behaviours that promote the wellbeing of the collective. According to distributional theories of equity, an equitable society must balance freedom and equality so as to promote the highest wellbeing of the members of a society, and a well-ordered society will do so according to a common understanding of what is just and unjust (Dobson, 1998; Low and Gleeson, 1998; Rawls, 1999). According to the liberal conception of equity, each person's basic entitlement to freedom and rights must be compatible with a system of liberties and rights for all (Rawls, 1999; Rizzotto and Bortoloto, 2011). Individuals are thus required to give up some freedoms in the pursuit of collective wellbeing, the standard by which resource distribution is evaluated. Distributional theories of social equity are applied in contexts where resources are limited, and these limits create the tension between freedom and equality. The freedom to consume resources for the benefit of the individual will reduce the equality of resource use by all members of a society, in the context of limited resources. Theories of justice in this tradition focus on the processes of fair distribution of resources, including the structure and rules guiding just institutions, the principles governing proposed distributions, and the resulting distribution of the resources in question (Rawls, 1999; Schlosberg, 2007).

A central figure in the movement to expand social justice research paradigms beyond the distributional focus is Iris Young with her text *Justice and the Politics of Difference* (1990). Young considers distributional conceptions of social justice to be crucial but incomplete (Schlosberg, 2007; Young, 1990). She argues that distributional injustice arises from social structures, cultural beliefs, and institutional context, and thus focuses her inquiry on the determinants of inequitable distribution. This expands the question 'how should resources be distributed?' to include 'what determines inequitable distributions?' (Young, 1990). Young argues that the roots of inequitable distributions are domination and the oppression that accompanies it. Young includes various practices in the definition of oppression, including marginalization, exploitation, removal of power, cultural imperialism, and violence (Schlosberg, 2007; Young, 1990). She argues that the social and institutional factors that create oppression, and the resulting distributional inequity, are often created by a lack of recognition of identity and difference, and the exclusion from political (i.e., collective decision-making) processes that this causes (Young, 1990). Taylor has also examined the importance of recognition in social justice theory (1994). He argues that recognition or approval from other people is a fundamental part of human identity and integrity. A lack of recognition, exhibited by insults and devaluation at both the individual and cultural level, inflicts harm that is unjust (Schlosberg, 2007). Recognition is thus a vital human need, and a lack of recognition is as inequitable as the unjust distribution of goods (Taylor, 1994). Gould (1996) uses this definition of equity, that includes recognition, to link equity to political participation. She argues that there is a direct link between a lack of respect and recognition and a decline in a person or group's participation in the wider community, including political processes. Young also argues that political processes can influence both the distribution of goods and the conditions controlling social recognition (Young, 1990). Inclusive decision making is thus both a part of and a condition for social equity.

It is important to note that none of the definitions of equity discussed above seek to define 'the good'. The central role of freedom in liberal philosophy means that a society will contain a plurality of definitions of the good, and the practice of equity in society will look different in different contexts and for different people (Rawls, 1999; Schlosberg, 2007; Young, 1990). For example, the balance point between individual freedom and collective equality will shift according to societal norms and individual experience. The dimensions of equity uncovered in the social justice and ethics literature thus define what should be examined in an investigation of social and environmental equity, and do not lead to a constructed theory of the good.

1.2. Green equity in urban forestry

Urban green equity is a growing area of inquiry in the field of urban forestry, with contributions from spatial analytical approaches and remote sensing, urban vegetation governance and decision making, climate change adaptation, and urban political ecological analyses. Urban forestry research over the past two decades has largely focused on the ecosystem services provided by urban vegetation (Annerstedt et al., 2013; Jenerette et al., 2011; Konijnendijk et al., 2013; McPherson et al., 1997; Nowak et al., 2000; Yamaguchi et al., 2006), reflecting a growing interest in urban vegetation and its societal benefits (Lawrence et al., 2013).

This focus on ecosystem services, a perspective that arguably represents a conceptual commodification of urban vegetation, has given rise to a growing body of literature on the distribution of urban vegetation and its associated ecosystem services. Distributional theories of equity appear to have had a strong influence on urban green equity research in urban forestry, as evidenced by the research focus on urban vegetation distribution and accessibility in the literature (Barbosa et al., 2007; Comber et al., 2008; Germann-Chiari and Seeland, 2004; Lafary et al., 2008; Landry and Chakraborty, 2009; Nesbitt and Meitner, 2016; Schwarz et al., 2015). This body of literature focuses on identifying and understanding spatial relationships between urban vegetation and socioeconomic factors to elucidate patterns of unjust access to urban vegetation and the ecosystem services it provides. It generally assumes that urban vegetation comprises desired or at least innocuous goods or amenities and that a low level of access is an indication of the presence of inequity. Distributional equity also appears to be central to many municipalities' conceptions of urban green equity. For example, when municipalities have codified equity standards or goals, they most often focus on the distance to the nearest park, park area per resident (City of Phoenix, 2009; City of Vancouver, 2017; The Trust for Public Land, 2017), or canopy cover targets by neighbourhood (City of Seattle, 2016; Portland Parks and Recreation, 2015).

A field of inquiry that has received less attention is urban vegetation governance. Nonetheless, the field of urban vegetation governance has made important contributions to the urban green equity literature in recent years and is a growing area of research. Urban vegetation

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