

From borders to ecotones – Private-public co-management of urban woodland edges bordering private housing

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ABSTRACT

This paper conceptualises and evaluates so-called *co-management zones* as an approach for user participation in urban forestry, specifically in the management of public woodland edges bordering residential areas. Co-management zones can metaphorically be viewed as ‘ecotone-like’ spaces, i.e. zones where overlapping interest – in this case residents’ and municipal authorities’ – can be used to create richness and meetings rather than boundaries. Building on the perspectives of ecotone thinking and governance arrangements, co-management zones in the Danish residential area of Sletten in Holstebro were evaluated. The presented case study combined interviews with residents and interviews with three key green space professionals who had led the planning, design, establishment and management of the woodland and the implementation of co-management. The resident participation in the co-management zone was also assessed and photo documented in a field survey, categorising individual households according to type and degree of physical signs of participation. Findings illustrate the potential of co-management zones to initiate collaboration between residents and public woodland managers in creating recreationally valuable and varied meetings between private gardens and urban woodlands. Challenges with establishing co-management zones were also highlighted, especially the need for clear guidelines and continuous communication between residents and the municipality. Perspectives and implications related to residents, managers and green space quality are discussed.

1. Introduction

The transition zone between two ecosystems – the so-called *ecotone* – represents a biological cornucopia containing characteristics and species from both ecosystems and also some unique to the ecotone (Encyclopædia Britannica Online, 2016). As described within landscape ecology, these zones develop due to several factors, not the least human activities (Küppers, 1992). In a broader sense, ecotones can be considered zones of overlap, richness and meetings, rather than strict boundaries. Transforming formerly strict borders into dynamic zones of overlap, transition or gradient is also illustrative of contemporary architecture and urban planning theories. Examples of this are the emergence of green infrastructure planning and landscape urbanism (Waldheim, 2006), where the landscape and its geography are the medium for planning across the nature-urban divide (Corner and Tibberghien, 2009). Another example of working with more dynamic boundaries is *shared space*, promoted as an alternative to traditional streetscape design, where removing demarcations and segregation (i.e. borders) between different transportation modes potentially improves

street safety (Anvari et al., 2015).

The dynamics of natural ecotones, such as forest edges, are counteracted by human land use and the related strict border between maintenance regimes for adjacent habitats (Wiström, 2015). Similarly, zones of richness are rarely created in the generally strictly defined borders between public green spaces and private property, which represent a meeting not only between different land uses, but also between public and private ownership and between municipal authorities and residents. In the present study we therefore apply ecotone thinking also to the administrative level of managing the edges of public woodlands bordering residential areas.

User participation in green space planning and management has been advocated by e.g. the Local Agenda 21 Action Plan (UNCED, 1992), the European Union’s Aarhus Convention (UNECE, 1998) and the European Landscape Convention (Council of Europe, 2000). All of these call for involvement of citizens in decisions regarding the places and services they use. However, green space managers are sometimes hesitant about greater user involvement, which might be attributed to a lack of specific training or to a fear of losing control over the process

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(Molin and van den Bosch, 2014).

Green space management aims to maintain and enhance the quality of a place for its users (Dempsey and Smith, 2014). Residents can contribute to management with alternative forms of knowledge and ideas that can be beneficial to municipalities (Nannini et al., 1998). Residents can also benefit from participating in green space management through, e.g., increased neighbourhood satisfaction (Nannini et al., 1998), enhanced green space use (Glover et al., 2005; Jones, 2002), and increased attachment to the green space (Van Herzele et al., 2005). However, empirical evidence on these suggested benefits of participation is still weak (Fors et al., 2015). Furthermore, little is known about how residents can contribute to the management of the transition zones between their private gardens and public green space. Co-management between residents and municipal authorities could hold potential to develop ecotone-like zones that increase local residents' attachment and use of green space.

The meeting between public woodlands and residential areas is a valuable, but also complex, transition zone (Rydberg and Falck, 2000; McWilliam et al., 2014). Woodland areas have been absorbed by, or deliberately established to delineate, urban sprawl to such an extent that they constitute the most frequent type of green space in terms of area in many European cities (Cvejić et al., 2015), with a high edge-to-interior ratio due to fragmentation (Larsen and Nielsen, 2012). The total length of woodland edge is more than 100 km in many European cities (Haase et al., 2015). The transition between urban woodlands and residential areas offers a number of benefits to citizens, including beauty, nature contact and children's play, while drawbacks may include shading of gardens by tall trees and damage from storm fall (Rydberg and Falck, 2000).

Building on ecotone thinking (Kahn, 2016), the present study conceptualises and evaluates so-called *co-management zones* as an approach to user participation in green space management, and specifically for the management of transition zones between public urban woodland and private gardens. The study was carried out in the neighbourhood 'Sletten' in Holstebro, Denmark, where resident participation has resulted in a diversity of garden-woodland interfaces. The objectives of the study were to:

- Analyse and evaluate resident participation in the co-management zone in Sletten.
- Identify benefits, drawbacks, opportunities and challenges associated with co-management zones for residents, managers and green space quality.

1.1. Theoretical framework: the policy arrangement approach

Sletten's co-management zone can be seen as representing co-governance, with the municipality and local residents both influencing decisions and actions (Molin and Van den Bosch, 2014). Governance is seen as not being restricted to the strategic level of decision making, but also taking place at the operational management level where 'place-based governance' shows the importance of local connections between people and their living area (Molin and Van den Bosch, 2014). From a governance perspective, the public-private co-management zones in Sletten can be considered an example of an (environmental) governance arrangement, a concept which builds on the policy arrangement approach (PAA) (e.g. Arts et al., 2006).

A governance arrangement perspective provides a theoretical framework for analysing cases such as the Sletten co-management zone along four interdependent dimensions (Fig. 1): *actors and coalitions* (who is involved?), *power and resources* (how can actors influence decision making? what are the resources available to them, e.g. in terms of knowledge and funding?), *discourses* (what main 'storylines' provide the context and background for decision making?) and *rules of the game* (what rules and procedures guide interaction and decision making?). Policy and governance arrangements are not static, but rather in

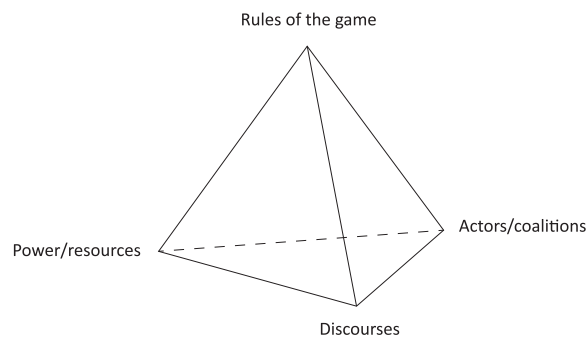


Fig. 1. Tetrahedron representing the four dimensions of the policy arrangement approach (PAA), which can be used for analysis of a temporary stabilisation of a governance arrangement. After Arts et al. (2006).

continual flux. Therefore the present analysis focused on a certain point in time, representing a temporary stabilisation of the arrangement (Arts et al., 2006), however with a perspective on potential future development. For a further elaboration of the four dimensions and their application to an urban green space context, see e.g. Molin and van den Bosch (2014).

Arnouts et al. (2012) propose a spectrum of governance modes, ranging from hierarchical to self-governance, where the Sletten co-management zone could be described as representing open co-governance. In an open co-governance arrangement, decisions and actions are taken in a flexible way by several governmental and non-governmental actors, directed by visible interaction rules. Involved actors work individually or only loosely together. Power is diffused among the many individuals and small groups, leading to an open and unorganised decision-making process (Arnouts et al., 2012).

2. Materials and methods

2.1. Case area

The research comprised a single case study, with the co-management zone as the single unit of analysis (Yin, 2009) and the neighbourhood Sletten as the case context. The case was identified through information-oriented selection and can be considered an extreme or potentially paradigmatic case (Flyvbjerg, 2006). In the city of Holstebro, the municipal green space management organisation is similar to that in many other municipalities in Denmark and other Nordic countries; e.g. the green space maintenance is outsourced, the budget for management has been cut during the past decades, and green space maintenance is administratively a sub-unit of a larger technical department (Randrup and Persson, 2009). The extreme component of the case – compared to conventionally managed areas in Holstebro municipality as well as other Nordic municipalities – is that of formalised, but open, resident involvement in the operational management.

In 1995, 160 ha arable land at the eastern fringe of Holstebro were earmarked for residential development. The new city district was named Sletten (*The Plain*) and is delineated by a regional road to the north and a large elongated lake (Vandkraftssøen) to the south. The landscape plan for Sletten was developed in 1995–1998, reflecting landscape urbanism principles (Waldheim, 2006). It included commercial areas (20 ha) and 400 housing units in eight forest villages, six fortress villages and a retirement home (21 ha). The housing is set in a matrix of new woodland plantings (32 ha) and pastures (30 ha), intersected by the road infrastructure (27 ha), existing shelterbelts, wetlands and natural brooks (30 ha) that flow into the lake (Fig. 2). The present study focused on the forest villages, with 201 housing units bordering the woodland. The residents in the forest villages are a rather homogeneous societal group of the middle class (Table 1).

The planning, design and novel approach of co-management of the woodland at Sletten was led by the head green space manager at the

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