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Multiple-use forestry as a boundary object: From a shared ideal to multiple realities

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ABSTRACT

Today, multiple-use (or multifunctional) forestry is one of the main concepts guiding European forestry. While there is wide acceptance of the overall concept, here is a lack of coherence in definitions, policies and practices. Such outcomes indicate that multiple-use forestry (MUF) may contain the essential properties of a "boundary object", i.e. something that is robust enough to conceptually unite different interests, but at the same time is flexible enough to encompass different practices in line with local needs and conditions. This study sets out to explore the conceptualization and implementation of MUF as a boundary object, examining the overall trends at an international level, and scrutinising the national specifics in three case countries: Lithuania, the Netherlands and Sweden. The review of international literature finds no consensus on what MUF is, beyond combining two or more forest functions or uses. The case countries show widely different approaches to conceptualizing and implementing MUF, not least in terms of spatial scales for integrating or segregating various functions. The analysis indicates that we should not expect instrumentation of MUF toward uniform guidelines to shape forestry practices throughout Europe. Rather it will continue to serve the profession as a boundary object that serves as a mediating concept between various interests while being inclusive of a wide set of forestry practices.

1. Introduction

During the last decades, several new forest management paradigms have appeared in Europe as an alternative to the long-standing sustained yield forestry, which has been dominating European forestry for more than two centuries. Two concepts that have probably received most attention are sustainable forest management (SFM) and multiple-use forestry (MUF). SFM arose from the UN Conference on Environment and Development in 1992, and was further developed in, inter alia, at the 2nd and 3rd Ministerial Conferences in 1993 and 1998, respectively (Rametsteiner and Mayer, 2004**).** Despite a lack of a generally agreed definition (Maguire, 2013), SFM generally includes two important elements. First, SFM addresses the needs of present and future generations (García-Fernández et al., 2008). Second, it focuses on multiple goods and services in that it goes "*far beyond the simple goal of timber production*" (Farrell et al., 2000, p. 6).

To what extent SFM captures a paradigm shift in European forest management can be questioned. Although the concept of sustainable development was put in the global spotlight by the Brundtland report of 1987, the idea of sustainability is not new in forestry. Its origins can be traced back to as far as 17th and 18th century Germany where concerns about the wood supply for future generations came to the fore (Convery, 1973; Duerr, 1974; Martell et al., 1998; Speidel, 1972). It was from these concerns that the notion of sustainability evolved in the sense of sustained yield forest management (Lowood, 1990; Hoogstra, 2008). This goal became for several centuries one of the doctrines of forestry culture (Duerr, 1974; Glueck, 1987), the "'*holy grail' of foresters all over the world*" (Grober, 2007, p. 7).

Some scholars (e.g. Wang, 2004) consider SFM to provide a new view on sustainability by focusing less on timber and more on other benefits and values of the forest. The idea of MUF is, however, also older than the 1980s. At the turn of the 20th century, US forestry, also faced with concerns about the future wood supply, promulgated the Forest Service Organic Administration Act. It paved the way for all types of uses as long as they were not destructive to the forest (Fedkiw, 1998). Faced by growing conflicts between different forest users (Fedkiw, 1998; Andersson, 2002), in 1960, the concept of MUF was formalized in the Multiple Use-Sustained Yield (MUSY) Act, describing the joint consideration of major outputs from the national forests (Krutilla, 1987). MUSY still stands as an important milestone for MUF as it not only brought multiple-use for the first time into the title of law, it put the concept also before Sustained yield forestry and presented

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multiple uses in alphabetical order (Wilkinson and Anderson, 1987), emphasizing that all uses are equal and no use should be considered greater than any other. The concept then became widely adopted in international discourse about forest management and science (Andersson, 2002). The Fifth World Forestry Congress, held two months after the passing of the MUSY Act, and themed "Multiple Use of Forest Land" (Andersson, 2002), is seen as an important occasion for spreading the concept around the world (Hytönen, 1995; Andersson, 2002).

New or not, with SFM the idea of multiple use gained a new political momentum (Cesaro et al., 2008, p. 9). In 1998 the European Union (EU) adopted its Forest Strategy, and the importance of multifunctionality as a leading principle for forest management in Europe was re-emphasized. Multifunctional forest management also gained attention in conservation policies (Kaljonen et al., 2007), particularly in Natura 2000 which promoted an integrated approach to forest management for multiple purposes (Kaljonen et al., 2007; Nijnik et al., 2010). In 2005, the Union of European Foresters issued a Resolution on Multifunctional Forestry, stressing the importance of the concept for Europe (Union of European Foresters, 2005). Pröbstl (2007, p. 71) also observed that the overall concept of MUF had functioned "*as a guiding principle in the implementation of the notion of sustainability, which has emerged as the focus of European forest management*". Nabuurs et al. (2014) **even** called "multifunctionality" to be the European forest management model. Many European countries have also anchored the concept of multiple use, or related concepts such as multifunctionality, in their respective policy frameworks (Schmithüsen et al., 2000; Kaljonen et al., 2007; Pröbstl, 2007). In some countries, MUF is considered as part of the broader SFM approach (e.g., Ireland (Bonsu et al., 2015/in press), in other countries MUF is considered to be a completely independent concept (e.g., the Netherlands) or a concept used interchangeably with SFM (e.g., Lithuania). In several European countries, the concept of MUF has also been translated into specific forest management models, such as the Swedish Forestry Model (Lindahl et al., 2017), the German model of integrative multifunctional forest management (Borrass et al., 2017), and Integrated Forest Management in the Netherlands (Van der Jagt et al., 2000).

Interestingly, since the idea of MUF was introduced, the concept has been subject to multiple interpretations (Andersson, 2002). The shifted focus to management not for a single function but for a range of functions has received little debate (Zhang, 2005). Behan (1967, p. 473), for example, called the approach "*the nearly sacrosanct modus operandi of professional forestry*". However, the wide embracement of the concept has not been accompanied by a shared understanding of how MUF should be actually implemented. American scientists (e.g. Stagner, 1960; Pearse, 1969) had already noted in the 1960s that it was unclear what exactly multiple use entailed. Current forest-management practices labelled as "multiple use" also differ considerably across Europe, including among the home countries of the authors of this paper: Lithuania, the Netherlands and Sweden.

Such outcomes indicate that MUF may contain the essential properties of a "boundary object", i.e. something that is robust enough to conceptually unite different interests but at the same time flexible enough to encompass different practices, in line with local needs and conditions. With this in mind, our study examines the conceptualisation and the practical implementation of MUF, assessed in terms of a boundary object. This is done at two levels: looking for general trends at the supranational level and scrutinising developments in the case countries in greater detail. Before delving into the analysis, we first explore what exactly a boundary object is.

2. Boundary objects

Star and Griesemer (1989) introduced the term "boundary object" in their ethnographic research at Berkeley's Museum of Vertebrate Biology, where actors with different backgrounds managed to work together and create a shared understanding despite their differing points of view. Accordingly, boundary objects were described as *"plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual use"* (Star and Griesemer, 1989, p. 393). Bowker and Star (2000, p. 297) elaborated on the features of boundary objects as follows: *"Such objects have different meanings in social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation*". Boundary objects thus make cooperation and coordination of heterogeneous groups possible, even when no consensus or shared views exist (Lainer-Vos, 2013). As explained by Wenger (2000, p. 236), "*some objects find their value* […] *to the extent that they support connections between different practices*". Stoytcheva (2015, para. 6) concludes that thinking in terms of boundary objects "*can be a powerful theoretical lens for understanding complex social interactions, especially those in which separate communities of practice cooperate despite differing, and often conflicting, interests.*"

The word "object" might give the impression that a boundary object is a material entity, something that is tangible. However, an object can be virtually anything and take multiple forms. Star and Griesemer (1989) originally described four types of boundary objects: (1) repositories: ordered and indexed collections such as libraries and museums, (2) ideal types: abstractions from different domains such as drawings and models, (3) objects with coincident boundaries: different internal contents, but sharing similar boundaries such as an office building, and (4) standardized forms and processes: methods of common communication such as standard procedures. This typology was never intended to be comprehensive. Briers and Chua (2001) added a fifth type, visionary objects, objects that have high levels of legitimacy with a particular group but at the same time evoke emotional or affective emotions among a wider public. Wenger (2000) proposed a different typology with three categories: (1) artefacts such as shared tools, documents, and models, (2) discourses like a common language shared, and (3) processes, such as shared procedures and routines.

Since its introduction by Star and Griesemer (1989), the boundary object concept has received considerable attention in the academic world (Trompette and Vinck, 2009), and has been deployed in a range of research fields. Several scholars (e.g. Trompette and Vinck, 2009; Zeiss and Groenewegen, 2009; Star, 2010) observed that over time the concept has lost (part of) it's meaning. "*Boundary objects became almost synonymous with interpretive flexibility*" (Star, 2010, p. 602), and almost anything seems to qualify as such an object. As Trompette and Vinck stated (2009, p. f), the "*notion* [of a boundary object] *is sometimes employed in an anecdotal manner to refer to any artefact which is involved in coordination between actors which is at the boundary of two worlds*".

In her final review, Star (2010), therefore emphasized that it is not only the interpretive flexibility that defines a boundary object, but also standardisation and the dynamics at play between highly or poorly-structured uses of objects. Drawing on Star (1998), Wenger (1998) identified four dimensions (or elements) characterizing boundary objects (see also Carlile, 2002; Oswick and Robertson, 2009)

1. Abstraction: the general character of the boundary object leads to a certain level of abstraction and vagueness, facilitating dialogue between different 'worlds'
2. Accommodation: the object can be used for several activities and practices
3. Modularity: the object consists of several parts that can be mobilized in various situations according to actors' needs and interests
4. Standardisation: the information contained in a boundary object is in a pre-specified form and directly interpretable so that it can be used locally.

Büger (2008) used these four dimensions as a checklist to determine if human security can be considered a boundary object. Similarly, we