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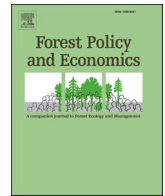
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Is a sustainability transition possible within the decision-support services provided to Finnish forest owners?

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ABSTRACT

North-European decision-support service providers have been advised to look beyond wood production to respond to the diverse needs of forest owners, to maximise business opportunities and to fulfil the pluralist goals of society. However, change in the service sector has remained limited to date. Here, we applied a mixed-method critical discourse analysis to examine whether the discourses produced by Finnish forest owners (n=12) and consulting professionals (n=12) recognise the need for decision-support services that deviate from current production-centred thinking and promote more sustainable forest use.

We identified four discourses of service development. The *juggling discourse* welcomed new service innovations for sustainable forestry on condition that these continue to support high-quality forestry and are in demand by forest owners. In the *productivist discourse*, a strong focus on wood production has made it impossible to envisage any reason for change. The *loyal discourse*, produced only by forest owners, was more open to change but was still satisfied with the existing services. Together, these three discourses ensured a service interaction that effectively excluded all forest-related contradictions and sustained the production-centred business-as-usual approach. The environmentally focused *critical discourse* advised that decision-support services should adopt a strong sustainability view that highlights human responsibility for nature, although these ideas remained outside of everyday service interactions.

Our results illustrated that the current discursive conditions effectively suppress any ideas that deviate from production-centred thinking within the mainstream decision-support services provided to Finnish forest owners. To facilitate change, service providers require concrete and economically attractive best practice examples of new service products that follow a strong-sustainability view.

1. Introduction

Forest sciences have studiously advised decision-support service providers in northern Europe and USA, areas with a high percentage of private forest ownership (UNECE and FAO, 2020), to create new decision-support services that envisage a departure from the current production-centred way of thinking (e.g. Häyrynen et al., 2015, Andersson and Keskitalo, 2019, Snyder et al., 2019). The proposed change has highlighted the mutual benefits that may accrue for forest owners,

service providers and the wider society, i.e. three interest groups within forestry knowledge and information systems (Lawrence et al., 2020). Two lines of arguments or thinking can be discerned here: one that emphasises new business opportunities and a second that emphasises sustainability benefits.

The business benefits that may accrue from looking beyond wood production have been highlighted in studies that have applied the marketing theory of Service Dominant Logic (SDL; Vargo and Lusch, 2004, 2008, Mattila and Roos, 2014; Hyvärinen et al., 2019; Berghäll,

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2018). In this line of thinking, the traditional production-centred idea of value creation, the Goods-Dominant-Logic, creates an obstacle for service providers to envisage and utilise the considerable business opportunities that are related to value creation through knowledge co-creation, learning and empowerment (Mattila and Roos, 2014, Hyvärinen et al., 2019, Berghäll, 2018). It has also been hypothesised that the ongoing structural changes within the forest sector may offer new opportunities to change the traditional mindset, by helping service providers create new types of products as part of service business renewal (Mattila et al., 2013).

In this paper, we are more interested in the second line of thinking that emphasises sustainability benefits from service renewal. The mismatch between current production-oriented decision-support services and the increasing diversity of forest owners' values and goals has been reported in a number of studies (e.g. Mattila et al., 2013, L'Roe and Allred, 2013, Hyvärinen et al., 2019, Andersson and Keskitalo, 2019, Snyder et al. 2019, Joa and Schraml, 2020). Pynnönen et al. (2018) found that environmentally oriented forest owners in Finland, specifically require new types of services to support their forest ownership. Moreover, from a wider societal point of view, ensuring that decision-support services look beyond wood production is often seen as an essential way to fulfil the multiple goals of present-day pluralist societies (e.g. Kittredge, 2004; Follo, 2011; Lawrence et al., 2020).

However, despite the win-win-win vision pictured in the literature, mainstream service providers have continued to focus on the production-centred way of thinking (Primmer, 2011, Mattila and Roos, 2014, Snyder et al. 2019). In Finland, for example, all mainstream services, which include measures for voluntary forest conservation in this paper, are ultimately based on the value of the wood or the land (i.e. on a production-centred view). This means that the sustainability deficit recognised within decision-support services (e.g. Pynnönen et al., 2018) persists and potential business opportunities (Mattila and Roos, 2014, Hyvärinen et al., 2019, Berghäll, 2018) remain unexplored and untapped. In an era of increased voluntary governance (Nichiforel et al., 2020), we can also regard this mismatch between existing services and societal expectations as a forest policy problem, as decision-support can be seen as an important voluntary policy instrument. While conditions around decision-support services appear very similar in Sweden (Mattila and Roos, 2014; Andersson and Keskitalo, 2019), some potential departures from the production-centred view have already taken place in USA (Hull and Nelson, 2011).

The dominance of the wood production logic does not mean that decision-support services have not been developed in northern Europe. In recent years, there has been change towards long-term customer relationships and the development of all-inclusive services, although the development – albeit arising from customer-oriented thinking and the recognition of societal change – has been tightly aligned with value creation through wood production (Mattila and Roos, 2014, Andersson and Keskitalo, 2019).

In this paper, we examine how the alternative discourses¹ sustained by Finnish forest owners ($n = 12$) and consulting professionals ($n = 12$) involved in different types of decision-support services have guided the need for service development. While decision-support services can be developed in a number of ways and for a variety of reasons, we were particularly interested in i) whether the various discourses drive the need to change services in order to guide forest owners towards more sustainable forest use. As described above, this type of change has not taken place in northern Europe to date (Primmer, 2011; Mattila and Roos, 2014). Discourse analysis may provide new insights and may even provide a remedy for this forest policy problem. In addition to sustainability change, we examine ii) whether the discourses drive the need to

improve the skills of forest professionals to listen to, and appreciate the wishes of the forest owner. Based on earlier literature, improving the quality of the interaction in this way may be something that service providers have already been cognisant of in recent years (Mattila and Roos, 2014, Andersson and Keskitalo, 2019).

2. Theoretical framework

The theory of critical discourse analysis (CDA; Fairclough, 2010; Fairclough et al., 2010) forms the main theoretical framework of this study. We aim to identify the various discourses related to service development produced by Finnish forest professionals and their clients, the private forest owners. In CDA, discourses are linguistic entities that define what is true and right in their own characteristic ways. They are continuously reproduced in social interactions and, as manifestations of deeply rooted ideologies, are typically resistant to sudden changes (Fairclough, 2010 pp. 69–83, 126–145). Furthermore, CDA is a critical realist theory that regards discourses as a social practice that affects, and is affected by, other social, material and mental dimensions of reality (Fairclough, 2010, pp. 230–254; Fairclough et al., 2010).

For the individual, discourses provide the ingredients needed to build one's worldview. Through social interactions, for example when speaking with a neighbour or commenting on social media platforms, an individual also participates in the reproduction of discourses, but typically without the idea of participation (Fairclough, 2010, pp. 69–83, 126–145). Individuals select arguments and styles that are characteristic of them and appropriate in a particular context. For example, when a forest professional or a forest owner speaks about decision-support services in an interview, they do not necessarily think about competing discourses, but instead try to answer questions based on their own knowledge and opinions.

Every discourse regards its own version of the reality as the correct one, which means that there is always competition between discourses. Each discourse aims at hegemony, the state in which the discourse's own version of reality is taken for granted in society (Fairclough, 2010 pp. 69–83, 126–145). In the hegemonic position, there is no need to identify problems or controversies, which ensures that the narration of the hegemonic discourse is characteristically calm and positive. Subordinate discourses (i.e. those outside the hegemonic core) raise problems and controversies related to hegemonic ways of thinking and speaking to demonstrate why their version of reality is the better one. In empirical analysis, discourses are often positioned between pure hegemony and pure subordination, although we can typically still discern an approximate order of the discourses based on the styles of narration. This order reveals ideologies that are naturalised in society and makes it possible to examine how discourses affect social and ecological sustainability.

In addition to the CDA theory, we utilised the concepts of strong and weak sustainability (Giddings et al., 2002) in this study. These concepts can be used to describe the fundamental differences in perceptions of sustainable forest use between discourses. The strong sustainability view highlights the well-being of nature as a prerequisite for human well-being and, beyond this dependency on planetary boundaries, the human responsibility for nature (Giddings et al., 2002). In this view, all human activity, including forestry, only makes sense when it does not harm or threaten other species and natural processes. Economic, social and cultural justifications are not ignored, but these are subordinate to ecological justifications. To date, the hegemonic weak sustainability view emphasises and aims at the balance between the economic, ecological, social and, in some instances, cultural dimensions of sustainability (Giddings et al., 2002). The term *weak* refers to the perceived problems associated with this view to guide societies towards a sustainable future, as the prioritisation of the economic dimension appears to be inherent (Giddings et al., 2002).

The goal of sustainable forest use and associated decision-support services also forms the normative framework of our critical social science approach (Fairclough, 2010 pp. 230–254, Alhojärvi and Sirviö,

¹ Discourses can be understood as a linguistic social practice through which we collectively sustain alternative, often competing, ideas about how things are and should be (Fairclough et al., 2010).

2018). In this study, we adhere to the strong-sustainability view, as we acknowledge the many types of sustainability problems or challenges associated with forest use and decision-support services that are prevalent in Finland. These challenges have been raised and discussed in a large number of ecological and social science papers, but only a limited part can be examined in a single study such as this. Our perception of ecological sustainability problems aligns with the recent national assessments of the conservation status at the species (Hyvärinen et al., 2019) and biotope levels (Kouki et al., 2018). Many different perceptions of the existence and nature of forest-related sustainability problems can be observed in Finnish society, and this present work illustrates these alternative perceptions in the context of decision-support services.

At the larger scale, our normative standpoint has likely affected the selection of our topic (i.e. our interest in competing ideologies), while at the level of practical research, our standpoint means that we are sensitive to the demands to make forest use or decision-support services more sustainable and so we attempt to propose solutions to the perceived problems when discussing our results (section 5). In contrast, a normative standpoint does not belong in the interview and analysis stage, which aims to reach, identify and describe the various discourses as they exist (sections 3 and 4).

3. Material and methods

3.1. The case: decision-support services for forest owners

To reach the wide range of actors and capture the wide variety of views, we invited forest professionals ($n = 12$) and their clients ($n = 12$) from large forestry service organisations (three forest owners' associations and a forest industry company), a medium-sized forestry service organisation that specialises in continuous-cover management, and the public state-funded organisations that are authorised to implement voluntary forest conservation (Finnish Forest Centre; Centre for Economic Development, Transport and the Environment) to participate in this study. From the forest owners' associations, we contacted three forestry professionals who primarily worked within forest management planning and three professionals who had a consulting role. Three other forestry professionals in a consulting role were invited from the forest industry company. From the public state-funded organisations, we contacted three professionals (two foresters and a biologist) who worked within the voluntary forest conservation program METSO. Hereafter, these actors are referred to as forest professionals. Despite the diverse contexts, all forest professionals had in common a strong involvement in service interactions with private forest owners, i.e. an aim to assist forest owners in forest use decisions.

Through the forest professionals, we were then able to reach a wide variety of forest owners. Each of the forest professionals invited one of their clients into the study – likely one that shared the forest professionals' ideas of what constitutes appropriate forest use and services. Those professionals working within forest management planning invited forest owners who had engaged this service, and those professionals working within voluntary conservation organisations invited forest owners who had implemented temporary or permanent conservation in their forests. The forest owners that were invited by those forest professionals working within forest consultation exhibited more diverse service needs, which ranged from advice given to new forest owners to forestry operational planning in pre-defined forest compartments. The major Finnish forestry service organisations offer a wide range of services to forest owners that include forestry operational services (e.g. silvicultural work), wood trading services, property administration, management planning services (e.g. formal forest management plans) and information services (e.g. magazines and courses) (Mattila et al., 2013). Hereafter, all service products included in this study are called decision-support services, as they all aim to assist forest owners with forest use decisions through service interaction.

In this study, a wide array of actors and views was deemed more

important than the exact service products provided. To achieve this, we advised the forest professionals to select, where possible, forest owners who had discussed with them a variety of forest-related topics, also other than wood production. This guidance made it possible to reach forest owners who held multiple objectives, even if wood production was emphasised in forestry services and nature conservation in voluntary conservation services.

Outside Finland, very similar cultural and institutional decision-support service contexts can be found in Sweden (e.g. Mattila and Roos, 2014). In both countries, the role of forest professionals in resisting, or potentially facilitating, change in forest use is worth emphasising, as forestry services are widely used by private forest owners (Hänninen et al., 2020). In fact, for a Finnish forest owner with forestry objectives, it is very difficult to avoid contact with forest professionals who orchestrate the practical forestry operations and the wood trade. As part of their organisations, forestry professionals also can potentially influence the content of the decision-support services. In USA, the use of forestry services by forest owners seems to be more reduced than in Finland and Sweden (e.g. Snyder et al. 2019), which also makes the political role of the forest professionals in that country less obvious.

Consideration of a forestry professional as a potential change agent also reflects the idea of decision-support services as a policy instrument. Forestry professionals typically view themselves as facilitators of high-quality silviculture, which produces all the necessary benefits for the forest owners, but also provides benefits for the host organisations, wider society and nature. This is in line with the historical development of Finnish forest policy goals in general (Kotilainen and Rytteri, 2011). Since the onset of the present-day customer-oriented and customer-sensitive services in the 1980s (Hokajärvi et al., 2007, 2011) discussion of decision-support services as a political instrument has probably been unpopular. However, these services will always remain as a form of political influencing, as forest use decisions cannot be other than political.

The forest owners in this study represented a diversity of professions, life histories and life situations. However, their forest use habits varied less, as most emphasised doing forestry work, such as young stand thinning and making firewood. Forest walks were also common and were the primary use for those owners who lived far from their forest. The size of the forest property varied from 6.5 to 175 ha (median value: 43.5 ha). With the exception of a single individual, all forest owners in our study had inherited at least part of their forest. The mean age of all interviewees, including forest professionals, was 50 years (range: 25 to 78 years). These background variables were not used in the analysis.

3.2. Interview data

Our data consisted of a thematic interview of forest professionals ($n = 12$) and their clients ($n = 12$). All 24 persons were interviewed separately. As a warm-up, the interviewees were asked to talk freely about a specific service interaction that had taken place between the forest professional and the forest owner. Next, we proceeded to the actual interview, which consisted of six questions and eleven statements (Table 1). We started with a discussion that focused on the possible problems, contradictions and conflicts related to forest use in general and within an interviewee's own life (Questions 1–6 in Table 1). The purpose of these themes was to reveal a respondent's view of Finnish forestry and sustainability. The eleven statements focused the discussion on decision-support services and, specifically, on the roles of a forest professional and a forest owner in service interaction and decision-making. A number of statements were concerned with formal forest planning (10, 12, 15–17 in Table 1), the service type where decisions on multiple forest uses should be most apparent. However, the interviewees were also encouraged to make references to other decision-support services when discussing these statements. Data gathering took place between June and November 2019. Ten of the interviews were

Table 1

Interview guide. The interview included six themes with related questions (1–6) and eleven statements on the roles of the forest owner and the forest professional in service interactions (7–17).

Theme / statement	Question/Statement
1	What are the most important questions/challenges/problems related to forest use in Finland? Do you try to respond to these questions/challenges/problems in your own forest-related activities?
2	Do you discuss forest policy issues with other people?
3	Do you encounter forest-related contradictions, such as conflicting objectives, values or ideologies in your life? If you encounter these contradictions, how do they affect you? [Clarification: These conflicts can be either personal (cognitive) or between you and others (social).]
4	Where do you seek advice when making decisions on forest use? Who is and who is not allowed to advise you in your forest-related activities?
5	Do you think that the public forest policy discussion (in the media) affects your attitudes, decisions or behaviour?
6	Do you make statements through your forest-related activities? Do you consider that your forest-related activities affect the opinions of others? Do you see yourself as an ideological or political actor?
7	Comment on the following statement: Forest owners require advice for the correct management of forests.
8	Comment on the following statement: Consultants know best how forests should be managed.
9	Comment on the following statement: A consultant should aim, exclusively, to achieve the objectives of the forest owner.
10	Comment on the following statement: The ideas and wishes of the forest owner considerably affect the course of the formal planning process.
11	Comment on the following statement: The benefits from forest use accrued by a forest owner can be quantitatively measured.
12	Comment on the following statement: We have the knowledge needed to create a multi-objective management plan that simultaneously fulfils all the objectives for forest use.
13	Comment on the following statement: Discussion of the conflicts between different forest uses facilitates service interaction.
14	Comment on the following statement: Successful forest management planning requires close participation with the forest owner.
15	Comment on the following statement: A good forest planning report presents various management alternatives for each forest stand.
16	Comment on the following statement: The personal opinions of a consultant affect the content of a forest planning report.
17	Comment on the following statement: A consultant decides the type of information that is essential in the formal forest planning process.

conducted face-to-face and 14 by phone. Three specific service cases were also observed to make the researchers more familiar with the service practices, although the observation data were not analysed. All material was recorded (audio) and indexed.

This interview was the first part of a wider study project. Based on the interviewees' responses to Questions 1–6 in Table 1, and to separate questions with regard to biodiversity conservation (not reported here), we created a national forest owner survey that was used to examine the Finnish forest owners' discourses of political agency (Takala et al., 2021) and biodiversity conservation (Takala et al., 2022). Thus, our interviewees produced narratives that formed the basis for the formulation of the survey statements and questions, although the actual data that the interviewees produced were analysed in this paper only.

3.3. Methods

Our data analysis followed a mixed-method framework for discourse analysis that combines qualitative content analysis with non-metric multi-dimensional scaling (NMDS) (Fig. 1). In general, discourse analysis is carried out qualitatively only, but in this framework, the

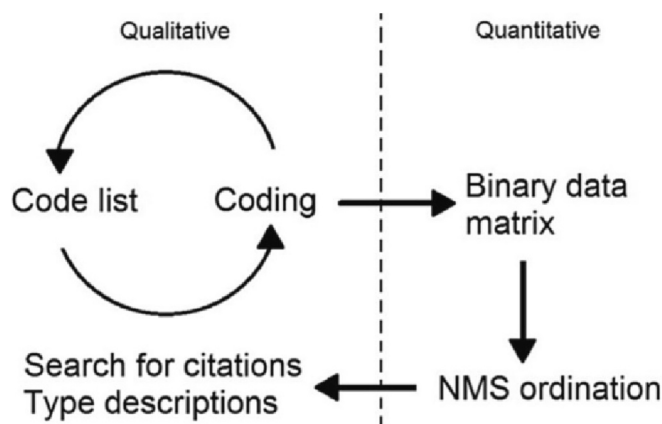


Fig. 1. Analysis framework (Takala et al., 2017).

multivariate technique was used to assist in the search for statements that co-occurred within the data, i.e. were typically raised in the same narration. These co-occurring statements were deemed to belong to the same discourse, provided they formed a coherent interpretable story that could also be identified from the original narratives.

Data analysis commenced with a qualitative content analysis in which we identified and listed typical linguistic reactions (hereafter codes) that the interview questions and statements elicited from the interviewees and that were evident in several interviews. These did not need to be direct answers to the questions. New codes were added continually during the first rounds of reading, until the code list was considered ready (Fig. 1). Based on that final list, we compiled a binary data matrix with the codes as rows and the interviewees as columns. The cell values (1 or 0) depicted whether an interviewee expressed a code or not. As discourses are shared representations, codes expressed by only one interviewee were deleted. Following this stage, 78 codes were included in the analysis (Appendix A).

We then applied NMDS to determine the codes that belonged together to form discourses of service development (Fig. 1). Similar to other ordination methods, the basic idea of NMDS is to represent the structure of multi-dimensional data with a more conceivable number of ordination dimensions (typically two or three in NMDS) (McCune and Grace, 2002). In our NMDS, interviewees who expressed similar codes, and codes that were expressed by the same interviewees, were positioned near each other in three-dimensional ordination space. The three-dimensional NMDS was selected based on interpretability and stress value. Stress value is an indicator of how well NMDS depicts the variation in the data and stress values below 0.2 are well acceptable (McCune and Grace, 2002). We used the Bray-Curtis (dis)similarity measure to calculate the distances between the variables (i.e. codes, interviewees). The analysis was conducted with the Vegan package (Oksanen et al., 2017) in R (R Core Team, 2017).

When the code positions in the NMDS space were analysed, we found that it was particularly useful to first examine how the codes related to each question and statement (Table 1) were dispersed in the ordination space. This question-by-question inspection also made it possible to provide interpretations for the NMDS dimensions (the main axes of the data), even if many important discourse characteristics were typically oriented along several dimensions. Second, we examined the code groups (i.e. discourse cores), the internal coherence of which was continuously monitored by comparing our NMDS findings with the original interviews (Fig. 1). Discourse type descriptions were then written. It is worth emphasising that the exact distance from the origin in the NMDS space in our analysis was not as important for code importance as interpretability. However, the codes located very near the origin were typically those shared by most or all discourses (i.e. there were no essential differences between the discourses regarding these

codes).

In addition to the codes, NMDS positions the interviewees in the ordination space. Each interviewee was then oriented towards the discourse that was most typical of them, although the exact ways in which the interviewees produced a particular discourse or combined it with other discourses varied from one individual to another.

Power relationships between discourses, i.e. the order of discourses, was examined after discourse identification and documentation. Examination of the style of narration within each discourse was essential in this analysis stage. Critiques, anxieties and worries were indicative of subordination, whereas a lack of these features signalled hegemony (Fairclough, 2010 pp. 69–83, 126–145). Finally, it is worth emphasising that we did not aim to assess the prevalence of the discourses among Finnish forest professionals and forest owners with our small sample size and in-depth analysis. Instead, we aim to provide an understanding of existing ideological orientations and their effects on society.

4. Results

4.1. NMDS

Our interpretation of all three NMDS dimensions (hereafter NMDS1, NMDS2 and NMDS3) showed that NMDS1 depicted a gradient from low to high recognition of forest-related contradictions (Fig. 2). Furthermore, the expertise of the forest professional was emphasised in the low values in NMDS1 and the objectives of the forest owner were emphasised in the high values. In NMDS2, the careful and neutral communication manner that is typical of forest professionals was separated from the more straightforward communication style typical of forest owners (Appendix A). In both NMDS1 and NMDS2, a gradient from a critique of environmentalist thinking to a critique of production-centred thinking and mainstream forestry was also evident (from B to D in Fig. 2). In NMDS3, a gradient from frustration with the polarised media discussion to eagerness to express opinions and debate was observed. The final NMDS stress value was 14.9, which falls within the acceptable range reported by McCune and Grace (2002).

Based on the main gradients observed along the NMDS dimensions, and after an inspection of the code positions and the interviewees' narratives, we identified four discourses related to service development

(Fig. 2). In the *juggling discourse* (A), which was produced exclusively by forestry professionals, the purpose of decision-support services was to balance the different forest uses starting with the forest owners' objectives. The *productivist discourse* (B), produced by both forest owners and professionals, emphasised practical non-ideological forestry based on forestry guidelines. This discourse was also critical of environmental views. The *loyal discourse* (C), produced exclusively by forest owners, detached itself from any forest-related controversies and was highly appreciative of the expertise of forestry professionals. All three discourses indicated satisfaction with current decision-support services. The *critical discourse* (D), produced primarily but not exclusively by forest owners, emphasised forest-related controversies and was critical of production-oriented mainstream forestry and decision-support services. Discourse type descriptions are presented in section 4.2 below. We started each description with orientation to forest-related contradictions and then proceeded to views on the decision-support services. With regard to the latter issue, we also presented a single quotation (in italics) for each discourse to illustrate the essential differences between the discourses. The selected quotations depict the interviewees' reactions to the statement "we have the knowledge needed to create a multi-objective management plan that simultaneously fulfils all objectives for forest use" (Statement 12 in Table 1). Quotations are free translations from Finnish.

4.2. Discourse type descriptions

4.2.1. The juggling discourse (A)

The *juggling discourse*, produced exclusively by forest professionals, takes an intermediate position in the gradient from environmentalism to productivism. It expresses environmental concern over biodiversity loss and climate change but is also concerned with the quality of forestry and the ownership rights of forest owners (C38). Viewed from this intermediate position, it is clear that the forest is a target of competing demands and ideologies, although the *juggling discourse* does its best to avoid taking sides. If the activity of the forestry professional (who also reproduces the discourse) is seen as ideological, then this is primarily due to organisational goals, not because of the personal traits of the professional (C42, C71, C74). In service interactions with forest owners, the forest professional always attempts to avoid ideological influencing,

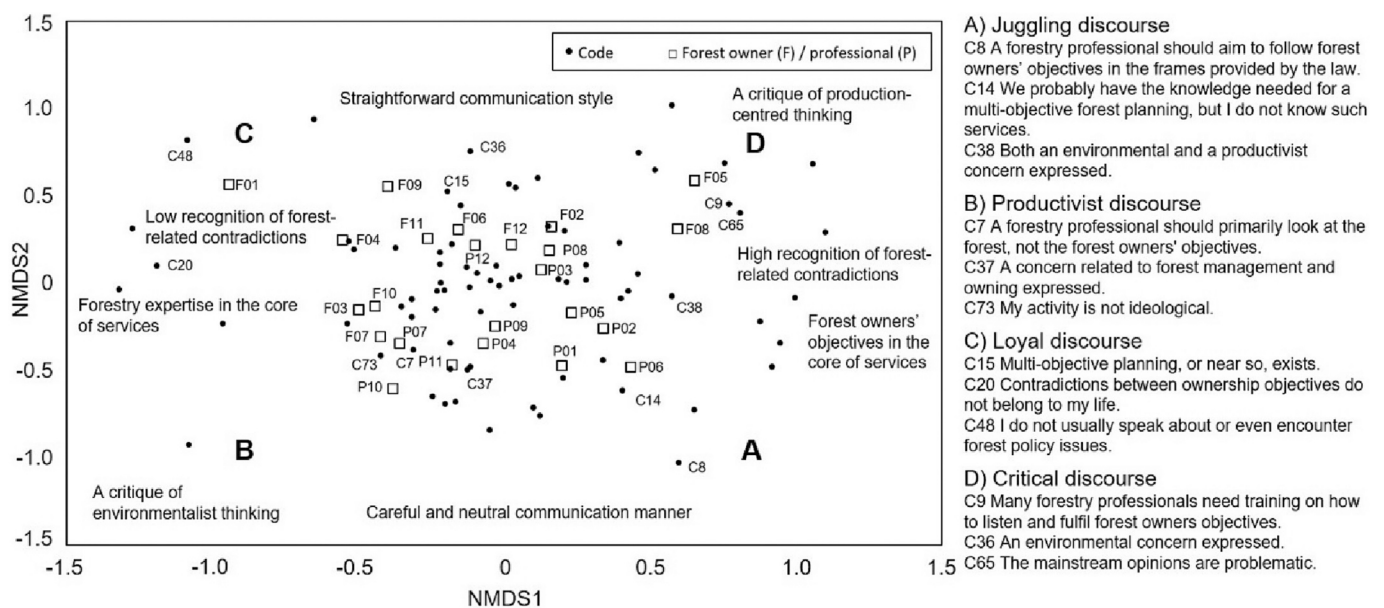


Fig. 2. Results of non-metric multi-dimensional scaling (NMDS). The approximate orientations of the four discourses along the NMDS1 and NMDS2 axes are indicated by the letters A–D. Exemplifying codes are also presented for each discourse. The full list of code positions can be found in Appendix A. Some interpretations of the NMDS dimensions are also added in the graph.

even if this is not always possible (C67, C68).

The *juggling discourse* positions a forest professional above ideologies and forest-related contradictions. From this position, discussion of forest issues, even with those who have contrasting views, becomes possible and interesting (C44, C61). Encountering alternative viewpoints provides the ingredients for self-reflection, which can strengthen the identity of the forest professional (C53, C63). In fact, learning to live with forest-related contradictions and competing ideologies like this is part of being a forest professional (C52). However, even if contradictions between the various forest actors and their views are recognised (C55, C58), the role that these play in the life of the forest professional must not be exaggerated. In service interactions, a neutral and cautious (or probing) communication manner is effective for the avoidance of conflicts. In fact, conflicts or contradictions between forest uses are not really acknowledged in this discourse, as there are only management alternatives (C17, C60, C66).

The *juggling discourse* supports the mainstream decision-support services. It emphasises the objectives of the forest owners as the basis of professional advice, ahead of both forest condition and forestry guidelines (C8, C32). A forestry professional is expert in translating the objectives of the forest owners into forestry practices (C3, C4). The *juggling discourse* views mainstream forestry as a continuous balance seeking between wood production and non-timber objectives, in proportions that are decided by the forest owner in each case. However, this discourse accepts that wood production and the timber trade still form the foundation of current decision-support services. For example, multi-objective forest management planning is possible in principle, but current supply and demand for such services is scarce (C14). There are also technical challenges to multi-objective planning:

“I think we could do multi-objective forest management plans nowadays, but our tools do not really support such planning. [...] Our software and report templates allow only a certain type and amount of input.” (PR01).

In practice, and despite the emphasis on the objectives of the forest owners in this discourse, the goals of employer organisations also influence what a forest professional can suggest to a forest owner (C29, C42, C71). With regard to openness to new practices and management approaches, the *juggling discourse* expresses a somewhat reserved attitude to newly (re)introduced continuous cover management with selective felling, for example, because forest owners do not necessarily understand all the difficulties, uncertainties and risks associated with this management style (C77).

4.2.2. The *productivist discourse* (B)

As the name suggests, the *productivist discourse*, produced by both forestry professionals and forest owners, takes a productivist orientation in its concern over timber prices and high-quality forestry (C37). In this discourse, forest management is a practical challenge with no ideological connections (C43, C67, C72, C73). The *productivist discourse* expresses mistrust of the seemingly ideological environmental views that are encountered in the media (C49, C55, C57). However, these encounters cause light irritation only and are, together with other forest-related contradictions, rare outside the media and exceptional in service interactions (C45, C46, C51, C54, C76). Mild disagreement can exist in service interactions, but these can always be discussed in a neutral and peaceful way (C27, C66). Similar to the *juggling discourse*, we should not speak about conflicts between forest uses, but only about management alternatives (C17). Overall, the *productivist discourse* successfully remains outside conflicting issues and merely considers whether the inherent contradictions between forest uses, ideologies, values or actors can play any role in life (C20, C59).

The *productivist discourse* emphasises forest condition and forestry guidelines as the basis of professional advice and forest management planning (C2, C7, C23, C25, C31). The objectives of the forest owners are regarded as important (C6), although the forest professional's advice on suitable, or necessary, forestry operations is the most central element of

decision support services. Additional considerations, such as leaving some forest stands untouched, can be taken into account, but there is usually no need for a more in-depth analysis of the objectives of the forest owners. Continuous cover management is seen as a threat to the established, high-quality even-aged forestry (C77). Multi-objective forest management planning is typically considered a strange idea that sounds difficult and costly to implement in practice (C16).

“How can all the objectives of a forest owner ever be taken into account in planning? [...] I consider forest owners' ideas and wishes when planning and advising, but I still have to be a professional there and guide forest owners towards the rational management that we know works.” [PR07].

Within the *productivist discourse*, there are some minor differences between the professional narration and the forest owner narration. The former emphasises a neutral and cautious way of communicating forestry issues and avoids extreme opinions (C64, C66), whereas mistrust of environmentalist actors is expressed in a very straightforward way in the forest owner version (C49).

4.2.3. The *loyal discourse* (C)

The *loyal discourse*, produced exclusively by forest owners, steers clear of forest-related ideologies and controversies. Similar to the *productivist discourse*, forest management is a practical challenge without ideological connections (C67, C72). Forest policy issues are rarely discussed or even encountered (C40, C48). The media discussion is even avoided, because it often seems so unrealistic from the perspective of forest owners (C41, C51). All forest-related controversies play a very marginal role in the *loyal discourse* (C20, C56). With regard to the productivism-environmentalism gradient, this discourse takes an intermediate position, as it avoids taking sides and excludes concern over any particular forest value or benefit. However, environmental issues, such as clearcutting and climate change, are frequently cited as the main forest policy challenges of our time (C36).

The *loyal discourse* is satisfied with the mainstream decision-support services. Similar to the *productivist discourse*, forest condition and forestry guidelines form the basis of professional advice, forest management planning and, consequently, forest use decisions (C25, C31). Service interactions with forestry professionals is typically fluent – contradictions are very rare and possible disagreements are easily discussed in a consensual way (C27, C54). The *loyal discourse* underlines that the forestry instructions provided by professionals should be clearly articulated and straightforward, even if alternatives are also considered interesting (C24, C25). In this discourse, strong personal opinion of continuous cover management is not expressed. More positively, this discourse believes that mainstream Finnish forest planning is either already multi-objective or close to being so (C15):

“Quite, obviously. Does not seem to be a problem.” (FO01).

4.2.4. The *critical discourse* (D)

The *critical discourse*, produced by both forest owners and professionals, expresses concern over biodiversity loss, climate change and deterioration in watercourse quality caused by the production-centred mainstream forestry (C36, C50, C65). The forest and all forest uses are seen as inherently ideological (C70, C74). Consequently, forest-related activity is also viewed as a way to respond to the perceived forest policy problems (C42). Making unconventional forest use decisions is also a statement that may have wider effects on how people view the forest and its appropriate use (C68). Forest policy issues are also eagerly raised and discussed (C44, C69). Overall, colliding ideologies and values are strongly evident in everyday life (C58).

In contrast to the other three discourses, the *critical discourse* is dissatisfied with the mainstream decision-support services. Genuinely pluralist services are considered to be absent altogether, and the mainstream service producers resist continuous cover management that would bring essential environmental and recreational benefits in

comparison to even-aged forest management (C26, C78). A forest owner must carefully select the right forestry professional, as many are incapable of understanding and communicating on issues other than wood production (C5, C9). Concomitant, the *critical discourse* emphasises the objectives of the forest owners over forest condition as the basis of professional advice (C30, C32). Frustration with the current services is also evident with regard to multi-objective planning:

“I’m quite sure that we could do multi-objective forest planning, but the question is whether there is motivation to do that. Whatever things can be done nowadays. And if making a plan is a bit more difficult, for example to sustain biodiversity, then it must be so.” [FO05].

4.3. The common ground

Some codes were shared by all or most discourses. All discourses expressed their appreciation of professional advice (C1), even though the *critical discourse* only appreciated specific types of professionals. The discourses were also in agreement that both forest condition and the objectives of the forest owners were important dimensions in the decision-support services, despite the minor differences in emphases (C6, C22). There was also consensus that the personal characteristics of the professionals and their organisations influence their advice to some extent (C10, C28). All discourses also appreciated an open, constructive style of discussion (of forest issues) (C18). An idea that was commonly expressed was that free discussion alone is sufficient to elucidate the objectives of forest owners in service interactions (C34). Moreover, a forest walk was recognised as a functioning measure to facilitate this discussion (C33).

The frustration with the polarised forest policy discussion and avoidance of antagonist discussion was shared by all discourses, although this issue was raised most often in the *critical* and *loyal discourses* (C2, C35, C41, C47). These issues also produced some internal heterogeneity within the discourses, as shown by NMDS3. Occasional anxiety due to the forest issues encountered in the media was also present in all discourses (C62).

4.4. The order of discourses

The narration of each discourse was reflective of its position in the order of discourses. Critique of mainstream decision-support services, in conjunction with environmental concerns, made the *critical discourse* the most subordinate of the four discourses. The other discourses expressed hegemony in their ability to exclude or undermine controversies. The exclusion was particularly effective within the *loyal discourse*, as the mild irritation caused by the media discussion was the only sign of subordination that we observed here. The *productivist discourse* was also irritated by the media, in addition to which the antagonist orientation to environmentalist thinking added a touch of subordination to this otherwise hegemonic discourse. The *juggling discourse* indicated hegemony in its capacity to raise itself beyond competing ideologies and contradictions.

5. Discussion

The results of this study illustrate how the different ideological positions guide forestry professionals and forest owners to see (or not) the need for change within the changing landscape of Finnish decision-support services (Mattila et al., 2013). Specifically, the positions of the various actors along the gradient from productivism to environmentalism seemed to affect their perceptions of the need for a sustainability transition within services and in forest use. These differences further reflect the fundamental differences in the understanding of sustainability and sustainable forest use. Discourses and their power relationships determine which of these perceptions have space within decision-support services.

The *productivist discourse* reflects the traditional ideology that

prevailed in Finnish forest policy throughout the 20th century (Kotilainen and Rytteri, 2011). This ideology has gradually lost its hegemonic position in wider society (Takala et al., 2019a), but clearly less so within the mainstream decision-support services. This was indicated by the fluent and conflict-free service interaction and the absence of contradictions therein reported in the *productivist discourse*. Viewed from the perspective of this discourse, there is no reason for any change, least of all for a sustainability transition. Any initiatives towards enhanced sustainability are considered as part of the green propaganda that can be seen in the media, but which is detached from the real-life decision-support services. Thus, contemplation of sustainability issues was external for this discourse. The critique of green thinking and the rejection of contradictions, typical of the *productivist discourse*, are common among Finnish forest owners (Takala et al., 2021, 2022), although how common these features are among forest professionals is not known.

In its aim to balance wood production and non-wood objectives, the *juggling discourse* reflects the ideology or paradigm of multi-objective forestry that has been influential in Finnish, Swedish and Canadian forest policy since the 1990s (Sawatzky, 2013; Lindahl et al., 2017; Takala et al., 2019b). In this ideology, sustainability is already here as a consequence of ‘modern’ multi-objective (multiple-use) forestry that creates significant harmony between the different forest uses. Moreover, in the *juggling discourse*, there was no environmental concern that would elicit demands for a sustainability transition within decision-support services or in actual forest use. New measures for multi-objective forestry were apparently acceptable, provided these continued to support high-quality forestry and are in demand by forest owners.

Similar to the *juggling discourse*, the *loyal discourse* also adhered to the ideology of multi-objective forestry from an intermediate position between productivism and environmentalism. In contrast to the *productivist* and *juggling discourses*, it was more open to change, as indicated by the absence of negative opinions on continuous cover management. However, the level of environmental concern was not sufficiently high to produce demands for sustainability change within the decision-support services or in actual forest use. The *loyal discourse* relied strongly on forestry professionals, and also on their capacity to promote sustainable forest use, as indicated by the perceived happiness expressed with current services and the absence of forest-related contradictions. Multi-objective narration and the related capacity to exclude forest-related controversies is typical of almost half of Finnish forest owners (Takala et al., 2021, 2022).

The multi-objective rhetoric that promises “more of everything” but sustains the privilege of wood-production (e.g. Lindahl et al., 2017) is a brilliant example of a weak sustainability view and its inherent difficulty in the promotion of change and the guarantee of a sustainable future (Giddings et al., 2002). It is noteworthy that the multi-objective *loyal* and *juggling discourses* were the most hegemonic, thereby indicating the hegemonic position of the weak sustainability view among Finnish forest owners and forestry professionals. Interestingly, the professional *juggling discourse* acknowledged the prevalence of the economic dimension in current services and management planning, but did not regard it as a sustainability problem. This idea that forestry services and forest use is multi-objective and sufficiently sustainable (despite an economic emphasis) is clearly different to the typical weak sustainability view that highlights the balance between sustainability dimensions. In addition to the *loyal discourse*, this latter view is common in the Finnish media (Takala et al., 2019b) and among Finnish forest owners, in general (Takala et al., 2022).

The environmentally driven *critical discourse* was the only discourse that highlighted the need for a systemic, even transformative, change. According to this discourse, the privileged position of wood production should be abandoned to ensure that decision-support services and, ultimately forest use, is sustainable. Thus, environmental orientation and dissatisfaction with current services were entwined, as has also been shown in earlier research (Pynnönen et al., 2018). In its demand to

ensure that forest use decisions and decision-support are more sensitive to nature, the *critical discourse* reflects the strong-sustainability view that recognises human dependency on natural processes and human responsibility for nature (Giddings et al., 2002). In this view, forestry activities only make sense once the well-being of nature and the environment is assured. Planning how the well-being of nature is maintained must create the foundation for planning forestry activities, not vice versa. This type of strong environmental concern and critique of current forestry practices is typical of around 20% of Finnish forest owners (Takala et al., 2022). Most seem to remain outside the mainstream decision-support services that they criticise and, in contrast to our present analysis, avoid all conflict-sensitive communication (Takala et al., 2021). We can probably anticipate that this concerned and critical orientation is rare among forestry professionals within the mainstream forestry services.

If we examine the whole discursive landscape, our findings contribute to an explanation of the persistent reluctance to look beyond wood production within northern European decision-support services (Primmer, 2011; Mattila and Roos, 2014; Andersson and Keskitalo, 2019; Joa and Schraml, 2020). The everyday mainstream service interaction consists of *productivist*, *juggling* and *loyal discourses* that together create a fully conflict-free atmosphere within services. None of these discourses recognises the need or demand for a sustainability transition or for any other deviations from the current production-centred view. *Loyal*-type forest owners could be interested in a new type of decision-support service, but do not readily demand change given their satisfaction with current services and forest use. Indeed, it is easier to remain with the old management strategy than establish new ones (Juutinen et al., 2020), especially within a void of external support. When *critical*-type forest owners self-exclude themselves from the service interaction that they criticise (Takala et al., 2021), there is no visible customer pressure towards diversified service offerings in the field, even if this pressure is evident in forest owner research (e.g. Häyrinen et al., 2015; Pynnönen et al., 2018).

What can society do if the goal is to facilitate a sustainability transition within decision-support services and, ultimately, in forest use? An increase in environmental sensitivity and concern seems to drive the change for both forest professionals and forest owners (Primmer, 2011; Pynnönen et al., 2018), although promotion of change at the fundamental level of ideologies, values and worldviews is not an easy or an instantly achieved task (Degnet et al., 2022). In the current discursive conditions, a strategy to accelerate change must include very detailed and concrete examples of service products that follow the idea of strong sustainability, i.e. the strategy should use the well-being of, and responsibility for nature as a framework and starting point for a wider consideration of forest use and forestry activities, and have a clear, demonstrable business potential. Service providers most likely need external support to acquire or create the necessary expertise, tools and contacts to start the process (Hull and Nelson, 2011; L'Roe and Allred, 2013). However, without demonstrable positive economic outcomes, the mainstream service providers are probably not likely to be interested in strong-sustainability decision-support services. In addition to the mainstream actors, it is essential to consider smaller companies and entrepreneurs when discussing service renewal (Andersson and Keskitalo, 2019). However, the business potential of strong-sustainability decision-support services in a northern European context is not known, as such types of services do not yet exist. Moreover, one third of Finnish forest owners would be entirely excluded for ideological reasons (Takala et al., 2022).

If we consider decision-support services as a political instrument, as part of voluntary forest governance (Nichiforel et al., 2020; Eriksson and Sandström, 2022), the introduction of the strong-sustainability services demanded by the *critical discourse* seems necessary to ensure that decision-support services and the political goals of society converge. In these services, the traditional primary goal of (multi-objective) wood production should be replaced with responsibility for nature and the

environment. In other words, current facilitation of high-quality silviculture should be replaced with the promotion of environmental literacy (Berkowitz et al., 2005; McBride et al., 2013). The development of decision-support services as a kind of educational challenge is a topic for further research. The concept of environmental literacy guides our thinking on how individuals (forest owners in this case) can develop knowledge, sensitivity, motivation and skills to work towards a better future (Berkowitz et al., 2005; McBride et al., 2013).

In contrast to the major differences in broad-scale sustainability views depicted above, the four discourses were found to be more similar with regard to the perceived need to improve the interaction skills of the forest professionals (i.e. our second study question). The *juggling*-type forest professionals took on a consulting role when emphasising careful examination of forest owners' objectives, whereas the *productivist*-type professionals took on an advisory role when offering their practical forestry expertise to forest owners (Hokajärvi et al., 2011). However, both orientations regarded the forest owner and the forest itself as necessary information sources, appreciated open communication, and emphasised careful attention to the wishes of the forest owners. Regardless of their differences, the forest professionals were highly appreciated by those forest owners who utilised mainstream decision-support services. Building a trusting relationship with forest owners is also something that Nordic forestry organisations have invested heavily in recent years (Andersson and Keskitalo, 2019), albeit some trends that undermine these investments have also been documented, such as a decrease in interaction time (Hokajärvi et al., 2009; Brukas and Sallnäs, 2012).

We recommend further analyses of service interactions, including the use of interaction tools, even if (and because) the interaction issue played only a marginal role in our analysis and discussion. Differences still exist, and because our emphasis in this study was on broad-scale sustainability views, some important aspects of professional-client interactions may have received scant attention here or were not covered at all. However, it is also possible that our sampling strategy, where forest professionals invited forest owners into the study, resulted in restrained and overly polite comments about the other actor group involved.

6. Conclusions

Our study illustrated that considerable ideological change is needed for the often-proposed look beyond wood production – the transition to strong sustainability – within the mainstream decision-support services that have always concentrated on wood production. This type of change simply does not align with the worldviews and experiences of most forest owners and forestry professionals within these services. Discursive resistance appears to be an important reason for the apparent immunity of decision-support services from the demands of wider society. However, the order of the discourses can change and new types of decision-support services are possible. To promote a sustainability transition, we recommend the development of ready-made, easily accessible service products that follow the idea of strong sustainability – preferably in close co-operation with service providers and forest owners. These service products must be shown to be clearly different and separate from the mainstream products in order to educate the various forest actors as to what strong sustainability can mean in practice. On a more theoretical level, we recommend that the concept of environmental literacy and its potential in forest owner and forestry service research receives further research.

CRedit authorship contribution statement

Tuomo Takala: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Visualization, Funding acquisition. **Minna Tanskanen:** Conceptualization, Methodology, Validation, Writing – review & editing. **Maria Brockhaus:** Conceptualization, Methodology, Validation,

Writing – review & editing. **Teija Kanninen:** Conceptualization, Methodology, Validation, Writing – review & editing. **Jukka Tikkanen:** Conceptualization, Methodology, Validation, Writing – review & editing. **Ari Lehtinen:** Conceptualization, Methodology, Validation, Writing – review & editing. **Teppo Hujala:** Conceptualization, Methodology, Validation, Writing – review & editing. **Anne Toppinen:** Conceptualization, Methodology, Validation, Writing – review & editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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Appendix A. Supplementary data

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