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Management by boundaries – Insights into the role of boundary objects in a community-based tourism development project

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HIGHLIGHTS

- Boundary objects provide a suitable theoretical tool to analyse CBT processes.
- Different knowledge communities should be acknowledged in CBT development projects.
- A successful boundary object generates feelings of ownership in development work.
- A "boundary object map" is a practical tool for managing CBT development projects.

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ABSTRACT

Community-based tourism development typically assumes co-operation between different stakeholder groups at the local level, and thus combines different types of knowledge. However, this does not imply that a consensus exists between the stakeholders in the first place. In this article, we present a potential conceptual tool, namely boundary objects that could support stakeholders from different knowledge communities in working jointly towards a common goal and generate commitment towards it. The literature concerning knowledge communities and boundary objects is used as a theoretical framework. A three-year community-based tourism development project comprises the data of the article, and is used as a case study to illustrate the role of different knowledge communities, and to analyse the selected boundary objects. The results illustrate the importance of proper design of boundary objects in community-based tourism development processes, and highlight the features of a successful boundary object in generating ownership feelings towards development activities.

1. Introduction

All too often the efforts of tourism development projects go awry, and they tend to end up with weak results, as the new operation models or innovative tourism products developed are not adopted and supported by local people, and the results are not sustainable. It is little wonder, then, that support from local community members is suggested to be one of the most important success factors in tourism development (e.g. Harrill, 2004; Simpson, 2001; Wilson, Fesenmaier, Fesenmaier, & Van Es, 2001). The concept of community-based tourism (CBT) has often considered an alternative to more traditional firm-based, top-down tourism development, as it aims explicitly to support community commitment. The importance of community involvement in tourism development processes has also been acknowledged in the sustainable tourism discourse in the context of social sustainability (e.g. Choi & Sirakaya, 2006; Saarinen, 2006).

According to Russell (2000), community-based tourism should fulfil the following three criteria: (1) it should have the support and participation of local people; (2) maximal economic benefit should go to the people living in or near the destination and (3) tourism must protect local people's cultural identity and the natural environment. Thus, community-based tourism aims to benefit members of local communities through sustainable capacity building and empowering them as a means to achieve community development objectives (Okazaki, 2008; Tolkach, King, & Pearlman, 2013). It assumes from the outset that when decisions regarding tourism are made and executed locally, local people are also more

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likely to take ownership of the tourism development (see Hiwasaki, 2006; Simpson, 2008). Additionally, the benefits are concentrated locally (Kontogeorgopoulus, Churyenb, & Duangsaengb, 2014).

Critical voices point out the challenges associated with community-based tourism such as different objectives for community-based tourism among the stakeholders; asymmetrical power relations, limited economic success and dependence on long-term external support (e.g. Van Der Duim & Caalders, 2008; Goodwin & Santilli, 2009; Sharpley, 2000; Tolkach & King, 2015; Weaver, 1998). In addition, previous literature has highlighted the need for appropriate methods and tools to enable meaningful participation of locals in the tourism development processes (e.g. Gascón, 2013; Goodwin & Santilli, 2009). Regardless of its weaknesses, community-based tourism has still been widely suggested as a potential way to deliver economic and social regeneration, while protecting local cultures against the rising tide of globalisation in the broader context of the tourism industry (Murphy, 1985).

If communities try to implement the development processes solely by themselves, Tolkach and King (2015) state that community-based tourism development often faces a lack of tourism skills and knowledge among local residents as well as limited support for development. Establishing a wide collaborative network, instead, can offer the prospect of addressing these challenges of training, promotion and advocacy, as well as support the development of tourism and help local enterprises confront the challenges of insufficient knowledge, funding and marketing (Besser, 1999). For these reasons, community-based tourism is typically founded on the idea of wide collaboration practices. According to Gray (1989), collaboration refers to a process of joint decision-making among key stakeholders either to resolve planning problems or to manage issues related to planning and development. Collaboration and aiming to build a consensus on tourism development policies has many potential benefits for different groups, and the measures involved potentially help to restrain the cost of resolving conflicts and give a voice to local people. Most importantly, joint development processes also promote a sense of shared ownership among stakeholder groups (e.g. Bramwell & Sharman, 1999). Joint decision making, however, does not imply a consensus between the stakeholders in the first place.

Studying stakeholder groups and their intersecting interests has been a recurring theme in tourism management literature (e.g. Byrd, 2007; Byrd, Bosley, & Dronberger, 2009; Khazaei, Elliot, & Joppe, 2015; Robson & Robson, 1996; Sautter & Leisen, 1999; Waligo, Clarke, & Hawkins, 2013). In addition, participatory or collaborative planning aiming to include the stakeholders to the planning processes has drawn a lot of attention (e.g. Ladkin & Bertramini, 2002; Timothy & Tosun, 2003; Tosun, 2000) as well as the collaboration within the tourism sector in general has been analysed from several theoretical frameworks such as inter-organisational learning (e.g. Bramwell & Sharman, 1999), actor-network theory (e.g. Arnaboldi & Spiller, 2011; Johánnesson, 2005; Paget, Dimanche, & Mounet, 2010; Pavlovich, 2003) and cross-organisational collaboration (e.g. Akoumianakis, 2014). A growing number of tourism researchers are interested also in issues that fall under the rubric of innovation research (e.g. Hjalager, 1997, 2002, 2010; Carlisle, Kunc, Jones, & Tiffin, 2013; Nieves & Segarra-Ciprés, 2015). In particular, innovation research raises essential questions concerning knowledge dynamics and learning within various stakeholder groups. In fact, the traditional stakeholder approach typically focuses on the understanding the stakeholders or their management in relation to the business or a topic on hands, and studies on interaction between the different stakeholder groups is still rare (Neville & Menguc, 2006). Common critique towards collaborative or participatory approaches, on the other hand, has pointed out need to put more emphasis on the facilitation of the process, acknowledging better the power relationships and emotional tensions between the stakeholder groups and enabling the participation in a meaningful way for different stakeholder groups (Reed, 2008). Also Tolkach and King (2015) emphasise the need to accommodate sufficient flexibility in the community-based tourism to empower the membership, and sufficient integration in collaboration processes to allow for the development of common goals. More research has been called for on practical-level implications, that is, on how to combine all of these stakeholder interests and knowledge types in such a manner that the common goal can be attained (Bramwell & Sharman, 1999).

Among organization and management theorists, the concept of "boundary object" has sparked considerable interest as a potential conceptual tool for understanding co-operation between various groups. Boundary objects have been defined as the *"sort of arrangements that allow different groups to work together without a consensus"* (Star, 2010, p. 602). The concept of boundary object is strongly linked to the social approach to knowledge and learning (Star & Griesemer, 1989), and it has recognised knowledge and learning as something that is produced in social interactions between various communities of mutual learning and knowledge creation, or to put it more simply, knowledge communities (Hafkesbrink & Schroll, 2011; Thomas, Hardy, & Sargent, 2007). In practice, boundary objects provide conditions that allow different groups to exchange knowledge and enhance collective learning, so that each group finds a feasible role in relation to the boundary object, and the boundary object helps them to interpret the knowledge of other groups to apply to the common goal. Boundary objects can be, for example, jointly agreed tasks, physical artefacts or discussion forums.

Boundary objects are attractive to management theorists because they act as mediating artefacts that have interpretive flexibility, and can be an important means of achieving collaboration and promoting the sharing of knowledge between diverse groups and communities (Sapsed & Salter, 2004; Thomas et al., 2007). No wonder the concept has been utilized across a wide range of fields of research from knowledge and information management (e.g. Carlile, 2002; Carlile, 2004; Kimble, Grenier, & Goglio-Primard, 2010), knowledge integration (e.g. Abson et al., 2014; Cash et al., 2003) and science-stakeholder integration (e.g. Döring & Ratter, 2016) to innovation management (e.g. Swan, Bresnen, Newell, & Robertson, 2007), strategic management (e.g. Spee & Jarzabkowski, 2009) and project management (Barret & Oborn, 2010; Koskinen & Mäkinen, 2009; Sapsed & Salter, 2004; Yakura, 2002). It has been used as a framework for analyzing, for instance, care management (Allen, 2009) and natural resource management (e.g. Clark et al., 2016; White et al., 2010). Research into tourism and hospitality management has also acknowledged boundary objects and their role in affording a sense of togetherness when developing innovative tourism services and products (e.g. Akoumianakis, 2014). However, this branch of study is still rare.

Our study contributes to community-based tourism research by enhancing the understanding of how to involve different types of stakeholders in the community-based tourism development. This will be achieved by examining a community-based tourism development process through the theoretical framework of knowledge communities and boundary objects. We aim to expand the understanding of how various actors can co-operate despite having different knowledge bases and sometimes even conflicting interests. Our research question is how boundary objects enable or constrain the collaboration between stakeholders representing different knowledge communities. Our main argument is that the development of community-based tourism necessitates a conscious deliberation over the boundary objects and the active management of them. Our research data is based on a case study of

the tourism development project COMCOT (An innovative tool for improving the competitiveness of community-based tourism). COMCOT was an international development project (2010–2013) that brought together Estonian and Finnish tourism specialists, local developers and entrepreneurs, local activists and residents, along with a team of tourism development experts from the UK. The project was based on thoughts about community-based development and the key idea was that by engaging local people in the tourism development processes, they would feel the resulting products and services to be their own and further ensure the sustainability of tourism activities.

This article has the following structure: First, we explain the theoretical background related to knowledge communities and boundary objects. We then use this framework to identify the knowledge communities and boundary objects in the COMCOT project and analyse, in more detail, the selected boundary objects. We conclude with suggestions for the successful boundary objects and their use, especially in community-based tourism project management.

2. Boundary objects supporting collective learning and innovativeness among different knowledge communities

Innovation processes in the tourism sector are strongly dependent on the activation of various stakeholder groups that in many cases operate at the local level, since the tourism industry typically utilises such locality-based elements as nature, culture and human resources. Furthermore, innovation processes occur more and more at the boundaries between disciplines, and are based on collaborative learning processes during which the roles of the different actors fluctuate. For example, Hjalager (2002) has remarked that tourism businesses, as such, are not the only sources of innovation, and are strongly dependent on other sectors and actors surrounding them. In addition, a common research finding is that co-operation between R&D actors and enterprises alone accounts very little for innovation processes (see Hjalager, 2002, 2010).

We acknowledge Hjalager's reasoning and follow her ideas by researching community-based tourism within a context where tourism novelties are created by broader sets of actors and embedded in certain localities and resource compositions. To gain a better understanding of innovation processes in the community-based tourism context, we have adopted ideas from Hafkesbrink and Schroll (2011) who have been among the first to outline “Innovation 3.0”, which goes beyond both the traditional closed or linear innovation process, as well as the open innovation approach (see also Hafkesbrink & Evers, 2010). In it, knowledge production and exploitation occur in a variety of multi-actor networks and in highly interactive and non-linear models involving specific users and society at large (Hafkesbrink & Schroll, 2011). They refer to this as “embedded innovation” in which individual enterprises synchronise organisational structures, processes and culture with open collaborative and collective learning processes in the surrounding communities, networks and stakeholder groups in order to ensure the integration of different internal and external knowledge sources.

Hafkesbrink and Schroll (2011) recognised four types of communities of mutual learning and knowledge creation in these multi-actor networks: communities of practice (CoP), communities of science (CoS), communities of affinity (CoA) and communities of interest (CoI). The communities of practice type is well established and has been widely used by several scholars (e.g. Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; Wenger, 1998). Communities of practice consist of practitioners who might be from different disciplines but work on a certain topic more or less independently, and exchange and share knowledge, attitudes, skills and values. They have much in common: shared language and discourses, specific work tools and artefacts, and similar conditions. Another type of knowledge community that has been commonly used when studying collective learning is the “epistemic community”, which focuses on creating new knowledge in certain knowledge sectors. Members of such communities share access to codes and the codification of the same knowledge, as well as the norms and procedures of certain disciplines (e.g. Hussler & Rondé, 2007). Hafkesbrink and Schroll use the term “communities of science” (CoS) when referring to epistemic communities.

Two other kinds of knowledge communities are also presented by Hafkesbrink and Schroll (2011). Communities of affinity refer to continuous dialogue with end-consumers and so-called prosumers, both of whom have a special interest in products and services. Both groups review products and services and exchange experiences about using them. Prosumers even make substantial contributions to altering or improving products and services. The learning processes within these communities are enabled, for example, by digital connectivity, blogs and the Internet. The fourth group, communities of interest, bring together stakeholders from different communities. These stakeholders are characterised by their mutual interest in the identification and resolution of specific problems. Communities of interest are more temporary than communities of practice: they come together within the context of a specific project, and dissolve after the project has ended. Communities of interest can also be more innovative than communities of practice because of the more heterogeneous knowledge bases within them. Hafkesbrink and Schroll's ideas about communities of interest come very close to those of Lindkvist, who calls such groups “collectivities-of-practice” (Lindkvist, 2005).

When organisations and individuals are part of an innovation process, their learning takes place through their participation in the communities described above. We therefore consider this classification of four communities to be applicable, and have adopted it to categorise the stakeholders of the case project here. The main incentive for sharing and creating knowledge within these communities is a common interest, as their members work together for shared purposes (Hafkesbrink & Schroll, 2011; Kilpatrick, Barret, & Jones, 2003). However, these common interests do not denote a shared understanding between the different knowledge communities, let alone that all members of these communities are in concordance. Therefore, cognitively heterogeneous and often spatially and organisationally dispersed innovation processes need to be managed, or “orchestrated”, to ensure a balanced knowledge transfer and absorption (Hafkesbrink & Schroll, 2011; Hurmelinna-Laukkanen, Olander, Blomqvist, & Panfilii, 2012). Even though there may not be a consensus among these communities' participants, they can collaborate with the help of boundary objects.

According to Star and Griesemer (1989), boundary objects are any objects that are both plastic enough to adapt to local needs and the constraints of the different parties yet robust enough to maintain a common sense of identity across sites. In other words, they are the “common denominator” that gathers the different knowledge bases and communities together in order to reach a mutual goal. They may be abstract or concrete, and may have different meanings in different social worlds, but they are common enough to more than one social world to make them recognisable by means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds. Star and Griesemer (1989) identified four kinds of boundary objects: repositories, ideal types, coincident forms and standardized forms. However, these four types were not meant to be exclusive and instead show what various forms the objects might take based on the action and co-operation in question (Star, 2010).

Thomas et al. (2007) emphasise that plasticity is inherent to the definition of a boundary object. This interpretative flexibility has become almost synonymous with the term boundary object even though it is only one of its aspects (Star, 2010). Another issue to be pointed out is that a boundary object's essence derives from action, not from a physical object as such. Almost any artefact *may* be a boundary object, but only if it is used between groups through flexibility and shared structures (Star, 2010). Thus, a wide range of artefacts have been studied as boundary objects in previous research (see e.g. Barret & Oborn, 2010). Some researchers have focused on tangible artefacts and have emphasised the importance of concrete, pragmatic boundary objects, while others have noted that boundary objects do not have a physical form (Carlile, 2002; Thomas et al., 2007). Model-based decision-support tools are, for example, one common type of boundary object that has become increasingly popular for linking academics and policy makers together (e.g. White et al., 2010). As well, a division between "primary" and "secondary" boundary objects can be made. A primary boundary object can be an artefact such as a common document, whereas a "secondary" boundary object is that which surrounds the artefact, such as seminars, meetings, and workshops, through which the meaning of the document is negotiated. In other words, tangible artefacts require interpretation and social interaction to become boundary objects (e.g. Garrety & Badham, 2000; Thomas et al., 2007).

Boundary objects enable collaboration because they can facilitate spanning the knowledge boundaries between diverse knowledge communities. These objects are riven with tension and ambiguity (Thomas et al., 2007), allowing enough overlap of meaning to make the object recognisable to different groups, yet ambiguous enough to allow flexible interpretation within contexts inevitably challenged by diverse social circumstances. In this dynamic view, it must be highlighted that negotiations and knowledge sharing enabled by a boundary object at one point in time can change, although the object itself may remain unchanged. Boundary objects can also interact with other objects, and influence how these are perceived and used. Ongoing negotiations around one object can control or moderate the use of related objects (Barret & Oborn, 2010.)

In our study, the question is, how to handle the complex management and overlapping perspectives in a community-based tourism development project, which has pulled together various knowledge communities and potentially disharmonious interests. Based on the literature presented above, we think that the crucial factor is the co-ordination of social worlds, and in the best case these social worlds will meet (see Strauss, 1978). There is a need to find ways to translate each other's perspectives and to "orchestrate" collective learning and innovativeness among various stakeholders representing different knowledge communities. To better understand the process of collaborative learning within the case project, we have adopted the idea of boundary objects as a medium of the "translation process" between different actors and knowledge communities.

3. Material and methods

3.1. Setting the scene - description of the COMCOT project

The COMCOT project was carried out during 2010–2013 in six pilot areas in southern Finland and Estonia (see Fig. 1.). The pilot areas were located mainly in rural districts of a few thousand inhabitants, and the tourism development was water based, focusing on lakes, rivers or the sea. The pilot areas were selected prior to launching the project based on the interest of the local communities. In each pilot area, the project commenced by bringing local people together in workshops and meetings and identifying their tourism development needs and aspirations. In addition, a wider community survey was carried out within the pilot areas ($n = 234$) to map out the opinions of the local community. In the survey, locals were asked to list what they liked about living in their areas, what they did not like, what changes they wished to see and what changes they did not desire. Their attitudes towards the potential impacts of tourism on themselves and their local areas were also assessed to enable those attitudes to be taken into consideration during the planning process.

The initiated development ideas were then prioritised in such a way that the most supported and promising ideas in each pilot area were chosen for further consideration. The ideas were prioritised by the local community members in workshops and meetings. As an essential part of this work, the chosen development ideas were visualised through 3D modelling and presented to the local community for feedback. In each of the pilot areas, the local community was provided with external and objective information concerning the potential for developing rural tourism in their area, as well as the needs and expectations of tourists via marketing survey ($n = 180$) results from the potential customer groups. The purpose of this information was to facilitate local decision making regarding the different ideas. During the COMCOT project, for each pilot area, a step-by-step action plan was created for turning the tourism development ideas into successful products and services. Furthermore, the project supported the local communities in taking these identified development steps in the form of research, capacity building and networking opportunities (at both the national and trans-national levels). As a result, several tourism ideas were initiated and/or further developed (e.g. a hiking trail, summer festivals, community theatre performances, and a park featuring historical monuments). Fig. 2 presents the process description of the COMCOT project.

3.2. Research data and analysis

For the research strategy in the present study, a case study method was chosen. This method has been found to be a relevant approach when a holistic overview of the phenomenon is sought, and when "how" and "why" questions are posed (e.g. Eisenhardt, 1989; Flyvbjerg, 2006; Yin, 2003). In addition, the case study approach is suitable when the focus is on contemporary phenomena within real-life contexts, and particularly when the boundaries between the phenomena and contexts are not clear (Yin, 2003). The COMCOT project was selected as a case study, because it aimed at developing community-based tourism by including several different stakeholder groups in the process in different contextual settings (pilot areas). Thus, it provided a fruitful case for studying the interplay between various stakeholders representing different knowledge communities in a tourism development process, and provided a frame for boundary objects to be analysed. In principle, COMCOT represents a typical tourism development project, focusing on a community-based tourism approach in developed countries, but at the same time, it has aimed to combine and test some new approaches in local-level tourism development.

As is typical in case study research, during the COMCOT project, different kinds of empirical material were collected from the key stakeholders participating in the development work (see Yin, 2003; Patton, 2005). It must be noted that in this research, only the data collected from the case study that focus on evaluating the development process and boundary objects are used. Even though during the development process also marketing and community surveys were used, their role was to bring information to the development process, not to evaluate it. Therefore, for the primary data, face-to face interviews and feedback surveys concerning the

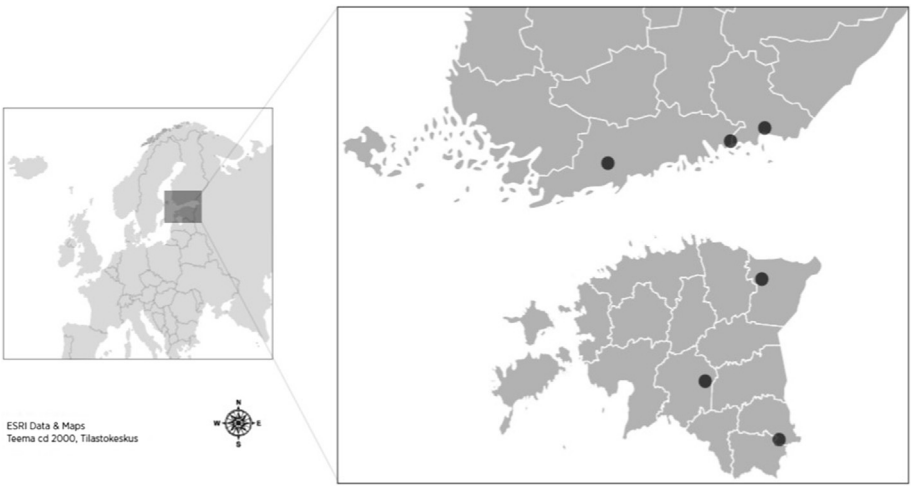

Fig. 1. The pilot areas of the COMCOT -project.

Fig. 2. The model of the COMCOT development process for community-based tourism.

selected boundary object were used. The interview data were derived from *12 in-depth interviews* with key stakeholders conducted at the end of the project to give the participants an opportunity to reflect on the strengths and challenges of the development project. Among the interviewees there were grass root level local co-ordinators, tourism business representatives (SMEs), local developers and village association representatives as well as municipality authorities.

The semi-structured, in-depth interviews were conducted between late autumn 2012 and spring 2013. Before the first interview took place, we prepared a list of broad themes that we wanted to discuss with each respondent. These themes included a few more specific questions to prompt the discussion if needed and to obtain deeper understanding of each theme. Especially the interviewees were asked to describe the successful aspects and weaknesses of the development process and the reasons of the success/failure, in their opinion. After this, their opinions on the usefulness of different tools and activities used in the process were discussed. The interviewees were asked to share the experiences on themes such as the activation of local people, development of action plans, visualisation of the development ideas, training needs analysis and training, the role of external experts, selected tourism products and networking.

The interviews lasted approximately 1-1½ hours. They were conducted in either the Estonian or the Finnish language. Afterwards, the main arguments and comments of each interviewee were translated into English for the analysis. The interviews were analysed by the first and third author using qualitative content analysis through the third interlinked phases as follows (e.g. Miles & Huberman 1994; Patton, 2005). During the first phase, the authors read through the interviews and made notes throughout the reading on general themes within the transcripts. This served two purposes, namely to familiarize the researchers with the data and to start the process of structuring and organizing the data into meaningful units. Special emphasis was put on the comments related to the evaluation of the a) community-based development process in the pilot area in general and b) selected critical boundary objects (prioritisation process and 3D visualisation). In the second phase, the first and third author started code the data by carefully deliberating on what each sentence or paragraph is about. In this phase, the categorization of data was based on rather detailed naming of text instances and for this reason the number of different categorizations was great. The examples of the codes recognised during this phase include notions, like: “communication within boundary object” and “power relations within the boundary object”. In the third phase, the list of codes was grouped together

under higher-order headings. The aim here was to increase the level of abstraction in the categorization. This resulted in a smaller number of coherent themes describing the phenomenon under examination, like “success elements in the boundary object” and “challenges of the boundary object”. To increase the validity of the results, the analysis was conducted jointly within the first and third author as an iterative process. In cases of disagreement, the data were jointly reanalysed until a uniform interpretation was reached. This way of utilizing analyst triangulation, although rather laborious, is often seen as bolstering the credibility of research (Eisenhardt, 1989; Patton, 2005).

In addition to the interviews, *feedback surveys* were also used in different phases of the process. Some of those were collected during the prioritisation process as feedback from individual events and workshops. These were reported as well as analysed as part of the project's progress reports. In addition, a wider survey was conducted to examine local perceptions of the tourism development ideas presented in the 3D models as well as the 3D tool in general ($n = 109$). The survey was conducted in the public 3D shows and the respondents were representatives of local communities. Even though this survey focused more on analysing the success of the 3D shows and presented development ideas, than the whole process, it gave valuable information on the usefulness of the 3D to raise local interest. Thus, this survey was analysed separately by using descriptive frequencies.

The *project progress reports* (3 per year, 10 in total) were used as secondary data. The documentary data was used to help analyse the project's progress, successes and challenges in different phases. Each project partner initially created progress reports independently by using the common template, and then the reports were collected together as one progress report for each reporting period by the project co-ordinator. Also the first and third author of the paper made *participatory observations* during the project. However, it must be noted that the researchers did not act only as observers, but also took part in the project management and activities. Thus, the methodological approach taken in participatory observation reflects the principles of participatory action research (PAR) (Greenwood, Whyte, & Harkavy, 1993). The PAR approach is an often used data collection method in the case study approaches (Baxter & Jack, 2008; MacDonald, 2012). The role of the observers in the project was not to work in grass root level development activities, for example by consulting the companies. Instead they were operating rather as national lead partners of the project in Finland. Nevertheless, the approach adopted in the data collection of COMCOT —case study attempts to break down the distinction between the researchers and the researched, as well as the subjects and objects of knowledge production by the participation of the people-for-themselves in the process of gaining and creating knowledge (Gaventa, 1988). Consequently, the knowledge produced on community-based tourism development is generated through researchers', external experts', local community members' and end-users' collective efforts and actions (e.g. Bergold & Thomas, 2012). The data collected in the case at hand has been merged into a holistic story focusing on the phenomena of knowledge communities and boundary objects described in the theoretical background chapter. This has been recognised as a sound way to describe case study results, and it allows discourse between the theory and collected data in the analysing phase (e.g. Denzin & Lincoln, 1994; Thomas, 2010; Yin, 2003).

4. Results

In this chapter, we first describe the knowledge communities and boundary objects found from the case. After that, we analyse the selected critical boundary objects in more detail.

4.1. Knowledge communities and boundary objects in the COMCOT project

Before the most important boundary objects for the development process can be selected for the detailed analysis, the knowledge communities and variation of the boundary objects in the project had to be mapped out. Several different stakeholders were involved in the project (see Fig. 3), and can be seen as representatives of different knowledge communities, following the aforementioned grouping of Hafkesbrink and Schroll (2011). The central characteristics of the participants seemed to be heterogeneity and willingness to co-operate. Heterogeneity in our case project means that the participants were from different social worlds. They included scientists, administrators, municipal authorities, consultants and residents from several foreign countries, even representing various locations within the same country. Heterogeneity also signifies various activities conducted in the project. It must also be noted that the same person could simultaneously represent several different knowledge communities. The project as such brought all these interested parties together. Therefore, the project as a whole could be also seen as a community of interest.

Central to the COMCOT project were the local community members who took part in planning, organizing and implementing the tourism activities. The community members often operated through a local group, for example a village association or a local action group (LAG), and usually took part in the community development in general and shared an interest in enhancing life in their villages. Local small business owner-managers operating in the tourism and tourism-related fields, such as accommodation providers, food producers and different nature-based enterprises, were also important. In addition, local municipality representatives and rural development professionals took part in the project. In each pilot area, a local co-ordinator was responsible for the realisation of the project's objectives at the local level. The co-ordinator was the person who promoted the project in the local community and gathered together those interested in collaborating in tourism development. An important part of the local co-ordinator's role was to build and enhance team spirit and trust among the local people. Thus, the local co-ordinators maintained active communication between the local community and other stakeholders, and organised local meetings, during which the tourism development aims

Fig. 3. Stakeholders involved in the COMCOT project.

and actions were deliberated over and decided. It is also important to note that the local co-ordinators, themselves residents of the areas, were members of the local communities.

One of the core assumptions at the beginning of the COMCOT project was that local people do not always have a full understanding of customers' needs and expectations regarding rural tourism products. In other words, local community members may sometimes be “blind” with respect to their own ideas and products, either not seeing their full potential or being too product orientated without understanding the true market potential of the products. The project, therefore, sought to add this knowledge to the process in order to generate new ideas, and provide realistic assessments of existing ones. The project also included members of the community of science in the form of universities, and community of practice in the form of professional tourism organisations, as well as experts with a wide international expertise. The main role of the university representatives was to facilitate local tourism development by providing external information (surveys and existing research) and co-ordinating the process. The tourism professionals acted as external consultants, and their role was to add their expertise to the process by guiding and assisting the local pilot areas.

According to Hafkesbrink and Schroll (2011), communities of affinity refer to continuous dialogue with end-consumers. Within the tourism context, these people are active travellers and/or bloggers who use the services. In the COMCOT project these groups were included through a marketing survey targeted at international tourists and by collecting feedback from potential users concerning the development ideas by using 3D visualisation.

In order to gain the commitment of the different actors during the development process and to combine the knowledge of the different stakeholders, several concrete activities, practices and artefacts (boundary objects) were also implemented in the COMCOT project. It must also be noted that these boundary objects can be considered in terms of scale (Thomas et al., 2007). On the wider scale of community-based tourism development in general, for example, the entire COMCOT project can be considered a boundary object aiming to combine different knowledge to develop community-based tourism. Similarly, each meeting or working document bringing different knowledge bases and communities together can be considered a small-scale boundary object, typically referred to as secondary boundary objects (Thomas et al., 2007). The boundary objects defined in the COMCOT project are presented in Fig. 4.

For further analysis of boundary objects, two artefacts, the prioritisation process and 3D visualisation, were selected. These two were selected, as they contribute the most to the tourism development action plan formulated during the project. Prioritisation process and 3D visualisation can be considered the critical phases in achieving the project's objective, and they can be classified as primary boundary objects according to Thomas et al. (2007). As we also wanted to study the dynamics of boundary objects during the development process, neither analysing the project as a whole, nor the tourism development action plan as a boundary object, were meaningful. In addition, the processes of prioritisation and 3D visualisation are different from each other; one being more traditionally used in community-based tourism development, with the other being more innovative. In the following section, we describe the selected, primary boundary objects in greater detail, and demonstrate how these artefacts were formulated through interactions in the form of workshops and project meetings, how they integrated different knowledge communities together, and the kinds of challenges that were encountered during the implementation.

4.2. Analysing the critical boundary objects

4.2.1. Prioritisation process

The COMCOT project gathered the stakeholders together to generate and discuss tourism development ideas suitable to their particular areas. This was referred to as the “prioritisation process”. Each process began by giving the local community members a chance to freely produce a list of potential tourism development ideas. They then reduced the ideas to a manageable number, by merging similar ideas and removing those that were not widely supported. In the next step, the local community members collaboratively ranked these remaining development ideas into a matrix based on a) their potential to help realise the common tourism vision (impact), and b) their feasibility (ease of implementation). Based on this exercise, each pilot area ended up with nine ideas that were considered to have the most potential, and still be feasible enough to realise with the resources available. Thus, the main aim of the prioritisation process was to prioritise the ideas for implementation and create a vision for the next steps. The prioritisation process was implemented in practice through several local-level meetings and workshops. The process lasted from two to six months, depending on the pilot area.

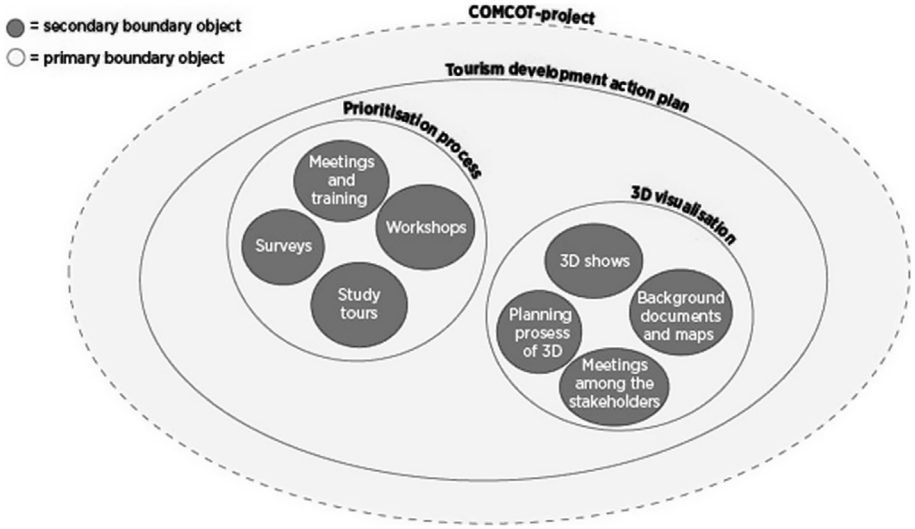

Fig. 4. The boundary objects of different scales identified in the COMCOT project.

The local project co-ordinators, university actors and external consultants played an important role in organizing and facilitating this process. The local co-ordinators role in particular was to communicate between the different actors. However, the development ideas would originate from the local residents, as the project aimed to engage local people personally in the process, to create local ownership and to legitimise the development initiatives. In addition, to help the locals make the best decisions possible, it was the responsibility of the university actors and external consultants (community of science and community of practice) to provide them with the necessary expert knowledge to support the decision-making process. Accordingly, a market survey was conducted in 2012 in Germany and the Netherlands markets to determine the opinions of the potential end-users (community of affinity). The role of the external consultants was to reflect on the results of the prioritisation process together with the external information. They also ensured that the selected ideas were truly feasible in terms of the local resources, as well as giving feedback to the locals for reconsideration. Following the experts' feedback, the process of collecting and prioritising ideas in some cases started afresh, to identify more realistic and suitable ones. The local inhabitants, not external experts or researchers, ultimately did prioritising decisions. The prioritisation process was therefore used as a boundary object that provided a crossing point, enabling the different knowledge communities with different knowledge bases to produce and categorise the most suitable tourism development ideas for the area.

According to the interviews with the key stakeholders, the experiences of the prioritisation process as a boundary object were somewhat contradictory. On the one hand, the prioritisation worked well: as a collaborative endeavour, it succeeded in producing some new tourism development ideas while also enhancing the community consensus on ideas discussed earlier. The prioritisation process managed to provide a low-threshold platform for all who were interested in tourism development to join the process, and pushed people to think about the future through a structured method. Hence, the interviewed key stakeholders acknowledged the important role of the prioritisation process as a trigger for the local people to organise more effective and target-oriented tourism development, as the following excerpts illustrate:

> “The prioritisation process enabled the development of a group of active people to find each other and become somewhat more organised in their activities. So, at the moment, the developing atmosphere in the area is great! People have now started their own development group and they have two projects under way and with the financing organised for them. The development work in the area will certainly continue when COMCOT ends”.

> “The prioritisation was good task to do. It pushed people to think about the future. It was good that we had some months between meetings, so those involved could think more about the issues”.

The interviewees also appreciated that the prioritisation process was long enough to complete the collaborative learning process among the participants. Even though the prioritisation was by no means unanimous, it provided time and space for people to reach consensuses and compromises on the development ideas. They achieved this by discussing their ideas with each other, and reflecting on them together with the views and knowledge provided by university members and external experts. On the other hand, however, the long process entailed a threat to the prioritisation as a boundary object because some locals lost interest in it. In other words, as highlighted in the project's progress reports, the main threat was that because the number of people taking part in the prioritisation process could decrease or the participating people significantly change, the results would represent the views of only a few people in the community, thus potentially leading to conflict situations in the future. To avoid this, the role of the local co-ordinators became very important, having assumed responsibility for keeping the local people interested and committed to the process. Furthermore, even though the idea of prioritisation and its ability to generate new tourism development ideas was highly appreciated, the process itself was somewhat criticised due to its inflexibility. The interviewees had hoped that the prioritisation process would better consider the starting point from which each pilot area was developing its own tourism activities. That is to say, some pilot areas' tourism development was already more advanced than others', and carrying out the basic exercise of prioritising tourism ideas was felt by some local community members to be frustrating.

4.2.2. 3D visualisations

In the COMCOT project, an innovative tool used in participatory tourism planning was introduced to visualise the potential changes in the landscape caused by tourism development – a 3-dimensional (3D) computer-based visualisation program. Specialists from the Estonian University of Life Sciences constructed 3D models of each pilot area and added the new development ideas into the current landscape according to the locals' prioritisation ideas. For example, if one development idea was to build a nature centre, the 3D model showed different alternatives of how it would affect the current landscape and indicated how it might influence the locals' use of the area. The 3D models were shown to the public and any interested party in organised events. The viewers were asked to give feedback on the 3D visualisation as a method and comment on the development plans and alternatives, as well as suggest changes or other tourism development alternatives. The modellers made changes to the 3D models according to the feedback from the presentations. The aim of the 3D visualisation was, therefore, to help locals to understand the tourism-related changes in their environment before they would occur. This would create discussion and activate the locals to influence and take part in the development, to help communities reach a consensus and make decisions concerning the future tourism development, and to strengthen the relationship between the people and their environment.

As such, 3D as a boundary object brought together the knowledge and information of several interest groups. The modelled ideas were based on both the locals' knowledge and decisions, as well as the expert knowledge of the professional tourism developers and university researchers, i.e. representatives of community of practice and community of science. The special expertise was also involved in the creation of the 3D model. The communities of affinity, i.e. the potential users of the tourism services, were invited to the 3D shows.

According to the key stakeholder interviews, the 3D visualisations worked well as a boundary object in the tourism development process. They were seen as a new and exciting, as well as very concrete, way of involving several actors in evaluating and refining the development ideas further. As the local co-ordinators and participants collected material for the modellers, they had to consider once more the development idea and its potential. The experts worked well with the locals in creating the 3D visualisations. Furthermore, most of the key stakeholders mentioned that they had no explicit expectations about this phase, since the method was unfamiliar. Still, the 3D theatre fulfilled its role in the process very well. The actual presentations were seen by the interviewees as impressive, effective, informative and fun. People were very impressed by how they could “walk and fly” through the visualised landscape. As one of the interviewees stated, conceptual

and intangible ideas cannot be presented easily to broad groups of people and the 3D presentations were an excellent solution. The modellers were also considered to be very professional, and the collaboration between them and the pilot areas was seen as effective. The interview excerpt below demonstrates the kind of experience that the 3D visualisations provided:

> "The visualisation process was very successful and it worked very well. I didn't have any explicit expectations of the method, since it was not familiar to me. Both of the modellers were professional and collaboration with them was effective. The marketing for the first presentation could have been better; but still, it was something new for all of us and therefore a kind of learning process. The first presentation raised interest among the media and local people in general, and people were sorry if they were not able to see it. So, the second presentation attracted many more people. The organisation of the second presentation, and the stories told during the "flights", worked very well. I have nothing negative to say about that".

Even though the model was considered an excellent tool to visualise the planning and bring people together, its main challenge was that it is relatively expensive and probably too costly to be used for small development proposals. Furthermore, some interviewees also mentioned that the locals might lack the skills and resources to produce material for the modelling process.

The 3D presentations drew significant media attention in the pilot areas, and thus helped to induce an animated discussion on the topic, which would have been difficult otherwise. Furthermore, as it is a common problem that young people in rural areas need to be more involved in local development processes, 3D visualisation as an innovative boundary object was also seen as an effective way to engage them in local development. In addition, the feedback survey of the 3D visualisation as a process and tool from the audience (community of affinity) was positive regardless of the respondents' opinion on the visualised tourism development idea in general. For example, 57 per cent of all 3D visualisation participants in the Finnish pilot areas thought that the visualisations had provided them with substantially more and better knowledge for their decision-making processes. Similar to the results of the key stakeholder interviews, the tool was seen as promising by clearly illustrating the development alternatives and, in particular, by bringing them 'reality in advance'. The main weakness associated with the 3D visualisations was that the show was a 'one off' and the participants had no physical image of the visualisation picture, for example that a brochure would feature, to contemplate later. However, it was also evident that the more intensive the development idea was, and the more effects it had on the landscape, the more comments it generated from the audience, both positive and negative. When the development was less visible, e.g. a new nature trail, and had less impact on the landscape, fewer comments were made as well.

4.3. Comparing the collaboration dynamics of the critical boundary objects

Both analysed boundary objects offered several methods of interaction between the multiple actors from different knowledge communities, for example in the forms of local community meetings, study tours and workshops. The 3D visualisation worked better than the prioritisation process in gathering different stakeholders for the discussion concerning the tourism development in the pilot areas and keeping them engaged. Furthermore, the 3D visualisation also had an impact on the audience, as it clearly depicted the development possibilities. The more radical the changes were, the more actively the different interest groups wanted to influence the process. On the other hand, the prioritisation process managed to gather stakeholders together for a longer period of time. Thus, our findings confirm earlier research (e.g. Thomas et al., 2007) by illustrating that an artefact per se is not a boundary object; rather, an artefact can only be developed and maintained as a boundary object through the interactions between a range of actors as they negotiate its meaning.

In the COMCOT project, the role and involvement of the community of affinity varied between the analysed boundary objects. In the prioritisation process, the tourists, or more precisely, their opinions, were involved throughout the marketing and community surveys conducted at a more general level. In the 3D visualisation, on the other hand, the community of affinity was provided a more direct link to the boundary object, as it was invited to take part in the visualisations. Therefore, in the prioritisation process, there was more room for the other knowledge communities to interpret, consider or ignore the results of the surveys in the prioritisation process, as the community of affinity played a more passive role in it. It can even be said that it was only represented by the knowledge brought to the process by the community of science. In the 3D visualisation, however, the community of affinity was actively present in the discussion and represented purely its own interests. It can be stated that the 3D visualisation as a boundary object was more in line with the idea of co-creation and the collaborative innovation process.

It should also be acknowledged that even though boundary objects in the COMCOT project provided the different knowledge communities with the innovative space for tourism development, the potential for power struggles were inherent throughout the development process (see also Bechky, 2003; Thomas et al., 2007). According to Bechky (2003), the greater status, authority and expertise of certain groups may lead to situations where, rather than acting as a boundary object, artefacts are used to exercise control. Particularly in the prioritisation process, the external experts overlooked the lay knowledge as the prioritisation process was forced to be implemented in exactly similar way in each pilot area. Thus, they neglected the fact that each pilot area had different expectations concerning the prioritisation, depending on their experiences and current status of their previous tourism development. The dissatisfaction of local people with the prioritisation led to the reorganisation of the process to better balance the power between the knowledge communities. Still, local community members should not have been understood merely as powerless agents because the lay knowledge they possessed was essential for the successful implementation of the COMCOT project. The same problem did not occur concerning the 3D visualisation as it was tailor-made for each pilot area. Consequently, based on this experience, it can be stated that boundary objects must be flexible enough to allow for transformability according to community dynamics, even during the process.

Related to the group dynamics, as a boundary object aims to link people with different backgrounds, the role of communication in the collaboration is essential. In the COMCOT project, the role of communication became increasingly important since, in addition to different social worlds, the international project gathered together people having different native languages. Particularly during the prioritisation process, the language problems sometimes restricted the development of an interactive atmosphere. The preparation of the 3D visualisation was conducted within a smaller group, in which language issues were not very problematic. Due to the communication challenges, the role of the local co-ordinators grew more essential, as they transmitted the information between external experts and local people. In other words, they became knowledge gatekeepers within the boundary objects.

Furthermore, the success of the boundary objects in the COMCOT project varied between pilot areas, with a central element being the role of the local co-ordinator in knowledge transfer. It can be concluded that even though activating local people and creating trustful relationships made the role of the local co-ordinators essential, perhaps the boundary objects themselves should have been designed beforehand to prevent communication bottlenecks like this one, which could pose a risk to the development initiative.

5. Discussion

Co-operation among several stakeholder groups is one of the core elements in community-based tourism, even more so than in firm-based tourism development. At present, tourism development plans and their phases are typically presented in chronological order, and the stakeholders of each phase are identified. Scholars have also developed several methods to identify the most critical stakeholder groups for (e.g. Matilainen & Lähdesmäki, 2014; Mitchell, Agle, & Wood, 1997). However, in addition to identifying the stakeholder groups, also the knowledge communities that are represented in the process should be recognised. Particularly, when studying innovation processes, combining different types of knowledge has been found to be essential (Hjalager, 2010). Our results support this conclusion as well. Previous research has also pointed out the danger of having only one sectoral approach to the local development in community-based tourism development processes (Gascón, 2013). Therefore, we suggest that it is not enough to consider stakeholder groups based, for example, on their critical (according to Mitchell et al., 1997) or political position. Instead one should also take consciously into account that all necessary knowledge communities are involved, to promote successful innovative atmosphere for the development processes.

As community-based tourism development projects typically bring together various knowledge communities, with potential tensions between them, the boundary objects need to create a meaningful way to each community to participate to the process and to bring together the knowledge of both local people and experts - combining scientific and lay knowledge. Hearkening back to Star and Griesemer (1989), the production and recognition of boundary objects itself is one way of accommodating potentially conflicting sets of concerns. However, using boundary objects does not automatically decrease the tensions between the participating groups. The boundary objects must be attractive and viable enough to involve all different knowledge communities, not only a few. In other words, if one or more of stakeholder groups representing various knowledge communities neglects the boundary object, it is likely to fail (Sapsed & Salter, 2004). White et al. (2010), for instance, found out that the boundary object is not credible, salient, and legitimate, if it does not engage stakeholder groups widely enough nor response properly to their needs related to the development/decision making. Especially in community-based tourism, this could be recognised as well when discussing on the growing trend of co-creation in tourism development (Grissemann & Stokburger-Sauer, 2012; Richards, 2011). Typically in it the aim is to involve the customers (community of affinity) in the product planning process. Perhaps in the community-based tourism context the concept could be understood as a wider co-operation between all knowledge communities, rather than just between the company and a community of affinity, to create sustainable products.

In addition to involving all crucial knowledge communities to the development processes, careful planning of the boundary objects can reduce the potential tensions between the participating groups. Carlile (2002) examined the difference between good and bad boundary objects, and identified three characteristics. First, a boundary object should establish a shared syntax or language for individuals to represent their knowledge; second, it should provide a concrete means for individuals to specify and learn about their differences and dependencies across a given boundary; and third, an effective boundary object should facilitate the process in which individuals can jointly transform their knowledge (Carlile, 2002). Previous research, as well as our results, demonstrate that as the relations between the knowledge communities evolve during the development process, new boundary objects become necessary to supplement and replace old ones (Barret & Oborn, 2010; Kimble et al., 2010; Stoytcheva, 2013). Replacement is needed when former boundary object is no longer able to sustain the collaboration and innovation process (Kimble et al., 2010).

The fluent continuation of boundary objects can create a meaningful participation to various actors throughout the whole development process. The previous literature related to boundary objects within the tourism sector has not, nevertheless, taken focus to the transition from one boundary object to another, but rather focused on the objects as individual entities (Akoumianakis, 2014; see also; Ren, 2011). In the case study at hand, we observed that one of the studied boundary objects, namely the prioritisation process, was somewhat inflexible and prolonged which alienated some of the local community members. This is to say that the transition to another boundary object, in this case 3 D modelling, should have happened at earlier stage and by smoother transition. Smooth transition from a primary boundary object to another is strongly related to the design of the secondary boundary objects (e.g. meetings, workshops) within the primary object. In some of the case study areas, these secondary boundary objects within prioritisation process were successful in supporting fluent transition to 3 D modelling whereas in some areas they were not designed well enough from the viewpoint of continuum of boundary objects. The development process under scrutiny naturally did not confine to those two critical boundary objects and their secondary objects analysed but there was a need for a continuation of new boundary objects for detailed action plan and tourism product development as well.

A successful boundary object can create ownership towards the tourism services and products, which has been identified as one of the key elements of successful community-based tourism development projects (e.g. Bramwell & Sharman, 1999) without violating the experienced local ownership that emerges. Indeed, previous studies have argued that especially feelings of ownership, not only the legal ownership aspects, are positively associated with commitment and the sense of responsibility. The more a group feels the tourism development project is theirs, the more they are willing to take personal responsibility for it (see Pierce, Kostova, & Dirks, 2003). The phenomenon has also been conceptualised in organisational research (Pierce et al., 2003), which could provide a new approach also to analyse boundary objects. The feelings of ownership, i.e. psychological ownership, are often considered to evolve through different routes, namely through the ability to influence or control the object of ownership, becoming intimately familiar with the target and investing oneself in the target (Pierce, Kostova, & Dirks, 2001). These routes to psychological ownership are distinct, complementary, and additive in nature. Any single route can result in feelings of ownership independent of others. However, the feelings of ownership for a particular target will be stronger when an individual arrives at this state as a result of multiple routes rather than just one route (Pierce et al., 2003). Accordingly, we suggest that to establish actual ownership of a tourism project, it is essential that a boundary object also nurtures these routes towards ownership feelings. In practice, this would provide the stakeholders with an opportunity to influence the development, enhance communication between the different

stakeholders, and ensure that it is appealing, interesting and important enough for stakeholders to invest their time and energy in it. One boundary object does not necessarily have to contribute to all routes simultaneously, but each interest community should have access to these routes at some point in the development process to generate the feelings of ownership. It has also been noted in previous research that extrinsic motivation does not produce as good results as intrinsic motivation, the latter being people's self-motivation to take part in and influence the development (Deci & Ryan, 1987). Therefore, as well as providing extrinsic incentives, the boundary object must also be able to stimulate intrinsic motivation to participate in the project and develop community-based tourism in the long run.

6. Conclusions

The aim of our research was to illustrate the importance of co-operation of different knowledge communities in the community-based tourism development process and examine the usefulness of the novel conceptual tool in tourism management, namely boundary objects, in bringing these knowledge communities together. Our main contribution is aimed at CBT literature by showing that boundary objects provide a fruitful instrument to engage various stakeholders and knowledge communities in the community-based tourism development process. The results also highlight the proper design of the boundary objects and the need for smooth transition during the process from one boundary object to another. In the sustainable development processes, it is necessary to bring the shared knowledge and learning of the previous boundary object to the next one. In this sense, a successful tourism development project can be considered a continuation of different kinds of boundary objects. Based on these main findings, we conclude that the boundary object approach could be used more both in planning and analysing CBT development processes and development project's activities from their internal functionality point of view. This is often overlooked. A lot of emphasis is put to recognizing the critical stakeholder groups, but less on considering how to provide meaningful participation to these stakeholder groups, so that the different knowledge communities could be included into the same activities and innovative space for the development created.

As a managerial implication, in addition to basic process description, project managers should consider creating “boundary object roadmaps” when planning the development processes. In these “roadmaps” the type and role of the boundary objects used in the process, as well as the ways they combine different knowledge communities and enable collaborative learning, would be more systematically thought through and analysed. The roadmap approach provides a new approach to the planning process of tourism development projects, and helps in planning the boundary objects, both primary and secondary ones, more carefully. It can sometimes be challenging for the project manager to identify and remember the proper management of the primary boundary objectives (usually sub-objectives of the whole process) as it may be often easier to focus on managing the secondary objectives (tools to reach the primary boundary objectives), like seminars, meetings or training events. Thus, creating “a boundary object roadmap” could properly support community orchestration, commitment of stakeholders to the process, and strengthen the experienced local ownership.

At the end some limitations of the study must be mentioned. The study is explorative in nature and is consequently based on the analysis of critical boundary objects in one development case. According to Yin (2013), case studies, can be generalised into theoretical propositions, but not to the population. Therefore, no farfetched generalisations based on the results can be made. To further study, for instance, the role of the different elements of boundary objects in generating psychological ownership within tourism development, wider research using the existing measuring tools of psychological ownership, for example, is required. It must be noted that the boundary objects identified in the COMCOT project are not universal because the applicability of boundary objects is always context-dependent. Consequently, even though the prioritisation process to some extent, and the 3D visualisations without a doubt, succeeded in providing an innovative space for both the Finnish and Estonian tourism development, this might not necessarily prove to be the case in other cultural contexts. In addition, much more remains to be learned about how different artefacts or activities develop as boundary objects in social processes, and how these processes alter the boundary objects. This is, nevertheless, the most vital part of the use of boundary objects in tourism development work. This approach has not yet been fully captured in existing research, and further knowledge of this process would help project managers to plan boundary objects better.

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