A place-based approach to smart specialisation in non-urban territories

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DRAFT

Abstract

The paper explores the potential of applying a place-specific smart specialisation framework on non-urban territories. A 'quintuple helix' framework is presented, where the traditional triple helix is supplemented not only with civil society (in what has become known as the quadruple helix) but also with landscape and the built environment. The interactions between the five elements of the quintuple helix are viewed in a place-specific context. The benefits of approaching smart specialisation from a place-specific perspective are that it emphasises the importance of focusing on distinct business and technological activities that are so rooted in the territory that they would lose value or not make the same sense if moved to another place. Furthermore, the approach stresses that places are formed by people, and that it is the interaction between business, physical, social and cultural factors that bind economic activities to a specific place. The empirical application of the framework is illustrated through two case studies of lower-level territories in Denmark.

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Introduction

Smart specialisation takes its point of departure in a geographically specific context. In its original framing, the geographical context could be a country or a region (Foray et al. 2009; 2011), but through the role attached to smart specialisation as a major driving force for achieving regional cohesion, smart specialisation is now perceived as closely associated with regional development strategies. However, from a planning perspective, despite smart specialization being a place-based approach to regional development, place is in this approach primarily about strategic and institutional setups. Furthermore, ”place-based” is in a smart specialization context to a large extent perceived as being equal to bottom up entrepreneurial discovery processes for identification of local development potentials and needs (Capello and Kroll 2016). Accordingly, hands on planning and development of the specific physical place is de-emphasised. This has consequences for regional policy where there is a call for a closer integration of business development and physical planning in order to create a more robust development of a geographical area that works with the physical and business strengths jointly, exploiting synergies by letting the business development initiatives influence the physical planning and vice versa (Hansen et al. 2015).

As pointed out by McCann and Ortega-Argilés (2015), the types of regions that are most often the targets of regional policy may face unfavourable conditions for the unfolding of smart specialisation processes, because lagging or peripheral regions typically lack sufficient levels of entrepreneurial search processes, relevant size of activity and/or sufficient levels of connectedness or connectivity of the region. However, this should not necessarily lead to the conclusion that smart specialisation is not a relevant policy framework for these types of regions. McCann and Ortega-Argilés argue, that if the smart specialisation approach is used to

> *“consider the potential innovation and entrepreneurial opportunities associated with the region’s existing characteristics, its realistic diversification potential, and to design appropriate policy interventions on the basis of these features and intended outcomes”*
>
> (McCann and Ortega-Argilés 2015 p. 1300)

then it can be relevant to a wide range of regions facing very diverse conditions.

The present paper follows in the footsteps of McCann and Ortega-Argilés (2015) in focusing on the potential of applying a place-specific smart specialisation framework on non-urban territories. The paper explores the extent to which smart specialisation can be a useful tool for development not only at the regional level, but also at smaller geographical scales. Smaller communities may have an advantage in terms of undertaking interactive and consensus-based processes, which are a core element of smart specialisation (Foray et al. 2012), because passionate individuals representing different types of actors may be more committed to the local community and have more specific local knowledge. In the development of the built environment in challenged regional and/or local territories, tendencies within architecture and planning are to use the strongholds of the given territory coined in the concept of ‘place-based potentials’, which may be either physical or embodied in people (see e.g. Laursen 2012). Accordingly, in the present paper a place-specific planning perspective is incorporated into the smart specialisation framework.

Although it is argued that the place-based planning approach is relevant at all geographical scales, the focus in this paper is on exploring how a place-based planning approach to smart specialisation can be employed

in small-scale local development for two reasons. First, for illustrative purposes, small scale territories are less complex. Second, smart specialisation may have unrealised potentials in small scale territories, where the involvement of different types of actors with complementary approaches and competences may be able to mobilize a common engagement and thereby the necessary critical mass that might otherwise be a challenge in less densely populated territories.

The present analysis is based on two cases that illustrate the attempt to enhance business development and focus on the local in an increasingly global world. The cases are not selected as 'best practice'-cases, and, as such, they are illustrations of development initiatives that could benefit from wider intra-territorial interactions and a stronger place-specificity. Hence, the idea of presenting these cases in a place-based, smart specialisation context is to illustrate how this approach can deepen our understanding of development potentials as well as possible pitfalls.

Based on the findings from the two cases, we argue that incorporating a placed-based planning perspective into a smart specialisation approach can provide a more holistic understanding of concrete place-specific development potentials. This can provide a foundation for developing targeted smart specialization policy initiatives.

The outline of the paper is the following: The following section develops a theoretically based analysis model applying a place-based approach to smart specialisation. Next, the empirical cases are introduced and analysed according to the proposed model. Finally, the concluding section discusses the contributions of the paper, both theoretically in proposing a model that stresses the importance of place in smart specialisation, and empirically in demonstrating the potential of working actively with integrating triple helix interactions with physical context and civil society actors into a quintuple helix.

Conceptual framework: smart specialisation in a place-specific planning perspective

Conceptually, the paper addresses regional and local development through the combination of smart specialisation and a place-based planning perspective.

Smart specialisation is a relatively new concept, developed by academics David Foray, Paul A. David and Bronwynn Hall in 2008 and introduced for the first time in Foray et al. (2009). The concept soon came to play an important role for policymaking, particularly in Europe (Foray et al. 2011). Accordingly, the European Commission views the fostering of smart specialisation as an important driving force behind the Flagship Initiative 'Innovation Union', which is part of the Europe 2020 strategy for smart, sustainable and inclusive growth (European Commission 2010), as well as behind the EU cohesion policy reforms aiming at promoting the development of weaker regions in Europe (McCann and Ortega-Argilés 2015).

The main goal behind the European Commission's Europe 2020 strategy is to achieve smart, sustainable and inclusive growth. 'Smart' here refers to growth based on knowledge and innovation (European Commission 2010). This implies, that smart specialisation cannot be seen as completely detached from R&D and innovation, since smart specialisation is

> *"[not] associated with a strategy of the simple industrial specialisation of a particular region in tourism or fisheries (to take two fairly low tech sectors as an example). Instead […] it might suggest*

that such a region should specialise in R&D and innovation related to the sector of tourism or fisheries."

(Foray et al. 2011, p. 5)

Smart specialisation rests on the core assumption that, "context matters for the potential technological evolution of innovation systems" (McCann and Ortega-Argilés 2015 p. 1292). Regional potentials for competitive advantage should be identified through a discovery process, stressing the importance of basing development activities on competences and qualities that are present – and distinctive – for the region in question, thereby avoiding that regions copy what has been done elsewhere (Foray et al. 2012).[1]

This focus on context, when defined in the broadest sense possible, ranging from the workforce and the knowhow available to the infrastructural systems and building structures, defines an interesting link between smart specialisation and the fields of planning and urban design, as "For disciplines and professions concerned with design of the physical environment, site matters" (Burns and Kahn 2005 p. viii). Thus, having a place-based approach means building upon existing potentials. Developing the geographical area with point of departure in existing strengths and, thereby, building on distinct characteristics of a given site; distinguishing the specific site from other sites. Using the site as a constituent co-player in the development of the same site (Stenbro and Christoffersen 2008).

Identifying the place-specific potentials within a planning and urban design field can overall be divided into two categories. On the one hand, the physical setting such as buildings, squares, parks, harbours, landscapes, natural resources, technical facilities etc., and on the other hand, the people living in the physical spaces and their competences and preferences and the cultural and social processes of a given place (Jahn et al 2014). On top of that, places can be considered to be nodes in a network, being relational and connected to each other (Førde et al. 2013). Thus, a place is both different and unique as well as inter-linked and reciprocal (Førde et al. 2013). Hence, place-specific potentials can be considered the things which physically, socially, culturally and/or economically are bound to a place and which will lose value or not make the same sense if moved (Naturstyrelsen 2013), thereby creating a certain or specific place identity. This identity is influenced by people, thus, being constructed and developed continuously in interaction between people and between people and their surroundings. The place identity affects the citizens and vice versa , which means that places are created, challenged and changed over time (Dale and Berg 2013); making a place the result of human actions and experiences (Vestby 2009). Put in another way, sites are not static entities, but products of our actions (Ringgaard 2010) – a dynamic space for actions (Hvattum 2010). Thus, places are products of society and culture (Cresswell 2004), constructed, formed and perceived by the citizens.

Besides agreeing on the fact that place[2]/context matters, there are similarities between branches of planning and urban design and smart specialisation when it comes to exploiting existing regional and local characteristics in future development processes. In planning and urban design these local potentials are

[1] Smart specialisation is also a reaction against a tendency for regions attempting to copy other regions based on a 'best practice' logic: "Too many regions have selected the same technology mix – a little bit of ICT, a little bit of nano and a little bit of bio – showing a lack of imagination, creativity and strategic vision" (Foray et al. 2011 p. 4).

[2] In this paper the word place is used as covering the physical and experienced site and thus, implicitly referring to a broad definition of place constituted as physical locality, experience and the actions taking place in-place (Canter 1977).

used in the development of the physical settings as stepping stones to a future (urban) development and as a way of embedding a future development in existing materialities. Thus, using e.g. the place-specific landscape potentials as anchors for development in both the physical structures as well as in business development. This approach is used at both larger regional scales as well as in very local and place-specific contexts.

In smart specialisation, emphasis is more on basing regional competitive advantage on fostering diversification through related variety emerging from a specialised knowledge base. Prosperous territories tend to develop their industrial base by diversifying into industries that are closely related to previous or existing activities (Boschma and Gianelle 2014). Accordingly, the objective of a smart specialisation policy is

> *"to aim for specialised diversification into related technologies which generates new economic activities that are rooted in the region and that can draw on local related resources."*
>
> (ibid., p. 8)

This implies that smart specialisation processes should focus on strengthening and exploiting the 'connectivity'[3] between related activities within a region as well as between the region and other regions that have the potential to bring in new knowledge and resources that are related to existing activities within the region (Boschma and Gianelle 2014; McCann and Ortega-Argilés 2015). Boschma and Gianelle (2014) argue that the related variety framework e.g. can be used as a tool for local policy makers to decide whether they should back a local industry, which is facing temporary failing demand, making the struggling industry's technological relatedness to other local industries the focal point. As illustrated by e.g. Holm et al. (forthcoming), relatedness is not purely a technological phenomenon, it can also be present at the level of individuals as skill-relatedness. In sum, relatedness-driven smart specialisation allows firms "to build on the skills, assets and capabilities within a region while adapting and improving on them through innovation" (Foray et al. 2012, p. 15), thereby strengthening the competitive advantage of the region/territory.

Healy (2006) emphasises the link between business development and place-making, where urban quality becomes an economic asset. This implies the necessity of merging spatial development and business development (Healey 2006), which relates to the work of geographer Doreen Masseys regarding the urban economy as a "complex collection of layers of economic relations" (Masseys cited in Healey 2006, p. 135).

> *"This argument indicates that the qualities of places within an urban region are important not just as assets, but as part of the relational capacity of an urban region"*
>
> (Healey 2006, p. 155)

Specifically, in the development of the built environment in challenged regional and/or local territories – here defined as territories suffering from decline in population and economy - tendencies within urban design and planning are to exploit the strongholds of the given territory coined in the concept of place-specific potentials (see among others Laursen 2012). In recent years, a prevailing approach within physical planning and urban design in the Nordic countries is to use inherent place potentials in the development of rural areas (Laursen 2012). Often these projects have a focus on landscape potentials, using these in

[3] Connectivity is a term borrowed from social network analysis, which expresses the number of different pathways that connect two actors. High connectivity means that are multiple ways for actors to reach each other (Hanneman and Riddle, 2005).

relation to creating leisure and experience economy-activities in the rural peripheries (Laursen 2012). Accordingly, the related variety of economic activities is closely linked to the place identity, not only economically, but also physically, socially, and culturally, because it is the interaction between these factors that bind the economic activities to the specific place.

In the smart specialisation strategy approach (European Commission 2010; Foray et al. 2012), the triple helix (Leydesdorff and Etzkowitz 1996; Etzkowitz and Leydesdorff 2000) and the extended quadruple helix approach (see e.g. Arnkil et al. 2010) is a central framework for analysing interactions between different types of actors. Smart specialisation is described as a collective endeavour based on public-private partnerships and quadruple helix-relations. Public-private partnerships may especially play an important role for implementing smart specialisation strategies in sparsely populated territories with few external links and a low density of innovators (Foray et al. 2012). The quadruple helix is an extension of the triple helix model of the role of university-industry-government relations for explaining structural developments in knowledge-based economies (see e.g. Etzkowitz and Leydesdorff 2000). The quadruple helix is still an emerging concept, and there are different views on what the added fourth element consists of. Carayannis and Rakhmatullin (2014) argue that the fourth element of the quadruple helix can range from intermediate innovation enablers to different users of innovations, but that in general quadruple helix models emphasise cooperation in innovation, "in particular, the dynamically intertwined processes of co-opetition, co-evolution and co-specialisation within and across regional and sectoral innovation ecosystems" (ibid. p. 218). In the European Commission's version of the quadruple helix, the fourth element represents users/civil society, following Arnkil et al. (2010).[4]

The inclusion of users/civil society allows for a larger variety of innovations in addition to science- or technology-based innovations:

> *"The Quadruple Helix type of innovation activity, instead, can focus on producing other kinds of innovations and applying existing technology and research knowledge and user knowledge as well. To SMEs, the increase in quadruple and user-oriented type of innovation activities could open up new possibilities to participate in innovation activity, as also other types of SMEs could participate than only strongly science-based ones or firms having science-based firms as clients."*
>
> (Arnkil et al. 2014 p. 16)

The promotion of such a broad variety of innovations at the regional level requires flexibility and acquisition of new skills as well as a potential re-distribution of power among organisations. This calls for collective leadership, involving either political leadership (public authorities), managerial leadership (enterprises), and/or intellectual leadership (knowledge institutions). None of the different forms of

[4] Arnkil et al. (2010) present four different versions of 'user-centred' quadruple helix models, where users are included in different ways as contributors to innovation. The 'Firm-centred living lab model', characterized as 'design with users' where users can be informants as well as developers, and user knowledge can be as important as research knowledge, is probably closest to the one adopted by the European Commission, which describes the quadruple helix as "the necessary organisational counterpart of an open and user-centred innovation policy, because it allows for a greater focus on understanding latent consumer needs, and more direct involvement of users in various stages of the innovation process"(Foray et al. 2012 p. 37).

leadership can be emphasized as more important than others, as the required form of leadership depends on the specific context and competences (Foray et al. 2012).

Linking the above to place-specific planning, this relates to a tendency within planning and urban design that focuses on "the formation of public-private partnerships, strategic alliances, dialogue groups, consultative committees and inter-organizational networks" (Sørensen and Torfing 2007 p. 2). Thus, a planning praxis, where "the stakeholders are becoming more actively involved in the planning process on the basis of a joint definition of the action situation" (Albrechts 2004 p. 743).

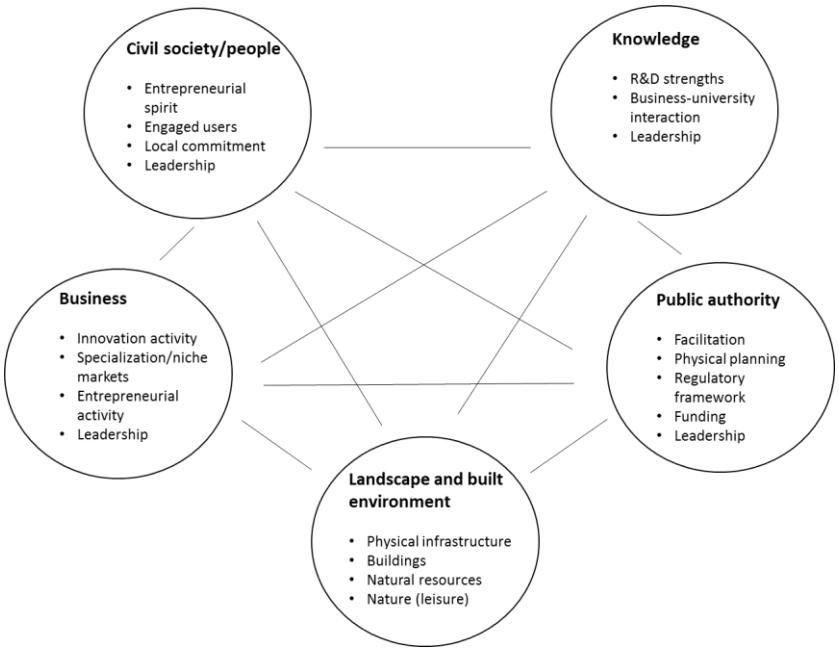

Figure 1. Quintuple analysis model

This aspect is captured in the quadruple helix, which includes the civil society as an equally important actor group, alongside public authorities, business community and science. Equally, it can be argued that the physical place is also an "actor" that interacts with the other types of actors, and thereby the physical place influences the development paths and processes. Accordingly, we propose a theoretical quintuple model that stresses the importance of place in smart specialisation.[5] The model pin points a range of central key themes in relation to viewing smart specialization in a placed-based planning perspective. In this way, a holistic approach is developed that views business development and physical planning in combination and, thus, takes several aspects into consideration when exploring the strategic development of a geographical area. Accordingly, a geographical place where development processes take place, with its materialities, humans and relations to other places is investigated through a quintuple helix perspective. Thus, place is present in all elements of the quintuple helix, since the degree to which knowledge, people and business activities are bound to the physical place is crucial for territorial development potentials.

[5] Whereas we in the present context introduce the physical place as the fifth element of the quintuple helix model, parallels can be drawn to Carayannis and Campbell (2010) and Carayannis and Rakhmatullin (2014), who introduce the natural environment and natural resources (emphasizing sustainable development) as the fifth element.

In the following the empirical setting is presented, followed by an empirical analysis demonstrating the potential of working actively with integrating triple helix interactions with physical context and civil society actors.

Empirical setting

The empirical foundation of the paper is a qualitative study of two cases in the region of North Denmark. The region of North Denmark is situated in the peripheral areas of the national Danish territory. The most peripheral and rural parts of the region are struggling with decline in population and economic activity. The two cases are all situated outside the growth centre of the region (the main city, Aalborg) and in different ways they address how to utilize different types of strongholds of the territories for economic development. The first case, Hydrogen Valley, is an initiative aimed at utilizing local competences related to hydrogen to develop and attract activities related to green renewable energy, in particular hydrogen and biogas. The second case is Thy National Park, which aims at fostering new types of place-based innovation related to foodstuffs and tourism in particular.

The cases have been studied through an explorative approach. Data has mainly been gathered through site-visits, open-ended interviews and meetings with key stakeholders such as civil-society actors, local and regional government representatives and companies. Furthermore, a range of documents have been examined in order to understand and unfold the story of the cases as well as to be able to insert the various nuances gained in interviews into an overall frame.

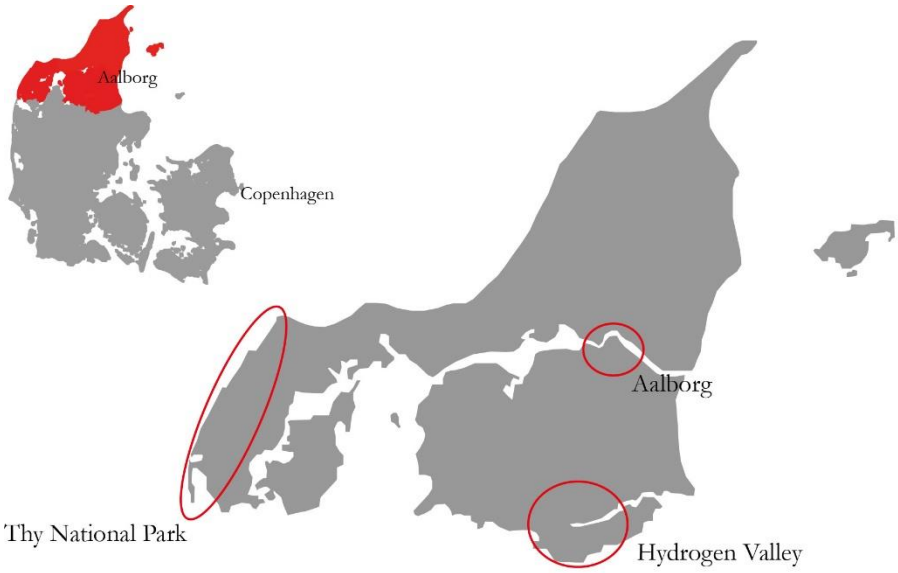

Figure 2. Geographical location of the two case territories

Case 1: Hydrogen Valley

Hydrogen Valley is an initiative that focuses on the development and implementation of projects related to green gasses such as hydrogen and biogas. Physically Hydrogen Valley is located in a relatively rural territory in the northern part of Denmark. The largest town in the area, Hobro, has a population of app. 12,000. Within a one-hour driving radius, the two main university cities on the mainland of Denmark,

Aalborg and Aarhus, can be reached, and Aalborg University is actively engaged in the Hydrogen Valley organisation as well as in specific project activities.

In the early-mid 2000's, hydrogen was an emerging business area in Denmark, but no one had yet established themselves as the major national players in the area. However, since 1997 Hobro had been the home of the metal company Sintex, which works with powder and sintering technology (the name 'Sintex' is an acronym for 'sinter experts'). Sintex uses hydrogen in its production process, and is Denmark's largest hydrogen-consuming company.

In 2005, a feasibility study initiated as part of a process of identifying a scientific profile for a newly established business park in Hobro showed that the local expertise in dealing with hydrogen related to Sintex' activities, combined with hydrogen in general being an area which showed positive growth potentials, provided a good foundation for developing a clear profile around hydrogen – and green gasses in general – around Hobro.

The municipality invested resources in developing project development and implementation competences related to hydrogen/green gasses within the Hydrogen Valley organization, and worked actively on attracting hydrogen-related companies to the area. Furthermore, the municipality has laid out land to companies working with hydrogen in an industrial setting, and has entered an agreement with a utility company, Verdo, who has set up a production facility for producing hydrogen in Hobro. So far, only a couple of hydrogen-related companies have set up activities in Hobro, and a successful Aalborg University spin-out company started up business in Hydrogen Valley, but moved to Aalborg when they outgrew the facilities in the Hydrogen Valley business park. However, this has been sufficient to engage a range of suppliers in building up competences in working with hydrogen, thus generating an indirect effect on a broader range of local companies. Based on own calculations, Hydrogen Valley has generated approximately 200 jobs, which corresponds to 1.7 percent of the jobs in the private sector in the municipality.[6]

Case 2 Thy National Park

Thy National Park was in 2008 the first to be denoted a national park in Denmark and is an example of a regional development scheme with focus on local place-specific potentials and public-private stakeholders. Thy National Park is situated outside the growth centres of Denmark in the periphery of the Danish territory. In this perspective, this case is an example of an attempt to create small-scale local development based on local place-specific potentials, which in this case is the nature and landscape of the territory. Hence, the National Park covers a 55-kilometer costal stretch in the Municipality of Thisted containing a variety of nature-types among others a unique dune and moor landscape. The overall purpose of the National Park is to preserve, strengthen and develop the nature as well as the local cultural environments and culture-historical trails. Further, the purpose is to strengthen the possibility of out-door activities and to develop and generate profit for the local communities by developing local food products and tourism.

The actual Thy National Park is run by a board assigned by the Minister of Environment representing different political organs and central stakeholders (Nationalpark Thy 2015A). The daily operation and management is handled by a secretariat. Finally, there is a National Park counsel which represents different

[6] Some of the jobs have been generated in other municipalities in North Denmark.

interests. Apart from the formal organization a range of NGO's, stakeholders, volunteers etc. are engaged in Thy National Park. This includes local businessmen or the local community using and branding themselves through the national park. Thy National Park can be described as a framework – a demarcated geographical area – which has been given a (new) unique role by using the nature as the connecting tissue of a larger geographical area and thereby underpinning a regional identity that makes room for local place-specific development. Hence, the promotion of businesses within the national park only represents a small part of the national park purpose, but it designates the National Park as a collected destination, which brands and communicates a series of connected experiences - understanding the national park as an umbrella of experiences and networks. Within this frame a range of stakeholders are engaged and it is attempted to create a diverse network where the different stakeholders can see a purpose through using the Thy National Park as a development frame.

Focusing, in this paper, solely on Thy National Park as a business opportunity and not on the preservation and protection part of Thy National Park, the landscape and nature of Thy National Park possesses a range of place-specific potentials which, by local entrepreneurs have been used in a commercial way. Small businesses use the national park actively applying the local identity and/or the physical locality of the national park in relation to e.g. food-production or tourism. Examples include hotels and inns branding themselves through the association with the national park and putting the national park on the menu by using local ingredients. Furthermore, there are meat growers who produce cattle and sheep; distilleries who produce whiskey and snaps; honey farmers etc. More recently, Thisted Brewery has launched three national beers based on herbs and berries from the local area. The products are sold both locally and nationally and in the period 2012-2015, 34 companies have been authorized to use the national park's logo in connection with food and non-food products (Thy National Park 2015B).[7]

Analysis

In the following the proposed quintuple analysis model is applied across the two cases. The purpose is to show how closely related business development and physical planning is and there through emphasise the under-exposed potential in a strategic joining of efforts within business development and physical planning.

Landscape and the built environment

The role of the local landscape and the built environment in the development process of the two cases vary in form and extent.

In Thy National Park, the landscape is the overall focal point and it is due to the landscape and the specific and unique landscape types situated precisely at this specific locality that the national park is situated here. Thus, the landscape is the enabler of the different initiatives going on in the national park. The landscape is a brand both in relation to being a tourist destination and as a valuable and unique biotope; but also as a natural resource for food production. When it comes to built structures an effort is put into making the landscape accessible by constructing paths for walking, biking and riding and thereby enhancing the tourist potential. In the future, the national park is working on the construction of a national park centre. This centre should be a place for exhibitions and information; a place where people get information about the

[7] A non-academic assessment carried out by local media in 2016 found that Thy National Park – together with the neighbouring surfer area 'Cold Hawaii' - has generated 100+ jobs (Nordjyske 2016).

national park and from where their journey out in the national park begins. Thereby, again enhancing the potential of exploiting the national park as an asset for (tourist) development.

When it comes to Hydrogen Valley the landscape does not per se have a role in the development of the hydrogen business. However, a recent project has explored how used salt caverns located west of Hobro can be used as a storage of surplus wind- and solar energy via electrolysis. Further, the business park, established in 2002, acts as the physical centre of Hydrogen Valley. The close access to European motorway E45 makes the 'Valley' relatively easily accessible, and places the two university cities Aalborg and Aarhus within a radius of less than one hours travel time.

Civil society

In the two cases the role of the civil society spans from being the DNA of the project to only playing a sparse role in the process of promoting local development. In Hydrogen Valley, a traditional triple helix construction has been predominant, and the civil society has not played any significant role. However, the civil society may become more involved in later stages, not least from a demand perspective, as e.g. plans for setting up a hydrogen fuelling station in Hobro are realized. Contrary, Thy National Park shows the contours of the kind of small-scale local development that can be initiated through the work of some very enterprising local stakeholders and their work with the local nature. The civil society are the performers of developing tourism and foodstuff production from the national park, and thus, exploiting the potential. The civil society are local entrepreneurs that have been eager to participate on a voluntarily basis in exploiting the potentials and the small local companies have found a way to make a living out of foodstuff from the national park or by using the national park for tourism activities. Thus, in the case of Thy National Park, one of the driving actors in the smart specialisation process is the civil stakeholders. Thy National Park can be interpreted as a platform that gathers different stakeholders with different interests all relating to the national park and all striving to develop the geographical area of the national park. Thus, the place-specific development taking place is characterised by a network approach. The success and development of the area is very much the result of a deliberate effort for bringing different stakeholders together and creating meaningful collaborations. Working together in order to achieve the goal of developing the area. This approach is based on a local culture characterized by a strong local drive and a will to develop the local community. Thus, the success of the national park is dependent on the local citizens and had they not been there to discover and seek to exploit the entrepreneurial potential, there would not have been any local development within the national park. This process in accordance with Arnkil et al. (2010), who emphasise how an increase in user-orientation can promote new types of innovation activities, and allow SMEs without a strong science-based to also participate in smart specialisation activities.

In the very sparsely populated community of Thy, the inhabitants are very engaged and a lot of the development that is initiated in this community originates from some very passionate individuals in a bottom-up process. These passionate individuals derive from a very strong community culture that is used to make things happen and there is a huge energy and potential in engaging with the civil society. Due to this bottom-up approach, the distinction between civil society and local businesses is blurred, rather the two are interrelated. As a result, what started as a volunteer community project in some cases grows into becoming the livelihood for local citizens. This is an interesting perspective seen in relation to the challenges of many Danish lower-tier territories where the job creation is very sparse.

Further, the cases illustrate how individuals representing different types of actors in the quintuple helix can be the initiating driving forces behind entrepreneurial discovery processes. In the first case, the process is initiated by a small group of individuals, including representatives of local authorities (the municipality) in collaboration with a university; in the second case civil society actors play a major role in collaboration with national government.

Knowledge and science

R&D and 'hard' science is only a major driving factor for development in the case of Hydrogen Valley, whereas the 'soft' sciences of humanities and social sciences are relevant potential levers in the case of Thy National Park.

Thy National Park is very much driven by bottom-up activities and practical knowledge of the local flora and fauna. Until now, the university sector has only played a minor role and mostly in relation to biology – plants and species etc. – and only very sparsely in addressing the development potential, even though the involvement is increasing.

However, the National Park could benefit from a closer collaboration with the science sector, not least humanities and social sciences, which could contribute to realising and articulating more clearly the local potentials and strongholds, as well as to professionalising the way that the local communities operate in their endeavours to the realise their potentials. Even though soft sciences are often disregarded as relevant in a smart specialisation context, they could play an important role, either in their own right or as a supplement to hard sciences, in a time where there is an increasing tendency to emphasise customer experiences in relation to both services and physical products. For Thy National Park, formal and informal interactions with universities in relation to soft areas could also be a first stepping-stone towards engaging in more binding collaborations, which also could develop into addressing hard science.

Contrary to the case of Thy National Park, collaboration with university has been a focal point for Hydrogen Valley from the outset. The main aim of Hydrogen Valley is to exploit the relative proximity to strong university research environments, which can be linked to the competences of one of the major companies in the community, the hydrogen-user Sintex. This has, however, also proved to be one of the challenges for Hydrogen Valley, who is struggling to keep the activities located within the local territory, and sometimes falls short, because the place-based qualities related to hydrogen are not strong enough to prevent the actors from e.g. choosing to locate in the nearby university town. Thereby the case of Hydrogen Valley emphasises that when smart specialisation is used as a framework for business development at the very local level, a strong sense of place-based belonging is required in order to secure that outcomes of the investments in development activities also benefit the local community. If strong links to civil society, combined with a strong physical connectedness of business activities, were present, then the need for accessing R&D/knowledge from outside the territory might not have posed such as challenge, acting as a magnet that pulls away activities from Hobro.

Business

The two cases differ in the extent to which the business sector exercises leadership in the development process.

In the case of Thy National Park, the business sector was not from the outset a main driving force behind

the development efforts. However, small, local business owners are becoming more active in developing tourism and foodstuff production that emanates physically from the national park or uses the national park brand as a unique selling point. Local entrepreneurs are eager to participate on a voluntarily basis in exploiting the potentials of the natural park, and without these local entrepreneurs, the natural park would not have a potential for making an economic contribution to the local community. Innovation activity is mainly incremental and related to creating new types of experiences that exploit the uniqueness of the physical place. A report conducted by Visit Nordjylland concludes that the Danish national parks have the potential to strengthen growth, creating local jobs and secure future development (Visit Nordjylland 2014 p. 3), and that local citizens and stakeholders see a strong strategic potential in using the national park as means of attracting and retaining residents. Thus, not the national park secretariat per se, but the local stakeholders have to acknowledge and further develop the business potential in order for the initiatives related to the national park to be realized.

The second case, Hydrogen Valley, is driven by a public-private collaboration. The local hydrogen-consuming company Sintex was, together with among others a major local bank, involved in developing the initiative from the early, exploratory phase. The aim of Hydrogen Valley is to provide the framework for entrepreneurial activity related to hydrogen and other green gasses. The ambition is to foster collaboration between businesses, public organisations and research institutions on generating innovations that can promote the green transition of the Danish energy system towards renewable energy sources. However, the business-driven entrepreneurial discovery activity is, despite the early involvement of major players and the successful relocation of an established hydrogen-based company to the business park that is the physical centre of Hydrogen Valley, still relatively low. Even though local subcontractors have developed a competence in relation to working with hydrogen, the activities are still very much depending on public funding and coordination.

Both cases illustrate the challenges that lower-level, peripheral territories face with mobilising a critical mass of related companies. This is where the placed-based approach, combined with expanding the role of civil society within the quintuple helix framework, can add value for local policy makers struggling to develop the local business community. Once the civil society is not just perceived as users within the framework, but also as potential co-leaders of local development processes, new opportunities may arise for lower-tier development. Strong ties to the other elements of the quintuple helix are, however, necessary for transforming civil initiative into viable business development.

Public Authority

Both cases emphasize that the role of public authority is extremely important. As illustrated above, in the case of Hydrogen Valley the municipality, and thereby local policy makers, has been the main facilitator and driving force. From the very beginning, the municipality played an important role as a facilitator and moderator of the entrepreneurial discovery process that identified the potentials related to hydrogen in Hobro. This was probably a more active public role than what is envisaged in the 'ideal' smart specialisation process. The heavy involvement of the municipality – combined with funding from the regional authorities - does not mean, however, that the business community has been excluded from the process: On the contrary Sintex, together with other partners, such as a major regional bank, were involved from the early, exploratory phase.

In National Park Thy, the municipality has been supportive of the project all along, but have had a

somewhat more secluded role as the body that could enable different projects through permits/licenses etc. However, the municipality plays an increasing role, where they recently have begun to use the unique nature and the national park more strategically as part of municipal planning. Thus, realizing the potential of the nature, which again strengthens the brand. However, public authorities have played a huge role where the national governmental authorities (managed by the Thy National Park secretariat) have initiated the whole process by appointing the area the status of a national park. And the local national park secretariat is still playing an important role in the development of the national park. This not as the performing body, but more as a developer of the nature, coordinating efforts as well as developing and promoting the brand of the national park.

The public authorities have had a facilitating role in both cases, supporting network relations and being a sounding board for the civil society and the business world. A possible pitfall can be the lack of tools that can accommodate a public, private and civil society development scheme, related to the public authority being unable to transfer regulatory power to somebody else. But the public authority has to be an enabler knowing and developing the regulatory framework and thereby being the authority that has the legal power to make things happen when the project reaches the realization phase. This includes knowing and helping with funding the project and thereby developing it, underlining that the role of public authorities is not to tell people what to do nor to specify what are "the right specialisations" (Foray et al. 2011, p. 6), but to provide the necessary framework conditions to help the new activities emerge.

Concluding remarks

Smart specialisation is about developing "distinctive and original areas of specialisation for the future" (Foray et al. 2011 p. 4). This is done by taking a point of departure in what is characteristic for the particular geographical area. Similarities to the concept of exploiting existing territorial characteristics coined in the smart specialisation terminology are found within regional and local urban and rural planning. Therefore, the present paper has unfolded the potential of combining the smart specialization approach with a place-specific planning perspective in proposing a framework for promoting business development in non-urban, lower-tier territories. Thus, approaching a specific geographical area in a holistic way, joining efforts of business development and site planning.

Theoretically, the combination of the two perspectives manifests in a quintuple helix, emphasizing the interactions taking place in a specific physical territory between business, knowledge communities, public authority, civil society/people as well as landscape and the built environment.

Smart specialisation is a context-specific approach in the sense that it emphasises that territorial competitive advantage should be based on fostering diversification through related variety emerging from a specialised knowledge base. There is also focus on strengthening and exploiting the connectivity between activities within the 'home' territory and activities in other territories in order to bring in new knowledge and resources. However, there has been a lacking attention to the degree to which specific elements crucial for development are embedded in the physical territory. This is where place-based planning contributes with its emphasis on the distinct characteristics of a given place and how they manifest in physical and people-embodied place-based potentials, which range from the workforce and the knowhow available to the infrastructural systems and building structures. Although the physical setting, i.e. buildings, harbours, landscapes, natural resources, technical facilities etc., may play an important role for the development

potential of a territory, the main contribution from the approach presented in the present paper is the emphasis on the competences and preferences of people living in the territory, and the cultural and social processes that e.g. influence the character and effectiveness of public-private interactions. A place-based approach to smart specialisation thus underlines that focus should be on distinct business and technological activities that are so rooted in the territory that they would lose value or not make the same sense if moved to another place. For this to be the case in practice, more attention should be on the fact that places are formed by people, and that it is the interaction between business, physical, social and cultural factors that bind economic activities to a specific place.

Empirically, the paper has illustrated how an analysis of the interactions between the five elements of the proposed quintuple helix within a territorial setting can provide a new framework for understanding the development processes and potentials in challenged lower-tier territories. The case of Thy National Park shows how civil society engagement can play a pivotal role for development in lower-tier territories, either as drivers or supporters of entrepreneurial discovery and exploration of entrepreneurial opportunities, especially in small, non-urban territories dominated by low-tech activities. An important adjustment, compared to the traditional view of smart specialisation, is that the entrepreneurial discovery processes in this case are not aiming at identifying strongholds in terms of R&D and innovation (cf. Foray et al. 2011). When interpreting entrepreneurial discovery in this way, where it does not necessarily need to focus on strongholds in R&D and innovation, and the research-based knowledge that separates smart specialisation from 'normal' specialisation does not necessarily have to be present locally, then smart specialisation becomes a relevant framework for development for a wide group of regions and local communities.

Thus, without reducing smart specialization to "simple industrial specialization" (Foray et al. 2011 p. 5), we propose that local commitment and place-specific qualities are more important than R&D for fostering entrepreneurial discovery and innovation in lower-tier territories. This does not mean that R&D is insignificant, but providing the existence of a strong local commitment and drive, then research-based knowledge in a broad sense can be acquired through an external outreach. However, as illustrated in the case of Hydrogen Valley, if the place-specificity is weak, then the dependence on external linkages to knowledge communities may pose a threat to the territorial gains from the development efforts.

From a policy point of view, a place-based approach to smart specialisation requires a close interaction – and possibly an integration – between different departments within public authorities in order to reflect the interactions between the different elements in the quintuple helix model. Furthermore, there is a need for new models prescribing how to handle increased civil participation in territorial business development processes, and new models that can accommodate the close collaboration between public-private actors such as citizens, businesses, knowledge institutions and democratically elected politicians (Agger et. al 2010). A potential pitfall can be that the processes become too local, with too 'closed circles'. In this regard it is considered fruitful to explore the linking of bottom-up processes to a wider range of networks in order to incorporate knowledge and competencies from other spheres. Another issue that needs to be addressed in processes driven mainly by 'local entrepreneurial spirits' is the role of leadership. Firstly, local communities do not necessarily have many 'natural born' leaders, and in orchestrating a local development process leadership skills are essential. Secondly, the communities do not have any authority per se, which challenges their scope for functioning as a united body rather than as individuals. Here a close collaboration between civil society actors and local, regional and national authorities is vital.

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