User-generated Spatial Content for Sustainable Land Management – Experiences from Transdisciplinary Landscape Branding in Germany

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1. INTRODUCTION

In German-speaking parts of Europe, transdisciplinarity ("Transdiziplinarität") is understood as an integrated research approach, in which scientific and non-scientific partners jointly generate new knowledge (see Bergmann & Schramm, 2008). Starting points for transdisciplinary research are not only scientific, but also socially relevant issues. This approach is supported by the German Federal Ministry of Education and Research (BMBF) within the funding priority "Innovation groups for a sustainable land use" (Förderschwerpunkt: "Innovationsgruppen für eine nachhaltige Landnutzung"). One research project that has been implemented in this context is Regiobranding ("Regiobranding – Branding von Stadt-Land-Regionen durch Kulturlandschaftscharakteristika", FKZ 033L121AN). Regiobranding investigated how the joint analysis of official agencies' geodata and user-generated spatial content can make a meaningful contribution to the characterisation of landscapes. However, landscape characterisation was not an end in itself. Rather, one aim of this project was to identify possible characteristics of landscapes in Northern Germany in order to use them as unique selling propositions in building regional brands.

In addition to developing an external branding strategy, place branding sees the strengthening of local identity as a second goal (cf. Colomb and Kalandides 2010, p. 175). The participation of the local population is, therefore, of particular importance and was implemented in Regiobranding, among other things, through sketch mapping and the explicit consideration of the user-generated content developed there.

In the following, we describe the use of a GIS-based combination of qualitative and quantitative methods for landscape characterisation and present the most important results. Furthermore, benefits for transdisciplinary place branding resulting from the integration of user-generated spatial content are outlined. The paper summarises results already described in more detail elsewhere (see Schaffert et al. 2016, Wenger 2016, Becker et al. 2018, Schaffert et al. 2020a, Schaffert et al. 2020b).

In order to properly understand the following considerations, the reader must be aware that our contribution served only as one pillar in a larger project: In Regiobranding, eight (scientific or applied) institutions in three federal states collaborated. During Regiobranding's five-year period (2015 bis 2019), representatives from these institutions met regularly to guide brand management. This committee received information by the work carried out through scientific project partners from different disciplines. The approach outlined below was jointly designed by scientists from geodesy, archaeology and environmental planning and implemented in cooperation with local partners. It is important to notice, however, that the

results of our work did not lead directly to a brand, since branding is ultimately a political process. Rather, they served as an information basis and a decision support, that were considered and examined by authorities responsible for brand management in each study region.

2. RESEARCH AREAS AND METHOGOLOGY

1. Research areas

One of our three research areas is the so called “Griese Gegend-Elbe-Wendland” (GGEW). It covers areas within the administrative districts of Lüchow-Dannenberg, in the eastern part of Lower Saxony, and Ludwigslust-Parchim, in the south-western part of Mecklenburg-Western Pomerania. The GGEW comprises three different cultural landscapes: The Griese Gegend within Ludwigslust-Parchim, the Wendland within Lüchow-Dannenberg and the Elbtal, which is the valley of the river Elbe between the first two. The largest cities are Lüchow (~ 9500 inhabitants) in the western part and Ludwigslust (~12.500 inhabitants) in the eastern part.

“Lübeck-Nordwestmecklenburg” (LNWM) is another research region represented by the city of Lübeck (~ 210.000 inhabitants) which is located in the area' s west (belonging to the federal state of Schleswig-Holstein) and the adjacent municipalities of Kalkhorst, Dassow, Lüdersdorf and Selmsdorf (these are part of Mecklenburg-Western Pomerania). The region is characterised by a sharp contrast between the city of Lübeck and its small neighbouring municipalities, with ~ 1.800 to 5.000 inhabitants in the east.

The “Steinburger Elbmarschen” (SEM) form the southern part of the district of Steinburg in Schleswig-Holstein. The SEM are characterised by the flat marshlands which gives them their name and which extend from the Elbe in the southwest to the neighbouring Geest area in the north. Geest is a landform of glacial origin, which is slightly higher than the adjacent marshes. Itzehoe (~ 32.000 inhabitants) and Glückstadt (~ 11.000 inhabitants) are the major cities in this area.

All research areas are located in the metropolitan region of Hamburg (Figure 1). It is one of eleven metropolitan regions within Germany and comprises the city state of Hamburg, and parts of the adjacent federal states of Lower Saxony, Mecklenburg-Western Pomerania and Schleswig-Holstein. While differences in GGEW and LNWM are reinforced by the fact that they are traversed in a north-south direction by the former inner-German border (Figure 2), the landscape of SEM is relatively homogeneous.

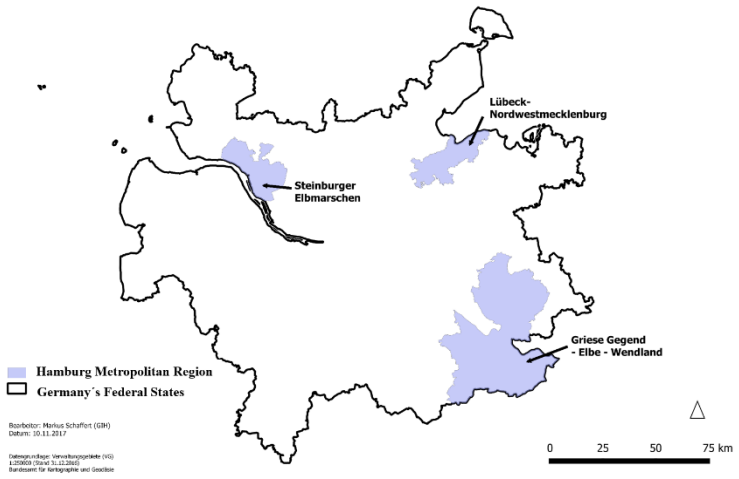

Figure 1 – The research areas within the metropolitan region of Hamburg ("Metropolregion Hamburg"). In the project, the research areas were coined as focus regions ("Fokusregionen").

Figure 2 – The metropolitan region of Hamburg within Germany, shown in a fictive context (the metropolitan region was founded after the fall of the Iron Curtain) with a no longer existing inner-German border (Schaffert et al. 2016, modified).

2. Methodology

The methodology applied in this work comprises quantitative and qualitative elements and has been performed in three steps:

Step 1: In the first step, official geodata has been used to examine the landscapes of the three research regions. With the help of GIS-based, quantitative spatial analyses, landscape elements and classes have been calculated and compared between the regions. Therefore, area sizes and accumulations, among others, have been calculated on a patch level (cf. Forman & Gordon 1981, p. 734). In addition, further landscape metrics (Lang et al. 2008), such as the Shannon Diversity Index to estimate landscape diversity, were performed and the hemeroby, which is understood as a measure of the overall human influence on natural ecosystems (Steinhardt et al. 1999), was assessed. Furthermore, landscape classes have been identified that are rare in Germany, but occur relatively often in the respective region. Under the chosen approach, those landscape classes that account for less than 3% of the total area of Germany were classified as "rare". This step emerged from the idea that the classes of a landscape, which are generally rare but occur comparatively often in a region, provide an indication of a regional particularity.

The calculations have been performed on the basis of the digital landscape model (ATKIS-Basis-DLM) and the land cover model for Germany (LBM-DE). The advantage of these official data sets are uniform mapping rules for the whole of Germany, hence, allowing for supra-regional comparisons. Since landscape is not a static quantity, but is subject to constant transformation, land cover changes were additionally detected and compared based on CORINE Land Cover (CLC) data. These sets of geodata have downsides in terms of quality when applied to landscape characterisation: Among others, Basis-DLM, LBM-DE and CLC each have a different level of generalisation. This results, for instance, in landscape elements below a minimum mapping unit to be ignored (see also Retat and Schaffert, 2018). In addition, only such features are captured whose entities are specified in the respective data schema. Consequently, we have worked within a framework predefined by data schemata and mapping rules. It is, therefore, unlikely that the data will cover all landscape elements of the regions that could be relevant from the perspective of a social group or an individual.

Step 2: To bridge these gaps, preliminary results have been presented at local workshops in the respective regions and participants from the community, politics as well as general public were invited to discuss them. Afterwards, input was requested from the participants by encouraging them to add “their” special landscape features on a base maps, to define them in an attached list and to add optional comments (Figure 3).

Figure 3 – A picture from a mapping session in SEM. Photo: C. Blaumann, © mensch und region, Hannover.

User-generated spatial content is widely discussed in geodesy nowadays, especially since the success of OpenStreetMap. However, the capture of geodata by laymen is much older and has been applied in many disciplines (e.g. by Lynch 1960, Gould and White 1968, Downs and Stea, 1973, Tuan 1975, Pocock 1967). Among others, the advantages of this approach are the communication of local knowledge (Brennan-Horley 2010: 98f., Kahila et al. 2017: 8) establishing a decentralised counterpart in the production of geodata (cf. Elwood 2008).

Participatory mapping runs under many names, for instance perceptual mapping (Doran and Burgess, 2011), needle method (Malcherowitz & Weck, 2017), sentiment mapping (Kocich, 2018) or emotional maps (Pánek, 2018). According to Boschmann and Cubbon (2014), however, there are essentially only two different types of participatory mapping that lead to "mental maps" on the one hand and "sketch maps" on the other. Mental maps start on a white sheet of paper while sketch maps work with additional information on spatially accurate maps, may they be in analogue or digital forms. Our maps in the Regiobranding project fall under the term of analogue sketch maps.

Step 3: The user-generated content from the workshops was subsequently digitised with QGIS and jointly examined with the official geodata and results from step 1. Thus, in our approach, quantitative and (user-generated) qualitative geospatial content was examined together and against each other, instead of treating them separately. This is considered to be a key characteristic of a branch of research coined as qualitative GIS (Cope and Ellwood 2009).

3. RESULTS

Landscape Characterisation

Comparative landscape characterisation based on official data helped to raise awareness among partners in the regions about aspects of their own landscape that were otherwise perceived as commonplace. Here, for instance, a high landscape diversity was attributed to LNWN in comparison to the other research regions (Wenger 2016). The local partners already perceived their region as somehow diverse before. However, it was only through quantification and spatial comparison that this “gut feeling” could be ranked and the high degree of diversity recognised as a possible regional peculiarity.

Since comparisons weren’t only regional, but also national, some regional characteristics emerged as common, thematic bridges in-between the study regions, which highlight them compared to other regions in Germany. One of these characteristics are water bodies, which comprise a significantly higher percentage in all research regions than the average German value. Such similarities between these three regions proved a valuable starting point for the trans-regional interaction of the local partners as they previously focused on their respective region neglecting the supra-regional view.

In addition, in the two coastal regions landscape elements related to "water" were mapped particularly often: a total of 55 objects were mapped in SEM and 44 in LNWM, out of which 40% and 55%, respectively, had a relation to water. Thus, both quantitative and qualitative methods point to an emphasised importance of regional water landscapes and give more weight to this aspect in the negotiation process on the topics that are eligible for branding. Such eye-catching results, generated with different methods and easily communicable, are crucial, because, although the scientific input in Regiobranding played an important recommending role, the decision making regarding the brands ultimately follows its own logic.

Place brands, that focus not on transient themes but on the local assets of a region promote the brand’s sustainability and have recently been suggested for the Region Pla de l‘Estany in Catalonia by Eugenio et al. (2019). The water landscape there was also identified as a central piece of the regional brand, which still needs to be paired with the local topography and cultural traditions. In our research, a relation between water landscapes and the local topography has been especially striking in the LNWM: the user-generated content showed such a relationship in the users’ comments suggesting idyllic and interesting viewpoints from an elevated topography over rivers and the Baltic sea.

In SEM on the other hand, structures of the historical marshlands have been mapped frequently and might form a second pillar of the regional brand. The marshlands have been developed since the Middle Ages through man-made land reclamation and can be regarded as a local cultural tradition that is directly reflected in the region’s land use, land cover and topography. They have always been linked to the regional water landscape, as they feature a sophisticated drainage system with a dense network of canals, locks or water pumps. The

brand's concept could take advantage of these available connections to promote its on-site anchoring, for instance, by thematic routes for cycling or hiking that link the regional water landscape, structures of the historical marshlands and restaurants offering local products. Fish dishes and regional cheese represent an aspect of the local cultural tradition that were highlighted in accompanying studies dealing with cultural markers (Knaps and Hermann 2018).

Transdisciplinarity

Just as important as the evaluation of the user-generated content was the process that led to its development: Regiobranding brought together people with different knowledge, experiences and interests. The combination and integration of heterogeneous knowledge of the different partners was a central challenge for this project. Even finding a common "language" was anything but easy. In the absence of such a joint technical language, working on the basis of maps and geodata served as a common ground for bridging differences and actively involving local partners (Schaffert et al. 2020). This became particularly clear in the workshops, since participants quickly got into conversations and were able to do so at eye level. For instance, in cases where the location of a feature was unknown, the participants helped each other, resulting in further mutual communicative exchange.

Landscape Change

The landscapes of all research regions showed significant changes with differing spatio-temporal dynamics. Changes at the patch level took place predominantly in the eastern part of the GGEW in the 1990s (after Germany's reunification). However, these changes were mainly land use changes in agricultural areas, which are reversible – and have in the meantime been partially reversed. On the other hand, urban sprawl is another trend that could be observed in all study regions and which has led to permanent modifications in the region's landscape (Schaffert and Steensen 2017). Furthermore, the widespread expansion of wind energy facilities marks a significant landscape change in recent times in the SEM.

These ongoing transitions raise further questions for a branding based on landscape characteristics, such as:

– How to deal with the danger of branding a landscape at a certain point in time and thus adopting a static, present-oriented view of a future brand? And how can we move away from a branding that promotes the tendency of museumize present-day landscapes?

– Does it make sense to brand regions based on landscapes, which are subject to distinctly different dynamics of landscape change within them? This phenomenon could be observed in LNWM and GGEW, two regions with one part belonging to former East and another part belonging to former West Germany?

– Can the changes in the landscape itself be integrated in a brand? And if so, how? For example, the wind energy sites in the SEM could be presented as a continuum in a longer

time series, starting from the historical windmills of the region, which have facilitated drainage in the marshlands for centuries (Schaffert et al. 2020b).

4. CONCLUSION

Place branding research is increasingly geared towards linking its own discipline to spatial planning and aims to make supporting contributions to sustainable regional development and land management. A significant aspect in this regard is the long-term, strategic view on a region and an intrinsic interest to link natural and social aspects with economic prosperity (cf. Oliviera 2016). Natural and social assets of a region, i.e. landscape and cultural traditions, are seen as basis for a sustainable place branding that, ultimately, supports the economic development of the region.

Which assets of the landscape are relevant for the local population in our research regions was identified through sketch mapping and explicit consideration of the user-generated spatial content derived therefrom. The user-generated content provided supplementary information in addition to the quantitative analyses based on official agencies' geodata. In this way, the calculated significance of a landscape and their presumed potential for branding could be underlined or questioned by local perceptions.

Working with maps and geodata facilitated the scientific exchange between people with different knowledge and ideas. This made the demanding transdisciplinary setup of Regiobranding easier to handle.

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