Telling the Story of a Landscape Plan Online

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Abstract: Germany has a sophisticated system of formal landscape plans but these plans often lack public support. It has been suggested that the use of new technologies could facilitate the communication of landscape planning among stakeholders and target groups and increase participation and support. In this project, an existing landscape plan was communicated in a novel way telling the underlying narrative of the plan and highlighting the qualitative dimensions of landscape in the Esri Story Maps online tool. Story Maps present a narrative or rather tell a story by enriching geospatial information through various other, mostly visual, media. Expert feedback suggests that Story Maps can increase the accessibility and understandability of landscape character descriptions and landscape plans. However, the project also identifies current limitations of Story Maps as well as technical and didactic challenges and gives recommendations for future research.

Keywords: Landscape planning, landscape character, Story Maps, online GIS

1   Introduction

"Storytelling has a vital role to play in creating spaces" (Victoria Leslie, 2019).

In many countries, landscape planning is under pressure from many sides – many neo-liberal and conservative governments consider it as an unnecessary restriction to the market, many stakeholders and members of the public consider landscape planning as technocratic and without relevance for their everyday life. While it is a political issue to address ideological opposition to landscape planning, planners can improve understandability and transparency of landscape plans. As demonstrated by von Haaren et al. (2005), interactive landscape visualization embedded in participatory processes can facilitate understandability and accessibility of landscape plans. This paper will further develop the approach of using interactive online maps and add multimedia and storytelling techniques to better communicate the aesthetic component of landscape and to increase the acceptability and accessibility of landscape plans. The European Landscape Convention confirms the importance of involving communities in planning, designing and managing our landscape resource.

2   Literature: Representing Landscape Planning

The Interactive Landscape Plan Königslutter, which evolved from a project funded by the German Federal Agency for Nature Conservation, has been very influential for the use of online mapping tools (based on Geographic Information Systems GIS) in participatory landscape planning in Germany (VON HAAREN et al. 2005). The project demonstrated that map-based visualizations can facilitate participation in landscape planning. Galler et al. (2014) provide an updated overview of which Web 2.0 technologies can facilitate landscape planning. Their list includes the use of social media and crowdsourcing but they also state that key questions are still unanswered. *In landscape planning processes possible additional ben-*

efits of web- based participation and collaboration (such as educating the public and promoting or intensifying their identification with their environment) must be traded off against the added expense of involving citizens in the planning decision process (GALLER et al. 2014, 80).

Like the Landscape Plan Königslutter, this project is also based on a German case study because landscape plans have mandatory status in Germany. If we look at the approach to landscape planning in other countries, particularly the UK, the aesthetic and perceptual qualities of landscape such as colour, texture, pattern, form, sounds and even associations and preferences receive more attention (LUC 2011). Landscape is about not only visual perception but also multiple senses and individual experience, feelings, memories and associations evoked over time (Fig. 1).
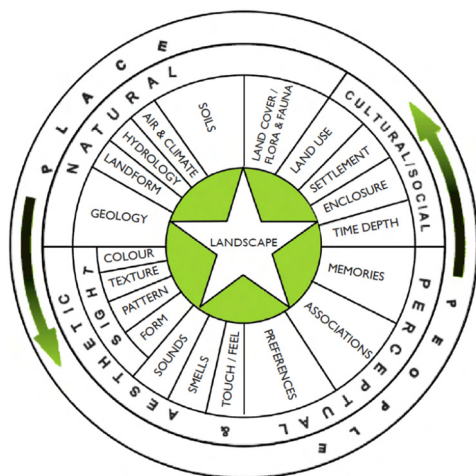

Fig. 1:
What is landscape ?
(Swanwick, in LUC 2011)

It may be argued that a stronger consideration of such qualitative characteristics of landscape will address local people more easily and make landscape planning more accessible. Vervoort et al. (2012) summarize these qualities as "experiential communication" and demonstrate how they can be combined with analytical communication. One technique for experiential communication is "storytelling", which will be tested in this case study.

Since the Königslutter case study, Esri has developed a new and free-to-use tool for interactive online maps called Story Maps. Story Maps have been tested in various contexts and for multiple purposes, e. g. in geography projects with high-school students (BRIGHAM 2016), environmental education through storytelling (GUTTING et al. 2019), or in soil science education (COPE et al. 2018). In the context of geodesign, Orland (2016) highlights the potential of story maps to address so-called "wicked problems" such as climate change and compare different geodesign scenarios. The strength of Story Maps is that it allows presenting geospatial map tools as stories embedding still images, video and various interactive features. Although Story Maps are built around a visual narrative, it is still possible to query underlying geospatial data.

The Nick J. Rahall, II Appalachian Transportation Institute (RTI) at Marshall University and Institute for Public Administration (IPA) at the University of Delaware research teams created a Story Map to facilitate a public participation process and evaluated its use to engage

and empower stakeholders in the case study process. Scott et al. (2016: 8) concluded, *"online, interactive techniques and mapping applications are ideal for fostering citizen engagement, providing meaningful context to complex topics and concepts, and empowering informed decision making. In other words, there is strong evidence that GIS Story Maps can be effectively used to empower and engage stakeholders in participatory planning processes. They combine dynamic maps with images, narrative, and other media to visualize a theme or sequential events and can be easily shared via social media or embedded within a website."* Because of the success of the case study participation process, the authors recommend broader GIS education in general and the use of Story Maps in particular.

In summary, these case studies support the application of Story Maps for participatory and educational purposes involving geospatial data. Furthermore, Orland (2016) and Scott et al. (2016) already pointed out the potential of Story Maps to communicate a narrative or rather tell a story by enriching geospatial information through various other, mostly visual, media. Therefore, Story Maps provide the tools to communicate the cultural/social, perceptual and aesthetic dimensions of landscape linked to the physical and natural characteristics of the place through storytelling techniques, still images, panorama and 360° photos, ground-based and drone-based videos. For this reason, the hypothesis of this study is that Story Maps are particularly suited for the communication of landscape planning.

3   Methods

The case study was implemented as an independent contribution to the EU-project LOS_DAMA! together with the City of Munich and the Heideflächenverein Münchner Norden e. V. LOS_DAMA! is the abbreviation for *Landscape and Open Space Development in Alpine Metropolitan Areas* and puts the focus on everyday landscapes in areas, which are often overlooked. The case study area comprises about 800 ha north of Munich including ecologically important relics of ancient heather with about 300 different plant species including many endangered species and supporting rare invertebrate species.

The planning content derived from the *Heideflächenkonzept* by the landscape planning firm (BURKHARDT & VALENTIN 1995) and the *Landschaftskonzept (landscape concept) Münchner Norden* by Pirkl, Rieder & Theurer (2006) (see Fig. 2). In addition, the character of the different landscape areas is described through GIS-based interactive maps enriched with photos, text, spherical images taking with a drone, and two tours of ground based 360° panorama photos.

Key communication feature of the online version of the landscape plan is the iterative construction of the various zones, layer by layer. Parallel to the map presentation, the matching information about each layer is shown in the accompanying text/multimedia sidebar.

In this context, it must be noted that Esri published a completely new version of the Story Maps editor in July 2019, overlapping with the setup of this project. As a result, the team decided to switch the initial design from the old (*"Classic"*) to the new Story Maps editor in order to ensure the longterm support of the platform beyond July 2021, when Story Maps Classic support will mature. In contrast to previous versions of Story Maps, it only features one layout template. The new template is a variation of the popular "Cascades" template from previous versions. Although the new version of Esri Story Maps is not open source, it is free

to use. In this project, ArcGIS desktop and ArcGIS Online were used to prepare the maps but they could also be prepared in other GIS software and provided as Web Map Service WMS.
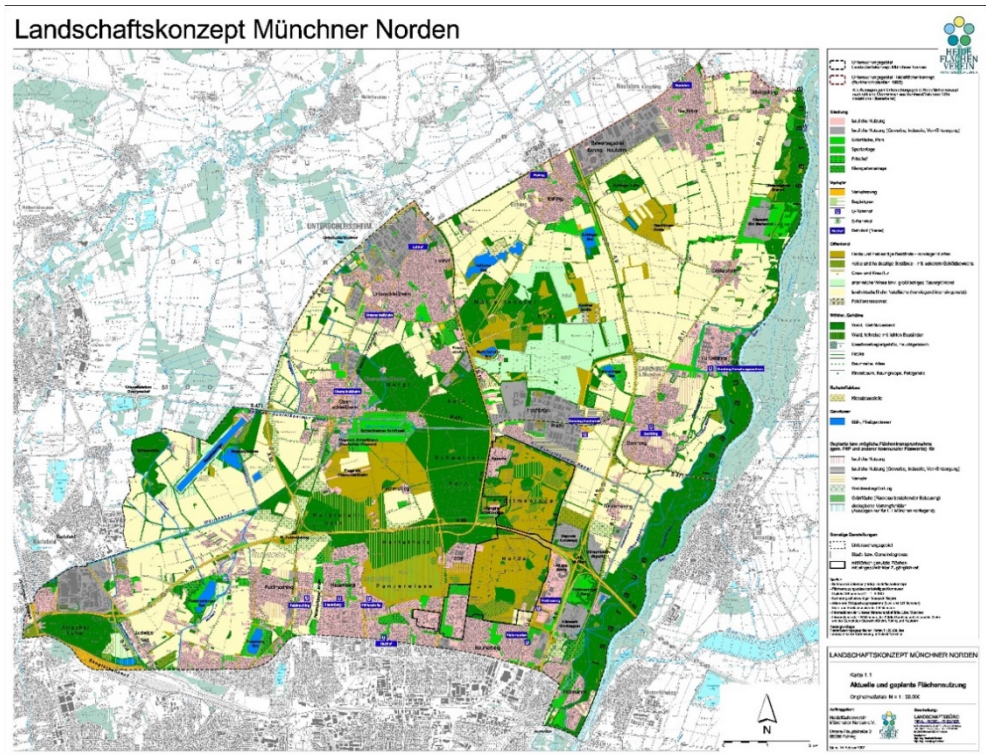

Fig. 2: Landscape plan Münchner Norden (PIRKL et al. 2006)

The Story Map was developed in an iterative process across all three partners, i. e. university, the City of Munich (the project sponsor) and Heideflächenverein e. V., over three months involving four feedback rounds. Parallel, the Heideflächenverein e. V. also commissioned a relaunch of its main website, which links to the Story Map. After a joint initial meeting to determine the basic structure and narrative, the three-person university team (project lead, designer, GIS administrator) created a first draft version of the Story Map. Then, overall about six City and Heideflächenverein e. V. staff reviewed the draft and the university team implemented the revisions in four iterations. In addition to the Story Map, a Leporello folded brochure was designed and printed for public dissemination of the website. In December, the Story Map was presented at the final LOS_DAMA! project meeting and to the Heideflächenverein e. V. members receiving positive receptions.

The Story Map has not been evaluated by the general public yet because we decided that an expert-based approach involving community representatives of the Heideflächenverein e. V. was more effective. In fact, staff provided comments referring to botanical names of species or inconsistencies in the underlying GIS data, which members of the public might not have spotted. Nevertheless, an online survey aiming at the public and their response to the Story Map may be recommended for a follow-up project.

4   Results

In the new Story Maps version, users scroll through the main narrative from the top to the bottom but can elaborate on individual topics in a *"screen presentation"* (at the time of this publication in beta testing), which is navigated like a slideshow from left to the right. Maps are presented in full size and interactively with so-called *"sidecars"*, i. e. single text columns on top of the map. The resulting Story Map (https://bit.ly/365oqOA) starts with large photos and an animation of drone-based imagery introducing the visual character of the area. Next, the readers learn about the history of the heather in a series of commented and illustrated maps and the other distinct landscape character types such as alluvial forest, pine forest and agriculture are explained in text and vision (Fig. 3).

Fig. 3: Map of the distinct landscape character units of the area, illustrated through representative photos (followed by a textual landscape character description, which is not in the screenshot)

Before the actual landscape plans are illustrated, the organizational background and involved stakeholders are introduced but then, the combined landscape plans are presented in another series of commented and illustrated maps with the sidecar feature. The landscape plan starts with the zones for environmental protection and for environmental development as well as

stepping stones in the biotope network (Fig. 4). Second major theme is recreation illustrated through zones for existing recreation and recreational development zones. A final map overlay combines the various layers in one. The Story Map concludes with a chapter on "Ways into the heather" presenting both two virtual 360° photo tours of the area and instructions how to do these tours by bike or walking.

Fig. 4:   Series of illustrated and amended map layers for the various zoning types in the landscape plan

Lessons learned address the process of simplifying the technical language of landscape plans. Secondly, the choreography of parallel interactive maps with text and multimedia required multiple revisions. Thirdly, the map symbology followed the recommendations by Hoheisel et al. (2017), which have been adopted by the Federal Agency for Nature Conservation. However, the symbols, which were developed for print products, cannot always be adopted one-to-one to online representations.

Revisions and feedback to the main narrative and structure changed several times and many initial technical or design flaws as well as errors in form and content were corrected. In general, Story Maps allow a very easy correction of texts but parts of the layout are rather restrictive. For example, it was not possible to choose specific fonts other than the template fonts to match the client´s corporate design. Neither was it possible to implement a navigation bar in the header for shortlinks to the various chapters of the Story Map at the time of this publication. Nevertheless, the new editor is continuously updated and several new features such as the aforementioned screen presentation have been implemented since the release in the July 2019. However, the team is in close contact with Esri and forwarded a set of recommendations for the future development of Story Maps, which were received with favour.

An advantage of using Story Maps in comparison to developing your own solution based on html5 and open-source software is the easy compatibility with mobile devices. Story Maps are automatically adapting the presentation of maps, text and multimedia content to mobile devices and varying screen sizes. While mobile phone screens are too small to use the maps effectively, the Story Map was tested on Android and Apple tablets and usability was even higher than on a desktop or laptop computer.

5   Discussion and Conclusions

The project demonstrates that the presentation as digital Story Map can increase the accessibility and understandability of landscape character descriptions and landscape plans. However, the translation of the rather technical documents into interactive online Story Maps requires not only technical but also didactic, design and public relations skills. Expert feedback highlights potentials and issues in the process.

In the case study, Story Maps are used as a teaser on the website entrance of the Heideflächenverein Münchner Norden e. V. The main goal was to raise awareness for the landscape, but also to inform about the work of the association and the content of the landscape concept, as well as intriguing people to explore it. Thus, it is directed towards the broad public, local decision makers and young people. It is a challenge to create one Story Map for different groups of users and a smart design is needed to appeal to multiple stakeholders. Individual choreographies and designs of Story Maps for each stakeholder group might be more effective in communicating to diverse target audiences. In any case, cooperation with didactic, design and public relations experts is recommended. Professional support can improve the result, nevertheless it is time and cost intensive.

Furthermore, using such tools depended on the available technology, including unexpected changes, like replacing the popular "Cascades" template from previous versions. On the one hand, an editor such as Story Maps helps ensuring cross-platform compatibility including mobile devices but at the cost of flexibility. Open source and html5 development may offer more scope for design but will also require more development resources. Therefore, further software development with a focus on usability and compatibility is suggested.

Concluding, Story Maps are communication tools that offer many interesting options, but various technical and professional skills are needed to implement them in an efficient way. Story Maps are a presentation form that is only as good as its content. Since it heavenly relies

on visual media, the incorporation of high-quality photos, 360° panorama photos and movies or animations is suggested.

Current global challenges such as climate change and the dramatic loss of biodiversity call for landscape planning but at the same time, formal landscape plans lack political support and public acceptance. The communication with stakeholders and target groups gets more and more important, and further research is required how to improve the communication and how landscape planning can (re-)establish the authority to make a difference.

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