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Landscape Perceptions in the Lake District: Distant and Close Reading in Participatory GIS

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Summary

As the use of Participatory Mapping becomes increasingly prevalent in decision making, it is vital to consider how analysis is conducted as well as data collection, in order to maximise the utility of the data that we collect from participants. This research explores the value in the free-text data that is commonly collected alongside participatory spatial data, but often overlooked or under-utilised. Here we use a case study in the Lake District National Park, UK to demonstrate how computational methods from literary research can provide a deeper understanding of participant's spatial thoughts and feelings.

KEYWORDS: PGIS, PPGIS, Participatory Mapping, Landscape Restoration, Literary Methods

1. Introduction

A key challenge to both the instigation and success of landscape restoration is obtaining community buy-in, alongside more practical considerations such as funding limitations or feasibility barriers (Carver et al., 2023). To explore whether it is possible to change perceptions of key stakeholders, it is first important to establish what those perceptions are. One way to do this is through the increasingly popular method of Participatory GIS (PGIS, Denwood et al., 2022a). In this research, PGIS is used to understand perceptions of nature, value and future treescapes in the Lake District National Park, UK.

Whereas many PGIS studies focus either on the spatial data alone (e.g., Huck et al., 2019), or utilise accompanying textual data purely to contextualise the spatial data (e.g., Denwood et al., 2022b); here we explore the value of deeper analysis of the textual data in its own right, deploying computational methods from literary research to gain a richer understanding of the dataset.

2. Methods

Data collection took place at two popular tourist attractions in Grasmere, a village in the centre of the Lake District. Data were collected in the foyer of the Wordsworth Museum over 7 days between the 21st - 27th August 2023, and in the Map Room at Allen Bank (National Trust) over 9 days between the 29th August - 14th September 2023. Grasmere was selected as the focal point for the data collection due to the high tourist footfall wide range of nearby land uses, including lakes, fells, urban areas, farmland, and woodland.

The survey was conducted using the Map-Me PGIS platform[†] (Huck et al., 2014). The survey was preceded by a short demographic questionnaire to gather information on age, gender, residential type, employment status, how participants use the landscape, and membership of relevant organisations (e.g. National Trust, RSPB etc.). Participants then used a 'spray can' tool to draw on the map and add supporting free-text (**Figure 1**) in response to the following questions:

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[†] https://map-me.org

- *Where do you perceive to be valuable in the landscape?*
- *Where do you perceive to be natural in the landscape?*
- *Where, if anywhere, would you like to see more trees?*
- *Where, if anywhere would you NOT like to see more trees?*
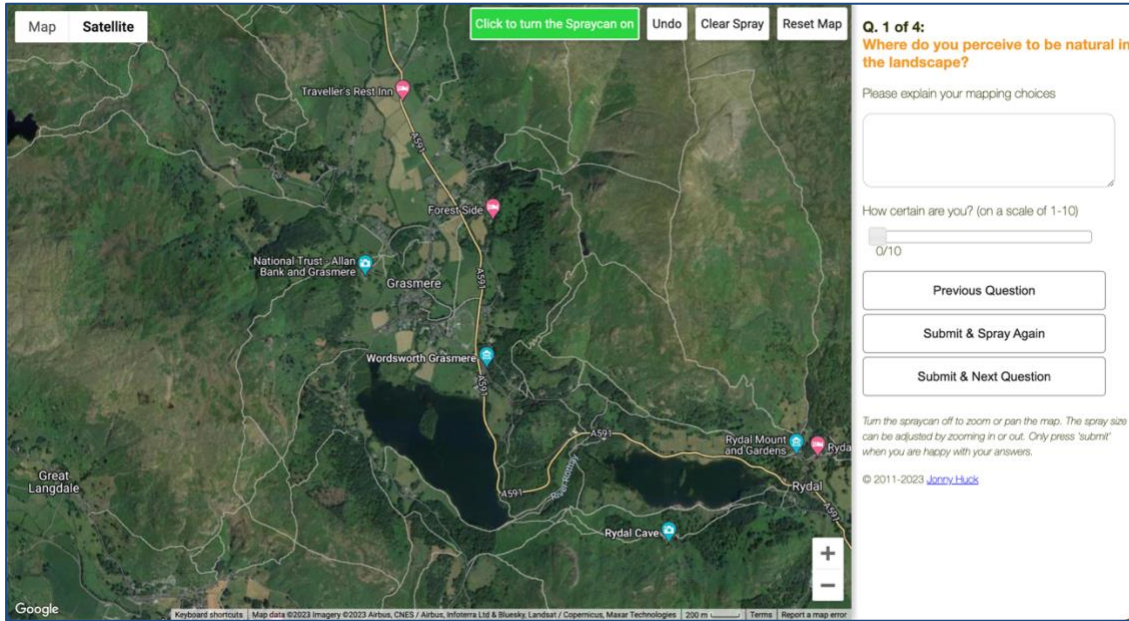
Figure 1 Screenshot of the map-me.org user interface.

3. Results

A total of 281 participants completed the survey. c.78% of participants (n = 218) did not live in the area, whilst c.21% (n = 59) lived locally (c.17% on those on a full-time basis, c.4% part-time) – c.1% (n=4) did not respond to this question. c.52% (n = 146) identified as female, and 46% (n = 130) as male – c.2% (n=5) did not respond to this question.

3.1 Spatial data

Figure 2 shows the spatial data collected for each of the four questions. The lakes and woodland areas are perceived to be both most *natural* (**Figure 2A**) and *valuable* (**Figure 2B**). The former is supported by the free-text data, in which 33% (n = 76) of participants referred to the lakes, whereas. 39% (n = 93) added in the free text that *everything* in the area was valuable. **Figure 2C** demonstrates a general enthusiasm for more trees to be planted in the landscape, particularly around existing woodland, which again was echoed in the free text, with 18% (n = 34) mentioning a desire to expand the existing treescape. However, **Figure 2D** shows that some participants would not wish to see more trees, particularly on the fell tops and around the village and lakes, which again is supported by the free-text (43% of participants, n = 57) stating that they did not want to see trees on the tops of fells, mostly for aesthetic reasons.
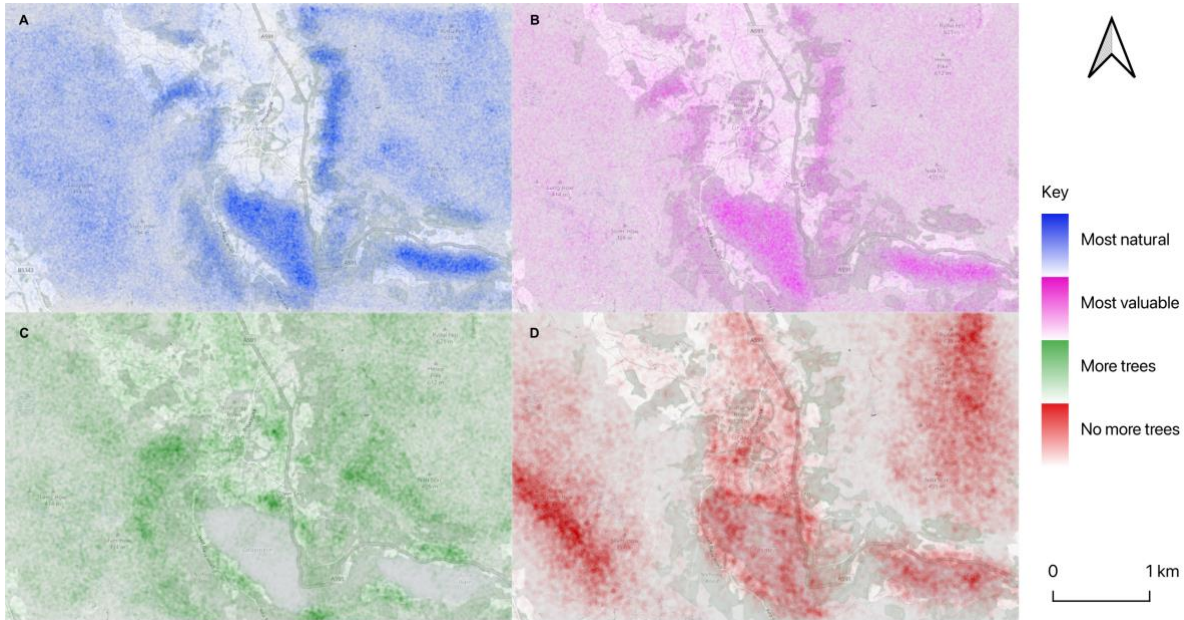
Figure 2 Spatial data for: **A**: where participants perceive to be natural; **B**: where participants perceive to be valuable; **C**: where participants would like to see more trees; and **D**: where participants would not like to see more trees.

3.2 Textual data

The text responses to the four survey questions total 12,455 words. A word cloud (**Figure 3**) offers an overview of the key terms and begins to suggest what participants identified as most important in the landscape, with lakes, hills, mountains, and woodland balanced against 'human' needs and infrastructures such as views, roads, farming, and sheep.

Figure 3 Word cloud showing prominent terms from the text answers in the survey. Generated with Voyant Tools.

By combining *distant reading* (of which a word cloud is an extreme example) with *close reading* methods (see below), we can begin to further unpack participants' understanding of 'value' or 'nature'

in the Lake District. We followed an established approach (Chesnokova et al, 2019; Taylor et al 2022; Taylor and Gregory, 2022) that begins with two types of computational analysis – collocation analysis and concordance analysis – before moving to the kinds of *close reading* techniques familiar to literary scholars.

First, collocation analysis identifies words that co-occur with the search-term more often than would be expected given the word's overall frequency in the corpus. To measure the relationship between terms, we have used a t-score as a statistical test, which provides a measure that favours relatively frequent words (Hunston 2002, 68-75). This approach offers some insights into how participants understand the key words 'value' and 'nature', as well as indications towards how they perceive the role of tree cover. Concordance analysis then elucidates individual instances of the terms identified through collocation analysis in context, which can be further expanded on via close reading.

Table 1 T-scores for top-10 terms relating to 'value(s/ing/ed/ation)'

T-score	Term
6.33	landscape
5.68	all
4.74	natural
3.93	areas
3.46	lakes
3.29	different
2.98	everything
2.92	water
2.77	land
2.63	economic

Table 2 T-scores for top-10 terms relating to 'natur(e/es/al)'

T-score	Term
7.23	areas
5.70	lakes
4.96	landscape
4.93	trees
4.55	all
4.43	valuable
3.86	beauty
3.82	more
3.71	area
3.43	water

For example, the word 'value' and its lexeme (related words, including 'values', 'valued', 'valuing', 'valuation') collocate most strongly with *diffuse* terms (**Table 1**). For example, 'landscape' or 'areas' indicate no fixed idea of where precisely might be valuable, although further collocations to 'lakes' and 'water' indicate that these features are considered especially high-status (unsurprisingly, perhaps, given the region). The breadth of participants' understanding of what makes a place 'valuable' is further underscored by collocations with 'all' and 'everything' although, as the maps relating to value suggest, some locations did emerge as being more comparatively valuable than others. The collocation analysis for 'natur*' reveals similar connections, but the experience of 'beauty' also matters to participants reflecting on nature (**Table 2**). Survey answers acknowledge both the official status of 'areas of outstanding natural beauty' and advocate natural beauties as being inherently valuable. The importance

of 'all' to value and nature illustrates an awareness that exercises like ours need to mindfully acknowledge inclusivity.

4. Conclusion

Whilst some patterns are apparent visually from the spatial data, a greater depth of information and reasoning for those patterns can only be found within the additional text data, making it vital to explore simultaneously. An oral presentation will further explore these spatial and textual data, including elucidating how views change with demographic variables, providing a richer geography of perceptions and opinions relating to landscape restoration in the Lake District.

5. Acknowledgements

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Biographies

Timna Denwood is Research Associate in Participatory Geographical Information Systems at the University of Manchester, interested in the humanitarian application of maps.

Joanna E. Taylor is Lecturer in Nineteenth-Century Literature and Digital Humanities at the University of Manchester. Her research interests combine literary studies, environmental humanities, and digital methods. Her book, *Deep Mapping the Literary Lake District: A Geographical Text Analysis (*co-authored with Ian Gregory), was published with Bucknell UP in 2022.

Jonny Huck is Senior Lecturer in Geographical Information Science at the University of Manchester, and Chair of the GISRUK National Steering Committee. He is interested in the development of geocomputational methods for application to a range of environmental, global health and urban applications.