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RESEARCH ARTICLE

Linguistic expression of place appreciation in English and Welsh: A case study in North Wales

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Abstract: Despite the prominence of 'place' notions in human geography and beyond, the language of place is surprisingly poorly understood. *Platial* research addresses human relations to places beyond the purely (geometric and cognitive) *spatial* aspects, whose linguistic features are well researched. This paper offers an in-depth case study of platial discourse in English and Welsh, contributing to a better understanding of how people use language to describe their attachment to a place. We asked 72 people to describe three local areas in North Wales in terms of what makes each one special and distinctive, along with further questions. We explore the responses in terms of a range of qualitative linguistic features indicating aspects such as proximity and ownership, identify a range of semantic categories relevant to the notion of place, and offer an exhaustive analysis of how one particularly popular local feature—castles—is referred to in our data. Beyond identifying how the three local areas differ with respect to the platial attachment associated with them, this paper offers lists of keywords for each of the identified platial semantic categories as a basis for future studies in the field. Our findings further suggest that ownership terminology, time references, and spatial inferences frequently characterise expressions of place appreciation, in different ways in English and Welsh.

Keywords: place, language, appreciation, linguistic features, space, discourse analysis

1 Introduction

Spatial cognition research has long since recognised the importance of language as a representation of cognition, and accordingly invested a wide range of endeavours into a better understanding of spatial language and its use [7, 28, 45]. For instance, insights have been gained into how humans understand space and spatial relationships, how they manage to identify the location of objects and navigate to places, the extent to which functionality, salience, and relevance come into play, and much else - a rich array of insights on spatial cognition based on linguistic study. However, despite the fundamental recognition that humans relate to the space around them from the day they are born, linguistic research hasn't invested nearly as much effort into addressing the nature of this relationship, that is: what the space around us actually means to us as humans, and how this meaningfulness is represented in language [49].

To approach the decisive difference here, one might start by considering the fundamental distinction between cognition and emotion [11]. Cognition, in this context, means understanding geometric and associated physical aspects of space, including where things are and how to get to them; this has been well researched through the lens of language. Emotion, on the other hand, concerns what places mean to humans - the associated feelings, the personal importance of a place. Viewed this way, we don't just relate to places in a spatial way (as in 'the desk is in front of me') but also 'platially': the desk may mean something specific to me, it may have emotional value, or personal importance, if only in terms of allowing me to write this paragraph. Place, then, incorporates aspects that pertain to the realm of emotion, going beyond (cognitive) space. This is particularly interesting in light of the fact that emotional meanings differ across cultures [24], as expressed through language. However, notably the concept of place goes beyond emotional aspects, as meanings can be constituted in many ways [22] (see section 2.1).

The two aspects of cognition and emotion, in the context of space and place, may be more closely related than one might expect [52]. We tend to prefer to have objects (and people) close to us that we emotionally relate to, and we naturally tend to be more closely connected to our surroundings than to more distant areas and aspects of the world - unless we have been there and developed a personal relationship. Language reflects this natural correlation of emotional and spatial proximity in various ways, for instance by metaphorical expressions [26] that express emotional attachment in terms of spatial distance, such as 'close to my heart' or 'we grew apart over time'.

The notion of place has long been recognised as decisive in human geography, geographic information science and other fields that aim to explore the meanings of places for humans [9]. In these fields, understanding where places are is only the beginning; to gain deeper insight about spatial configurations and their roles and effects, it is fundamentally necessary to understand the meanings of places for humans, in everyday life, in society as a whole, and for individuals. It seems an oddity that this deeper layer of understanding spatial relationships and places, in terms of how humans attach themselves to them, has rarely been addressed from a linguistic point of view. As a result, it is largely unclear just how humans linguistically convey the *significance* of a place (its meaningfulness), even though we can model in great detail how humans express the *spatial* relationship between places (or between themselves and a place, or an object).

This paper aims to contribute to a better understanding of human relations to places, by investigating the linguistic features of discourse that describes three distinct areas in

North Wales. This is largely descriptive, qualitative, and explorative; due to the lack of clear indication in previous research as to how platial language might be defined, there was no way of predicting the presence or preponderance of certain features over others depending on relevant scenario factors. Nevertheless, the exploration of three distinct local areas allows us to highlight different nuances of platial attachment, capturing the intuition that there are diverse ways of relating to places: one might be mostly appreciated for its beauty and tranquility, whereas another attracts attachment through its many options for activities. We will start by reviewing relevant literature in this interdisciplinary field, and then present our study on platial language in North Wales.

2 Place attachment in language: an overview

Several previous studies have pointed to the importance of language in the study of place. According to Craik [8], humans respond to landscapes in at least three distinct ways: a) by describing their attributes neutrally, b) by evaluating their attributes against some standard, and c) by expressing personal preferences. Our focus in this paper is on the evaluative aspects, in contrast to most previous approaches that appear to address primarily the 'objective' response - which tends to concern *spatial* (locational) rather than *platial* (affective) aspects, and therefore sheds little light on the linguistic expression of human relations to place.

Nevertheless, insights abound that human understanding of places is intricately linked with their experiences of them, as famously established by Relph [39]. For instance, Gustafson [20] explored the meanings of places through a qualitative interview study, aiming to identify and model underlying themes and relevant dimensions of place attachment expressed in language—but without focusing on the actual linguistic forms. Somewhat similarly, Scheider and Janowicz [42] presented a conceptual (i.e., not language-focused) ontology of 'place reference systems' based on human activities that define their relations to places (and relations between places). Such studies frequently draw on discourse but do not target language itself as a medium of representation.

Perhaps the most comprehensive summary of relevant insights in the field is offered by Hamzei et al. [22] (see next section). Concerning language, they noted that "Linguistic facets are the manifestations of place in language" [22, p. 52]—such as place names (toponyms) that are used to refer to places, and the complications associated with such references. For instance, Winter and Freksa [55] characterised linguistic notions of place by contrast, exploring how reference to places can be achieved by establishing a contrast to competing places in the discourse context. Here, much as elsewhere, places are understood in terms of "where one may locate objects or events" [55, p. 37], focusing on the spatial location of a place rather than any personal attachment to it. While these approaches are valuable and important in their own right, they do not explore the linguistic expression of human relations to space on an affective level as such.

Two main pathways remain for exploring how human relations to places (or place attachment) might be expressed in language: previous non-linguistic studies on place features and facets, and previous linguistic studies on the expression of emotion (affect or appreciation) in more general terms. In the following we will briefly review each of these in turn.

2.1 Place features and facets

Hamzei et al. [22] systematically reviewed the literature in human geography, GIScience and environmental psychology to extract and categorize what they called 'place facets': information that differentiates one place from another, and which has been identified as relevant in the literature concerning human place concepts. The current study makes use of insights from this systematic literature review in order to incorporate interdisciplinarity into linguistic examinations of place from the outset. Prominent facets identified by [22] include style and form, structure and parts, spatial relationships between places, location, emotional attachment, sense of place, function, and affordance and activity. Hierarchical clusters emerged around *anthropocentric* facets (containing emotive and functional facets) as opposed to *geographic facets* (containing physical and spatial facets). This highlights the broad range of terminology and insights associated with notions of place, demonstrating the many ways in which a space can be meaningful to humans.

Like Massey [31], many authors understand the notion of place as concerning a specific space with associated social relations. For instance, Gowing [19] examined gendered divisions in the use of space, and the different meanings that the same factors, such as privacy, public spaces, or even a shared address, can have for different people depending on their circumstances. Because perceptions of what it means for individuals to be in the same space can vary, the physical attributes of that space may be overlayed with different social (and thus presumably cognitive) maps for women and men [19]. London's Fields at the turn of the sixteenth century, for example, were portrayed as places of recreation for men and work for women—and for the latter, danger as well [19].

In geographic information science (GIS), social aspects are also considered, though some authors focus on place primarily as an emotionally salient correlate of objective, measurable space [22]. Many quantitative methods of associating spaces (especially those with toponyms) with emotions have been proposed (e.g., Chen et al. on georeferencing [5]). These examinations of the link between objective spaces and emotions are not limited to positive emotions. For instance, Comber et al. [6] examined place denigration on Twitter, examining patterns of places that are described in a disparaging way by locals and non-locals.

Giordano and Cole [18] combined GIS and humanities research to map the experiences of holocaust survivors platially using topological mapping. They highlight the importance of ensuring that experiences are not lost or ignored in data because of the problems inherent in mapping places with fuzzy or uncertain boundaries and geographical locations. They also demonstrate that places have a temporal element—associations change over time.

There is abundant evidence for neurological correlates of dimensions relevant to place such as memory, perception, orientation, attention, emotion and autobiographical memory [27]. For instance, using brain imaging techniques, Gatersleben et al. [16] provide evidence that the brain distinguishes meaningful from neutral places, reflected by differential responses in the amygdala (emotion processing), the medial prefrontal cortex (processing of memory and emotional appraisal, among other things), and the para-hippocampal place area. The latter suggests that the area is involved in processing the relationship between the participant and the environment—which may be because people are more inclined to picture themselves in places that are personally meaningful to them [16].

Place-based research is also well established in environmental psychology. Examining emotional attachments to natural environments, van Riper et al. [53] found that an environmental world-view was associated with a broader range of motivations to engage with

the outdoors than a more human-based world-view, and that social bonds associated with place had different effects on place attachment for different people. Additionally, the kind of activity that people do in a place affects the kind of attachment they have to it [53].

2.2 Linguistic features

When a place is meaningful to us, we are likely to talk about it in favourable terms (unless we're disappointed by it in some way, raising negative emotions), reflecting the various ways in which the place means something to us. This simple everyday observation means that the discourse of place can be taken as one way in which the meaning of place is represented: a source of insights concerning what 'platial meaning' might mean. In the following, we briefly review the kinds of linguistic features that are likely to be relevant in this regard.

Specific contexts will always contribute heavily to the range of vocabulary and linguistic constructions that speakers use, and the language of place may be particularly context-dependent due to the relevance of specific location features for specific individuals. However, based on the existing literature on place facets (including those briefly exemplified in the previous section, and further inspired by the excellent review in [22]) several recurring generic dimensions stand out that are likely to be represented systematically in language:

- Affect and emotion [14, 16, 22, 29, 43]
- Social relations [19, 20, 31, 41]
- Spatial location [4, 22, 51]
- Environmental qualities [14, 20, 53]
- Activities, affordances and experiences [14, 27, 32, 39, 42]
- History and culture [25, 32, 43]

Considering their linguistic expression, the last three of these are likely to be represented by domain-specific terminology: nouns and adjectives describing features associated with environments, activity verbs, past-tense descriptions of experiences and events, and cultural reference terms. Such terminology may be recurring in descriptions for particular types of places, but it is unlikely that there is a database or 'grammar' of any kind that might serve as a generic resource for related linguistic features.

The first three items on the list, however, are more promising from a linguistic point of view. There is abundant literature on spatial location terminology and concepts [49], at least in English. As spatial prepositions constitute a closed set, they can be examined in their entirety [45] (provided that the language in question is sufficiently well documented), covering a vast territory in the realm of spatial language. What remains, therefore, is to establish with greater systematicity how exactly this wealth of insight on spatial language serves to explain the meaning of a place to a human: location in itself is not sufficient; the fact that a place exists somewhere will not make it meaningful. Therefore, the ways in which speakers use spatial language embedded in place attachment descriptions need to be explored more systematically.

Social relations, as such, are certainly wide and varied in their linguistic expression. However, personal pronouns grammatically distinguish between the speaker (I), a dialogue partner (you), and someone else (he/she/they); the inclusion or exclusion of others in a social relationship is then expressed by the plural versions (we/you/they). Based on

this fundamental distinction, relations can be extended to ownership, using possessive pronouns (my/our). These differences, which systematically express human relationships, are so basic to language that they have been suggested as linguistic universals (although the details of this are controversial; [56]). For current purposes, it can be noted that attention to pronouns in platial discourse may be a good starting point for highlighting social relations in platial discourse - similar to abundant critical discourse analysis studies examining the prominent manipulative 'us vs. them' distinction in political discourse [40].

The first item in the list above is the last item to be examined here. The linguistic expression of affect and emotion arguably falls between the two extremes of 'closed class' (like spatial prepositions and pronouns) and 'entirely context-dependent' (and therefore elusive of generic examination, like specific references to historic events). There is no specific grammatical category associated with affect, yet there are systematic linguistic resources for this prominent function of communication. Humans talk frequently about emotions and evaluations, in a range of recurring ways that have been explored in depth within the grammatical framework of Systemic Functional Grammar (SFG) [21]. SFG was designed to capture the generic functions of linguistic resources and systems in discourse, including how speakers represent the world (through the *ideational* function) and how they frame this representation from their own viewpoint in dialogue (through the *interpersonal* function).

Martin and Rose [30] built on SFG to identify the resources available in discourse to express what they called the discourse system of 'Appraisal', a "system of interpersonal meanings (...) for negotiating our social relationships, by telling our listeners or readers how we feel about things and people (in a word, what our attitudes are)" [p. 26]. Their framework includes three main aspects:

1. Affect: the expression of positive and negative feelings, in a direct or implicit way.
2. Appreciation: evaluating things and experiences.
3. Judgement: expressing opinions about people's character and behaviour.

Of these, the first two are directly relevant to the place facet of emotion, in that people express their feelings or their appreciation of the environment in question. While Martin and Rose [30] further structure and elaborate these categories, the actual application for discourse analysis must be data-driven to a high extent; therefore we refrain from further expanding on the theory here. Note however that the framework also offers some scope to inform the facet of social relations, as people may appreciate a place because of the social experiences associated with it. Here, Martin and Rose's framework [30] motivates the distinction between Affect and Appreciation in our quantitative analysis in Section 4.2, and supports our qualitative analysis of Self vs. Other in Section 4.1.

3 Our study: Platial language in North Wales

The main aim of our study was to explore the language of place attachment (primarily in English, as most available literature on the topic focuses on English), offering a firmer basis for future studies in the field to identify expressions of platial relations on a linguistic level. As a secondary aim, we were interested in differential place attachment, and therefore designed our study around three distinct local areas, defined as Marine Character Areas (MCAs, with distinct features and 'identities') by Natural Resources Wales (https://naturalresources.wales/evidence-and-data/maps/marine-character-areas),

who suggest that such areas "reflect the relationship between people and place and the part it plays in forming the setting to our everyday lives". A tertiary aim is to gain initial insights into the expression of place attachment in Welsh, primarily by way of comparison with English (the analysis of which is, as noted, more clearly anchored in the existing literature).

While specific attributes of certain local landscapes might not be of central interest in wider academia, place attachment is by its nature sensitive to the specific places considered. We reasoned that people's relations to different areas around them would reveal differential patterns of place attachment more systematically than, for instance, descriptions of just one local area, generic landscapes, or previously unencountered locations.

3.1 Method

A bilingual questionnaire (English and Welsh) was designed with 14 questions covering background information on the participants (age, gender, where they lived and for how long, native language, level of Welsh proficiency) as well as data on their perceptions of the three MCAs (the Menai Strait, Caernarfon Bay, Conwy Bay). The definition of each MCA is an expanse of water plus the associated coastal landscape, and it was expected that the local participants would intuitively understand the references, for which we only provided a brief explanation (e.g., "Caernarfon Bay: the bay area between Anglesey and the Llŷn Peninsula southwest of Menai Strait"). And indeed they did, without questioning them, although not all of them were equally familiar with each of the areas (as intended).

The participants were first asked to describe each of these areas individually, and then to specify what made them different to each other. Then they were asked how the location of things in the area (such as where places and attractions are) affected what these areas meant to them. In order to learn more about what they actually referred to (as we did not define the MCAs for them), they were then asked to draw the boundaries of the different areas and to describe how they decided where the boundaries were. The final question (followed only by an option to add Further Comments) was on how their perception would change if changes were made to the environment.

3.2 Participants

The participants were randomly recruited at different locations (public places in three neighbouring towns: Bangor, Y Felinheli, and Caernarfon) in Gwynedd, North Wales and were asked for their consent to participate. The three towns were chosen due to their relation to the MCAs: all three towns are associated with the Menai Strait MCA, which thus makes it the central MCA for this study (and was therefore asked about first). While Y Felinheli is fairly centrally located along the length of the MCA, Bangor is closer to the next MCA to the northeast (Conwy Bay), whereas Caernarfon is closer to the next MCA to the southwest (Caernarfon Bay). While Y Felinheli is smaller in size than Bangor and Caernarfon, we selected the public places for data collection to be of similar nature, such as Bangor swimming pool, Caernarfon leisure centre, and Plas Menai outdoor centre (Y Felinheli).

72 people answered the questionnaire (39 females; 33 males) among whom 44 were native speakers of Welsh (20 females; 24 males), whereas the other participants named English as their (first) native language. 21 participants answered the questionnaire in Welsh, the others in English, and 1 person answered in both languages. The English first-language

speakers had different levels of proficiency in Welsh, ranging from none (9 participants) to the ability to understand, speak, read and write in Welsh (7 participants).

3.3 Content summary

While a detailed content analysis is beyond the scope of this paper, here is a brief impressionistic summary, in order to offer some intuitive understanding of how participants responded to the questions. One general observation of note is that participants were unusually eager to fill in these questionnaires, despite the awkwardness of having to hand-write on paper in public, and without prior warning or reward. Some of the answers were astonishingly extensive and detailed, reflecting the participants' *affective* involvement with the topic. On this basis alone, we surmise that we might have succeeded in collating evidence of place attachment: the local areas we asked about *meant* something to the people who responded—otherwise they would have had little reason to invest so much time (sometimes up to an hour) and effort.

Following demographic questions, the first content question was worded "Please describe the Menai Strait area. What makes the area special and distinctive?" Here, participants tended to refer to the Menai Strait water, the tides and the two prominent bridges across the Menai Strait. The biodiversity of the area and associated activities were also highlighted (landscapes, fauna, flora, outdoor activities). The atmosphere was described as peaceful, quiet and rich in history and culture.

The same question was then asked about Caernarfon Bay, where Caernarfon castle featured frequently in the descriptions, but visual and natural features were also often mentioned.

Conwy Bay was described as busy, with activities, marine life, a windfarm and tourists, and a range of specific places and their attributes were mentioned in this area.

When asked about the main differences between the three MCAs, responses concerned features of the environment, in terms of landscapes, flora and wildlife, open waters and beaches (both the latter being associated with Caernarfon Bay and Conwy Bay but not with the Menai Strait), and stronger tidal effects in the Menai Strait area. The Conwy Bay area was seen as more populated, built up, touristy and having more access to activities and attractions than the two other areas, but with a lower level of Welsh language and culture.

In answer to the question "How does the location of things in the area (such as where places and attractions are) affect what these areas mean to you?", many people mentioned the importance of accessibility; they clearly appreciated having many different attractions on their doorstep, and they preferred those areas that were closer to their homes. Some participants said they preferred quieter places. A fairly common answer was to emphasise the emotional connection with the place, rather than access to attractions.

Most of the participants drew the boundaries based on local knowledge and personal experience of the areas, and used the coastlines and town names to guide them, as well as well-known landmarks.

When asked "What would happen to your perception of the area if something changed?" (with some examples, including a wind farm, a large housing project, or a new nature reserve), many participants said they did not mind change as long as it did not disfigure the landscape or harm the environment. The vast majority felt attached to their environment and wanted to preserve it, so they welcomed changes that were beneficial.

Only 30 participants responded to the final question "Do you have any further comments on how you appreciate these three areas?". Of those, many mentioned how lucky they felt to live in such a beautiful environment, with some adding that each area is unique in its own way and in the diversity of activities and landscapes it offers. Also, participants again referred to the need to preserve nature.

4 The language of place attachment in our study

In this section, we will analyse the language of place in our data more closely and systematically, following the principles of Cognitive Discourse Analysis (CODA) [47]. CODA was developed for the purpose of analysing natural discourse concerning how it represents cognitive aspects. The method usually combines qualitative insights concerning linguistic structures and features with quantitative aspects, counting and comparing key elements related to the research question at hand. Typically, language data are collected systematically and then treated as a corpus, where content (in relation to questions asked) can be secondary to the examination of linguistic features across the data set. Here, our focus is on identifying those aspects of our collected language data that represent the speakers' place-related concepts of the three local areas. For this purpose, we mostly focus on the distribution of relevant keywords in the data as detailed below, enhanced by a range of qualitative observations on linguistic features.

We choose Gustafson's model of 'meanings of places' [20] as a starting point, as it intuitively captures key place facets schematically in a way consistent with relevant literature such as that explored above. The model consists of a triangle with Environment, Self, and Others at the vertices, and the various meanings of places placed in between to reflect the interrelationships of these key elements. Links between our data and the model are abundant, and we present them in two ways: in section 4.1, we identify specific ways of formulating relevant platial notions in our English and Welsh language data, to demonstrate a range of linguistic forms that certain ways of representing platial attachment can take. In section 4.2 we turn to a keyword-based quantitative analysis that allows us to differentiate between the three MCAs, using key semantic categories identified as relevant in our corpus, which we relate, as far as feasible, to Gustafson's model [20].

Neither of these approaches will be exhaustive; language has multiple ways of representing concepts, and (unlike much of spatial language analysis) we are not dealing with closed-class terms [46] in this case. For this reason, in section 4.3 we turn to a subset of our data, and offer an exhaustive analysis of the ways in which people refer to one particularly distinctive feature of the local areas addressed here, namely castles.

4.1 Platial language features in English and Welsh

We start by identifying recurring qualitative features of platial language observed in our data set that elaborate some of Gustafson's key categories [20], adding contrastive observations concerning Welsh and English language data where feasible.

In Gustafson's model, 'Self' pertains to personal meanings in terms of one's life path, and is associated with experiences, memories, a sense of home, and activities that connect a person with a place. In our data, personal experiences can be detected for instance through explicit time references, such as 'I climbed on the Great Orme *many years ago*', 'I

was walking near the airfield *last night*', 'fantastic light effects, particularly *in the evening*', or 'the sunsets are beautiful to watch *all year round* but especially *in the summer months'* (all emphases ours). Descriptions of the latter kind (in the context of a questionnaire, rather than an advertisement or the like) suggest that the person is likely to have experienced the differences between different times themselves. Explicit time references are frequent in our data, although they seem to be more widespread in English where we counted 54 instances (manually). In Welsh, we counted only 9 instances, of which only two pointed to experiences of the area at different times (as in last two English examples). The other explicit time references concerned life experience, such as 'byddaf yn gwneud fy siopa wythnosol' (I usually do my *weekly* shopping) and 'wedi byw yn yr ardal ar hyd fy oes' (lived in the area *all my life*).

Time references could also be more implicit, as in 'All three places have special memories to me *as a child*'; and [kayaking] 'can be challenging *in some sea states*'. Twenty five such hints to times were found in English but none in Welsh. Although implicit cases, by their nature, are less straightforward to count reliably, our close reading of the available Welsh data (which, as noted, were less extensive than the English contributions) did suggest a systematic lack of this feature.

Another striking pattern corresponding to the 'Self' vertex concerns *ownership*—a non-literal sense of possession that is clearly rooted in the depth of attachment one feels, for instance in expressions like 'our lovely beach in Newborough', 'it is my happy place', 'Menai is my home patch', 'we have everything on Anglesey', 'our wonderful wildlife', 'our towns', 'our countryside', 'our beautiful views', 'we have interesting attractions', etc. Linguistically, these expressions include both directly possessive forms such as 'my' and 'our', and constructions with 'have'. It is also interesting to consider the difference between singular and plural possession, which could be pursued in future studies with respect to its significance for place attachment, in terms of concepts of private vs. shared (or collective) ownership. While we counted 11 such instances in English, the Welsh data only contained a single reference to 'y Fenai - fy nghartref' (the Menai - my home), and no plural references to place ownership. More neutral versions like 'There is/are' are frequent in both English and Welsh, including the Welsh 'ceir', as in 'ceir sawl peth hanesyddol' (there are several historical things). Literally, 'ceir' translates to 'is had' or '(you) will get', which points to possession but without a link to the Self.

Next, the 'Self' in Gustafson's model relates to the 'environment' in various ways, including spatial distance. Such spatial relationships to places were expressed frequently in our data (in section 4.2 we will specifically count proximity terms), in multiple ways. For instance, the statement "Trefor, Porthdinllaen, Nefyn and Nant Gwrtheyrn along the coast (...) where you can learn Welsh and stay in the cottages" contains place names, two spatial-relational prepositions ('along' and 'in') and a spatial conjunction ('where'). The latter is, interestingly, combined with a generic use of 'you' which demonstrates the affordances offered by the place, thus going beyond the purely spatial aspect of connecting the self to the environment. Similarly interesting is the expression 'looking across to the sand dunes of Newborough' which suggests a visual trajectory from Caernarfon Bay that appreciates the attributes of another area, where spatial containment is expressed by the possessive preposition 'of'.

Spatial language is also found on Gustafson's vertex 'environment' itself, i.e., without reference to the self. Here we find expressions such as 'long sandy stretch at Dinas Dinlle' and 'the Caernarfon area also has a marina where a number of boats are stored', 'lively

culture in the surrounding area', and 'a walled market town with a historical castle', and 'housing on the islands'. These expressions (adding to the already mentioned form 'of') represent attributes of a place in various ways: through 'at', 'in', 'with', 'on', and forms of 'have'. These are mirrored in Welsh with direct synonyms such as 'yn' ('in'), 'ar' ('on'), and 'gyda' ('with').

Frequently, independent of whether or not the 'Self' is included in such environmental attribute descriptions, the choice of terminology suggests appreciation, as in 'towering cliffs overlooking the sea' and 'Wonderful views from the pier and elsewhere. Plenty of trees and green places to walk and explore in'. Such descriptions create an image of the beauty of the scenery by describing certain spatial aspects, with the only explicitly evaluative term being 'wonderful' in the second quote (note also the discussion of a representative quote from this corpus in [48]). These observations motivated key elements of the quantitative analysis in section 4.2, aiming to capture the sense of appreciation that emerges from responses to questions as to 'What makes the area special and distinctive'—even with limited use of explicitly appreciative language.

With respect to the remaining vertex, namely 'Others' in Gustafson's model [20], there are some references to Welshness in certain areas (e.g., 'occupied with predominantly Welsh speaking population'), and to tourism, which is frequently presented as something 'other' than the speaker, as in 'it still seems so untouched by mass tourism (...) you can still get far away from other people and off the beaten track' (note the use of 'you' in this quote to represent the speaker's, rather than the contrastive other's, perspective!), 'full of things for people to "do" if they seek that source of entertainment', and 'People moan about infrastructure but would they rather lose the uniqueness of the area for even faster (necessary?) connection? We have it all in one place here'. The last of these examples directly sets up a contrast between 'people' and 'we' at the start of the clauses (significantly: the clause's Theme, according to Systemic Functional Grammar [21]). Similarly, the Welsh-language response 'Yng Nghonwy a Deganwy gwelwn dylanwad yr Afon Conwy ar ran o fywyd y dref, a dylanwad twristiaeth cryfach' (In Conwy and Deganwy we see the influence of the River Conwy on part of town life, and the influence of stronger tourism)', the 'we' of the observer is clearly differentiated from the tourism referred to.

4.2 Platial language: Comparing three areas quantitatively

We now turn to a more systematic representation of a range of key terms that characterise platial language (across the two languages) in our data set. After identifying these we provide a comparative analysis to highlight the differential place attachment for the three MCAs in this case study. This serves as a 'proof of concept' to demonstrate how patterns of platial keywords can distinguish between distinct areas.

4.2.1 Semantic categories

In an iterative and data-driven process, we identified semantic categories that represented aspects of platial language in different ways. Because a keyword-based analysis does not reliably account for the different frequencies with which certain words are used in a language, a direct comparison between Welsh and English is not feasible in this type of analysis. Also, names (of historic people, and places) are typically identical for both languages, and the semi-automatic search for terms (see Appendix for details) meant that certain letter

strings (such as 'natur' or 'kayak') did not distinguish between languages. Therefore we aimed to include the entire range of keywords found in our data for each category, as far as possible, irrespective of language. This makes sense for the within-subject comparison between MCAs aimed at here: every participant, whether writing in English or in Welsh, filled in the questionnaire for all three MCAs.

The full list of words identified for each category is provided in the Appendix, and examples are provided in Table 1. Here, we offer a brief motivation for each of the categories, which are generally inspired by Hamzei's review [22]; we place them relative to Gustafson's model [20] and refer to further literature resources where appropriate.

Proximity terms were counted to assess the extent to which distance matters for the three MCAs in question, related to the Environment-Self edge in Gustafson's model [20]. This category is the only one representing purely spatial terms. We refrained from counting other kinds of spatial terms automatically as this would have involved multiple ambiguities. For instance, as explored in section 4.1, there are various ways of associating an appreciated attribute with a place, several of which include short closed-class terms such as 'of' and 'at' or 'has' which can appear in multiple contexts, beyond spatial attribution. Moreover, the literature so far primarily points to effects of distance on place attachment, which makes the proximity category the most interesting one from a theoretical point of view.

Specific Locations were counted in terms of place names mentioned by the participants. They provide an indication of the importance of these specific places for the MCA, and relate to the Environment vertex [20].

Also relevant to Environment, we counted terms that indicated specific aspects of **Nature**. In the context of this questionnaire, they indicate the importance of nature in the appreciation of an MCA. In the same vein, we counted keywords for **Seasons and Weather**, **The Waters**, and **Wildlife** as separate categories. While each of these relate to nature, they do so in markedly distinct ways.

Under **Environmental Considerations**, we captured terms that indicated a sense of the environment being endangered, as well as those terms that directly pointed to the environment as such (e.g., 'green' or 'natural').

A somewhat different aspect of Environment that people mentioned frequently was captured under **Architecture**, which includes keywords pointing to the built environment prominent in an MCA. A related, though nevertheless clearly distinct category emerged in the data around **Economy**, which included aspects such as tourism and wind farms. Relatedly, we counted terms pertaining to **Transport**.

A final aspect of the Environment is captured in keywords pointing to **History and Legend**. Perhaps especially in Wales, many places are appreciated due to their history, with many legends and historical events associated with castles and medieval places. The category **Culture** is closely related to this, but focuses more on contemporary culture, including language.

Turning to the Self vertex [20], the category **Visual-perceptual Appreciation** captures evaluative lexical items [30], which in this context directly express the appreciation that people feel towards an MCA. Similarly, the category **Emotional Impact** captures people's affect [30] as expressed in relevant key words. Since direct appreciation is frequently related to visual aspects in our data, we counted **Auditory Aspects** separately, which in this context are also appreciative even though they may be lexically neutral in the sense of [30].

According to Gustafson [20], places matter to people due to **Experiences and Activities** that link the Self to a place, motivating this semantic category. Finally, the category **Homes, Housing, Population** subsumes various types of references to houses and homes and thus points to living conditions, with relevance to the Self.

Category	English examples	Welsh examples
Proximity	near, doorstep	lleol, agos
Specific locations	Church Island, Irish Sea	Llanddwyn, Afon Seiont
Nature	mountain, coast	arfordir, tir mawr
Seasons and weather	summer, windy	tywydd, hydref
Wildlife	cormorant, dolphin	cregyn, adar
Visual-perceptual appreciation	view, scenic	prydferth, olwg
Architecture	bridge, promenade	adeilad, Telford
History and legend	Edward, Iron Age	Gryffydd ap Cynan, Mabinogi
Experiences and activities	research, fish	nofio, naturiaeth
Economy	infrastructure, wind turbine	diwydiant, maes awyr
Emotional impact	tranquil, love	hiraeth, llonydd
Environmental considerations	habitat, eco system	llygredd, erydu
Transport	tram, access	llong, llwybr
Culture	language, tradition	etifeddiaeth, iaith
Homes, housing, population	populat, home	adra, nhy
The Waters	tidal, marine	culfor, ceffylau gwyn
Auditory aspects	roar, listen	(c)lywed, tawel

Table 1: Examples for search terms in English and Welsh for each category

4.2.2 General quantitative results

On average, each participant wrote 182 words in total, and we collected 13,132 words altogether: 3,933 were collected in Bangor, 5,096 in Y Felinheli, and 4,103 in Caernarfon. 9,484 of the words were in English and 3,648 in Welsh. 8,001 were produced by female participants and 5,131 by males. The distribution across age groups ranged from 514 in the 'over 75 years' group and 1,652 in the youngest (18-25 years) group to 2,752 in the '66-75' years group, with other values in between the latter two.

To gain some insight into whether the demographic differences between participants or the locations of data collection significantly influenced the discourse in any systematic way that need to be accounted for, we ran a series of ANOVAs and GLMs on the entire data set as a corpus. As might be expected, various factors appeared to affect the counts for several of the semantic categories with some statistically significant outcomes. However, overall no meaningful patterns emerged that would have been consistent enough to report. To avoid any danger of over-interpreting statistical differences with no theoretical motivation, we instead assume a reasonably random distribution across demographic and location-based factors (including randomly significant stats results), and turn to a closer look at the differences between MCAs, which are the main target for this part of the study.

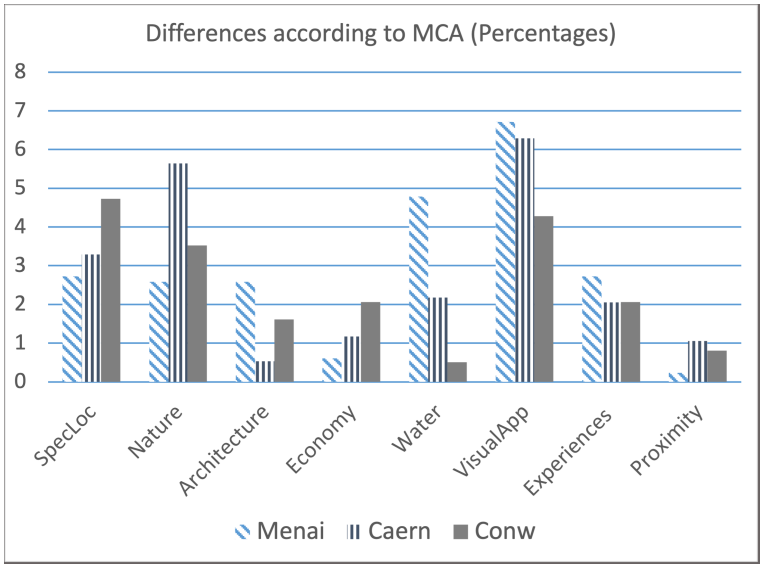

Figure 1: Visualisation of significant differences in semantic categories between MCAs (semantic categories without statistical differences are not shown here to reduce clutter)

4.2.3 Comparison between MCAs

To address specific differences in semantic categories between MCAs, unlike the previous section we considered only a subset of the data rather than the entire corpus, namely the responses to the three separate questions "Please describe the Menai Strait [Caernarfon Bay / Conwy Bay] area. What makes the area special and distinctive?".

GLM analysis showed that MCA affected the overall number of words ($p<0.01$) in the responses to these questions (with 2,130 words for Menai Strait, 1,702 for Caernarfon, and 1,988 for Conwy). We consider this an interesting result in itself as word count can be an indicator of engagement with a topic [1]. For the same reason, GLM analyses of semantic categories were carried out on the basis of counted instances rather than percentages. However, to offer a more comprehensive picture we present the distributions of significantly different categories visually on the basis of percentages in Figure 1.

Of the semantic categories introduced above, GLM analysis showed a significant difference at $p<0.05$ for Proximity and Experiences, and at $p<0.01$ for Specific Locations, Nature, Visual-perceptual Appreciation, Architecture, Economy, and The Waters.

As Figure 1 illustrates, the Menai Strait is mostly appreciated for its architecture (mainly concerning the famous two bridges crossing the strait), the waters (i.e., the tides and changes observed in the strait itself), and the various experiences and activities that are possible there (mostly watersports of diverse kinds). It shares with Caernarfon Bay a high level of visual-perceptual appreciation. Other references to nature are surprisingly limited, and specific locations, economy, and proximity play a minor role.

Caernarfon Bay is characterised by multiple references to nature (such as beaches, coastlines, and distant mountains), as well as visual appreciation and proximity, though it scores lowest on architecture.

Conwy Bay is mostly described by references to specific locations (with multiple mentions of nearby place names, characteristic of a busier area) and economy (emphasising the many local tourist attractions), with very little mention of water.

Taken together, these patterns demonstrate a clear difference between the kinds of aspects that are appreciated in these areas, corresponding to our own (and hearsay) intuitions about their characteristics, informal impressions as laid out in section 3.3, and insights gained from Natural Resources Wales' reports.

The semantic categories Wildlife, Seasons and Weather, History, Emotion, Environment, Transport, Culture, Homes, and Auditory were not significantly affected by MCA. These categories complement the differential picture by highlighting further aspects of platial attachment which matter to the questionnaire respondents without clearly differentiating between the three areas in this case. Other areas might however be characterised differently, showing other patterns and preferences.

4.3 Castles

Finally, we present an exhaustive analysis of how castles are presented in our data.[1] For this purpose, every token of 'castle' in English and Welsh (including their plurals) in the data was found and analysed within its segment. Of 42 relevant responses (here we count a participant's entire written response to a specific question in the questionnaire), 9 were in Welsh. We found that references to castles included the following (not mutually exclusive) concepts, with categories corresponding to those used previously:

- **Visual-perceptual Appreciation** (10 instances): Views and scenery; e.g., 'adds to the coastline', 'you have a fine view of Caernarfon Castle'.
- **Architecture** (2 instances): Physical features of the castles themselves; 'preserved-intact', 'large'.
- **History and Legend** (15 instances): Mentions of and stories about the history of the castles and their defensive functions; e.g., 'never attacked', 'built by Edward I', 'hanesyddol' (Welsh: historic), 'ancient'.
- **Experiences and Activities** (7 instances): Experiences and memories of being in or at the castles in person, including recent and recurring activities; e.g., 'Am dro â'r plant' (Welsh: [going] for a walk with the children), 'travelling and days out'.
- **Economy** (3 instances): Attracting visitors and locals to paid activities; e.g., 'touristy', 'denu ymwelwyr' (Welsh: attract visitors).
- **Emotional impact** (13 instances): Positive responses to the castles; e.g., 'still contemplation', 'it is the guardian', 'interesting', 'lovely'.

In addition to these six clearly platial concepts represented by linguistic tokens in the data, a seventh, which we call **Spatial-Conceptual**, became evident when considering presuppositions, i.e., assumptions and associations underlying the participants' responses. In particular, a response to a question about a specific area that includes a reference to a castle means that, for this speaker, the castle is in that area. Notably, our respondents never explicitly located a castle in an area using a conventional spatial description such as 'There is a castle in Caernarfon'. Instead, expressions of this spatial association are either completely implicit, as in 'Caernarfon—apart from the castle most touristy type of activities',

[1]This analysis was previously presented orally at UK-CLC 2020 (Birmingham). We thank reviewers of the abstract and conference participants for feedback.

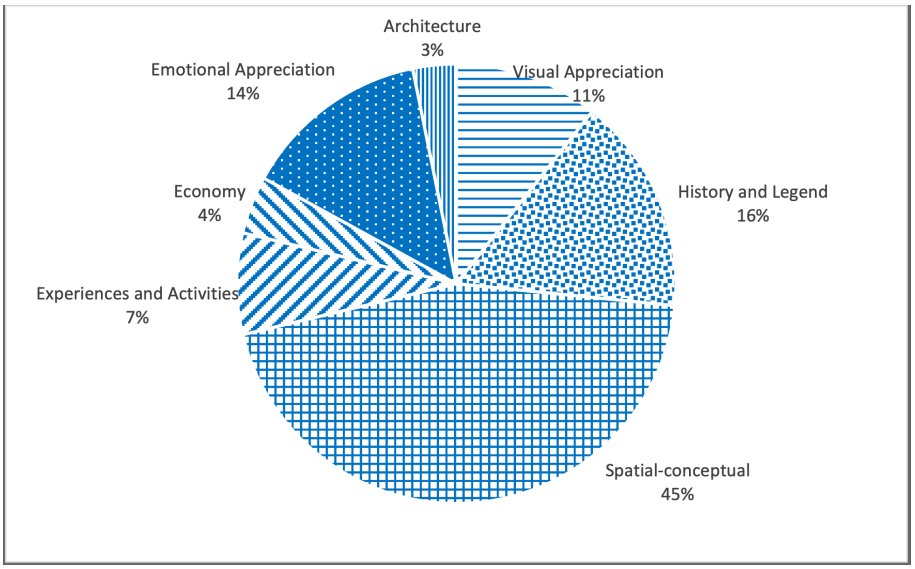

Figure 2: Proportions of tokens from each category

or presupposed using a spatial term (typically 'in'), as in 'Historical impact of the castles in Caernarfon and Conwy etc.'.

42 instances of this spatial-conceptual phenomenon (8 of which in Welsh) were found,[2] 37 of which unambiguously place a castle in a particular area. This high number demonstrates that implicit spatial-conceptual associations of this kind are both frequent and meaningful in our data, alongside the various platial concepts associated with castles that are exemplary for the wider range found across the entire data set. Figure 2 demonstrates the relative frequency of each of the categories explored.

We note that associations of castles to a particular area are not always straightforward, and may well relate to the individuals' spatial concepts and associated features. Figure 3 highlights how the various castles in the overall area are associated with different locations: sometimes the town and sometimes the bay, and since bays are not strictly defined (in participants' minds), there can be overlaps. It should be noted that the MCA Caernarfon Bay does not actually contain the town Caernarfon itself, and so Caernarfon Castle would have been associated with the Menai Strait area in the MCA description by Natural Resources Wales. However, only one individual actually conveys this association in their response, demonstrating discrepancies between official and personal spatial concepts. Similarly, Beaumaris castle is clearly situated within the Conwy Bay area, but most people miss this important feature and attraction of this area by focusing mostly on the town Conwy itself.

[2] Although the total number is identical to the number of relevant responses, this is a mere coincidence; not all responses included a spatial inference, whereas some responses had more, in referring to more than one castle.

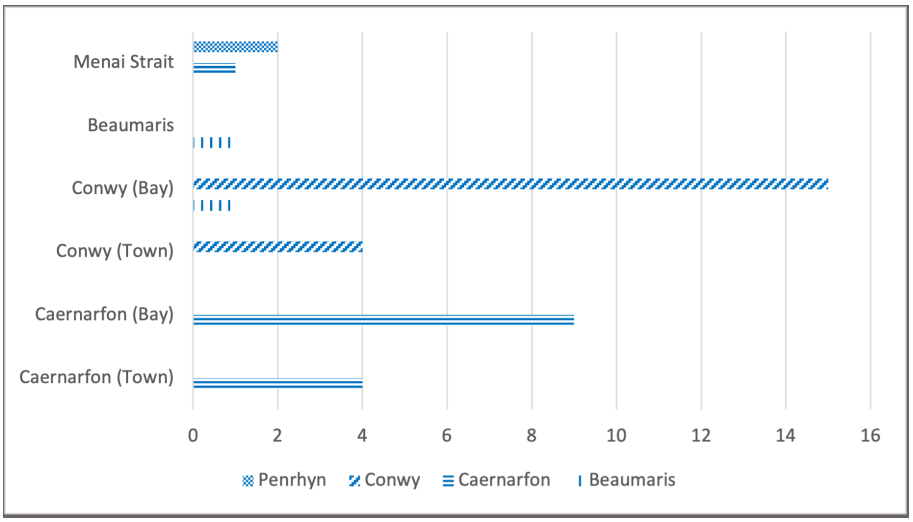

Figure 3: Conceptualised locations of the areas' castles, namely Penrhyn, Conwy, Caernarfon, and Beaumaris

5 Discussion

In this exploratory study we collected English and Welsh written discourse on place attachment with three aims in mind: to identify key features of the language of place (with English as a main focus), to address differential place attachment through the analysis of relevant keywords reflecting key semantic categories, and to gain initial insights into specific features of place attachment expressed in a language other than English, namely Welsh. The content report in section 3.3 confirms that our discourse data corresponded in many ways to established findings on place (such as those reviewed by Hamzei et al. [22]), suggesting that the data constituted a suitable corpus for linguistic platial data analysis. In the following we will discuss the specific findings for each of our three aims in turn.

5.1 Key features of platial language

To gain insights into the ways in which place attachment is expressed in language, we analysed our data set in three ways: first, using Gustafson's conceptual model of place meanings [20] as a starting point, we explored our language data qualitatively for linguistic features that represented the features in the model in notable ways. Secondly, we identified a range of key platial notions in terms of semantic categories and collected keywords that represented these systematically in our data. Third, we took a closer look at the ways in which castles, as a notable feature of the local environment addressed here, were represented linguistically.

From a content point of view, there is nothing striking about the fact that people talk about key place facets such as proximity, visual-perceptual appreciation, nature, history and legend, experiences and activities, emotional impact, and the like. Previous research has shown abundantly (as demonstrated in [22]) that the concept of place encompasses

these aspects. Our semantic category keyword list in the Appendix captures many of the facets of place highlighted in previous literature, offering a starting point for future research that aims to capture the expression of diverse concepts associated with place(s). As the keyword-based search for linguistic expression was data-driven and excluded individual instances and ambiguous letter strings, the list is by no means exhaustive, and will need to be adjusted in any future work. It is interesting to note, for instance, that the data did not allow us to include a category on social relationships, which according to previous literature (e.g., [3]) are a key element of place notions. Possibly due to the way the questions were asked, people did not talk much about family or friends (neither of these words appears in the data with a relevant meaning context), nor did we detect any other systematic way in which social relationships were expressed as part of a place concepts. This aspect may need to be captured through the analysis of different data sets.

Building on and extending this manual analysis on a small data set, some aspects of place attachment may be examined through sentiment analysis, for languages such as English where large data sets ('big data') are available. This adds to existing research already aiming to detect platial language automatically in large data sets (such as [13, 14, 35]). A combination of discourse analytic techniques and sentiment analysis in a different context was used for English in [37]. A word-list based approach to sentiment analysis is well established for English (e.g. [44]; [38]), and thus extraction of sentiment-based information from a given (English) corpus on place should pose little difficulty—enhanced by qualitative insights on the features of platial language such as those gathered here. Future researchers could compare the findings of a CODA analysis and a sentiment analysis of the same data in order to triangulate findings and assess the relative strengths and suitability of these methods for different research purposes.

By contrast, sentiment analysis on Welsh data poses problems due to the scarcity of available resources [33]. It has been suggested that the use of machine translation to artificially increase the size of a Welsh data set may allow neural networks trained initially on English to be used successfully on Welsh [15]. The lack of equivalent word lists to those which are available for English would, however, prevent the use of an analysis such as [38] on Welsh.

Beyond the generation of keyword lists that aim to capture key semantic categories of place that are explicitly expressed in content, our qualitative analysis highlighted several aspects of platial language that, to our knowledge, have not been identified in the literature so far. To start with, we noted that, in the context of place-related discourse, time references (such as 'many years ago') serve as indicators of personal experience with a place (which is a key element of place attachment). Like emotional terms (see section 2.2), time references are associated with systematic linguistic resources that can be identified fairly reliably and exhaustively across different contexts. This distinguishes them from the many words and phrases expressing place attachment (such as those collected in our keyword lists of semantic categories, shown in the Appendix) that are context- or location-dependent and therefore hard to identify generically.

Hence, the significance of time references as a linguistic indicator may again be of interest to automatic approaches to platial language. In this line of research, Purves et al. [36] noted that "time is inherent to any definition of places", however, this pertains primarily to the insight that meanings of places change over time, and are associated with specific times in human lives (see also [18]). In contrast, our data show that time references, as such, can provide valuable information about the nature of a speaker or writer's relation to a place.

However, we also noted that time-related information can be implicitly expressed (which is again elusive of automatic search methods), and that such references might not be used in equivalent ways across languages (see section 5.3).

Another generic aspect of platial language concerns the use of pronouns. While pronoun use in our data generally shifted between 'I', 'we/us', generic 'you' (as in 'a beach that you could potentially swim in'), and no pronoun at all (as in 'a lot to see here') (a flexibility previously observed in [50]), we noted two recurring patterns: the expression of ownership through possessive pronouns as well as 'have' constructions, and the expression of contrast between 'us' and 'them' (other people, tourists, etc.). The former is interesting in terms of the conceived rather than factual ownership that is represented in language, as neither wildlife nor beaches typically belong to anyone in particular. The latter is reminiscent of political discourse in which divisions between groups are regularly expressed to convey a simplified world view [40]. Arguably, the two concepts of ownership and contrast are interrelated; the personal feeling of attachment to a place may well be associated with a distinction from others who don't share this attachment, or not in the same way, for whatever reason. Gustafson [20] elaborated on this notion in terms of anonymity and recognition: while foreigners are perceived as anonymous to a place, other places are associated with the recognition of people as belonging there.

Much literature notes the strong element of spatial aspects in the conceptualisation of place [22]. In our data, we noted that spatial location descriptions were a recurring element in the descriptions, expressed linguistically in a surprisingly wide range of ways that complicates any systematic or exhaustive approach. Contrasting with the abundant literature on conventional, closed-class spatial terms such as 'at', 'on', 'left', 'right' etc., we found that spatial relationships in platial discourse could be expressed by non-spatial terminology including 'with' (as in 'a walled market town with a historical castle') and 'have' (as in 'the Caernarfon area also has a marina'), and sometimes by no terminology at all: when looking more closely at the responses relating to castles, it appeared that they were frequently associated with a specific location by inference, as in 'Caernarfon—apart from the castle most touristy type of activities'.

Arguably, such spatial-conceptual presuppositions (and possibly the other forms of non-spatial terminology that conveys spatial concepts too, such as 'with' and forms of 'have') are not primarily spatial but could be regarded as *platial*, for two reasons: First, an implicit spatial association of this kind does not, by its nature, suggest the intention of a spatial description. Instead, it expresses the conceptualisation of a castle in its association with a location—adding to the meaning of that location in a platial sense, as places are defined by associated meanings. Secondly, the castles were implicitly associated with locations in inconsistent ways, as shown in Figure 3. As people with local knowledge (like our participants) would not normally fundamentally disagree on the location of something as salient as castles, the underlying difference at stake must be one of association with one place in contrast to others [55]. Similarly, Comber et al. [6] suggested that individual flexibility and social factors that lead to such associations mean that they are conceptual "spaces", and therefore platial. In Giordano and Cole's approach [18], place-based experiences are discussed in terms of uncertainty with respect to scale and spatial extent, paralleling our finding that castles can be either associated with the narrower place of a town, or the more extended bay in which the town is located.

5.2 Distinctive place attachment in different locations

To address distinctive place attachment in different locations, we used a semi-automatic keyword search that allowed us to compare the different semantic place facets that were associated with the three different areas (MCAs) that our participants were explicitly asked about. Supported by statistical tests, this analysis shows that each of the MCAs was characterised reliably by distinct features with respect to the semantic categories of specific locations, nature, architecture, economy, water, visual appreciation, experiences and activities, and proximity—expressed systematically through associated keywords in the responses. The resulting patterns reflect the specific nature of these areas, highlighting exactly what was asked of the participants, namely to characterise what makes each of them special and distinctive. However, notably a similarly extended range of further semantic categories identified in our data set turned out not to be distinctive, showing no statistical differences between MCAs.

Clearly, as these results demonstrate, differential place attachment is driven by a complex dynamic between similarity and variation. Although different places are clearly attractive to people for various reasons, there are also common features of place attachment that seem consistent across different places. Identifying relevant commonalities along with distinctive features, in light of the high diversity of place facets as identified by [22], may be one of the main challenges for platial research in diverse geographical contexts [23], such as [2] or [54].

This dynamic between similarity and variation is mirrored in other contexts and concepts as well. Arguably, in fact, it is at the heart of a long-lasting debate in the field of linguistic semantics. In brief, classical feature theory assumed that linguistic concepts must be clearly defined by necessary and sufficient conditions [17]. With this assumption, the concept of 'place' would be defined by several features such as 'emotional attachment' or 'associated memories' or 'everyday activity'—and different theories of place would have to compete to identify which of these are in fact necessary and sufficient to allow for a location to be called a 'place'. Other semantic theories reject this rigid idea, and assume a much more flexible basis for associating meaning with a term [17]. While delving deeply into the associated intricate academic debate is outside the scope of this paper, it is safe to say that much of this debate concerns how best to capture the fact that many concepts (or words, in language) are associated with very diverse individual instances (such as specific places as instances of the 'place' category) that have much in common while still being distinct in many ways—such as different cats, or hats, or games, being recognisable as such but clearly distinguishable. The ability to abstract over such differences and recognise the commonalities is a fundamental human ability that enables us to categorise and thus structure our world conceptually.

Moreover, individuals might—and often do, albeit not always consciously—differ in how they understand a concept. For instance, 'breakfast' evokes different associations depending on societal conventions and personal habits, and might for some people even be sufficiently defined by a cigarette. Dictionaries and encyclopedias aim to abstract from such individual variation, but in doing so run the risk of failing to capture some less common conceptualisations. Similarly, the approach used here and in related work can only aim to capture outstanding general patterns of place associations, including to what extent different places are conceived of as distinct or similar, but the underlying concept of 'place' and what it means for a particular area will necessarily remain somewhat fuzzy, and char-

acterised by individual differences. For instance, van Riper et al. [53] demonstrated how environment-related world views can affect place attachment and engagement.

Notably, this study looked at three fairly similar areas located adjacent to one another in North Wales. People choosing to live in fundamentally different environments, such as the fairly recent urban development Milton Keynes in England [12] will be likely to prioritise other place facets to a higher degree (such as economic aspects), while omitting references to nature and visual appreciation. In contrast, people describing entirely natural settings may focus more on activities and emotions [14]. Thus, a distinctive analysis of linguistic features of the discourse pertaining to highly contrasting environments is likely to produce highly significant, consistent patterns of diversity of place facets.

5.3 Place attachment in Welsh

A tertiary goal of this study was to gain first insights into how platial notions are expressed in a language other than English (which is typically used as a starting point), namely Welsh. Here, our contribution is limited by a feature of our study design, namely that we let our participants decide in which language they wished to write their responses (as we did not want to impose a restriction they might not feel comfortable with). Despite the majority of participants (44 out of 72) declaring themselves native speakers of Welsh (and 7 more declaring a high level of Welsh proficiency), only half of the Welsh native speakers (22) contributed responses in Welsh. This corresponds to a widely observed tendency for Welsh speakers to lack confidence in writing in Welsh,[3] including on social media [10].

Within the limited Welsh-language data available in our corpus (3,648 words as opposed to 9,484 in English), our analysis highlighted two interesting gaps: neither the linguistic feature of ownership, used frequently in English to express personal relationships to a place, nor the abundance of time references (explicit and implicit) that indicated personal experience of a place, was mirrored in Welsh in a way matching the English usage. Three possible explanations come to mind. First, it could be an accidental feature of the imbalanced data source with a low number of instances overall: while the word count ratio is somewhat above 1:3 (a bit more than one Welsh word against three English words), the occurrence of ownership instances amounts to 1:11, and that of explicit time references to 1:6—but 0:25 (none in Welsh against 25 in English) for implicit cases. Secondly, it could be a feature of the different language systems, which may express similar concepts generally in a different way. Conceivably, in Welsh, concepts of this kind are generally rarely expressed through the terminology of ownership, or through time references, independent of context and beyond notions of place. We are not aware of any relevant literature addressing this possibility. However, differences in the linguistic systems might mean that our analysis did not capture the relevant concepts equivalently. Thirdly, it is theoretically possible that there is a genuine conceptual lack of perceived ownership of the kind that is sometimes expressed in English, and that anchoring platial experience in time is perceived as less relevant for Welsh speakers. While this difference could in principle be cultural, given the number of native speakers of Welsh in the group that answered through the medium of English it seems more plausible that the language itself is the influencing factor.

[3]For instance, Prys et al. [34, p. 3263] note a "lack of confidence speakers of Welsh, as a minority language, may have in their ability to write the language, especially as the older generation would not have had any education through the language, and it is still under-represented in official domains."

Of these three options, the last one is the most intriguing in the context of the current aims. However, at this point we have little basis for arguing in either direction, and so we will have to leave this point for future research.

In other respects, Welsh language responses were similar, though not always directly equivalent to English ones. Direct translations (i.e., corresponding words with similar semantic scope) could be found for a range of spatial prepositions (cf. section 4.1) as well as keywords for semantic categories as listed in the Appendix (motivated in section 4.2). We noted that not all concepts were equivalently represented in both languages, and the number of keywords used for the automatic search in each category was therefore not consistent across the languages; therefore, we refrained from attempting a direct language-based comparison between the distributions of semantic categories. With language as a between-subjects factor (in contrast to the MCA-based distributional analysis presented here), a more balanced and controlled data set would be needed for a reliable comparison.

6 Conclusion

Our exploratory study has highlighted a range of ways in which platial notions are represented in language, focusing primarily on English but gaining some initial insights for Welsh as well. We have identified relevant keywords for platial semantic categories in both languages that can serve as 'proxies' or shortcuts for more in-depth content analysis or as search terms for automatic approaches, and pointed to a range of linguistic phenomena such as platial notions expressed through ownership terminology, time references, and varieties of spatial expression and inference.

Our corpus is very small considering the many ways in which humans may relate to their environment. Nevertheless, we hope that our analysis offers a valuable basis for future discussion and further development of systematic linguistic analysis of the language (or discourse) of place.

Acknowledgments

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Appendix

We used the keyword extraction function in Excel to count the number of occurrences within each category. To support this, we transposed all capital letters into small case. Also, where appropriate we used letter strings that indicated a particular lexeme in different morphological versions rather than complete words, such as 'beaut' to capture both 'beautiful' and 'beauty'. This was frequently needed particularly for Welsh words, as the first letter of a word frequently changes: for instance, as 'coedwig' (forest) can mutate to 'goedwig' or 'choedwig' or 'nghoedwig' depending on the linguistic context, we searched

for the letter string 'oedwig' which is not ambiguous in this context, i.e., it will always indicate the Welsh version of 'forest'.

Not all words are equivalently represented in both languages, due to the data-driven approach taken here. For a word to be included in our search it had to appear more than once (unless it was a direct translation from a word occurring in the other language), as individual occurrences do not point to any patterns. Where an English word does not have a Welsh translation in the list below, it was not present in the Welsh data, and vice versa. We were cautious to minimise the danger of counting ambiguous letter strings and therefore manually inspected the data multiple times in the course of analysis. Due to the differences between the two linguistic systems, a direct quantitative comparison between them is not possible, although it is interesting to observe that some concepts are represented in one language but not the other: this may be pursued more systematically in future research. Here is the complete list of words searched for, and counted, for each semantic category.

Proximity near, close, doorstep, local, access, proxim-, not far, lleol, agos, drws

Specific locations church island, botanic garden, swellies, puffin island, plas newydd, penrhyn, st mary, fort belan, (sea) zoo, ferodo, belgian prom, coleg, foryd, llanddwyn, afon seiont, yr eifl, anglesey, môn, orme, abermenai, britannia, newborough, beaumaris, snowdonia, eryri, irish sea, porth lleidiog, dinas dinlle, trefor, nefyn, (llyn) peninsula, benllech, carneddau, colwyn, dulas, llandudno, llanfairfechan, penmon, red wharf, traeth lafan, ogwen, bangor

Nature mountain, forest, tree, planting, plants, coast, shore, river, beach, dune, mainland, lake, seafront, estuary, pool, marine, seaweed, mynydd, arfordir, traeth, tir mawr, llynnoedd, afon, moryd, morol, gwymon, culfor, -lanhigion, -oedwig, -oeden

Seasons and Weather summer, winter, autumn, spring, season, windy, sun, rain, weather, storm, tywydd, haf, gaeaf, hydref, gwanwyn

Wildlife mussel, cormorant, wildlife, bird, gull, oystercatcher, sandpiper, shell-, sheep, dolphin, seal, morloi, anifeil, anifail bywyd gwyllt, cregyn, dafad, defaid, dolffin, aderyn, adar

Visual-perceptual Appreciation beaut, fascinating, stunning, view, wonderful, scenic, lovely, peaceful, scenery, untouched, outstanding, calming, nice, splendid, incredib, excellent, special, dramatic, bliss, amazing, elegan, glory, perfect, lush, picturesque, perceive, nice, glorious, distinctive, magnific, special, unique, iconic, majest, fantastic, natur-, apelgar, gwerthfawr, olyg, hardd, arbennig, prydferth, bendigedig, godidog, braf, anhygoel, unigryw, olwg, wych, (t)rawiadol, hyfryd

Architecture engineering, bridge, construct, landmark, castle, architect, promenade, pier, building, pont, bont, astell, cestyll, adeilad, telford

History and legend history, hms conway, slate, ancient, heritage, myth, legend, past, edward, old, iron age, medieval, prehistoric, original, quaint, back in time, 1850, hms conwy, gryffydd ap cynan, magnus lightfoot, hanes, llech, mabinogi, hen, chwedl, etifeddiaeth, hynafol, treftadaeth, enwog

Experiences and activities walk, explore, canoe, swim, learn, research, study, fish, activit, sport, sail, visit/ing, meet, pastime, climb, museum, run, paddle, jog, watch, picnic, kayak, film, shop, athlet, opportun-, siop, cerdded, gerdded, nofio, dysg, pysgota, weithgaredd, chwarae, syrffio, hwylio, naturiaeth, ymweld, cyfarfod, dringo, amgueddfa, rhedeg

Economy industry, infrastructure, entrepreneur, touris, econom, work, popular, marina, consumer, commerc, staff, visitor, windfarm, wind farm, wind turbine, attract, developed,

deniadol, ymwelw-, fferm, diwydiant, masnach, gwaith, twris, poblogaidd, maes awyr, porthladd, denu, atyn-, yfoetho,

Emotional impact feel, interesting, like, peace, calm, tranquil, charm, love, appeal, fortunate, enjoy, therapeutic, happy, wonder, sense of, excite, relax, atmosphere, emotion, good, favourite, familiar, belonging, lucky, 'means the world', important, hiraeth, lwcus, b/pwysig, teiml, llonydd, hoff, diddorol, heddwch, delfrydol

Environmental considerations habitat, green, geographic, landscape, sssi, pollution, erosion, wild, fauna, species, eco system, divers, litter, sediment, gwyrdd, ynni, trydan, llygredd, cynefin, natur, warchod, amgylchedd, erydu, amryw

Transport bike, road, tunnel, tram, access, airport, path, boat, yacht, a55, awyren, llong, cychod, llwybr, feic, beic

Culture culture, language, walks of life, welsh, engl, tradition, church, theat, pilgrim, nant gwrtheyrn, etifeddiaeth, saes, ymro, ymreig, iaith, addysg, ymraeg, ymreictod

Homes, housing, population hous, populat, home, artref, tai, dai, adra, adre, oblogaeth, tŷ, nhy

The Waters tidal, tide, current, sea, marine, water, tidal, flow, ebb, strait, navigat, wave, culfor, ton, inlet, dŵr, môr, llanw, ceffylau gwyn, llif

Auditory aspects quiet, sound, roar, hear, nois, listen, (g)wrand(o), (c)lywed, tawel, dawel, sŵn