The linguistic encoding of landscape in Lokono
Rybak, K.A.
8. Comparative study of what- and where-nouns

Cognitive geography is the study of cognition about geographic phenomena (cf. Montello 2009a). Within this framework, geographic entities are investigated through the prism of, mostly human, cognitive processes and systems such as memory, perception, reasoning, learning, and language. This strand of research has yielded a number of studies, encompassing a vast variety of topics, for instance, wayfinding, navigation, landmarks, route selection, environmental preference, and cognitive maps (for a review of the literature see Mark et al. 1999a; Montello 2013, 2009b). A full account of the potential importance of such research is beyond the scope of this introduction. It is beyond doubt, however, that in the era in which Geographic Information Systems are capturing the whole Earth and access to such information is becoming omnipresent, technological advancement is inextricably linked to the understanding of human cognition of geographic space (Montello and Freundschuh 2005; Montello 2009b).

One of the fundamental, though neglected, questions of cognitive geography is whether the way we conceptualize entities on the geographic scale (e.g., mountains, rivers) differs in any significant and systematic way from how we conceptualize entities on the subgeographic scale (e.g., chairs, tables). The latter type boasts a long-standing tradition of cognitive research à la Rosch (1973; 1978), which the former type lacks. In the 1990s, Mark and colleagues brought this issue to the table with a series of papers, a theory of geographic entities, and a pilot experiment with human subjects designed to test it (Mark 1993; Mark, Smith, and Tversky 1999; Smith and Mark 2001; Smith and Mark 1998). The question they asked was whether the bulk of knowledge gained from the studies of the categorization of subgeographic entities could be extended to the geographic domain (e.g., Cantor and Mischel 1979; Johnson-Laird and Oatley 1992; Morris and Murphy 1990; Rosch 1975). According to Mark and colleagues, the answer is negative—the way we conceptualize geographic entities is fundamentally different from the way we conceptualize entities on the subgeographic scale. They argue that this contrast is a reflection of the differences between the two types of entities with respect to five ontological properties: location, size, perceptual boundedness, boundary type and texture of boundary.

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96 I would like to thank Kees Hengeveld, Eithne Carlin, and Juliette Huber for discussing the topic with me and for feedback on earlier versions of the article on which this chapter is based. I also would like to thank the four reviewers of Linguistic Typology for their feedback on the article.

97 The use of the term scale implies here the human as the point of reference. If human cognition and language structure indeed abstract from the real world, then it is only through the prism of human experience. Interestingly, today we have also access to micro-scales of bacteria and macro-scales of galaxies through sensory prosthesis such as microscopes and telescopes. I am here concerned only with the world observable to the bare human eye (and other senses).

98 Mark (p.c.) prefers today in fact the term geographic feature rather than geographic entity that I use in this chapter, restricting the term entity to the subgeographic domain.
Independently of the research in cognitive geography, theoretical claims of the distinctive status of geographic entities were formulated in linguistics. Semantic theory on the whole overlooked the domain of geographic entities, but the topic was taken up by Whorf (1945), Lyons (1977), and more recently by Mackenzie (2005) and Cablitz (2008). Similarly to cognitive geographers, Lyons (1977), for instance, argues that the ontological properties of geographic entities set them apart from subgeographic entities. This two-fold division can be reflected in linguistic expression. Terms denoting geographic entities may be grammatically distinct from terms denoting entities on the subgeographic scale. The question arises whether cognitive geographers and linguists are looking at the same phenomenon from different angles, and if yes, whether both disciplines could benefit from an integrated approach.

To answer this question I first define the concept of linguistic categorization and outline a theory of spatial meaning adopted in this thesis (§ 8.1). I then give a critical overview of previous linguistic studies relevant to the topic (§ 8.2). After this theoretical introduction, I present empirical evidence from three genetically unrelated and geographically distant languages that shed new light on the claims made by cognitive geographers as well as linguists. This comparative study shows that the languages distinguish two types of nouns, labeled here what-nouns and where-nouns, on the basis of spatial marking. Based on the small convenience sample, a preliminary cline is proposed showing the likelihood of a noun being categorized as a what- or a where-noun (§ 8.4). Subsequently, I provide a short background to the theory of entities proposed by Mark and colleagues and scrutinize the distribution of the nouns along the what/where cline with respect to their ontological features. The analysis of two categories reveals that the entities encoded by such nouns—that is what-entities and where-entities, respectively—differ with respect to some of their ontological properties (§ 8.4.1). The analysis sheds new light on which of the ontological properties identified by geographers may underline the observed grammatical patterns in the three languages.

8.1 Linguistic categorization

Bearing in mind that the notion of category is not uniform across different disciplines (cf. Cohen and Lefebvre 2005), I first elaborate upon what I mean by linguistic categorization. Following Mervis and Rosch (1981), I assume a broad definition of categorization, namely the situation:

[…] whenever two or more distinguishable objects or events are treated equivalently. This equivalent treatment may take any number of forms, such as labeling distinct objects or events with the same name, or performing the same action on different objects.

Mark’s new nomenclature is intended to reflect the ontological disparity between the geographic and subgeographic domain.
Linguistic categorization, in turn, is understood as the “equivalent treatment” of a linguistic form with respect to a certain linguistic feature (e.g., phonetic, semantic, syntactic). In English, for instance, nouns are categorized as *mass nouns* such as *rice*, and *count nouns* such as *cup*, based on their linguistic behavior with quantifying expressions. The former cannot directly combine with the indefinite article (*a rice*) or with numerals (*two rices*); they need an accompanying quantifier (*two pounds of rice*). The latter combine directly with the indefinite article (*a cup*) and numerals (*two cups*). Such linguistic categorization has been argued to reflect the semantic content encoded in English nouns, which reflects the ontological properties of the referents. Mass nouns denote shapeless, but homogenous entities, therefore they cannot be counted. Count nouns denote entities characterized by shape and lack of homogeneity, and thus can readily be counted (e.g., Rijkhoff 2002). Importantly, if a mass noun appears in a syntactic frame of a count noun, systematic changes in meaning follow (e.g., *two waters* ‘two glasses of water’). And *vice versa*, if a count noun appears in the syntactic frame of a mass noun, its meaning changes. Pelletier (1975) calls the latter scenario the *Universal Grinder* exemplified by the English sentence: *There was dog on the street*. Moreover, which concepts nouns encode differs across languages, a fact known to many students of English as a second language trying to learn which nouns are countable and which are not. Finally, not all languages make the distinction in the first place (cf. Massam 2012 for a comprehensive overview of the complexity of the mass/count distinction).

Though this study is only concerned with linguistic categorization, it should be kept in mind that there is an ongoing discussion about the possibility that linguistic categorization interacts with non-linguistic cognitive processes. Experiments with arbitrary categories show that linguistic categories influence object recognition (cf. Gauthier, James, and Curby 2003 for an overview of such studies). Regarding the mass/count distinction in natural languages, there is no concluding evidence that linguistic categories affect non-linguistic conceptual categories (see Papafragou 2005 for a discussion). As far as the domain of spatial language is concerned, it has been demonstrated that linguistic categorization can determine non-linguistic performance. The dominant linguistic *frame of reference* conditions, for instance, how speakers resolve non-linguistic spatial tasks (Levinson 2003; Levinson 1996). Future research should investigate the relation between the linguistic categorization discussed in this chapter and other cognitive systems and processes.

Since the distinction described here is inextricably linked to the language of space, a theory of spatial meaning needs to be introduced. Cross-linguistically spatial expressions show a great variety of forms and functions (Ameka and Levinson 2007; Levinson and Haviland 1994; Levinson and Wilkins 2006). In spite of this variation, spatial meaning can be decomposed into two elements: *configuration* and *directionality* (Lestrade 2010). The former describes the spatial

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*The terms directionality and configuration are used in keeping with the theory proposed by Lestrade (2010), which builds upon earlier work by Kracht (2008; 2003; 2002). They*
relation that holds between the Figure, the entity to be located, and the Ground, the entity with respect to which the Figure is located (Talmy 1975). We can distinguish topological (e.g., English in, on, next to), relative (English left of, right of), intrinsic (English in front of), and absolute spatial relations (English north of, south of) (Levinson and Wilkins 2006). It is in the domain of configurational relations that languages show greatest variation of spatial meanings (Bowerman and Gentner 2009; Levinson, Meira, and the Language and Cognition Group 2003; Tabakowska, Choisnki, and Wiraszka 2010).

Directionality, on the other hand, is the change of configuration over time. There are three universal primary directionality distinctions: location—the absence of change in configuration; goal—the change into a configuration; and source—the change out of a configuration. The distinctions can be exemplified with data from Russian (Nikitina 2009:1118–1119).

(294) Ključi ležat na stol−e.
    keys lie on table−LOC
    ‘Keys are on the table.’

(295) Ključi upali na stol−Ø.
    keys fell on table−ACC
    ‘Keys fell on the table.’

(296) Voz’mi ključi so stol−a.
    Take keys from table−GEN
    ‘Take keys from the table.’

In Russian each directionality has its own exponent—the location directionality is encoded by the locative case, the goal directionality by the accusative, and the source directionality by a specialized preposition so and the genitive case. Importantly, as is the case in the languages under study, languages may collapse some or all of the directionality distinctions in one form, leaving disambiguation to the linguistic context, for instance, the semantics of the verb (Nikitina 2009; 2008; Sinha and Kuteva 2008). Moreover, there are also secondary directionality correspond to the earlier notions of Path and Place (Jackendoff 1990) or Vector and Conformation (Talmy 2000).

The terms Figure and Ground were introduced by Talmy (1975) and are equivalent to later Trajector and Landmark (Lakoff 1987; Langacker 1987) and the terms Referent and Relatum (Levitt 1996; Miller and Johnson-Laird 1976).

I use the term location directionality to indicate what Lestrade (2010) calls place directionality, since the term place exhibits too much semantic variation in the disciplines of linguistics and geography.

The examples taken from Nikitina (2009) have been simplified for the purpose of presentation. Consult the original source for a comprehensive discussion of the Russian system.
distinctions such as the atelic equivalents of goal and source—namely, away from and toward—the situations when the change of configuration is not complete.\textsuperscript{103}

It is the directionality, not the configuration component of spatial expressions that is the grammatical locus of the distinction reported here. When analyzing linguistic data, attention has to be paid to each primary directionality separately, since they are not equally salient cognitively and may thus vary in the extent to which they encode the distinction (Kopecka and Narasimhan 2012, part II; Regier and Zheng 2007). Finally, though there is some evidence that the secondary telic/atelic distinction plays a minor role in the categorization, I will focus here on the primary distinctions only.

8.2 Geographic entities in linguistic theory

The fundamental role that spatial cognition plays in human cognitive systems and processes is clearly acknowledged in linguistic theory and practice. This is reflected in studies of domains such as emotions, kinship, and time (e.g., Bloom et al. 1999; Herskovits 2009; Levinson 2003; Pütz and Dirven 1996; Talmy 2000). However, the preoccupation with geographic space in linguistic studies is of a more accidental nature.\textsuperscript{104} In his work on the definitions of parts-of-speech, Lyons attempted to delimit a subclass of prototypical nouns, which would be “focal within the larger class in much the same way that […] a particular area within the total area denoted by a colour term is focal”, (Lyons 1977:440). Relying on a fairly uncontroversial assumption of naïve realism that the world around us is populated for the most part with more or less discrete and moveable objects, he takes the nouns that denote those physical objects to be prototypical nouns. He labels such nouns \textit{first-order nouns} and their real-world correlates \textit{first-order entities}. Lyons explicitly refers to the aberrant ontological properties of geographic entities:

\begin{quote}
There are some first-order entities that are either permanently or normally static, rather than self-moving or moveable: but they will not count as first-order entities unless the language so classifies them and they stand out from their environment with respect to their colour, shape or texture. Such aggregates, collections or conglomerations of matter as cliffs, mountains, clouds, lakes and so on, may or may not be perceived and conceptualized as first order-entities: their status is \textit{ontologically indeterminate}; and they may be treated differently by different languages.
\end{quote}

\textsuperscript{103} Finally, there is the \textit{via} directionality which Lestrade (2010:88) analyzes as either derived from goal and source (\textit{We walked through the forest}) or as location directionality (\textit{We walked through the forest for an hour}).

\textsuperscript{104} Recently, however, there has been some interest in geographic entities, especially from the cross-linguistic semantics perspective. The first wave of this research explored the encoding of landscape in a number of unrelated languages (Burenhult 2008b). Work by Cablitz (2008; 2006) discussed in this study is the first in-depth description of the \textit{what/where} distinction.
Lyons (1977:693, emphasis by author)

However, since such nouns are not focal to the nominal spectrum sensu Lyons, he says but little about the particular linguistic phenomena that could distinguish terms for geographic entities from terms for subgeographic entities.

The progress in the study of the distinction between terms for geographic and subgeographic entities has also suffered from a Eurocentric bias—the association of location solely with a class of prepositions. This bias resonates in the work of Landau and Jackendoff (1993), who attempted to relate English prepositions to the where-system and nouns to the what-system of visual perception in the brain. Interesting as their idea was, it overlooked the fact that spatial meaning is not exclusively expressed by prepositions. It excluded from the analysis a number of potentially important linguistic forms, among them those denoting geographic entities, place names, relational nouns, but also verbs and adverbs, which play an important role in the encoding of space in many languages (see Ameka and Levinson 2007).

The idea that geographic entities form a special subset of the lexicon is also found in the posthumously published writings of Whorf. Whorf noticed that words denoting places such as countries and cities often constitute a cryptotype, a class that may “easily escape notice and may be hard to define, and yet may have profound influence on linguistic behavior” (Whorf 1945:4, quoted in Mackenzie 2005). Mackenzie (2005) refers to this cryptotype as place-denoting nouns. He notes that, whether relational (e.g., right, lee) or not (e.g., Amsterdam), English place-denoting nouns can be substituted by here/there but not by it in spatial expressions. Nouns denoting first-order entities are readily substituted by it (or by him/her if the referent is a person).

(297) a. I’ve come from Amsterdam, and Mike has come from there/*from it too.
    b. I’m standing to the right of Mary, and John is standing there/* to it too.
    c. I’m sitting in the lee of the wind, and Mary is sitting there/*in it too.
    d. I’m wrapped up in the blanket, and John is wrapped up in it/?there too.

Mackenzie (2005:144)

However, the examples given by Mackenzie are not fully convincing. One problem is that in cases such as b) and c) in (297), it is the whole prepositional phrase that is substituted by there, not just the relational noun. The same holds for expressions with place names in the goal directionality: I went [to Amsterdam]/[there].

Cablitz’s (2008) study is in many ways a breakthrough in the analysis of the categorization of terms for geographic and subgeographic entities. Cablitz investigated landscape terms in North Marquesan and concluded that geographic terms are grammatically intermediate between first-order entities and place-denoting terms, or what she calls the what- and where-category, respectively, after Landau and Jackendoff (1993). Inspired by Cablitz’s work, I described the linguistic intricacies of the Lokono system showing that a similar what/where distinction operates there (Rybka 2014b). I also argued that the two categories bare striking
similarity to other types of noun categorization such as the mass/count distinction, and that its locus is specifically the directionality component of the spatial expression. The Lokono and North Marquesan data inspired Huber, who documented yet another reflex of the distinction in Makalero (Huber 2014; n.d.).

Each of these studies approached the what/where distinction from a largely emic perspective. For the analysis presented here linguistic comparability needs to be assured, therefore a clear definition of the what- and the where-category is necessary. Although I take over the what/where terminology used by Landau and Jackendoff (1993) and build upon the earlier findings of Cablitz (2008), I formulate a new definition of the what- and where-categories. This new definition is then applied to the three case studies: Marquesan, Lokono, and Makalero. I propose to go back to the question words what and where and the constructions they appear in. Though what and where interrogatives are not universally attested, cross-linguistically they are the two most common basic question words—that is, “unanalyzable words that represent the questioned element in a content question”, (Hengeveld et al. 2012:44). The what/where distinction can be operationalized by referring to the form of the directionality markers used with the two question words. I thus define the what-category as nouns that combine with the directionality marker attested with the interrogative what, and the where-category as nouns that appear with the directionality marker attested with the interrogative where. Take the English goal directionality as an example. For the purpose of comparison with the answers in (299), I use the somewhat atypical non-inverted form of an English question.

(298)  

a. He went where?  
b. He went to what?

In English, where is classified as an interrogative adverb—it does not require any additional marking when used in the goal directionality. The question word what is nominal in nature and requires an additional preposition to in the goal directionality. It has to be kept in mind that the marking depends on the type of directionality—in the source directionality both interrogatives are treated identically: He came from what/where? In English most nouns pattern like what, with only a handful of terms behaving like where.

(299)  

a. He went home/upstairs/left/north/seaward/ashore/down/there.  
b. He went to Mary/to the table/to school/to Amsterdam.

English terms that behave like where, for instance, home, upstairs, right, north, seaward, are all categorized as adverbs rather than nouns. Nouns are normally found

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105 Other factors may play a role too. Notice that in everyday English one can also say: *He went to where?* This may be a sign that the already feeble distinction in English is disappearing. For some speakers the sentence *He came from what?* May sound odd, but this is more likely due to the choice of the verb and the Figure. A sentence *It fell from what/where?* is perfectly acceptable.
with the marker to that appears with the interrogative what. Consequently, in English one cannot say He went Amsterdam. The equivalent of this sentence is, however, a well-formed sentence in North Marquesan, Lokono, and Makalero. In the sense defined here, there is no where-category in English—there are no nouns that pattern like the interrogative where—unless one is willing to treat forms such as home, upstairs, or left as nouns. Such an analysis is definitely viable for, for instance, home. In any case, the where-category in English is limited.

Noun is the operative word here—the English example above show that terms from other word classes can also pattern like the interrogative where in the goal directionality. It is worth remembering the types of meanings encoded by such adverbials in English: certain structures (home), configuration (left, down), geographic terms (ashore), and deixis (there, here). These types of meanings recur in the discussion of the what/where distinction that follows. These are the types of meanings encoded by where-nouns in the languages under study. In English, however, terms encoding such concepts have lost their nominal character. The what/where distinction is clearly part of a larger phenomenon crosscutting the nominal and verbal domain. Nonetheless, I want to limit the term what- and where-categories to the grammaticalized distinction in the nominal domain in order to assure linguistic comparability. What counts as a noun, of course, is determined on language internal grounds.

Finally, the definition of the what/where distinction excludes non-spatial uses—the analysis is limited to the expressions that are a possible answer to a locative question. Fictive motion, sensory paths, temporal expressions, and the like are often attested uses of both the what- and where-marking as well (e.g., Langacker 1987; Talmy 1983). In North Marquesan, terms for buildings are normally what-marked. If instead the where-marking is used, an abstract institution is implied. In Lokono, the what-marking is used with verbs of perception and searching. Such uses are clearly part of the what/where phenomenon, but are excluded here since I want to focus in particular on the ontological features of physical entities. The following analysis therefore comes down to determining to which nouns the two types of marking extend when used in concrete spatial expressions.

8.3 Three case studies

In the following subsections, I discuss data from three unrelated languages that distinguish two nominal categories on the basis of differential directionality marking: the what-nouns and the where-nouns. The sample is a convenience sample. The distinction has only been documented thoroughly for these three languages only until now. Importantly, in the following the borderline cases are treated differently than in the previous sections, in which I was interested in the semantic shifts from one category to the other (§ 7.3.4). In this chapter the focus is on the ontological properties of the referents. The noun datra, for instance, is categorized once as a person-denoting noun ‘doctor’, and once as a place-denoting nouns ‘clinic’, rather than as an intermediate borderline cases. The borderline cases here include only nouns that can combine with both types of markers with no detectable change of meaning (e.g., Makalero place names). Such nouns, instead of illustrating the
underlying semantic pattern behind the \textit{what}/\textit{where} distinction, signal where the two
categories overlap in a language.

8.3.1 Marquesan (Oceanic, French Polynesia)
North Marquesan (henceforth Marquesan) is an Austronesian language, spoken on
\textit{'Ua Pou} island in the Marquesan archipelago (ISO 639-3: mrq). It is a fairly
isolating, accusative case-marking language. Tense marking is not obligatory on
the lexical head of the verbal phrase and subject noun phrases are often dropped. When
used as locations or goals, nouns are marked by either of the two prepositions \textit{‘io} \textit{or}
\textit{‘i}, glossed as \textit{LOC.WHT} and \textit{LOC.WHR}, respectively. Both prepositions conflate
the location and goal directionality, which is disambiguated by the predicate. A
predicate encoding no change of location implies the location directionality, while a
predicate encoding a change of location implies the goal directionality. Marquesan
nouns are therefore divided into \textit{what}-nouns and \textit{where}-nouns based on the type of
marker they receive when used as locations or goals (Cablitz 2008; 2006). The
distinction is absent in the source directionality. There are also a number of
landscape nouns that combine with both types of marking. The differential marking
on such nouns in some cases entails systematic semantic changes. The combinatorial
possibilities of the \textit{what} - and \textit{where}-markers with different types of nouns are
summarized in Table 55 and illustrated with examples below.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|}
\hline
Noun type & Marking \\
\hline
proper names of people & \textit{what} \\
personal pronouns & \textit{what} \\
noun denoting animate beings & \textit{what} \\
object-denoting nouns & \textit{what} \\
part-denoting nouns & \textit{what} \\
part-denoting nouns (of objects) & \textit{what} \\
part-denoting nouns (of landscape) & \textit{what} \\
structure-denoting noun (simplex nouns and event nouns) & \textit{what or where} \\
landscape feature-denoting nouns (for small landscape features) & \textit{what or where} \\
landscape feature-denoting nouns (for large landscape features) & \textit{what or where} \\
proper place names & \textit{where} \\
configurational nouns (incl. projective configurational nouns) & \textit{where} \\
\hline
\end{tabular}
\caption{The \textit{what}- and \textit{where}-marking in Marquesan.}
\end{table}

In (300) both, the \textit{what}- and the \textit{where}-marker are exemplified. In (300), there are
two prepositional phrases. Both of them express the goal of movement, since the
motion verb \textit{heke} ‘go seaward’ is used.\footnote{The glosses used in Marquesan and Makalero
examples reflect the original sources, except for the glosses used for the \textit{what}- and \textit{where}-marking. Additional abbreviations used:
\texttt{ART}—article; \texttt{CONJ}—conjunction; \texttt{DEM}—demonstrative; \texttt{LNK1}—linker 1; \texttt{NSIT}—new situation;
\texttt{POS}—possessive; \texttt{REDUCED}—reduced form; \texttt{REFL}—reflexive; \texttt{STV-P}—state verbal particle;
\texttt{TAM}—tense-aspect-mood particle; \texttt{VOC}—vocative.}
Mea meita'i e hu'u tama e heke koe 'i tai 'io to hoa.

'It's good, my dear child, you go down seaward to your friend.' (Cablitz 2006:413)

In the first prepositional phrase, the goal is expressed by the noun tai 'sea', encoding a landscape feature, and the preposition 'i is used. I call this marker the where-marker, since it appears with the interrogative hea/sea 'where'. The where-marker is used with proper place names and many terms for large geographic entities (e.g., vao 'bush, interior of island' or moana 'far out at sea'). The where-marker also appears with nouns encoding events. When combined with the where-marker, such nouns indicate the location, a building or a place, where the event typically takes place (e.g., kitchen). Other terms for structures and small spaces are, however, what-marked. Finally, the where-marker appears with configurational nouns—that is, nouns expressing topological as well as frame-of-reference dependent spatial relations (e.g., 'uka 'up', 'a'o 'down', 'oto 'inside'). Configurational nouns include also projective configurational nouns discussed below.

In the second prepositional phrase in (300), the goal is expressed by a person-denoting noun hoa 'friend', and the preposition 'io is used. I call this marker the what-marker, since it appears with the interrogative aha 'what'. The what-marker is used with proper names of people, generic person-denoting nouns, personal pronouns, and nouns denoting objects, and animals. It is also found with nouns denoting structures, excluding event nouns which encode locations when where-marked. Moreover, some terms for small landscape features are also used with the what-marker (e.g., papua 'garden', mata'ae 'cape', ava 'passage', opata 'cliffs', tahuna 'gravel beach'). Finally, the category of what-nouns includes also relational nouns such as kaki 'neck' in (301).

Ua mau 'io he kaki o te po'otu.

'The garland) was attached on the neck of the beauty.' (Cablitz 2006:315)

In (301) the Figure is in physical contact with the body part kaki 'neck'. The what-marker appears with all relational nouns, provided that the Figure is in actual contact with the Ground—that is, when the noun denotes the actual part of the entity. Interestingly, the where-marker can appear with a small subset of such nouns as

107 The category structures includes subgeographic scale places, such as buildings, rooms, and smaller spaces in all three languages under study. It is a somewhat residual category that is not defined very well. Typically members of this category are deverbal locatives and the term for home.
well. In such cases, however, the noun indicates a spatial region projected from the named part, not the part itself as in (302).

(302) *Tapi`i te`a koivi puaka `i te kaokao o te tumu `akau*

\[
\begin{array}{llll}
\text{tapi`i} & \text{te`a} & \text{koivi} & \text{puaka} \\
\text{ART} = \text{DEM} & \text{female} & \text{pig} \\
\end{array}
\]

\[
\begin{array}{llllllllll}
\text{`i} & \text{te} & \text{kaokao} & \text{o} & \text{te} & \text{tumu} & \text{`akau} \\
\text{LOC.WHR} & \text{ART} & \text{side} & \text{POSS} & \text{ART} & \text{trunk} & \text{wood} \\
\end{array}
\]

‘Stick that sow at the side of the tree.’ (Cablitz 2006:324)

In (302) the Figure does not have to be placed in physical contact with the body part, since the noun *kaokao* ‘side’ combined the *where*-marker implies a spatial region projected from it. This type of marking is only possible with a limited number of relational nouns, namely *a`o* ‘front’, *tua* ‘back’, *keo* ‘bottom’, and *kaokao* ‘side’. These nouns when *where*-marked function in fact as projective configurational nouns. In Table 55, such nouns appear therefore twice: when used with the *what*-marker, they are counted as relational nouns, but when used with the *where*-marker, they are counted as configurational nouns.

Finally, in the domain of landscape, some terms for both small and large landscape features combine with both markers without any detectable change in meaning (e.g., *henua* ‘land’). However, a few landscape nouns combine with both prepositions resulting in different semantics. This can be exemplified with the noun *ka`avai* in (303) and (304) below.

(303) *Ena `io he ka`avai.*

\[
\begin{array}{lllllll}
\text{ena} & \text{`io} & \text{he} & \text{ka`avai} \\
\end{array}
\]

\[
\begin{array}{llllllllll}
\text{exist} & \text{LOC.WHT} & \text{ART} & \text{river} \\
\end{array}
\]

‘He is by/at/in the river.’ (Cablitz 2008:216)

In (303) the prepositional phrase encodes the location of Figure, since the predicate does not encode motion. The *what*-marker combined with the noun *ka`avai* implies that the Ground is a river. However, when the same noun is combined with the *where*-marker, the meaning changes to ‘valley’, as in (304).

(304) *Ena me te papa `enana `i te`a ka`avai.*

\[
\begin{array}{llllllllll}
\text{ena} & \text{me} & \text{te} & \text{papa} & \text{`enana} & \text{`i} & \text{te`a} & \text{ka`avai} \\
\end{array}
\]

\[
\begin{array}{llllllllll}
\text{exist} & \text{with} & \text{ART} & \text{pl.group} & \text{man} & \text{LOC.WHR} & \text{ART} = \text{DEM} & \text{valley} \\
\end{array}
\]

‘There were a lot of people in that valley…’ (Cablitz 2006:416)

In (304) the prepositional phrase again encodes the location of the Figure. The use of the *where*-marker implies, however, that the Ground is the whole valley, not just

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108 In such cases, Cablitz still claims there may be a pattern: the *what*-marker is more felicitous when participants have actual physical contact with the geographical entity—that is, in the telic directionality (i.e. when the configuration is reached).
the river. A similar example is the term motu, which means ‘island’ when followed by the where-marker, but ‘lava rock’ when followed by the what-marker. Cablitz (2008) concludes that a where-marked noun denotes a larger landscape feature, while a what-marked noun encodes a smaller one. Finally, in the sources there is no explicit mention of which directionality marker combines with terms for parts of landscape features, hence the question mark in Table 55. I assume therefore that they pattern like other part-denoting nouns—that is, with the what-marker—so that the Marquesan system can be juxtaposed with the Lokono one, for which the relevant data is available.

8.3.2 Lokono (Arawakan, Suriname)

As explained in previous sections, when used as locations and goals, Lokono nouns are marked by either the free form bithi or the bound form -n, glossed as LOC.WHT and LOC.WHR, respectively (Rybka 2014b). Both forms conflate the location and goal directionality, which is disambiguated by the verbal element of the clause, just like in Marquesan. A predicate encoding no change of location implies the location directionality, while a predicate encoding a change of location implies the goal directionality. Both markers have an atelic variant bithiro and -nro, respectively, derived with the atelic suffix -ro. Lokono distinguishes two types of nouns based on their location and goal directionality marking: what-nouns and where-nouns. The former include proper and generic terms for people, pronouns, terms for animals, plants, objects, and their parts. Where-nouns, on the other hand, include place names, configurational nouns, deverbal locatives, terms for structures, terms for geographic entities and their parts. The distinction is neutralized in the source directionality. The Lokono system, summarized in Table 56, was discussed in previous section and is therefore only briefly exemplified below.

**Table 56. The what- and where-marking in Lokono.**

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>proper names of people</td>
<td>what</td>
</tr>
<tr>
<td>pronouns (incl. aba ’something’)</td>
<td>what</td>
</tr>
<tr>
<td>noun denoting animate beings (incl. datra ’doctor’)</td>
<td>what</td>
</tr>
<tr>
<td>object-denoting noun</td>
<td>what</td>
</tr>
<tr>
<td>part-denoting noun (of object)</td>
<td>what</td>
</tr>
<tr>
<td>part-denoting noun (of landscape)</td>
<td>where</td>
</tr>
<tr>
<td>structure-denoting noun (incl. locative nominalizations and datra ’clinic’)</td>
<td>where</td>
</tr>
<tr>
<td>landscape-denoting noun (small features)</td>
<td>where</td>
</tr>
<tr>
<td>landscape-denoting noun (large features)</td>
<td>where</td>
</tr>
<tr>
<td>place name (incl. those formally related to object-denoting nouns)</td>
<td>where</td>
</tr>
<tr>
<td>configurational noun (incl. projective configurational nouns)</td>
<td>where</td>
</tr>
</tbody>
</table>

The what-marker bithi is exemplified in (305). I call this marker the what-marker, since it combines with the question word hama ’what’. In the active clause shown in (305), the noun boyo ‘your mother’ encodes the goal of movement, and the atelic what-marker marker is used.
The *what*-marker combines with generic and proper terms referring to people, pronouns, terms for animals, objects, and their parts. The use of the *where*-marker —*n*, on the other hand, is exemplified below. In (306) the place name Korhopa encodes the goal of movement.

(306)  *Bôsâ Korhopanro!*

b–oːsa  koropā−n−ro
2SG,go  Korhopa−LOC,WHR−ATL
‘Go to (toward) Korhopa!’

I call this marker the *where*-marker, since it appears with the question word *halo* ‘where’. The *where*-marker extends to place names, configurational nouns, and terms for landscape features. To the list of *where*-nouns discussed in chapter 7, terms for parts of landscape features have to be added as well (e.g., *dako* ‘tributary’, *shirima* ‘headland’). The *where*-marker applies also to locative nominalization ending in −*nale* denoting places where the activity encoded in the root normally takes place, for instance, *kodanale* ‘part of the forest where palm leaves are collected and folded’, derived from the verb *kodon* ‘weave’. Some of the locative nominalizations denote small spaces or structures, for instance, *tikanale* ‘defecation-place). Not surprisingly, the *where*-marker is also found on terms for buildings such as *bahu* ‘house’ or *banabo* ‘hut’.

Interestingly, the noun *datra* ‘doctor’ belongs in two different categories: when combined with the *what*-marker it denotes a person, but when combined with the *where*-marker it denotes a clinic (§ 7.3.4.1 above). The same applies to the indefinite pronoun *aba*, which refers to an animate being or an object when followed by the *what*-marker, but to a place when combined with the *where*-marker (§ 7.3.4.5). Similarly, nouns such as *ôlo* ‘tree species’, a *what*-noun, can also function as place names, in which case they are *where*-marked (§ 7.3.4.2). Finally, a few nouns function as relational nouns when *what*-marked, but as projective configurational nouns when combined with the *where*-marker, analogically to the subset of Marquesan relational/configurational nouns (§ 7.3.4.3 above). I also found examples of term for landscape features used with the *what*-marker (§ 7.3.4.4). The resulting meaning is that of a landform viewed from a distance or represented on a map as a symbol. The former turns out to be a case of a sensory path, excluded from this

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109 Interestingly, the telic form *bithi* is only compatible with person-denoting nouns, pronouns, and a few other terms. For all other nouns of this category only the atelic *bithiro* is acceptable. Telicity clearly plays a secondary role in the *what/where* distinction, but the discussion of this phenomenon is beyond the scope of this chapter. See also footnote 108 about the role of telicity in Marquesan.
comparative study. The latter does not denote to a landscape feature but an object—that is, a point, a line, or a polygon on a map.

8.3.3 Makalero (Papuan, East Timor)

Makalero is a fairly isolating Papuan language spoken in the Iliomar region, near the eastern tip of East Timor (ISO 639-3: mkz). It exhibits a strict AOV/SV word order, which plays a key role in determining grammatical relations (Huber 2011). Makalero differs from Marquesan and Lokono in the way nouns are categorized with respect to directionality marking. Instead of having two fairly well-represented categories, Makalero uses the what-marking with all nouns, as summarized in Table 57. Only place names and terms for geographic entities additionally exhibit the where-marking. There are therefore no nouns that combine exclusively with the where-marking. Importantly, there is no specific information in the sources about nouns denoting parts of landscape features and nouns denoting small landscape features. The generalizations made by Huber suggest that they fall into the what-category as well. The Makalero directionality system is explained in detail below.\textsuperscript{110}

\begin{table}[h]
\centering
\caption{The what- and where-marking in Makalero.}
\begin{tabular}{|l|l|}
\hline
Noun type & Marking \\
\hline
proper names of people & what \\
noun denoting animate beings & what \\
object-denoting noun & what \\
part-denoting noun (of objects) & what \\
part-denoting noun (of landscape) & what \textsuperscript{*} \\
structure-denoting noun & what \\
landscape-denoting noun (small features) & what or where \\
landscape-denoting noun (large features) & what or where \\
place name & what or where \\
\hline
\end{tabular}
\end{table}

Huber (2014; n.d.) explains that the location directionality in Makalero is expressed by a construction with a configurational verb. The Figure and the Ground are expressed by the subject and the object of the configurational verb, arranged in the AOV word order, as in (307).

(307) \textit{Ani isikola isi’}.
\begin{center}
\begin{tabular}{ll}
ani & isikola \\
1SG & school \\
isi’ & be.at \\
\end{tabular}
\end{center}
\begin{center}
‘I am at school.’ (Huber n.d.:5)
\end{center}

\textsuperscript{110} The Makalero example is nevertheless important for the study. The Makalero type is probably the most common reflex of the what\textbar where distinction cross-linguistically. Many cases that should be investigated in the future are listed in Stolz et al. (2014), who discuss locative zero-marking in a sample of languages.
In (307). the general verb isi ‘be at’ is employed. Alternatively, one of a number of specific configurational verbs can be used, for instance, mutu ‘be inside’ or (k-)ua ‘be on top’. The bare configurational verb, generic or specific but clearly static implies the location directionality. The goal directionality is derived from the location directionality by adding a motion verb to the utterance. There are two possible goal constructions. First, the motion verb can follow the Ground-denoting noun and the configurational verb, as in (308).

(308) Ei taure fami’=ini lopu mutu la’a?
    ei taure fami’=ini lopu mutu la’a
   2SG which:reduced be.like=CONJ house be:inside:REDUCED go
‘How did you get into the house?’ (Huber n.d.:11)

In (308), the motion verb la’a ‘go’ follows the specific configurational verb mutu ‘be inside’. The configurational verb appears in its reduced form without the glottal stop, forming a single predicate with the motion verb. Alternatively, the motion verb can precede the Ground-denoting noun and the configurational verb, as in (309).

(309) Ani la’a=ni isikola isi’.
    ani la’a=ni isikola isi’
   1SG go=CONJ school be:at
‘I go to school.’ (Huber n.d.:7)

In (309), the motion verb la’a ‘go’ precedes the Ground-denoting noun and the general verb isi’. The conjunction is optional and the configurational verb is used in its unreduced form. This suggests that in (309) there are in fact two distinct

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111 A comment with respect to the what-marking is necessary. Terms for animate beings and physical objects usually combine with specific configurational verbs, while terms for landscape features, institutions, buildings, relational concepts, containers, and body parts tend to appear with the general verb isi’. This distribution appears to be related to the ontological features of the entities encoded by the nouns, and therefore is a phenomenon related to the what/where distinction. This in fact led Huber (n.d.) to distinguish a third category of nouns—nouns that tend to combine with isi’, but not with the where-marking, namely buildings, relational nouns, containers, and body parts. My analysis of the Makalero data is different. I do not see a strong argument to distinguish noun categories solely on the basis of their collocational possibilities with configurational verbs. Similarly, in English I do not make a distinction between nouns combining with the general at and specific in, on, or under. Knowing that languages differ in the number of configurational terms, while in principle each language has the same spectrum of spatial relations to express, it is clear that some configurational terms are necessarily more general than others. I acknowledge the collocational choices of Makalero nouns, but I do not think they are grammaticalized in the same way as the what/where distinction is. Moreover, it should be noticed that the distinction between the general verb and specific verbs is made at the level of configuration, while the what/where distinction is encoded in at the level of directionality distinctions. The semantic changes induced by the different configurational verbs, described in Huber (n.d.) reflect this difference. They do not involve the modulation of the meaning of the noun, but the modulation of the spatial relation.
predicates ordered in a time-iconic manner (Huber n.d.). The above-described grammatical means of expressing the location and goal directionality apply to all nouns. I call it the what-marking, since it also appears with the interrogative pronoun sa’a ‘what’. This pattern does not, however, apply to the interrogative verb tau’ ‘where’.

(310) **Hai tau’? Hai ma’u=ni tau’?**

```
  hai  tau’  hai  ma’u=ni  tau’
  NSIT  where  NSIT  come=LNK1  where
```

‘Where is (he)? (He) came where?’

In (310) the verb tau’ appears twice and functions as the predicate on its own, first encoding the location and then the goal directionality when combined with a verb of motion. There are no nouns that pattern exclusively in this way. Nevertheless, two types of nouns stand out in the Makalero lexicon as being able to function both as goals and, less commonly, locations with the what-marking and optionally with the where-marking. These nouns include place names and terms for landscape features, for instance, larin ‘mountain’, meti ‘sea’, and ama ‘garden, field’. In (311) a proper place name is exemplified.

(311) […] **bisika’=ini hai Dili.**

```
  bis–ika’=ini  hai  dili
  bus–up.in=LNK1  NSIT  Dili
```

‘[…] (he) took the bus and (then was at) Dili.’

In (311) the place name Dili, expressing the goal of motion, is not followed by a configurational verb. Rather, as Huber (2014) explains, it forms a predicate of its own, just like the interrogative verb tau’. An example with the location directionality is given in (312).

(312) […] **ki-rate hau ude Dirimuni.**

```
  ki–rate  hau  ude  dirimuni
  3:POSS–grave  all  be.up.there:REDUCED  Dirimuni
```

‘[…] their graves are all at Dirimuni up there.’

In both (312), the Ground-denoting noun is not followed by a configurational verb. Rather, it function as a predicate on its own, just like the interrogative verb tau’ in the location directionality.

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112 The verb ma’u is glossed as ‘come’ by Huber (2011) but it clearly indicates goal directionality. The semantics of come and go verbs shows great cross-linguistic variation, and more attention should be paid to what ma’u really encodes—I suspect it is in fact non-deictic, but it acquires a particular deictic reading on the level of the utterance.
8.4 Discussion

It is beyond doubt that certain types of nouns are systematically what-marked, while other types of nouns tend to receive where-marking in the three languages under study. Interestingly too, though the modulations of meaning resulting from the application of both markers to a single noun are not focal to the discussion below, it is worth noting that there is a lot of overlap between the Marquesan and Lokono data (e.g., in both languages the what- and where-markers distinguish relational nouns from projective configurational nouns). Moreover, the types of meanings encoded by nouns combining with the where-marker overlap with the English adverbs that pattern like the interrogative where in English (e.g., certain structures such as home, configurational concepts such as left and down, geographic terms such as ashore). In all three languages, the what-marking (bithi, io’, configurational verbs) is formally more marked than the where-marking (–n, 1’, no configurational verb). The data from the three case studies are agglomerated in Table 58.

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Example</th>
<th>Language code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>arw.</td>
</tr>
<tr>
<td>proper names of people</td>
<td>Mary</td>
<td>–</td>
</tr>
<tr>
<td>pronouns</td>
<td>he</td>
<td>–</td>
</tr>
<tr>
<td>nouns denoting animate beings</td>
<td>mother</td>
<td>–</td>
</tr>
<tr>
<td>object-denoting noun</td>
<td>chair</td>
<td>–</td>
</tr>
<tr>
<td>part-denoting noun (of objects)</td>
<td>head</td>
<td>–</td>
</tr>
<tr>
<td>part-denoting noun (of landscape features)</td>
<td>headwaters</td>
<td>+</td>
</tr>
<tr>
<td>structure-denoting noun</td>
<td>house</td>
<td>+</td>
</tr>
<tr>
<td>landscape-denoting noun (small features)</td>
<td>garden</td>
<td>+</td>
</tr>
<tr>
<td>landscape-denoting noun (large features)</td>
<td>village</td>
<td>+</td>
</tr>
<tr>
<td>place name</td>
<td>Amsterdam</td>
<td>+</td>
</tr>
<tr>
<td>configurational noun</td>
<td>inside</td>
<td>+</td>
</tr>
</tbody>
</table>

Starting from the top of Table 58, nouns denoting animate entities and physical objects are what-marked in all three languages. If such a noun is where-marked, as is the case in Lokono, its denotation changes, rendering it a member of a noun type that is further below on the cline. This is, for instance, the case for the noun datra ‘doctor’ or ōlo ‘tree species’, which when where-marked denote a structure and a place, respectively. Similarly, a few nouns denoting parts function in both Lokono and Marquesan as configurational nouns when where-marked. In Table 58, just like in Table 55, Table 56, and Table 57 above, such nouns are therefore counted in the respective categories of what- and where-nouns depending on the marking—that is, as two different nouns, despite the obvious polysemy, since I am particularly interested in the referents of the nouns in the following sections.

Nouns denoting parts of objects are also what-marked in all three languages. Nouns denoting parts of landscape features, however, are where-marked in Lokono. There is no explicit information about such nouns for Marquesan and Makalero. I
assume therefore that they pattern like other part-denoting nouns, but this may not necessarily be the case. When more data is available, the place of the nouns denoting parts of landscape features on the cline may need to be revisited. Structure-denoting nouns are *where*-marked in Lokono. In Marquesan structure-denoting nouns are *what*-marked, with the exception of event nouns encoding places associated with an activity. In Makalero, all such nouns are *what*-marked.

Nouns denoting smaller landscape features are *where*-marked in Lokono. In Marquesan such nouns combine with the *what*-marking, though some terms can also combine with the *where*-marking without any significant difference in meaning. For Makalero, there are no data for smaller landscape features—the examples given in by Huber (2014) include rather larger landscape features. Such data gaps are indicated in the tables above and should be investigated further, but for clarity of presentation I have not marked them in Table 58, where I assume that such nouns pattern like other landscape nouns. Terms for large landscape features are *where*-marked in Lokono. In Marquesan such nouns are on the whole *where*-marked, but a few of them can appear with both types of marking without a change in meaning.

In Marquesan and Lokono place names receive the *where*-marking. In Makalero, such nouns can optionally combine with the *where*-marking as well. In case this there is no semantic difference between a *what*-* and *where*-marked noun. Finally, configurational nouns are *where*-marked in Lokono and in Marquesan. In Makalero the configurational concepts are expressed by verbs. The *y* do not count as nouns, but it is nevertheless interesting to notice that they pattern as *where*-nouns would; hence the asterisk symbol in Table 58.

Importantly, though a single cline can represent the distribution of the nouns in all three languages, the cut-off point between the two categories is language specific. In some languages the two categories may be of comparable size, as in Lokono and Marquesan. In other languages one category may cover most, if not all, of the nominal lexicon, as in Makalero. The borderline cases are predictably located on the cline between the *what*-* and *where*-nouns, and can be classified into two types. Both types of marking can appear with the same noun, resulting in no change of meaning (e.g., Makalero place names) or in a modulation of the meaning (e.g., Marquesan noun *ka‘vai* ‘river/valley’). Alternatively, the both types of marking may not be compatible with a single noun, but some nouns from a given noun type may combine with one marker while other with the other marker. This latter case implies of course that the arbitrarily delimited noun type in question (e.g., Marquesan landscape terms or structure terms) is in fact internally structured rather than a coherent category. Importantly, since this preliminary study investigates the *what/where* marking only in three languages, it is not possible to arrive at a detailed hierarchy of nouns, representing the likelihood of a noun being categorized as a *what*- or a *where*-noun. Based on the attested patterns in the data, a preliminary hierarchy can be put forward, given in Table 59. The cline should be read as follows. If a noun type is *where*-marked in a language, then noun types lower than the relevant noun type can also be *where*-marked, and vice versa, if a noun type is *what*-marked in a language, then noun types higher than the relevant noun type can also be *what*-marked.
Ultimately, six noun types can be distinguished based on the what- and where-marking in the three languages. First, there are nouns that are typically what-marked, that is proper names of people, pronouns, noun denoting animate beings, object-denoting nouns, and nouns denoting parts of objects. Second, nouns denoting parts of landscape features can be singled out. Third, there is the group of structure-denoting nouns, including terms for buildings, rooms, and other subgeographic-scale spaces. Fourth, there are terms for smaller and larger landscape features. Fifth, proper place names are distinguished. Last but not least, configurational nouns can be singled out as a final subcategory.

This comparative study and the resulting cline presented in Table 59 can be compared, for instance, with the work on the alienable/inalienable distinction by Nichols (1988). She demonstrates that there is a cross-linguistic hierarchy of nouns, representing their likelihood of being categorized as alienable and inalienable. Kinship terms and body part terms, for instance, are more likely to be encoded as inalienable than part-whole terms and spatial terms, which are in turn more likely than culturally basic items and the rest of the lexicon. Similarly to the distinction described here, the cut-off point between the two classes is language specific. Nichols’ (1988) study stirred an important discussion about the motivation behind the distribution. This question is equally important for the what/where distinction. In order to investigate the possible ontological basis for the what/where distinction, I apply the theory of ontological features developed by Mark and colleagues to the types of entities identified on the basis of the what and where-marking applied to the nouns encoding them (Mark 1993; Mark et al. 1999; Smith and Mark 2001; Smith and Mark 1999).

### 8.4.1 Ontological features of the referents

The pioneering work by Mark and colleagues was inspired by the extensive literature on the categorization of subgeographic entities, especially the few studies that in one way or another incorporated the geographic domain (e.g., Battig and

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**Table 59. Hierarchy of nouns based on the what- and where-marking.**

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Language code</th>
<th>Language code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>arw.</td>
<td>mrq.</td>
</tr>
<tr>
<td>proper names of people</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>pronouns</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>noun denoting animate beings</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>object-denoting noun</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>part-denoting noun (of objects)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>part-denoting noun (of landscape features)</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>structure-denoting noun</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>landscape-denoting noun (small features)</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>landscape-denoting noun (large features)</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>place name</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>configurational noun</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

---

311
Montague 1968; Lloyd, Patton, and Cammack 1996; Tversky and Hemenway 1983). Smith and Mark (1999) formulated a number of theoretical assumptions about the ontological properties of geographic entities that render them distinct from entities on the subgeographic scale (Mark 1993; Mark et al. 1999; Smith and Mark 2001; 1999). This ontological polarity is argued to cause differences in the conceptualization of the two types of entities. Smith and Mark (1999) summarize their point in the following way:

> Geographical objects are not merely located in space, they are tied intrinsically to space in such a way that they inherit from space many of its structural (mereological, topological, geometrical) properties. For entities on the subgeographic scale, the ‘what’ and the ‘where’ are almost always independent. In the geographical world, by contrast, the ‘what’ and the ‘where’ seem to be much more closely intertwined.

Smith and Mark (1999:248)

Below, I provide a critical account of five key ontological properties discussed by Mark and colleagues, namely perceptual boundedness, size, location, type of boundary, and texture of boundary. The ontological properties of geographic entities proposed by Mark and colleagues allow us to contrast many geographic and subgeographic entities. The features of “ideal” subgeographic and geographic entities, according to Mark and colleagues, are given in Table 60. Below, I use these five ontological properties to describe the referents of the noun types forming the what/where cline represented in Table 58 above.

<table>
<thead>
<tr>
<th>TABLE 60. FEATURES OF IDEAL SUBGEOGRAPHIC AND GEOGRAPHIC ENTITIES.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subgeographic entities</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>Perceptually bounded</td>
</tr>
<tr>
<td>Location as accidental predication</td>
</tr>
<tr>
<td>Size as accidental predication</td>
</tr>
<tr>
<td>Bona fide boundary</td>
</tr>
<tr>
<td>Crisp boundary</td>
</tr>
</tbody>
</table>

8.4.1.1 Perceptual boundedness

Entities on the subgeographic scale can normally be viewed within a single act of perception. Even though any entity is necessarily always perceived from a particular perspective, entities on the subgeographic scale differ from geographic entities in that their outline can be perceived in its totality in one act of perception. Moreover, if need be, they can often be physically manipulated to identify all their parts (i.e. we can rotate a chair). Geographic entities often lack this property. They are often too large and too distant for their outlines to be perceived in their totality from a single angle (e.g., mountain, forest). In some cases, there may be in fact no angle whatsoever from which their outlines can be perceived in their totality (e.g., ocean, sea). Neither can geographic objects be physically manipulated (at least not without
drastic measure being taken). The perception of their outline requires a succession of vistas integrated over time into a single image. I call this property *perceptual boundedness* after Cablitz (2008). The outline of a perceptually bounded entity can be perceived in its totality from a single angle. Geographic entities are argued to be perceptually less bounded than subgeographic entities.

However, certain entities that we would intuitively consider subgeographic entities are not particularly perceptually bounded (e.g., large buildings). *Vice versa*, certain small geographic entities—the referents of some landscape terms and place names—are in fact perceptually bounded (e.g., islets, ponds, rock outcrops, gardens, fields). Moreover, the perceptual boundedness of the referents of relational terms depends on the perceptual boundedness of the whole entity. A tree top is perceptually-bounded, but a mountain top may be perceptually unbounded. The same applies to spatial regions denoted by configurational nouns; they are perceptually bounded (e.g., Lokono *tafra diako* ‘table top’) and unbounded entities (e.g., *horhorho diako* ‘landform top’), and the difference is clearly related to the type of the entity, the configuration of which is indicated. In Table 61, the referents of the nouns from the what/where cline are graded with respect to perceptual boundedness.

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Referent</th>
<th>Perceptually bounded</th>
</tr>
</thead>
<tbody>
<tr>
<td>proper names of people</td>
<td>person</td>
<td>+</td>
</tr>
<tr>
<td>pronouns</td>
<td>person, animal, object</td>
<td>+</td>
</tr>
<tr>
<td>noun-denoting animate beings</td>
<td>animate being</td>
<td>+</td>
</tr>
<tr>
<td>object-denoting noun</td>
<td>object</td>
<td>+</td>
</tr>
<tr>
<td>part-denoting noun (of object)</td>
<td>part of object</td>
<td>+</td>
</tr>
<tr>
<td>part-denoting noun (of landscape)</td>
<td>part of landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>structure-denoting noun</td>
<td>space, building</td>
<td>+/-</td>
</tr>
<tr>
<td>landscape-denoting noun (small features)</td>
<td>small landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>landscape-denoting noun (large features)</td>
<td>large landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>place name</td>
<td>place</td>
<td>+/-</td>
</tr>
<tr>
<td>configurational noun</td>
<td>spatial region</td>
<td>+/-</td>
</tr>
</tbody>
</table>

As a whole, perceptual boundedness decreases as we move from the referents of typical *what*-nouns to the referents of typical *where*-nouns. The cut-off point between perceptually bounded and unbounded entities falls between nouns denoting parts of objects, and nouns denoting parts of landscape feature, coinciding with the limits of the first type of entities recognized in the hierarchy in Table 59. Perceptual

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113 Cablitz (2008) does not provide a clear definition of *perceptual boundedness*. Mark and colleagues also limit themselves mostly to the “single act of perception” type of definition. Notice that in the literature a number of partly overlapping terms are in use (cf. Downs and Stea 1977; Montello 1993).
boundedness is therefore a possible ontological feature underlying the what/where cline. Of the three languages, it describes particularly well the distribution of nouns in the Lokono data set, in which the cut-off point falls between nouns denoting parts of objects and parts of landscape features.

8.4.1.2 Location as accidental/categorial predication

Second, perceptual boundedness often goes together with the capability of displacement. Therefore for entities of the subgeographic scale, location is not a defining feature. For such entities, location is a case of accidental predication in Mark et al.’s (1999) terms. The identity of such moveable entities as cat or chair does not depend on their location; a chair remains a chair irrespective of its location, orientation, or position. In the geographic domain, on the other hand, location may be a defining feature. A lagoon is an entity in contact with sea or ocean, not in contact with a lake—that is, a case of categorial predication. A cliff, at least in its non-technical use, is associated with the edge of the sea; an island is an elevation surrounded by water, not an elevation on land. Ideal geographic entities are thus immoveable and location can be their defining feature. However, the meanings of landscape features in the three languages do not seem to be sensitive to location. A good example is the Lokono term horhorho discussed above (chapter 4), which can refer to any type of landform irrespective of its location (i.e. including landforms surrounded by water). The precise semantics of landscape terms in the three languages should, however, be investigated on a case-by-case basis. In the absence of the evidence to the contrary, I assume that location is not a defining feature of landscape terms in the three languages. Location is, however, a central part of the meaning of place names—the proper names of landscape features. The knowledge of what Amsterdam is includes its (at least relative) location, as opposed to the concept city. This contrasts with entities such as Willem-Alexander and man; the change from proper to generic does not involve a change from location as categorial predication to location as accidental predication in the domain of nouns denoting animate beings and objects. Location in a relative, not absolute sense is also at least a secondary defining feature for part terms in most languages. Body parts come with a predefined holistic distribution within an organism. Finally, location is the defining feature of spatial regions—the referents of configurational nouns.

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114 This should not be confused with the fact that the same artifact can be categorized differently because of its function. Whether an entity is categorized as a pot or a bowl may depend on whether it is in the garden with a plant in it or in the kitchen containing fruit. However, a bowl with fruit in a garden is still a bowl.

115 This is not the case in all languages. In Zapotec, for instance, the vertical dimension determines the naming of the parts. If an object is turned upside down its bottom is reanalyzed as its top (MacLaury 1989; quoted in Levinson 2003).

116 Moreover, sandbanks and cays (low banks of reef or coral) can move and grow. It is, however, unclear to me whether a sandbank that has moved is considered the same sandbank—a shadow of doubt that goes back to Heraclitus’ idea of Pantha rhei ‘everything flows’ (Peters 1967). If so, such cases have to be considered intermediate with respect to the property location.
the referents of the nouns from the *what/where* cline are graded with respect to location as accidental predication.

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Referent</th>
<th>Location as accidental predication</th>
</tr>
</thead>
<tbody>
<tr>
<td>proper names of people</td>
<td>person</td>
<td>+</td>
</tr>
<tr>
<td>pronouns</td>
<td>person, animal, object</td>
<td>+</td>
</tr>
<tr>
<td>nouns denoting beings</td>
<td>animate being</td>
<td>+</td>
</tr>
<tr>
<td>object-denoting nouns</td>
<td>object</td>
<td>+</td>
</tr>
<tr>
<td>part-denoting nouns (of object)</td>
<td>part of object</td>
<td>−</td>
</tr>
<tr>
<td>part-denoting nouns (of landscape)</td>
<td>part of landscape feature</td>
<td>−</td>
</tr>
<tr>
<td>structure-denoting noun</td>
<td>space, building</td>
<td>+</td>
</tr>
<tr>
<td>landscape-denoting nouns (small features)</td>
<td>small landscape feature</td>
<td>+</td>
</tr>
<tr>
<td>landscape-denoting noun (large features)</td>
<td>large landscape feature</td>
<td>+</td>
</tr>
<tr>
<td>place name</td>
<td>place</td>
<td>−</td>
</tr>
<tr>
<td>configurational noun</td>
<td>spatial region</td>
<td>−</td>
</tr>
</tbody>
</table>

Location as accidental predication fails to account for the observed grammatical pattern as a whole. Part-denoting nouns, for which location is at least a secondary defining feature, are more likely to be encoded by *what*-nouns than terms for structures, for which location is clearly not a defining feature. However, it is worth noting that terms for which location is clearly a defining feature (i.e. place names and configurational nouns) are typically *where*-marked. The parameter may also account for the specific shifts between the two categories—namely, the case of nouns that function as relational nouns when *what*-marked, and as configurational nouns when *where*-marked (e.g., Lokono *shibo* ‘face, in front’). Relational nouns—that is, part denoting nouns—share with configurational nouns the property of being defined by their (relative) location. It is likely this property of relational nouns that predisposes them to functioning as configurational nouns in the intrinsic frame of reference. Such patterns are cross-linguistically very common (e.g., Heine, Claudi, and Hünnemeyer 1991).

### 8.4.1.3 Size as accidental/categorial predication

Analogically, size is an accidental predication for subgeographic entities. The size of a cat changes throughout its life, which does not affect its identity as a cat. Hence, subgeographic entities may change location and size. “Ideal” geographic entities, on the other hand, do not grow, at least normally not at a speed observable to the human eye. Therefore, size can function as their defining feature or, in Mark et al.’s (1999) words, as *categorial predication*.

Compare the following pairs in English: *bay-*
Cove, sea-ocean, hill-mountain, creek-river, hamlet-village in which size is crucial to the definition of the terms. However, size can function at least as a secondary defining feature for subgeographic entities as well. Entities such as pony ‘a horse of a small breed’ are an example thereof (Stevenson 2010). Moreover, diminutive and augmentative terms for subgeographic entities are regularly found in languages, for instance, Dutch terms such as tafeltje ‘little table’ and tafel ‘table’. In Table 63, the referents of the nouns from the what/where cline are graded with respect to size as accidental predication.

Table 63.
SIZE AS ACCIDENTAL PREDICATION.

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Referent</th>
<th>Size as accidental predication</th>
</tr>
</thead>
<tbody>
<tr>
<td>proper names of people</td>
<td>person</td>
<td>+</td>
</tr>
<tr>
<td>pronouns</td>
<td>person, animal, object</td>
<td>+</td>
</tr>
<tr>
<td>animate-denoting noun</td>
<td>animate being</td>
<td>+</td>
</tr>
<tr>
<td>object-denoting noun</td>
<td>object</td>
<td>+</td>
</tr>
<tr>
<td>part-denoting noun (of object)</td>
<td>part of object</td>
<td>+</td>
</tr>
<tr>
<td>part-denoting noun (of landscape)</td>
<td>part of landscape feature</td>
<td>+</td>
</tr>
<tr>
<td>structure-denoting noun</td>
<td>structure</td>
<td>+</td>
</tr>
<tr>
<td>landscape-denoting noun (small features)</td>
<td>small landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>landscape-denoting noun (large features)</td>
<td>large landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>place name</td>
<td>place</td>
<td>+</td>
</tr>
<tr>
<td>configurational noun</td>
<td>spatial region</td>
<td>+</td>
</tr>
</tbody>
</table>

Size as an accidental predication does not account for the observed grammatical pattern as a whole. Nevertheless, it is worth noting that Cablitz (2008) argued that in Marquesan terms for geographic entities that are smaller are what-marked (e.g., papua ‘garden’, mata’ae ‘cape’, ava ‘passage’, opata ‘cliffs’, tahuna ‘gravel beach’). Terms for larger geographic entities are where-marked (e.g., vao ‘bush, interior of island’ or moana ‘far out at sea’). Although size accounts for only a small subset of the Marquesan data, it still may be of some importance to future research. Size as an accidental or categorial predication may be an important property for geographic entities only. However, different languages can encode it in different ways. Languages such as English have mostly lexicalized the differences between geographic entities of different sizes (e.g., creek–river and hill–mountain). Similarly in Lokono size is directly or indirectly encoded by certain pairs of terms such as: oni ‘river’ and onikhan ‘creek’ (moving water features), barhā ‘sea’ and kiraha ‘pond’ (water bodies), thoyoshikwa ‘city’ and shikwahu ‘village’, bunaha ‘permanent path (large)’, sorhi ‘temporary path (small)’, as well as by the opposition between konoko ‘forest’ and karhow ‘savanna’, on the one hand, and the wkili- and wkaro-terms for natural geographic objects such as lagoon or beach, but for fiat objects (see below) location is part of the definition—that is, France is defined by its boundaries.
ecotopic patches, on the other hand. Languages such as Marquesan, on the other hand, may use the what/where distinction to bring out the same semantic differences (e.g., motu LAVA - rock - motu ISLAND and ka’ava RIVER - ka’ava VALLEY). Size is therefore not a property that distinguishes what-entities from where-entities per se, but a property that may play a role the domain of landscape terms.

8.4.1.4 Type of boundary

Another important difference between geographic and subgeographic entities is the type of boundary that delimits their extent. Entities on the subgeographic scale have bona fide boundaries—that is, boundaries that correspond to “genuine discontinuities in the world” (Smith and Varzi 2000; Smith 2001). It is a fact of life, for instance, that the table finishes where the floor starts. On the other hand, many geographic entities are demarcated by fiat boundaries—that is, boundaries that are imposed solely by human cognitive processes, including customs and law in the case of settlements and countries. Mountains are clearly delimited by their summits and ridges but their lower parts do not have a clear edge. It is a matter of human cognition to impose the boundary between the mountain and the rest of the landmass. Fiat boundaries exist also on the subgeographic scale, for instance, in the domain of animal and human body parts. The dividing lines between different body parts are for the most part not bona fide boundaries. There is no bona fide dividing line between arm and shoulder, but our cognition does impose one. The key role that cognition plays here is reflected in the fact that cross-linguistically the body is partitioned into language-specific body part systems (Majid, Enfield, and van Staden 2006). Cultural practices can be of importance too—think of the precision with which Koreans distinguish almost 120 different cuts of beef. Furthermore, some human made geographic entities (e.g., fields, gardens), water bodies (e.g., lakes, ponds, rivers) and landforms bordering on such bodies (e.g., islands) can be thought of as having bona fide boundaries (at least at a given moment in time corresponding to a given water height in the case of hydrological entities). Spatial regions may have both fiat boundaries of the fuzzy type (e.g., the end of tafra diako ‘table top’ and the beginning of tafra rhebo ‘table edge’). In Table 64, the referents of the nouns from the what/where cline are graded with respect to type of boundary.
TABLE 64. TYPE OF BOUNDARY.

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Referent</th>
<th>Bona fide boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>proper names of people</td>
<td>person</td>
<td>+</td>
</tr>
<tr>
<td>pronouns</td>
<td>person, animal, object</td>
<td>+</td>
</tr>
<tr>
<td>animate-denoting noun</td>
<td>animate being</td>
<td>+</td>
</tr>
<tr>
<td>object-denoting noun</td>
<td>object</td>
<td>+</td>
</tr>
<tr>
<td>part-denoting noun (of object)</td>
<td>part of object</td>
<td>+/-</td>
</tr>
<tr>
<td>part-denoting noun (of landscape)</td>
<td>part of landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>structure-denoting noun</td>
<td>room, space, building</td>
<td>+</td>
</tr>
<tr>
<td>landscape-denoting noun (small features)</td>
<td>small landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>landscape-denoting noun (large features)</td>
<td>large landscape feature</td>
<td>+/-</td>
</tr>
<tr>
<td>place name</td>
<td>place</td>
<td>+/-</td>
</tr>
<tr>
<td>configurational noun</td>
<td>spatial region</td>
<td>+/-</td>
</tr>
</tbody>
</table>

It can be observed that entities with bona fide boundaries are encoded by typical what-nouns (person-, animal-, and object-denoting nouns). What-nouns, however, typically also include relational terms denoting parts of entities; such parts typically have fiat boundaries as well. The parameter also fails to account for terms for structures, which typically also have bona fide boundaries, but are more commonly encoded by what-nouns than part terms. The type of boundary therefore does not account neatly for the observed grammatical pattern.

8.4.1.5 Texture of boundary

Boundaries of geographic entities can be fuzzy as opposed to usually crisp boundaries of entities on the subgeographic scale, such as objects. Swamps and vegetation patches, for instance, do not have crisp boundaries; they tend to blend into one another, often creating transition areas, which in turn can be recognized as separate entities (see also the notion of ecotone in Johnson and Hunn 2012b). In the domain of subgeographic entities, such transition zones are rare. Structures typically also do not have fuzzy boundaries. In Table 65, the referents of the nouns from the what/where cline are graded with respect to texture of boundary.
In general, it can be observed that entities with crisp boundaries are encoded by what-nouns (person-, animal-, and object-denoting nouns), while entities with fuzzy or partially fuzzy boundaries are encoded by where-nouns (i.e. place- and landscape-denoting nouns). As a whole, crisp boundaries become less typical as we move from the referents of what-nouns to the referents of where-nouns. Texture of boundary therefore is a possible ontological feature underlying the what/where cline. More specifically, it may account for the specific cut-off point in Makalero, where landscape terms and place names are the only nouns that combine with the where-marking.

### 8.5 Conclusions

In this chapter, I have investigated the what/where distinction from a comparative perspective. Despite the small sample size, parallelisms between the three languages are conspicuous. The distinction manifests itself in the location and goal directionality, but not in the source directionality. All three languages conflate the two directionalities, therefore it is impossible to tease apart which of the two is more sensitive to the distinction. A larger sample may shed light on this question. Interestingly too, formally what-nouns are always less marked than where-nouns when functioning as Grounds in spatial descriptions. This comparative evidence supports the idea discussed in chapter 7 the what- and where-marking may be a grammaticalized reflection of the Figure/Ground disparity. Most importantly, the distribution of nouns between the two categories, the what-nouns and the where-nouns, is far from accidental. By comparing the three cases, I have arrived at a preliminary cline of nouns, illustrating the likelihood of a noun being classified as a what- or where-noun. Six different types of nouns can be distinguished on the cline, based on the observed splits in the three languages, forming a preliminary implicational hierarchy. As expected, since languages have only two categories at

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Referent</th>
<th>Crisp boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>proper names of people</td>
<td>person</td>
<td>+</td>
</tr>
<tr>
<td>pronouns</td>
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</tr>
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<td>place name</td>
<td>place</td>
<td>+/-</td>
</tr>
<tr>
<td>configurational noun</td>
<td>spatial region</td>
<td>+/-</td>
</tr>
</tbody>
</table>
their disposal, the cut-off point between them is language specific; in each of the cases, the what- and where-category boast a different membership.

In this chapter I looked specifically at the possible dimensions underlying the observed distribution of nouns along the cline. Since where-nouns typically include terms for geographic entities (i.e. generic landscape terms and proper place names), I have scrutinized the ontological properties of noun types identified on the cline through the prism of the theory of ontological properties of subgeographic and geographic entities. By comparing the distribution of the ontological properties of the referents with the distribution of the terms encoding them, I investigated which ontological properties of entities may be relevant to the what/where distinction. In other words, which ontological properties of entities may be grammaticalized by the what/where type of noun categorization. None of the parameters accounts perfectly for the observed distribution in the three languages; which is not a surprising fact considering that each parameter was treated here as a binary feature (and there are three languages, each with a different distribution of nouns). Type of boundary turned out to be particularly misaligned with the what/where distinction in the three languages. Perceptual boundedness and texture of boundary, however, appear to be the only two parameters that change monotonically as one moves from the referents of what-nouns to those of where-nouns. Moreover, the former property can account fairly well for the Lokono type of split, while the latter for the Makalero system. Location as accidental or categorial predication, however, provides us with an interesting motivation for the observed shifts between the categories. The inherent semantic component of location may predispose a subset of nouns in Lokono and Makalero to function as relational nouns when what-marked, but as configurational nouns when where-marked. Size, on the other hand, turned out to be of relevance only to a subset of landscape nouns in Marquesan, a finding that nevertheless may be of importance to the study of the encoding of landscape. Some languages may encode the size of geographic entities in the lexicon (e.g., English), while other languages may resolve to encoding it on the level of grammar—that is, by using the what/where distinction (e.g., Makalero).

Interestingly, such encoding of the size of geographic entities is only possible in the directional expressions, which raises the question what is the special relation that landscape terms have with the spatial expressions in general. In chapter 7, I hypothesized that this may be a reflection of their proclivity to function as Grounds in spatial descriptions. Abstracting from the Marquesan case, in practical terms the proclivity of landscape terms to appear as Grounds in spatial expressions may have far reaching consequences for language documentation. In Lokono, for instance, many geographic terms contain configurational nouns (e.g., horhorho diako ‘landform’s top’). Such nouns are only used as objects of the verb in highly marked contexts. More naturally, such expressions are used with directionality markers, encoding the location, goal, or source. This implies that when trying to elicit Lokono geographic terms it is important to ask the right question. Phrases such as horhorho diako ‘top of landform’ are a felicitous answer only to the question Halonka no? ‘Where is it?’ but not to the question Hama to? ‘What is it?’ This should be taken into consideration when documenting landscape terms in other languages.

Related to this technical problem is the more theoretical question of what type of semantics is encoded by landscape terms and place names in different languages.
Assuming that across cultures, there is little variation in the ontological features of geographic entities, it is interesting to observe that languages treat landscape terms differently grammatically. In English one cannot say *I go Amsterdam but in Makalero, Lokono, and Marquesan this is a well-formed sentence—that is, Lokono, Makalero, and Marquesan place names can all be used as goal and locations with the same marking that appear with the interrogative where. The Makalero example Bisika’ini hai Dili translates in fact literally as ‘(he) took the bus and Dili.’ This raises the question whether the English and Makalero place names encode in fact slightly different concepts; Makalero place names appear to be inherently more “locative”. Locative is, of course, a place holder for the ontological features relevant to the what/where distinction in Makalero. This theoretical question applies of course not only to landscape terms and place names, but to all translational equivalents that are categorized differently in the languages in question. Similar debate surrounds the mass/count dichotomy and related phenomena, but the what/where distinction is not as well documented and analyzed.