Differential place marking beyond place names:

Evidence from two Amazonian languages
Abstract

Some languages display variable marking on spatial adjuncts with the same semantic role – a phenomenon known as *differential place marking* (DPM). Recent studies of DPM have established two common typological claims regarding the motivations and morphological realizations of the phenomenon: 1. DPM is primarily motivated by noun semantics, mainly opposing place names and other nouns; and 2. DPM is primarily realized as a contrast between zero-marking of place names and contentful marking of other nouns in spatial adjunct role. This paper evaluates these claims against new fieldwork data from two Indigenous languages spoken in Northwestern Amazonia: Dâw (Naduhup) and Ticuna (isolate). We demonstrate that DPM in these languages is conditioned by many factors beyond the contrast between place names and other nouns, including the perceptual and ontological properties of noun referents (i.e. size, boundedness); the morphosyntactic properties of verbs; and the semantics of verbs. We additionally argue that morphological realizations of DPM extend beyond contrasts between zero- and contentful marking. Rather, DPM in these languages is realized through alternation between markers of equal complexity, as well as through variation in the set of markers with which the adjunct can combine.

Keywords

Differential Place Marking; Language of Space; Spatial Adjuncts; Indigenous Languages; Amazonian Languages; Dâw; Ticuna

Word count (excludes title and abstract): 10,848
1. Introduction

Across languages, arguments often occur differentially marked, and the parameters that motivate this distinct marking vary enormously. For example, as Hopper and Thompson’s (1980) classic work on transitivity shows, case marking strategies can go far beyond the simple transitive-intransitive distinction, instead depending on the clause-level and discourse-level interactions of many different parameters, from participant number to aspect. Another well-known example is differential object marking, which often conditioned by animacy and definiteness (Bossong 1991; Aissen 2003).

Beyond arguments, spatial adjuncts can also display differential marking. Yet the conditioning of this “differential place marking” (Haspelmath 2019a) is still not well understood. Prior studies of differential place marking (DPM) have suggested that it is driven by semantic category: place names are zero-marked in spatial adjunct roles, while other noun phrases receive contentful marking. But besides zero-marking of place names, many other forms of DPM are also logically possible. Case alternations could contrast multiple markers, rather than zero-marking and contentful marking, and the factors conditioning DPM could extend beyond the contrast between place names and other nouns. We therefore ask: How can differential place marking be realized across languages, and what motivates its realization?

In response to these questions, we analyze the form and conditioning of differential place marking in two unrelated Indigenous languages spoken in Northwestern Amazonia: Dâw (Naduhup, Brazil) and Ticuna (isolate; Brazil, Colombia, Peru). Our analysis challenges two common claims about DPM. First, we demonstrate that DPM can be conditioned by factors beyond the contrast between place names and other nouns. These include the perceptual and ontological properties of noun referents and the morphosyntactic and semantic properties of the
verb. Second, we show that DPM is not exclusively realized by zero-marking or less complex marking of certain spatial adjuncts. Rather, DPM can also be realized by alternations between markers of equal complexity, or by variation in the set of markers with which adjuncts can combine.

The paper is structured as follows. §1 summarizes the main claims that have been made concerning DPM in the literature. §2 introduces the study languages and data sources. Next, we examine the conditioning and form of differential place marking in Dâw (§3) and Ticuna (§4). In §5 we discuss our findings in the light of prior approaches to DPM, and in §6 we conclude.

1.1. Competing accounts of DPM

We understand DPM to include all differential coding of the ground role – location, goal, or source – in predicates that express the spatial relationship between a figure and ground. This form of differential marking has been described in the literature in two ways: as reflecting a what-where distinction, or as instantiating reduced coding or zero-coding of the ground role. Analyses focused on the what-where distinction describe DPM as arising from inherent, real-world properties of the nominal referent, similar to the count-mass distinction. In contrast, analyses focused on reduced/zero-coding see DPM as arising from relatively abstract properties of the nominal lexeme. They also tend to focus on the form of marking, while analyses of the what-where distinction emphasize the conditioning of marking. In order to contextualize our analysis against other accounts of DPM, we now explore these two bodies of literature.

1.1.1. What-Where Distinction

Much as quantification distinguishes mass from count nouns, the basic locative construction distinguishes what- vs. where-nouns. A basic locative construction is defined as the
unmarked answer to a ‘where is Noun?’ question (Levinson & Wilkins 2006) and prototypically expresses the relationship between a figure, or what-noun, and a ground, or where-noun. For example, the basic locative construction *The ball is next to the house* conveys a spatial relation between the what-noun *ball* and the where-noun *house*. Locative constructions that treat prototypical where-nouns (grounds) as what-nouns (figures), such as *The house is next to the ball*, are pragmatically strange (Whorf 1945; Talmy 2000; Cablitz 2008; Rybka 2014).

In accounts of the what-where distinction, the anomalous status of these constructions is analyzed as reflecting a link between the noun’s linguistic category and the ontological properties of its real-world referent (Rybka 2014:30). Thus, prototypical figure referents are moveable, while prototypical ground referents are relatively stationary (Talmy 2000). Of course, some entities can function as both figures and grounds, depending on the scale of the spatial scene (e.g. *frog* is a more felicitous ground in small-scale descriptions like *The mosquito is next to the frog* than in large-scale ones like *The mountain is next to the frog*). Thus, Cablitz (2008) further refines the semantic parameters that can motivate the what-where distinction, showing that size and perceptual boundedness can also be central for assigning a noun to the what or where class. She demonstrates that landscape terms, landform terms, and toponyms are all treated as where-nouns in Marquesan, suggesting that larger entities (e.g. landform terms) and entities with less perceptually clear spatial boundaries (e.g. landscape terms) are also more likely to be treated as grounds.

Rybka (2014; 2015) uses the concept of categorization to analyze this influence of ontological properties on the what-where distinction. As defined by Cohen and Lefebvre (2005), categorization is an organizing mechanism that facilitates access to our knowledge of the world by assembling relevant information into classes. These classes are reflected in language-specific
linguistic features (Senft 2010:676-77), such that grammar shows the traces of various forms of categorization. Thus, on Rybka’s (2014; 2015) analysis, the what-where distinction is fundamentally similar to the count/mass distinction and other grammatical distinctions based on the ontological properties of nominal referents.

The grammatical locus of the what-where distinction consistently surfaces in the encoding of spatial roles – location, goal and source – on adjuncts (Landau and Jackendoff 1993; Cablitz 2008; Rybka 2014; Obert 2019). What-nouns and where-nouns are asymmetrically coded in these roles, suggesting that this differential marking hinges on whether a nominal referent’s ontological properties classify it as a place or an entity.

As the motivation for the differential marking of what- and where-nouns, authors emphasize role-referent association (hence, ‘role association’; Haspelmath 2019b). When what-nouns appear in ground function, they deviate from their usual semantic roles and therefore require more explicit place marking (Rybka 2014:41). In contrast, where-nouns require less marking because indicating places is their default role. While authors on the what-where distinction do discuss the form of spatial marking, they still focus more on the distinctive or contrasting status of marking than on its form. Thus, within this analytic frame, the differential marking of spatial adjuncts is relevant primarily because it may identify nouns as members of the what-class or where-class in a language.

1.1.2. Zero-coding analyses

Accounts which view DPM through the lens of zero-coding or reduced coding of spatial adjuncts, such as Stolz et al. (2014) and Haspelmath (2019a), depart from accounts based on the what-where distinction in several ways.
One notable difference between zero-coding analyses, and what-where-based analyses, appears in the motivation for asymmetric coding. Authors on the what-where distinction see real-world properties of noun referents, such as size and perceptual boundedness, as motivating the assignment of nouns to the what-class vs. where-class. On the other hand, authors in the zero-coding literature focus on more abstract properties of nouns, such as animacy and lexical category. For them, in fact, the single most important influence on a noun’s DPM behavior is its lexical category – especially its status as a place name, since place names are more likely to display zero-marking than other noun types (Stolz et al. 2017:456; Haspelmath 2019a:319).

But while zero-coding authors emphasize more abstract noun properties than authors on the what-where distinction, they still view role association as the most immediate cause of differential marking. Within this literature, the zero-marking of place names in ground function is analyzed as showing that – because of their place-denoting semantics – they frequently appear in the ground role. In contrast, human nouns require more complex marking in ground function because they infrequently appear in this role (Haspelmath 2019a:315-317).

Thus, zero-coding accounts still attribute differential marking to nouns’ prototypical (i.e. most frequent) role associations, and still view these role associations as motivated by nominal semantics. They depart from accounts based on the what-where distinction primarily in which semantic features they treat as controlling nouns’ role association. Analyses focused on zero-coding see animacy and lexical category as central, while what-where analyses emphasize more fine-grained properties like movability and boundedness.

Another key property of zero-coding analyses is their close attention to the form of place marking. While analyses based on the what-where distinction focus on the distinctness of marking between noun categories, zero-coding analyses emphasize differences in the length and
complexity of marking. This is evident from the authors’ comparisons of ground phrases formed with place names vs. with common nouns. Stolz et al. (2017:455) write that place name grounds are “less complex”; Haspelmath (2019a:317) states that they bear “shorter” marking and are less likely to appear zero-marked. Within this literature, these form comparisons are important because they support larger claims about correspondences between form length and role association (Haspelmath 2019a:331).

1.2. Scope of the accounts

Despite their differences, what-where analyses and zero-coding analyses of DPM share two key theoretical presuppositions. These presuppositions significantly limit the types of DPM which these analyses can explain.

The first key presupposition is that DPM always involves an asymmetry in complexity. Both what-where authors (Cablitz 2008; Rybka 2014) and zero-coding authors (Haspelmath 2019b) argue that asymmetric place coding arises because – due to association with semantic roles other than ground – certain nouns require more explicit or complex coding in order to function as grounds. This role association argument accounts well for forms of DPM which involve alternations between more and less complex forms of place marking: schematically, A ~ B alternations where A > B. However, it leaves both styles of analysis unable to account for forms of DPM where the alternating markers are equal in complexity, or A ~ B alternations where A = B. We show in §§3-4 that both Ticuna and Dâw display exactly the A = B type of DPM. As such, the systems of these languages call for an explanation of DPM which is not based exclusively on differential complexity.

The second presupposition in both theories is that asymmetric place coding is conditioned entirely by noun semantics. Noun semantics determine the noun’s membership in the what- vs.
where-class for what-where analyses, and determine the noun’s role association in zero-coding analyses. Class membership or role association then controls marking. Because of this shared presupposition, both what-where and zero-coding analyses are unable to account for forms of DPM that are either (a) controlled by non-semantic properties of the noun, such as word class, or (b) controlled by verbs. We show in §3 that Dâw displays DPM controlled by word class, and in §4 we further demonstrate that Ticuna has DPM controlled by verbs. These facts call for an explanation of DPM conditioning that does not rely only on role associations motivated by noun semantics.

1.3. Working definitions

Studies of DPM use widely varying terminology. In this study, we define topological relations as spatial situations in which a figure and a ground spatially coincide (e.g. The cup is on the table). We refer to proper nouns denoting places interchangeably as place names and toponyms. Following Stolz et al. (2014: 42), we refer to nouns that denote places – landscape terms, landform terms, and place names – collectively as place nouns. All other nouns, including animate nouns (cf. Stolz et al. 2014), are common nouns. We avoid the terms what-noun, where-noun, and topo-noun (Haspelmath 2019a: 322) because they do not map well onto the noun categories proposed in our analyses.

2. Language background

2.1. Dâw

Dâw (ISO-639: kwa) is a Naduhup language spoken by 142 people. Speakers live in a single community near the town of São Gabriel da Cachoeira in northwestern Brazil.
All Dâw examples are from language documentation conducted by the second author and the Waruá community. Most data comes from landscape descriptions and personal and traditional narratives. Elicited data was collected using standardized stimuli – such as space games (e.g. Ameka et al. 1999), images (e.g. Bowerman and Pederson 1992), and questionnaires – which were administered in both Dâw and Portuguese.

Most Dâw examples were contributed by Deolinda Fernandes, Jair Araújo, Mocita Araújo, Moisés Moraes de Souza, Roberto Sanches, Pedro Moraes de Souza, Maria Auxiliadora Souza and Ester Sanches. These collaborators ranged in age from 22 to ~75 years. Six were fluent in both Dâw and Portuguese; two only had passive knowledge of Portuguese. Most data is available in the Archive of the Indigenous Languages of Latin America. Other data was deposited in the archive of the Museu do Índio Rio de Janeiro (MIRJ), which is not yet open to the public. Dâw examples are displayed in a practical orthography which mirrors the IPA, with the following exceptions: /ɟ/ is written <j>; /ʔ/ <’>; /ʃ/ <s>; /h/ <r>; /ŋ/ <nh>; /ŋ/ <gn>; /j/ <y>; /ɨ/ <ʉ>; /e/ <ê>; /ɛ/ <e>; /ɤ/ <â>; /o/ <ô>; and /ɔ/ <o>. Long vowels are marked by doubling.

2.2. Ticuna

Ticuna (ISO: tca) is a language isolate spoken by 38,690 to 70,000 people (Lewis et al. 2014; ISA 2021). Most speakers live along the western course of the Amazon/Solimões River in western Brazil, southern Colombia, and northeastern Peru.

Ticuna examples in this paper are from the first author’s fieldwork in Cushillococha, Peru. Positive examples come primarily from landscape description interviews (Kita 2001). These are non-metalinguistic interviews where speakers describe the location of landmarks in their community and how the landmarks have changed over time. Negative examples and
minimal pairs come from elicitation. Landscape description interviews were conducted monolingually in Ticuna, while elicitation was conducted bilingually in Ticuna and Spanish.

Eight people, four women and four men, contributed most of the Ticuna examples. Angel Bitancourt Serra, Yaneth Candido Guerrero, Deoclesio Guerrero Gomez, and Sotil Suarez Gonzalez contributed both landscape description interviews and elicited examples. Lilia Witancort Guerrero and “ECP,” a consultant who chose to remain anonymous, contributed elicited examples only; Lucinda Gomez Cordero and Hortensia Coello Guerrero contributed landscape description interviews only. The Ticuna consultants ranged in age from 36 to 74 years and all spoke Ticuna as their sole native language. Six spoke Spanish as an L2, while two had only passive knowledge of Spanish.

All Ticuna data is publicly available in the California Language Archive (CLA). Below each example, we identify the consultant who produced the example, then cite the archival source of the example by CLA accession number and filename. Transcriptions of Ticuna use IPA, except that IPA [r] is written <r>. Numerals represent lexical tone; 5 is the highest tone.

3. Differential place marking in Dâw: between boundedness and markedness

Per §1.2, previous approaches to DPM presuppose that the phenomenon is instantiated by alternation between longer and shorter, or more and less complex, markers (A ~ B where A > B). Additionally, previous approaches also rely on dividing nouns into a small number of semantic classes – humans, inanimate common nouns, place-denoting nouns, and toponyms (Haspelmath 2019a:323).

DPM in Dâw challenges both of these assumptions. In this language, DPM is realized mostly by alternation in the combinatorial possibilities available to nouns. It does not involve
Differential place marking beyond place names

The alternation between markers which differ in length or morphological complexity. Further, DPM in Dâw also partitions the nominal lexicon more finely than imagined by previous approaches.

The Dâw examples in (1) - (4) provide initial evidence for the generalization that DPM does not always involve differences in the length of marking. These examples include one noun from each of the four semantic classes proposed as conditioning DPM in Haspelmath (2019a).

They show that adjuncts in all four classes are realized as postpositional phrases, marked with distinct locative postpositions.

(1) abug 'yànmxu' [tir pej]ground nēed pun' mār and.then jaguar 3SG next.to come IPFV REP

‘And then, the jaguar came close to him [human noun].’

(DFS, ailla:254700, 20130725_historia_onca_paje_DFS.wav, 00:00 – 00:45)

(2) tir ka’ mār [yeg ked]ground 3SG lie.in.hammock REP hammock in

‘He was lying in the hammock [inanimate noun], they say.’

(MS, ailla:254700, 20130724_historia_McS.wav, 4:30 – 4:46)

(3) dâw tee rū’ [xeew wâ’]ground person child play beach on

‘The children are playing on the beach [landform term].’

(DFS, field notes, 2016/07/05, p.34)

(4) 'aa' nēed dōo’ [baal’ rid]ground ANPH come AUX:source Manaus LOC

‘He came yesterday from Manaus [place name].’

(MFM, ailla:254700, 20130723_historia_MFM.wav, 6:50-7:30)

The locative adjuncts in (1) - (3) involve human (1), inanimate (2), and place-denoting nouns (3). Respectively, they are headed by the configurational postpositions pej ‘next to,’ ked ‘in,’ and wā ‘on.’ In contrast, the adjunct in (4) contains a toponym and is headed by the generic locative postposition rid.

As we discuss in more detail below, the postpositions heading these adjuncts differ in meaning and with respect to the types of arguments they select. The alternations between the
postpositions therefore represent a form of DPM. Yet all postpositions involved in these alternations are monosyllabic and monomorphemic. This pattern expands the assumption that DPM always involves differences in the length of marking (Creissels 2009; Stolz et al. 2014, 2017; Haspelmath 2019a).

Exceptions to the pattern of marking with postpositions in (1) - (4) do exist. Three Dâw landscape terms can occur zero-marked as spatial adjuncts: *xaay* ‘forest’ (shown in 5), *tuu* ‘ground,’ and *pox* ‘sky.’ This indicates a first division among place-denoting nouns – nouns which require postpositions, such as ‘beach’ in (3), contrast with nouns which allow zero-marking, such as ‘forest’ in (5).

(5)  
{id} ton-êè   [embedding] *xaay* ground  id-êj rîot
  1PL  give.birth-PST  forest  1PL-BEN  far

‘Far away, we gave birth in the forest [landscape term].’

(MFM, ailla:254700, 20130723_historia_MFM.wav, 0:40-1:10)

Thus, Dâw shows three place-marking strategies: configurational postpositions (1 - (3), the generic locative marker *rid* (4), and zero-marking (5). Below, we will see that two properties of the nominal referent control the alternation between these strategies: perceptual boundedness and size.

Perceptual boundedness is defined by a referent’s intrinsic perceptual properties. First-order entities – three-dimensional, self-moving or manipulable entities, like humans, animals, or prototypical objects (e.g. baskets) – show clear perceptual boundaries (Lyons 1977). In contrast, place nouns, including landscape or landform terms such as forest and sky, usually lack such boundaries (Smith and Mark 1999; Cablitz 2008). Furthermore, some geographic formations, such as ponds, cliffs, and lakes, occupy an intermediate position between these poles. They have clear perceptual boundaries, but are not manipulable.
DPM in Dâw displays a correlation between perceptual boundedness and markedness: referents which are larger and less perceptually bounded have more restricted marking possibilities. Common nouns (those denoting smaller objects, with clear perceptual boundaries) can be marked through a variety of configurational postpositions. Landscape terms denoting larger but bounded referents are incompatible with most of these postpositions, instead allowing only one configurational postposition each. Only landscape terms that lack perceptual boundaries at all (e.g. sky) can occur zero-marked. Toponyms occupy a special place within this continuum. Though landform terms, such as nâax ‘river,’ can combine with postpositions, toponyms – even toponyms formed with landform terms, such as wâan nâax ‘Curicurari river’ – combine only with rid.

3.1. Nouns that combine with configurational postpositions

Dâw displays 14 spatial postpositions. They mark common nouns and some place nouns in spatial adjunct function. Semantically, they express configurational relations between the figure and ground, equivalent to English prepositions such as on, in, under, at, and below. In this section, we explore the properties which make nouns compatible with spatial postpositions, examining how size and degree of boundedness influence this compatibility.

Recall from §3 above that first-order entities (human and object-denoting nouns) usually show clear perceptual boundaries. In line with this, figures can participate in a range of spatial relations with first-order entity grounds. For example, consider the inanimate noun yeg ‘hammock.’ Figures can participate in a variety of spatial relations with specific parts of this ground, such as containment (6); attachment (7); and non-contiguity (8). Each relation is marked with a configurational postposition.

(6) Lucian xutu dôô’ [yeg ked] ground
    Luciana go.down AUX:source hammock in
‘Luciana gets off the hammock [inanimate noun].’
Lit.: ‘Luciana goes down from inside the hammock.’
(SFS, field notes, 2017/07/03, p.78)

(7) yeg tit đâk [yeg rêd]\textsubscript{ground}
hammock string be.attached hammock in.adhesion
‘The hammock string is attached to the hammock [inanimate noun].’
(SFS, field notes, 2016/07/28, p.50)

(8) dâw tee pêem [yeg buut]\textsubscript{ground}
dâw.people child sit hammock under
‘The child is sitting under the hammock [inanimate noun].’
(SFS, field notes, 2017/07/03, p.62)

(6) - (8) point to a first correlation between boundedness and markedness. First-order entities – which have clear perceptual boundaries and extension in space – have very extensive combinatorial possibilities, potentially combining with any spatial postposition in Dâw.

At the same time, some geographic entities, such as islands, ponds, and mountains, have fairly perceptible boundaries. Dâw nouns denoting these referents can also combine with configurational postpositions. However, their combinatorial possibilities are restricted, usually to just one postposition that expresses the default spatial relationship between a figure and the relevant geographic entity. Manmade landscape terms – such as taaw ‘town,’ kaaw ‘manioc garden,’ and xam ‘soccer field’ – provide a prominent example of this restriction. All of these landscape terms appear as complements of the postposition wâ ‘on,’ as illustrated by (9).

(9) [taaw wâ\textsuperscript{'}]\textsubscript{ground} daad téen rid-i’
town on write now 3PL-FOC
‘Now they are studying in the town (São Gabriel da Cachoeira) [landscape term].’
(NMS, ailla:254700, 20130725_narrativa_NMS.wav, 3:40-3:55)

In the topographic context of Northwestern Amazonia, towns, gardens, and fields can be understood as clearings within the dense tree cover of the rainforest, and their boundaries are clearly perceptible to Dâw speakers. At the same time, these landforms typically show large
extensions in space -- much larger than human referents or objects. This restricts the possible spatial relations between a figure and these grounds.

Like manmade landscapes, islands and river beaches also show clear perceptual boundaries delimited by water. As a result, figures are usually understood to be *wâ’* ‘on’ these places, as illustrated in (10).

(10) id nôx yêt-êe’ merecêe merecêe taa, [xeew wâ’]ground
1PL fall lie.down-PST Mercês Mercês in.front beach on
‘We arrived in front of (the city of) Mercês, at the beach [landscape term].’
(JA, MIRJ, daw_28122017_ko_01.wav, 0:20-0:42)

Likewise, bodies of water – such as rivers, creeks and lakes – are bounded in space by their banks and edges. Nouns denoting bodies of water are thus typically complements of the aquatic postposition *mîi’* ‘in liquid/at a waterway,’ as shown in (11). This postposition does not express configuration, but instead classifies the ground as a liquid.

(11) id bax mûg [nâax pôog mîi’)ground
1PL emerge here water big in.liquid
‘We emerged here in this river [landform term].’
(JXX, ailla:254700, 20130725_narrativo_antigos_JXX.wav)

In sum, for nouns compatible with at least some postpositions, DPM is controlled by ontological properties of the nominal referent, primarily size and boundedness. It is ‘differential’ in that nouns differ in their combinatorial possibilities – how many different postpositions they may combine with – and **not** in that nouns differ in the length or complexity or marking.

Furthermore, while properties of the nominal referent clearly impact DPM, animacy (treated as important to DPM by Haspelmath 2019a:323) does not. Humans and other animate referents pattern together with inanimates, reflecting their shared status as first-order entities.
3.2. Nouns that combine with the locative marker rid

Besides the configurational postpositions, Dâw also displays a generic locative marker rid. This item can mark all place nouns functioning as spatial adjuncts, but does not mark common nouns in this position. Thus, compatibility with rid is the most notable morphosyntactic cut-off point between common nouns and place nouns in Dâw.

The generic locative rid is ‘generic’ because it can mark all three spatial roles on place nouns: location in static spatial scenes (12) and goal (13) or source (14) in motion events. As this range of readings indicates, rid lacks any configurational meaning.

(12) Maria nii [nũ' 'mãay nĩr xoot rid]ground
    Maria be.located other [be.located place] LOC
    Maria be.located other community LOC
    ‘Maria is in another community [landform term].’
    (DFS, field notes, 2016/07/05, p.35)

(13) abug rid rām yoow mār [pox rid]ground
    and.then 3PL go PROG RPT sky LOC
    ‘Then they were going away upwards.’
    (McS, ailla:254700, 20130724_historia_McS.wav, 3:30-3:55)

(14) ‘aa’ nēed dōo’ [baal’ rid]ground
    ANPH come AUX:source Manaus LOC
    ‘She came from Manaus [place name].’
    (PM, field notes 2017/07/15, p.13)

    All place nouns – whether landscape terms, landform terms, toponyms or spatial adverbs – are compatible with rid. In contrast, object and human nouns are not compatible with the marker for any spatial role. (15) illustrates this for the role of location; goal and source behave the same.

(15) *tir ka’ mār [yeg rid]ground
    3SG lie.in.hammock RPT hammock LOC
    Intended meaning: [She is lying in the hammock [inanimate noun].]
    (SFS, field notes, 2017/07/03, p.79)
Nouns that are compatible with the generic locative rid function as grounds per se, since they are permanently anchored in space. Furthermore, their specific ontological properties – lesser perceptual boundedness, larger size, less crisp spatial boundaries, and immobility – all imply that these nouns function more readily as grounds (Talmy 1983; Rybka 2015).

Many landscape and landform terms can combine either with (one) spatial postposition or with the generic locative marker, as exemplified in (16). This interchangeability does not alter the spatial relationship that holds between figure and ground. However, the alternation between configurational postpositions and the generic locative marker again seems to be conditioned by the perceptual properties of the place noun. Landscape and landform terms that denote referents with clearer perceptual boundaries, such as kaaw ‘manioc garden,’ mõr ‘pond,’ and paas ‘mountain,’ are preferentially marked with spatial postpositions. In contrast, landscape and landform terms that denote referents with less clear perceptual boundaries and larger size – such as xaay ‘forest’ and pox ‘sky’ – allow only marking with rid or zero-marking (cf. §3.3).

(16) tǒonh ‘wǐinh tir [kaaw wâ]ground / [kaaw rid]ground yôr
Tǒonh work 3SG [manioc.garden on] / [manioc.garden LOC] today
‘Tǒonh (person’s name) is working in [✓ configurational postposition / ✓ rid] her manioc garden today.’
(DFS, field notes, 2018/06/28, p.3)

(17) ār ‘wǐinh-êe’ [xaay rid]ground
1SG work-PST forest LOC
‘I worked (far away) in [rid] the middle of the forest.’
(DFS, field notes, 2018/06/28, p.3)

Dâw also exhibits a small class of nouns that represent homophonous substance/landform pairs, including nāax ‘water/river,’ çax ‘earth/territory,’ paas ‘stone/mountain,’ and xeew ‘sand/beach’ (Obert 2019). When these nouns denote a substance, they are marked with a postposition, as in (18), but when they denote a landform, they bear the generic locative marker rid, as in (19). Thus, for this specific class of nouns, DPM is meaningful – it contributes to the
semantic disambiguation of grounds in locative constructions. The DPM behavior of the substance/landform pairs also shows that Dâw does morphosyntactically differentiate between object/substance/human nouns and place nouns.

(18) bok nôox xêtə [xeew xaax]ground pot fall descend sand between ‘The pot falls in the sand.’ (DFS, field notes, 2018/06/29, p.10)

(19) tir nẽed dô’ [xeew rid]ground 3SG come AUX:source beach LOC ‘He is returning from the beach.’ (DFS, field notes, 2018/06/29, p.10)

Cross-linguistically, toponyms occupy a unique position in DPM (Creissels 2009; Stolz et al. 2014, 2017; Haspelmath 2019a). In Dâw, toponyms generally occur with the generic locative marker rid (20). The exception is toponyms for bodies of water, which are frequently marked with the aquatic postposition mĩi’ ‘in water/at a waterway’ (21).

(20) ‘aa’ nẽed dô’ [baal’ rid]ground ANPH come AUX:source Manaus LOC ‘He came yesterday from Manaus.’ (MFM, ailla:254700, 20130723_historia_MFM.wav, 6:50-7:30)

(21) ['liw’ mĩi']ground mãay çeeb pee bug dâw ëe’ kariwa.creek in.liquid not.be change.place go.upriver there dâw.people DUB ‘Wasn’t it at the Kariwa creek that the Dâw moved upriver?’ (CMM, MIRJ, daw_22112017_ko.wav, 0:40-1:10)

Comparing toponyms to their corresponding landscape or landform terms – as in Solimões River vs. river – reveals a syntactic contrast. (22) shows that a locative adjunct headed by a toponym, Tumbil ‘Tumbira community,’ is marked with the generic locative marker rid. In contrast, (23) shows that the corresponding landscape term nĩr xoot ‘community’ is marked with the postposition wâ’ ‘on’.

(22) yôr id nẽed raay [tumbil rid]ground today 1PL come whatchmacallit Tumbira LOC
‘Today we arrived at this Tumbira (community).’
(JA, MIRJ, daw_28122017_ko_03.wav, 0:00-0:40)

(23) tên id nĩi ’mũg [nĩr xoot wâ’]ground
now 1PL be.located here community on
‘Now we are here in the community.’
(DFS, field notes, 2018/06/29, p.10)

This suggests that the ontological properties of toponyms are not the only factors responsible for their DPM behavior – since the toponym in (22) and the landscape term in (23) have similar conceptual properties, but show distinct marking. Rather, it is word class that restricts toponyms to combining with the generic locative marker rid, while landform terms can be marked with either a configurational postposition or rid.

In sum, DPM in Dâw primarily affects nouns’ compatibility with the generic locative marker rid. Real-world properties of the nominal referent seem to influence compatibility with this marker. Nouns that denote places with larger size and less clear perceptual boundaries may combine with rid, while common nouns (animate and inanimate) cannot. These observations illustrate that, in line with the DPM literature, Dâw place nouns receive different spatial marking than common nouns.

At the same time, these findings also represent counter-evidence to several ideas prominent in research on DPM. Most generally, they run counter to the assumption that DPM always involves asymmetries in the length of marking (Haspelmath 2019a:331), as DPM in Dâw is not realized by shorter marking, but by different marking of place nouns. At a more specific level, our findings challenge the claim that place nouns always receive shorter marking than common nouns in situations of asymmetrical place encoding (Creissels 2009, Haspelmath 2019:319). Likewise, the absence of zero-marking on toponyms is inconsistent with Stolz and
colleagues’ (2014:291) prediction that whenever a language displays zero-marking of place, that zero-marking will apply to toponyms.

### 3.3. Nouns that display zero-marking

Differential place marking in Dâw can also involve zero-marking. Zero-marking applies only to four landscape terms: *xaay* ‘forest’, *pox* ‘sky’, *tuu* ‘ground’, and *xoot* ‘place.’ All four nouns denote large referents which lack clear perceptual boundaries. As with the landform terms in §3.2, these properties prevent the nouns from combining with a configurational postposition. But in contrast to the landscape terms, these four nouns predominantly occur zero-marked in our corpus. They also allow, but do not require, marking with *rid* (24, 25).

(24) `abʉg id nĩi därãam 'mʉg [woor xoot] ✓(rid)`

and.then 1PL be.located CONT here Tukano.person place LOC

‘And now we will stay here at the Tukanoan’s place.’

(JA, MIRJ, daw_28122017_ko_03.wav, 0:20-0:54)

(25) `abʉg xut buy yêt mār āay-ũuy’ [tuu] ✓(rid)`

and.then man knock.down lie.on.ground REP woman-OBJ ground LOC

‘And then, they say, the man knocked the woman down on the ground.’

(DFS, ailla:254700, 20130725_historia_onca_paje_DFS.wav, 3:00-3:20)

### 3.4. Interim summary

DPM in Dâw is motivated primarily by the ontological properties of noun referents. Evidence for this claim comes from nouns’ varying combinatorial possibilities with configurational postpositions vs. the generic locative marker vs. zero-marking. As summarized in Figure 1, the cut-off point between common nouns and place nouns in the DPM system of Dâw is compatibility with the generic locative marker *rid*. While human and object nouns are not compatible with *rid*, all nouns denoting places can combine with it. We can thus observe a
relation between boundedness and markedness: the larger an entity is and the less perceptible its boundaries are, the more restricted are the marking possibilities of the noun which denotes it.

Furthermore, DPM gains semantic significance in contexts where marking can alternate between postposition and *rid* marking, as we have seen for the substance-landform pairs above. In these cases, change in marking leads to systematic changes in interpretation of the noun: more generic marking with *rid* supports a landform reading of the noun, while postpositional marking leads to a substance reading.

Figure 1. Combinatorial possibilities for place marking of each category of nouns in Dâw.

On the one hand, as Figure 1 shows, all types of place nouns in Dâw pattern together in one way: they are compatible with the generic locative marker *rid*. Because this aspect of the system divides place nouns from all other nouns, it supports the core claims of role association theories.
On the other hand, different classes of place nouns pattern apart in their compatibility with zero-marking and configurational postpositions, and this split is not simply conditioned by status as a toponym. These properties are inconsistent with role association theories, which treat the class of place nouns – except for toponyms – as homogeneous (Haspelmath 2019a: 322-324). Similarly, while the marking of place nouns with rid is different from the marking of human and object nouns, it is not less morphologically complex or shorter. This is also inconsistent with the role-association assumption (§1.2) that DPM always involves oppositions between more and less complex marking.

Last, while our Dâw findings are not fully consistent with role association theories, they do support these theories’ premise that DPM is motivated primarily by noun semantics. This contrasts sharply with the DPM system of Ticuna, which we discuss next.

4. Not all differential place marking is controlled by noun properties

While role association theories suggest that DPM is conditioned entirely by properties of the noun, this is not the case in Ticuna. Instead, in this language, DPM is controlled primarily by morphosyntactic and semantic properties of the verb. Verb-controlled DPM in Ticuna shows that a cross-linguistically adequate account of DPM cannot rely entirely on semantic or morphosyntactic properties of nouns. Rather, DPM is sensitive to both properties of the place-marked constituent and properties of the clause which contains that constituent.

We discuss three forms of verb-controlled DPM in Ticuna: DPM controlled by the verb’s conjugation class; DPM controlled by the verb’s lexical aspect; and DPM controlled by the verb’s transitivity.
4.1. Differential place marking is not controlled by nouns

As context for our discussion of verb-controlled DPM, we first provide background on the general system of place marking in Ticuna. When Ticuna nouns appear as adjuncts, they always combine with either the allative case enclitic =wa⁵ or the locative case enclitic =gu². (We label =wa⁵ as ‘allative’ and =gu² as ‘locative’ because of the case markers’ distribution in intransitive motion clauses, discussed in §4.4. The names should not be taken as claims about the markers’ meaning or distribution in any other type of clause.)

The same requirement for overt case marking with either =wa⁵ or =gu² applies equally to all spatial adjuncts. It does not distinguish between the roles of location (26), goal (27, 28), and source (29); nor does the requirement for case marking distinguish between place names (26), other place nouns (27), common nouns (28, 29), and human nouns (29).

(26) ma³r [Kiʔtʃi³tu⁵wa⁵]ground ta⁴ne²?ma⁴
      ma³r³ Kiʔtʃi⁴tu⁴=wa⁵ ta⁴=ne²?ma⁴
PVF Cushillococha=ALL 3(I)SBJ=be.in.place
‘By then he was in Cushillococha [place name].’
(ABS, 2015-06.039, tca_20170825_abs_ahs_elicit_001.wav, 4:19)

(27) [ti³ma²a¹ne¹wa⁵]ground ta⁴=u⁴³
      ti³ma³=a¹ne¹=wa⁵ ta⁴=u⁴³
3(I)=garden=ALL 3(I)SBJ=go:SG.SBJ
‘She went to her garden [place noun].’
(LWG, 2015-06.049, tca_20180718_lwg_ahs_tau.wav, 2:06)

(28) [de⁴³a⁵wa⁵]ground na³ʔi⁴³
      de⁴³a⁵=wa⁵ na³ʔi⁴³
water =ALL 3SBJ=go:PL.SBJ
‘They go to the water [common noun].’
(LWG, 2015-06.042, tca_20170804_lwg_ahs_elicit_001.wav, 2:41)

(29) ri¹ [je⁴ma⁴ no³¹e⁵wa⁵]ground i³na⁴ta¹ji³⁰ gi⁴ ga²⁴?re⁴ ga⁴ ai³⁰ru⁵ gi⁴, [na³⁰a¹ni³¹wa⁵]ground
      ri¹ je⁴ma⁴ no³¹e⁵=wa⁵ i³=na⁴=ja³⁰=ji³¹ ga⁴
and DEM grandmother=ALL DIR=3SBJ=AM=fall:PL.SBJ DET.REMPST
      ta²⁴?re⁴ ga⁴ ai³⁰ru⁵ =gi⁴ na⁴³ =a¹ni³¹ =wa⁵
two DET.REMPST dog =PL DFLT.POSS =belly =ALL
‘Then two dogs emerged from the old woman [human noun], from her belly [common noun].’
Zero-marking of spatial adjuncts never occurs in our corpus materials, which contain over 110,000 words. It is also judged unacceptable in elicitation, including for place names (30).

Since nouns from all DPM-relevant semantic categories behave the same in place marking (26 - 29), we conclude that Ticuna does not have DPM controlled by noun semantics.

4.2. Differential place marking is controlled by the morphological class of the verb

Ticuna has an extensive system of verb inflection classes. The inflection classes sort verb stems in several orthogonal ways: by the form of the subject proclitic, by the form of third-person object marking, and by the syntax of spatial adjuncts. In this section, we are concerned just with the classification which sorts verbs by the syntax of spatial adjuncts.

The spatial adjunct classification divides verbs into three classes, shown in Table 1. Two classes of verbs require a spatial adjunct, realized as either a free noun phrase or a proclitic. They contrast in the case which they assign to the adjunct. The other class of verbs does not require a spatial adjunct.

Table 1. Ticuna verb inflection classes defined by spatial adjunct syntax.

<table>
<thead>
<tr>
<th>Verb Class</th>
<th>Requires Adjunct</th>
<th>Case on Adjunct</th>
<th>Example Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>$wa^5$ Adjunct</td>
<td>+</td>
<td>=$wa^5$ ALL</td>
<td>$tg^1$ ‘discard’</td>
</tr>
<tr>
<td>$gu^2$ Adjunct</td>
<td>+</td>
<td>=$gu^2$ LOC</td>
<td>$tg^1$ ‘bury’</td>
</tr>
<tr>
<td>No Adjunct</td>
<td>-</td>
<td>n/a</td>
<td>$jau^1$? ‘acquire’</td>
</tr>
</tbody>
</table>
Verbs that do not require a spatial adjunct, such as the transitive verb *jau'$ ‘take, acquire,’ are grammatically acceptable with only their subject and object arguments. The citation forms of these verbs include subject and object proclitics only, as in (31).

(31)  \( t\text{ʃa}^3\text{na}^3\text{ja}^1\text{ʔu}^2 \\t\text{ʃa}^3=\text{na}^3=\text{jau}'? \\1SGSBJ=3OBJ=acquire \\
‘I took it.’ 
(YCG, 2015-06.038, tca_ahs_fieldnotes_2017book4.pdf, p. 6)

Verbs that do require a spatial adjunct are not grammatical with only subject and object arguments. Thus, in citation form, they take an additional proclitic before the subject proclitic. In some obligatory location verbs, such as ‘discard,’ this proclitic has the form \( i^5= \) (32). In others, such as the homophonous verb ‘bury,’ the additional proclitic has the form \( i^2= \) (33).

(32)  \*\( (i^5)t\text{ʃa}^3\text{na}^3\text{t}^2\\t\text{ʃa}^3=\text{na}^3=t^2\\*(VCL=)1SGSBJ=3OBJ=discard\\‘I discarded it.’ 
(LWG, 2015-06.038, tca_2017_ahsfieldnotes_2017book3_1-39, p. 15)

(33)  \*\( (i^2)t\text{ʃa}^3\text{na}^3\text{t}^2\\t\text{ʃa}^3=\text{na}^3=t^2\\*(VCL=)1SGSBJ=3OBJ=bury\\‘I buried it.’ 

If a verb takes the additional proclitic \( i^5= \) in its citation form, then when it appears with a spatial adjunct, it assigns the allative case marker =\( wa^4 \) to that adjunct. The \( i^5= \) proclitic deletes, as shown for ‘discard’ in (34).

(34)  \*\( (\text{na}^3=\text{ma}^3=\text{wa}^3) \text{ground} t\text{ʃa}^3\text{na}^3\text{t}^2\\t\text{ʃa}^3=\text{na}^3=t^2\\*(DFLT.POSS=path=ALL)1SGSBJ=3OBJ=discard\\‘I discarded it *(on the path) (allative).’ 
(LWG, 2015-06.038, tca_2017_ahsfieldnotes_2017book3_1-39, p. 15)
Likewise, if a verb takes the additional proclitic $i^2=$ in its citation form, then when it appears with a spatial adjunct, it assigns the locative case marker $=gu^2$ to the adjunct. As before, the $i^2=$ proclitic deletes, as shown for ‘bury’ in (35).

\[(35)\quad *\{\text{tʃa}³\text{na}³\text{ta}³\}_{\text{ground}}\quad \text{tʃa}³\text{na}³\text{ta}³
\]
\[\quad *(\text{yard}=\text{LOC})\quad 1\text{SgSbj}=3\text{Obj}=\text{bury}\]
\[\quad \text{‘I buried it *(in the yard) (locative).’}\]


In other words, adjuncts with the allative case marker are in complementary distribution with the $i^2=$ proclitic, and adjuncts with the locative case marker are in complementary distribution with the $i^2=$ proclitic.

Thus, the best analysis of verbs such as ‘bury’ and ‘discard’ is that they always require a spatial adjunct with a particular case value -- locative or allative. In clauses that include a noun phrase adjunct, such as (34) and (35), this requirement is satisfied by the presence of the case-marked noun phrase. In the citation forms of these verbs, the requirement is satisfied by the $i^2=/i^3=$ proclitic. These proclitics effectively act as expletive pronouns which absorb the verb’s requirement for a spatial adjunct. The $i^2=$ proclitic is an allative case pronoun, and the $i^2=$ proclitic is a locative case pronoun.

As the above examples suggest, whether a verb root requires a spatial adjunct, and what case it assigns that adjunct, is an arbitrary morphological property. A verb root’s spatial adjunct syntax is not predictable from its phonological form, other morphological properties, or semantics. For example, the verb roots shown in (34) and (35) above – $tg^i$ ‘discard’ and $tg^i$ ‘bury’ – are homophonous, belong to the same subject and object inflection classes, and both require a spatial adjunct. However, ‘discard’ assigns the allative case to its adjunct, while ‘bury’ assigns the locative case.
A similar contrast appears between the verb roots ʈʃi⁴ ‘stand’ and to¹ ‘sit.’ While these verbs belong to different subject inflection classes, both are intransitive verbs of posture and both require a spatial adjunct. However, to¹ ‘sit’ assigns the allative case to its adjunct (36) while ʈʃi⁴ ‘stand’ assigns the locative case (37).

(36) *(ĩ³¹ã̰tɨ³wa⁵)ground ʈʃa³ri³to¹
  *(ĩ³¹ã̰tɨ³=wa⁵) ʈʃa³ri³=to¹
  *(yard=ALL) 1SgSbj=sit
  ‘I sat *(in the yard) (allative).’
  (ABS, 2015-06.063, tca_20170725_abs_i2i5.txt)

(37) *(ĩ³¹ã̰tɨ³=gu²)ground ʈʃa³tʃi⁴
  *(ĩ³¹ã̰tɨ³=gu²) ʈʃa³=ʃi⁴
  *(yard=LOC) 1SgSbj=stand
  ‘I stood *(in the yard) (locative).’
  (ABS, 2015-06.063, tca_20170725_abs_i2i5.txt)

As these examples show, whether a verb which requires spatial adjuncts assigns the locative or allative case to those adjuncts is not a matter of semantics. In each of (34) - (37), the adjunct is headed by the same noun, and appears in the same semantic role – as the ground of a non-motion event. Yet the adjunct is assigned the allative case in (34) and (36), but the locative case in (35) and (37). Thus, the alternation between assignment of allative and locative case in (34) - (37) can only be analyzed as a case of DPM controlled by lexical properties of the verb.

4.3. DPM is controlled by the lexical aspect of the verb

Beyond morphological class, other properties of the verb also control DPM in Ticuna. Another key DPM-controlling property of the verb is lexical aspect (also called Aktionsart or situation aspect).

Much as in English (Vendler 1957), Ticuna verb stems can be divided into four lexical aspect classes: states, activities, accomplishments, and achievements. As in some other languages with inflection class, such as Yucatec Maya (Bohnemeyer 2002), there is some
correlation between a verb’s lexical aspect and its inflection class. Beyond inflection class, lexical aspect also has many other morphosyntactic effects, controlling the enclitics, adverbs, and adjuncts with which the verb can combine.

One of the most conspicuous effects of lexical aspect in Ticuna is on the syntax of spatial adjuncts. When a state, activity, or accomplishment verb combines with a ground-denoting spatial adjunct, that adjunct is marked with the allative case =wa⁵. This is shown for a stative verb in (38), an activity in (39), and an accomplishment in (40) (other language-internal tests diagnose the lexical aspect of these verbs).

(38) \([na'pa'⁴ta'a'[✓wa⁵/*gu²]]\) ground Bi⁴tu⁵ ri¹ no⁵⁴ri³ ma'⁴ma⁴=ʔi³ na⁴=pa⁴ta⁴=[✓wa⁵/*gu²] Bi⁴tu⁵ ri¹ no⁵⁴ri³ ma'⁴ma⁴=ʔi³

3(IV)=house=[✓ALL/*LOC] Victoria(IV) Top 3.ALPOSS mother=ACC na⁴=ŋe⁴tʃa¹ na⁴=wa⁵/⁎gu²

‘Victoria missed her mother in her house (✓ allative, *locative).’ [state]

(LWG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119, p. 20)

(39) \([na⁴⁵pa⁴⁴ta⁴⁵[✓wa⁵/*gu²]]\) ground na⁴⁴wi³ja³e³ i⁴ K⁵a⁵ʔi³ na⁴⁴=pa⁴⁴ta⁴⁵=[✓wa⁵/*gu²] na⁴⁴= wi³ja³e³ i⁴ K⁵a⁵ʔi³

DFLT.POSS =house=[✓ALL/*LOC] 3SBJ= sing DET(IV) Juan(IV)

‘Juan sang in the house (✓ allative, *locative).’ [activity]

(LWG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119, p. 20)

(40) \([ti'⁴re'[✓wa⁵/*gu²]]\) ground Ka⁴⁴ru⁴ ri¹ wi⁴⁵⁴i⁴ ja¹ ňu³⁴e³ na⁴⁵ʔi³ ti⁴'=re'[✓wa⁵/*gu²] Ka⁴⁴ru⁴ ri¹ wi⁴⁵⁴i⁴ ja¹ ňu³⁴e³ na⁴⁵=ʔi³

port=[✓ALL/*LOC] Carlos Top one DET(III) canoe(III) 3SBJ=make

‘Carlos made a canoe in the port (✓ allative, *locative).’ [accomplishment]


In contrast, when an achievement verb – a verb denoting an instantaneous change of state – combines with a spatial adjunct, that adjunct is marked with the locative case =gu². This is shown for three different achievement verbs in (41) - (43). It is clear that all three verb stems in (41) - (43) are achievements because they have other morphosyntactic properties that are unique to achievements in Ticuna, such as being incompatible with phasal verbs like ňi⁴gi⁴ ‘begin.’
Differential Place Marking Beyond Place Names

(41) \[ \text{na}^4\text{pa}^4\text{ta}^3[\sqrt{\text{gu}^2/\text{wa}^5}] \text{ground tʃi}^3\text{bi}^3\text{je}^1\text{pa}^3\text{ra}^1 \]
\[ \text{na}^4=\text{pa}^4\text{ta}^3=[\sqrt{\text{gu}^2/\text{wa}^5}] \quad \text{tʃi}^3=\text{bi}^3\text{je}^1=\text{pa}^3\text{ra}^1 \]
DFLT.POSS=house=[\sqrt{\text{LOC}/*\text{ALL}}] \quad 1SGSBJ=break.snapping=NI:shin
‘I broke my leg in the house (locative, *allative).’ [achievement]
(LWG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119, p. 20)

(42) \[ \text{ti}^5\text{re}^1[\sqrt{\text{gu}^2/\text{wa}^5}] \text{ground tʃo}^3\text{ril}^2\text{dau}^5\text{na}^4\text{ri}^3\text{gau}^5 \]
\[ \text{ti}^5\text{re}^1=[\sqrt{\text{gu}^2/\text{wa}^5}] \quad \text{tʃo}^3\text{ril}^2\text{dau}^5\text{na}^4\text{ri}^3=\text{gau}^5 \]
port=[\sqrt{\text{LOC}/*\text{ALL}}] \quad 1SG.ALPOSS shirt 3SBJ=rip
‘My shirt ripped in the port (locative, *allative).’ [achievement]
(LWG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119, p. 20)

(43) \[ \text{i}^6\text{tʃi}^3[\sqrt{\text{gu}^2/\text{wa}^5}] \text{ground na}^4\text{ju}^2\text{i}^4\text{ku}^3\text{ru}^4 \]
\[ \text{i}^6\text{tʃi}^3=[\sqrt{\text{gu}^2/\text{wa}^5}] \quad \text{na}^4=\text{ju}^2 \quad \text{i}^4 \quad \text{ku}^3\text{ru}^4 \]
yard=[\sqrt{\text{LOC}/*\text{ALL}}] \quad 3SBJ=die DET(IV) frog(IV)
‘The frog died in the yard (locative, *allative).’ [achievement]
(DGG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119, p. 11)

The spatial adjuncts in all of (38) - (43) have the same semantic role, acting as grounds.

Similarly, the nouns which head the adjuncts all belong to the same semantic category of human-made landform nouns. Yet despite these semantic similarities, the spatial adjuncts are not all assigned the same case. (38) - (40) are assigned the allative case, but (41) - (43) the locative case.

As in §5.2, the contrast in case marking between (38) - (40) and (41) - (43) is not a matter of nominal semantics. All of the nouns in these examples belong to the same semantic category of manmade landform nouns, and some of them are actually the same nouns (e.g., 38, 39, 41). Given these similarities among the nouns, the contrast in case marking between (38) - (40) and (41) - (43) must arise from a property of the verb.

But what property? None of the verbs given in (38) - (43) are verbs which display obligatory spatial adjuncts. Thus, the contrast between (38) - (40) and (41) - (43) cannot be due to the same property of the verb – a requirement for a spatial adjunct marked with a specific case – which motivated the DPM seen in §5.2. Instead, this contrast in place-marking is due to a different property of the verb: the lexical aspect contrast between achievement verbs, which
caused place adjuncts to be marked with \(=gu^2\) (41-43), and all other lexical aspect classes of verbs, which cause place adjuncts to be marked with \(=wa^4\) (38-40).

This information about DPM controlled by lexical aspect raises a question about the morphologically controlled DPM introduced in §5.2. In that section, we claimed that whether an obligatory location verb assigned locative or allative case was arbitrary. But given what we have seen here about the influence of lexical aspect on DPM, could the case profile of obligatory location verbs instead arise from their lexical aspect class membership?

The answer is no. Obligatory location verbs belong to a variety of lexical aspect classes, but they are not subject to lexical aspect-based DPM. Instead, their morphology (i.e. the form of their citation form proclitics) fully determines their spatial adjunct syntax. One example of this generalization comes from the verb \(tfi^4\) ‘stand.’ This verb is an obligatory location verb, bearing an \(i^2=\) proclitic in citation form. Based on language-internal tests of lexical aspect, it is also a stative verb. If \(tfi^4\) ‘stand’ followed the lexical aspect-controlled DPM pattern, it would mark spatial adjuncts exclusively with allative \(=wa^4\), like other stative verbs, such as \(nee\text{"taq"}\) ‘love/miss a person’ in (38). In contrast, if \(tfi^4\) ‘stand’ followed the morphologically controlled DPM pattern, it would mark spatial adjuncts exclusively with \(=gu^2\), like other verbs that bear the \(i^2=\) proclitic, such as \(ta^4\) ‘bury’ in (35).

What we actually find is that ‘stand’ marks adjuncts with \(=gu^2\), as shown in (37). Thus, when DPM conditioned by lexical aspect and DPM conditioned by morphology conflict for this verb, the morphologically conditioned DPM wins out. The same pattern holds for many other obligatory location verbs, such as \(ta^4\) ‘bury’ (another non-achievement which assigns the locative case) and \(nu^3\) ‘arrive’ (an achievement which assigns the allative case). As such, the case profile of obligatory location verbs cannot be due to their lexical aspect.
These observations illustrate the larger generalization that morphologically controlled DPM and lexical aspect-controlled DPM are two separate phenomena. They interact, but their interactions have a hierarchical relationship: morphologically controlled DPM takes precedence over lexical aspect-controlled DPM.

4.4. DPM is controlled by the transitivity of the verb

DPM controlled by the verb’s morphological class and lexical aspect is found throughout the lexicon of Ticuna. As §§5.2-5.3 illustrate, these forms of verb-controlled DPM extend to verbs, such as \textit{wi}³ja³ ‘sing’ and \textit{bi}³je³ ‘break,’ which do not have meanings related to space or motion. Alongside these lexicon-wide forms of DPM, Ticuna also has a form of verb-controlled DPM specific to verbs of motion. This form of DPM is controlled by transitivity: intransitive vs. transitive verbs of motion display different case profiles for spatial adjuncts.

Intransitive verbs of motion, such as \textit{ã}³ ‘paddle (a boat)’ in (44), mark ground adjuncts with the locative case marker =\textit{gu}². Using the allative case marker =\textit{wa}³, which marks the ground of most non-motion events (e.g. 38 - 40), is ungrammatical.

\begin{align*}
\text{(44) } & \text{ [na}³\text{ta}³\text{[野心/]wa³]}_\text{ground } \text{tf\text{ji}³=\text{a}³} \\
& \text{na}³\text{=ta}³\text{=}\text{[野心/]wa³]} \quad \text{tf\text{ji}³=\text{a}³} \\
& \text{DFLT.POSS=lake=}\text{[野心/]ALL} \\
& \text{1SgSbj=paddle} \\
& \text{‘I paddled in the lake (ground = locative).’} \\
& \text{(DGG, 2015-06.038, tca_2017_ahsfieldnotes_2017book3_40-79.pdf, p. 16)}
\end{align*}

In contrast to intransitive verbs, transitive verbs of caused motion and placement mark ground adjuncts with the allative case marker =\textit{wa}³. Using =\textit{gu}² to mark the ground of a transitive verb of caused motion or placement leads to either ungrammaticality or an interpretation of the adjunct as a goal rather than a ground. (45) illustrates this for \textit{ku²³ρ} ‘kick,’ a transitive verb of caused motion.

\begin{align*}
\text{(45) } & \text{Context: On a field, I played soccer.}
\end{align*}
Differential Place Marking Beyond Place Names

[campos[wa^#/gu^]]_ground ti31ʔ ti3¹ku3¹ʔu3

campos=[wa^#/gu^]  ti3¹ʔ  ti3¹=ku3¹

Sp: field=[ALL/#LOC]  3(l)=ACC  1SGSBJ=kick

'I kicked it (a ball) on the field (ground = allative).'

AHS: ‘Can you say this with campo=gu² (ground = locative)?’

LWG: ‘That means you were somewhere else and you kicked the ball onto the field’

[locative interpreted as goal]

(LWG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119, p. 9)

(44) and (45) show that intransitive verbs of motion mark grounds with the locative case, while their transitive counterparts mark grounds with the allative case. Exactly the opposite contrast appears in marking of the goal of motion. Intransitive verbs of motion mark their goals with the allative case =wa^ exclusively. Using the locative case =gu^ is ungrammatical (46).

(46)  [i31'article[wa^#/gu^]]_ground na4ʔu43
       i3¹'article[wa^#/gu^]  na4=ũ43

yard=[ALL/#LOC]  3SBJ=go:SGS

‘They (sg.) went to the yard (goal = allative).’

(DGG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119.pdf, p. 11)

In contrast, and as already suggested by the consultant comments on (45), transitive verbs of caused motion and placement mark their goals with the locative case =gu^ exclusively. Using =wa^ is ungrammatical or leads to a non-goal interpretation of the adjunct. (47) illustrates this for a verb of placement.

(47)  [ku3¹article[gu^#/wa^]]_ground tja³na³ʔi4 i4 wi4³ʔi4 i4 tfo³ka¹

ku3¹=article[gu^#/wa^]  tja³=na³=ʔi4  i4

2SG=house=[LOC/#ALL]  1SGSBJ=put:INAM.SG.O  DET(IV)

wi4³ʔi4 i4  tfo³ka¹  one  DET(IV)  bag(IV)

‘I dropped off (lit. put) a bag at your house (goal = locative).’

(DGG, 2015-06.038, tca_2017_ahsfieldnotes_2017book2_82-119.pdf, p. 12)

To summarize, intransitive vs. transitive verbs of motion have precisely opposite case-marking on spatial adjuncts. Intransitives mark ground adjuncts with the locative case (44) and
goals with the allative (46). In contrast, transitives mark ground adjuncts with the **allative** case (45) and goals with the **locative** (47).

This transitivity-controlled form of DPM is distinct from the other forms of verb-controlled DPM seen in the previous two sections. It differs from the DPM observed with obligatory location verbs (§4.2) because not all verbs of motion are obligatory location verbs (some are, but none of those described in this section). Similarly, it differs from the DPM observed with achievements (§4.3) because not all verbs of motion are achievements.

Thus, transitivity-controlled inversion in place marking is not due to the other DPM phenomena in the language. Rather, it represents a separate, **third** form of verb-controlled DPM. Since Ticuna is not morphologically ergative and lacks other evidence of syntactic ergativity, this finding is surprising theoretically. In areal perspective, however, it is less surprising. While this may be the first report of transitivity-controlled DPM in a language that is not ergative, it is **not** the first report of transitivity-controlled DPM in Amazonia. DPM of spatial adjuncts in transitive vs. intransitive clauses is attested in several Panoan languages, including Shipibo-Konibo (Valenzuela 2005), Kashibo-Kakataibo (Zariquiey Biondi 2018: 160), and Yaminahua (Neely 2019: 305-307). However, in Panoan languages the differential place marking (a) is controlled by the orientation of the adjunct to an argument, rather than by the transitivity of the clause as such, and (b) involves addition of extra (agreement) marking to the case-marked adjunct, rather than alternations in the case marking appearing on the adjunct.

### 4.5. Interim Summary

This section has shown that Ticuna displays three distinct forms of DPM which are controlled by verbs rather than nouns. DPM can be controlled by the morphological class of the verb (§4.2), by the lexical aspect of the verb (§4.3), and for verbs of motion and placement, by
the transitivity of the verb (§4.4). Figure 2 provides a diagram representing these multiple forms of verb-controlled DPM.

[See next page for figure]
Figure 2. Types of verb-controlled DPM in Ticuna.
Role association theories, as reviewed in §1.2, attribute DPM exclusively to the (semantic) properties of ground-denoting nouns. In contrast, this section has shown that – while much of DPM across languages is controlled by noun properties – DPM may also be controlled by the verb. Moreover, the Ticuna system shows not only that verbs as a class can control DPM, but also that many different properties of the verb can control the phenomenon. The language displays DPM controlled by lexical aspect, a purely semantic property of verbs; by morphological class, a purely morphological property; and by the transitivity of verbs of motion, a property which involves crossed morphosyntactic and semantic factors. Furthermore, contrary to the predictions of role association theories, these forms of DPM are completely insensitive to properties of the noun. The same noun, in the same role, displays different marking with different verbs, indicating that these phenomena are driven exclusively by verb features.

5. Discussion

In this section, we consider the impacts of our findings on the two research questions proposed in §1 – about what motivates DPM across languages, and about how it is realized.

5.1. Motivation of DPM

Recall from §1.2 that previous analyses, using both what-where and zero-coding frameworks, view DPM as motivated by noun semantics and mediated by role association. Properties of the nominal referent, such as movability in what-where theories or animacy in zero-coding theories, determine each noun’s degree of association with the semantic role of ground. Differential association with the ground role then leads to differential marking of that role.

Some of our findings for Dâw support this earlier analysis. As we showed in §3, DPM in Dâw is motivated largely by properties of the nominal referent. However, the relationship between Dâw nouns’ semantic properties and their DPM behavior is much more complex than
predicted by either type of previous analysis. In this language, the referent properties that control nouns’ DPM behavior are not coarse-grained features such as animacy, but fine-grained ontological properties such as relative size and perceptual boundedness. As a result of these finer divisions, DPM in Dâw distinguishes at least six different classes of nouns, in contrast to the two classes predicted by what-where theories (Cablitz 2008) and four classes predicted by zero-coding theories (Haspelmath 2019a:323).

At the same time, two of our findings expand the analysis of the motivations of DPM outlined above. First, noun semantics do control DPM in Dâw, in line with the traditional analyses. However, many of the semantic features involved in this conditioning, such as referent size, seem unlikely to impact the frequency with which nouns appear in the role of ground. As role association is a frequency-based concept, this data point troubles the claim that the relationship between noun semantics and DPM behavior is always mediated by role association.

Second, most DPM in Ticuna is controlled by properties of the verb, such as transitivity and lexical aspect. Per §4, this verb-controlled DPM is completely insensitive to properties of the ground-denoting noun: with different verbs, the same noun will display different marking. In contrast, prior analyses in both what-where and zero-coding frameworks assume that DPM is always controlled by the ground-denoting noun. They assign no importance to the verb, and as a result they cannot explain the verb-controlled DPM seen in Ticuna.

While these findings complicate traditional analyses of DPM, they are more consistent with broader-based research on the language of space (Levinson & Wilkins 2006). Research in this tradition has shown that meanings related to space and motion are expressed by constituents distributed throughout the clause, such as motion and posture verbs; positional verbs; directional suffixes; and adpositions (Levinson 2003). While zero-coding frameworks treat place-marking as
exclusive to nouns, this finding predicts that spatial information can be expressed on any constituent (Levinson & Wilkins 2006: 5-6). Our finding that DPM in Ticuna is controlled primarily by verbs clearly supports this prediction. Our results also draw a parallel to Hopper & Thompson’s (1980) claims on transitivity. Just as languages vary in the factors which control argument marking, they also differ widely in the conditioning of place marking: DPM is controlled primarily by verbs in Ticuna, but primarily by the perceptual and ontological properties of noun referents in Dâw. This position leaves a place for role association – which may still provide the bridge between nouns’ semantics and their DPM behavior – but does not treat it as the only possible motivation for the phenomenon.

5.2. Form of DPM

Role association-based theories, whether in what-where or zero-coding frameworks, heavily emphasize the length of marking. They propose that association with a given semantic role is inversely related to the length (or complexity) of marking for that role. Thus, the nouns most associated with the ground role display the shortest or least complex marking for that role.

This analysis clearly explains A > B forms of DPM, or those instantiated by alternations between longer and shorter (or zero) markers. On the other hand, it cannot explain A = B forms of DPM, or those instantiated by alternations between markers of equal length and complexity. Yet in both Dâw and Ticuna, most DPM is of the A = B type. DPM in Dâw primarily involves alternations in the combinatorial possibilities available to nouns, rather than alternations in markers per se. Where there are alternations in markers, as between configurational postpositions and rid, all of the alternating markers are equal in length (§3.1). Similarly, DPM in Ticuna consists entirely of alternations between two case markers which are equal in length (§4).
Thus, DPM in these languages does not concern the syntagmatic complexity of case marking – the number of morphemes or segments involved in a noun’s marking for the ground role. Instead, DPM in Dâw concerns the paradigmatic complexity of marking, instantiated by the number of possible markers with which a noun can combine. And in a further contrast with traditional analyses, DPM in Ticuna does not involve contrasts in the complexity of marking at all, but rather equipollent contrasts between markers of equal complexity. These findings show that DPM cannot be understood as simply ‘less explicit’ or ‘shorter’ marking of nouns more frequently associated with the ground role. The phenomenon is significantly more nuanced than this – more comparable to the subtle contrasts among mass, count, and aggregate nouns under quantification than to (simple forms of) differential object marking.

6. Conclusion

In this study, we have examined the DPM systems of two northwestern Amazonian languages, Dâw and Ticuna. Both languages’ DPM systems complicate the claims about DPM made in previous typological literature. While prior work claims that DPM is conditioned exclusively by noun semantics, we show that it can also be conditioned by syntactic and semantic properties of verbs. Similarly, while prior work assumes that DPM always involves alternations between more and less syntagmatically complex place markers, we show that DPM can also be realized by alternations in paradigmatic complexity, as well as by equipollent alternations between markers of equal complexity. Together, these findings show – contra Landau & Jackendoff (1993), Stolz et al. (2014), and Haspelmath (2019a,b) – that DPM does not exclusively concern the role associations and marking of the ground-denoting noun. Rather, in line with the language of space research tradition (Levinson & Wilkins 2006), DPM is controlled by and realized on constituents distributed throughout the clause.
We are able to reach these novel conclusions because our analysis leaves behind some common assumptions about the scope and form of DPM. For example, other analyses of DPM explicitly ignore markers encoding configurational or topological relations (Haspelmath 2019: 316). In contrast, our analysis of Dâw includes configurational postpositions. This decision allows us to detect an additional form of DPM in the language – the contrast in paradigmatic complexity between nouns which combine only with configurational postpositions, and nouns which can combine with both configurational postpositions and other place markers. Similarly, most studies of DPM consider only clauses headed by intransitive verbs of motion and location. Our analysis of Ticuna, on the other hand, also includes transitive verbs, as well as verbs outside the semantic domains of space and motion. Because of this decision, we are able to demonstrate the existence of verb-controlled DPM – which would not be evident from intransitive motion verbs alone, as in Ticuna all of these verbs display the same DPM behavior.

For the future, we encourage other researchers studying the grammar of space to identify and question their assumptions about DPM. The findings of this study show that for this phenomenon, in contrast to other forms of differential case marking, linguists may still know too little to form useful a priori hypotheses. For example, it is inappropriate to assume that the conditioning of DPM will always involve noun semantics, or that the form of DPM will always center on alternations between zero and non-zero marking of the ground. Documentary linguists should therefore keep an open mind in work on the grammar of space – investigating the motivations of every form of DPM, and looking beyond category-based explanations.
Acknowledgements: […]

Abbreviations: 1 first; 2 second; 3 third; I-IV = agreement with (Ticuna) noun classes I-IV; ACC accusative; AFFIRM affirmative; ALPOSS alienable possession; ALL allative; AM associated motion; ANPH anaphor; AUX auxiliary; COMP complementizer; CONT continuous aspect; DEM demonstrative; DET determiner; DFLT.Poss default possessor; DIR directional; DUB dubitative; FOC focus; INAL inalienable; INCL inclusive; INTS intensifier; IPFV imperfective; ITG intangible; LOC locative; NI noun incorporation; OBJ object; PL plural; PLZ pluralizer; PROG progressive; PROX proximate; PST past; PVF perfective; REP reportative; REMPST remote past; RN relational noun; SBJ subject; SG singular; TOP topic
References


Rybka, Konrad. 2014. How are nouns categorized as denoting “what” and “where”? *Language Sciences* 45. 28–43.


