Standing divided: dispositionals and locative predications in two Mayan languages*

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Abstract

The Mayan languages Tzeltal and Yucatec have large form classes of "dispositional" roots which lexicalize spatial properties such as orientation, support/suspension/blockage of motion, and configurations of parts of an entity with respect to other parts. But speakers of the two languages deploy this common lexical resource quite differently. The roots are used in both languages to convey dispositional information (e.g., answering "how" questions), but Tzeltal speakers also use them in canonical locative descriptions (e.g., answering "where" questions), whereas Yucatec speakers only use dispositionals in locative predications when prompted by the context to focus on dispositional properties. We describe the constructions used in locative and dispositional descriptions in response to two different picture stimuli sets. Evidence against the proposal that Tzeltal uses dispositionals to compensate for its single, semantically generic preposition (Brown 1994; Grinevald 2006) comes from the finding that Tzeltal speakers use relational spatial nominals in the "Ground phrase" — the expression of the place at which an entity is located — about as frequently as Yucatec speakers. We consider several alternative hypotheses, including a possible larger typological difference that leads Tzeltal speakers, but not Yucatec speakers, to prefer "theme-specific" verbs not just in locative predications, but in any predication involving a theme argument.

1. Introduction

In locative expressions, for example in answers to "where" questions, languages differ in where in the clause spatial information about the Figure (the entity being located), the Ground (the entity in relation to which it is being located), and the relation between them, is encoded. Mayan languages encode spatial information about the geometry of Figure and

Ground and about the spatial relations between them both in verbs (or, more generally, lexical heads of predicates) and in the "Ground phrases" they combine with — the expressions denoting the place at which the Figure is located. In this paper we examine locative expressions in two Mayan languages, Tzeltal and Yucatec. These two languages are separated by about 1800 years of development and, although their territories are no more than about 150 miles apart in southern Mexico, the two language communities have no regular contact. The languages have very similar resources for describing positions and configurations of objects, including a large set of spatially rich lexical roots which may surface in verb stems or stative predicate stems. But speakers of the two languages differ in how they put these strategies to use in locative predications. Tzeltal speakers use a "multiverb" strategy, with their locative utterances showing a strong preference for specifying how the Figure is spatially dispositioned (e.g., 'The bottle is standing on the table'); Yucatec speakers prefer a "single-verb" strategy using a generic existential predicate (e.g., 'The bottle is on the table'). Both options are available in both languages, but the pragmatic conditions for their use are different. What could explain this difference in usage between two such closely related languages? We address this puzzle by comparing the two languages for their linguistic resources for describing spatial relations and the use of these resources in answers to "where" questions elicited with two elicitation tools.

The comparison provides important insights into the nature of the multiverb type of Basic Locative Construction (BLC) (Ameka and Levinson this issue). There appears to be a tendency for multiverb languages to have a very simple inventory of spatial adpositions or case markers — for example, Tzeltal and Likpe (Ameka this issue) both have only one generic adposition. This may suggest a division of labor between the lexical head of the predicate and the Ground phrase, such that spatial information that single-verb languages encode in adpositional phrases, adverbs, or particles is expressed in the verb in multiverb languages (cf. Brown 1994; Grinevald 2006). The comparison of Tzeltal and Yucatec shows that this conjecture is too simplistic. Yucatec, too, has a generic preposition, very similar to the one of Tzeltal. (Unlike Tzeltal, there is arguably a second preposition specialized on containment relations.) However, in both languages Ground-denoting phrases in spatial descriptions are optionally augmented with relational nouns encoding meanings such as '(on) top (of)', 'on', 'above', '(at) back (of)', 'underneath', etc. If spatial information encoded in the Ground phrase in Yucatec were expressed by dispositionals in Tzeltal, one would expect to find much less use of these relational nouns in Tzeltal than in Yucatec. A quantitative analysis of the Ground phrases in our data shows that this is not the case. This confirms

our analysis of the semantics of dispositionals, according to which the bulk of the meaning of these roots is Figure-related, not Ground-related. Ground-related meanings are expressed primarily in the Ground phrase (although some amount of overlap does occur).

The paper is organized as follows. Section 2 provides an overview of predicate classes and a detailed description of dispositionals in the two languages. Section 3 presents the resources — the constructions in which these can appear in locative predications in both languages, and the structure of Ground phrases. In Section 4 we examine the spatial descriptions produced in response to two elicitation tools, the "Topological Relations Pictures Series" (BowPed) and "Picture Series for Positional Verbs" (PosB; cf. Ameka, de Witte, and Wilkins 1999),[1] and establish the difference between the BLCs of Tzeltal and Yucatec. A number of alternative explanations for this difference are considered in Section 5. We devote particular attention to the hypothesis that the difference may be the consequence of a general bias which favors the use of "theme-specific" predicates in clauses with theme arguments. This bias may be operative in Tzeltal, but not (or only to a lesser extent) in Yucatec. In this sense, it may have been inherited from the common ancestor language, but may have become "recessive" in Yucatec. A modest amount of evidence in support of this hypothesis comes from domains of predication and the lexicon beyond locatives.

2. Dispositional roots

Among the typological traits that characterize the members of the Mayan language family is a relatively large form class of roots that lexicalize, in their overwhelming majority, noninherent ("stage-level") spatial properties of objects, animals, and people. Depending somewhat on the language, these roots may produce verb stems, stative predicate forms, classifiers, and other lexical categories with the appropriate derivational morphology, and are generally considered a major lexical category in its own right by Mayanists. Each of these roots encodes properties conceptualized along one or more of the following dimensions: support/suspension/blockage of motion, orientation, and configuration of parts of an object with respect to each other.[2] Estimates for individual languages range from several dozen to several hundred items in the class; for some highland languages such as Q'anjob'al (Martin 1977; Mateo-Toledo 2004) and K'iche' and Motosintlek (Kaufman 1990), the number has been estimated to be as high as 600–700. The customary Mayanist term for roots of this class is "positionals". However, in order to avoid

confusion with what are called ''positional'' verbs elsewhere in this special issue — verbs that are in most cases semantically restricted to the posture domain, which is but one special case of the domain of Mayan ''positionals'' — we use the term *dispositional* (root/stem) as a cover term for the members of these form classes, and *disposition* in a broader sense as a cover term for the putative core meaning — noninherent spatial properties, conceptualized, unlike locative relations, independently of a specific Ground or place — shared by most members of these classes (see Section 2.3, and Brown 1994: 752). ''Disposition'' in this sense is understood here as a hypernym of 'support', 'suspension', 'blockage of motion', 'orientation', and 'configuration of parts of an object'. Instead of providing a strict definition of ''disposition'', we adopt a combination of two operational criteria: firstly, dispositional predicates provide information about *how* an object, animal, or person (henceforth the *Figure*) is situated at a given location. And secondly, dispositional information differs from locative information in that it can be predicated in abstraction from a specific Ground. Thus, while it makes little sense to say that an object is located 'on' or 'in' without giving any indication as to 'on' or 'in' *what* object, it is perfectly possible to say that an object is 'sitting' or 'hanging' without saying where or on/from what it is 'sitting' or 'hanging'. However, in contrast to the notion ''disposition'', which is definable in semantic/conceptual terms, the term ''dispositional (root/stem/form)'' is intended here to denote classes of lexical items defined by language-particular formal properties.

The two Mexican Mayan languages this study reports on, Tzeltal (spoken by over 200,000 people in the eastern highlands of the state of Chiapas) and Yucatec (spoken throughout the Yucatan peninsula by about 800,000 people), both have form classes of dispositional roots.[3] This is not a trivial point, as the two languages belong to different branches of the Mayan language family and are estimated to have been separated for at least 1,800 years (Campbell and Kaufman 1985). And while dispositional roots are used in both languages to convey dispositional information, speakers of the two languages deploy this common lexical resource quite differently. In Tzeltal, dispositional roots also occur in the construction most widely used to provide information about the Figure's location (e.g., answering ''where'' questions), whereas Yucatec speakers use dispositional forms in locative predications only when prompted by the context to focus on dispositional properties of the Figure as well. Thus, the BLC of Tzeltal features a dispositional form, whereas the BLC of Yucatec is formed with a stative existential predicate. On the BLC typology proposed by Wilkins (see Kita and Walsh Dickey 1998: 55–61; Van Geenhoven and Warner 1999: 61–71), Tzeltal emerges as a ''multiverb''

language, while Yucatec is a "single-verb" language. This has important implications for the typology of locative constructions, and one aim of this article is to explore these implications. The remainder of this section is dedicated to the formal properties of dispositionals and their semantics.

2.1. *Roots and stems in Mayan grammar and lexicon*

Languages of the Mayan family can be characterized as mildly polysynthetic. Aside from signature traits of polysynthesis such as head-marking and incorporation, this language type manifests itself in word forms that overtly reflect the construction type they occur in and the number and types of arguments with which they occur (Baker 1996). The result is a system of stem classes distinguished by their inflectional properties and syntactic privileges of occurrence, and a complementary system of root classes distinguished by the stem classes that the roots produce and the derivational operations they undergo to produce these stems. As in most Mayan languages (Kaufman 1990), the systems of root classes in Tzeltal and Yucatec include a class of dispositional roots.

Lexical stems in Tzeltal and Yucatec show a basic division into verb stems and stative stems (the latter correspond mostly to nouns and adjectives — including participles — in English). Verb stems divide into intransitive and transitive stems. Verbs receive obligatory marking of aspect (Tzeltal) or aspect-mood (Yucatec) in a slot preceding the verb, whereas stative predicates are excluded from aspect or mood marking. Intransitive verbs are cross-referenced by bound pronominal markers for a single argument ("S" in Dixon 1994); transitive verbs are cross-referenced for two arguments ("A" and "O"). The two series of cross-reference markers are customarily labeled "set A" and "set B" by Mayanists. Set-A markers index the A-argument of transitive verbs and the possessor of nominals; set-B markers index the O-argument of transitive verbs and the S of stative predications. These facts are the same for all Mayan languages; in contrast, intransitive clauses are the domain of enormous variation in argument marking across the language family.

Ignoring certain details, the structure of inflected transitive verbs in both languages can be represented as follows:[4]

(1) PERSON[CR_A]-(...)STEM-STATUS-CR_B(-NUMBER[CR_A])
   TZE ya   y-il-ik-on
        INC $CR_{A.3}$-see-A.3.PL-B.1
        'They see me.'

YUC k-uy   il-ik-en-o'b
     IMPF-CR$_{A.3}$ see-INC-B.1.SG-3.PL
     'They see me.'

$CR_{A/B}$ stands for the cross-reference markers of set A and B. The set-A markers have a discontinuous plural suffix that follows the stem.[5] In Yucatec, the set-A markers are clitics; certain preverbal aspect-mood markers, such as the imperfective marker *k-* in the example above, may be prefixed to them. "Status" is a language-specific inflectional category that integrates aspectual, modal, and illocutionary meanings (see Bohnemeyer 2002: 216–242 for Yucatec; Brown et al. 2002 for Tzeltal).[6]

Inflectional patterns for intransitive verbs differ in the two languages. In Tzeltal they have the following basic structure:

(2)   STEM-STATUS-CR$_B$
   TZE   och-uk-at
          enter-SUBJ-B.2
          '(that) you may enter'
   YUC   òok-ok-ech
          enter-SUBJ-B.2
          '(that) you may enter'

Verbal arguments are thus marked according to an ergative pattern in Tzeltal. In Yucatec, intransitive verbs have the structure of (2) in some status subcategories but the structure of (3) in others:

(3)   PERSON[CR$_A$]-(. . .)STEM-STATUS(-NUMBER[CR$_A$])
   YUC k-uy   òok-ol-o'b
        IMPF-A.3   enter-INC-3.PL
        'They enter.'

This instantiates a "split intransitive" pattern of argument marking in Yucatec (see Bohnemeyer [2004] for discussion and further references).

In Tzeltal, two classes of syntactically intransitive stems are distinguished by inflectional properties: regular intransitive stems and so-called "affect" verb stems. In Yucatec, however, four classes of intransitive stems are distinguished by patterns of allomorphic variation in status inflection: "active", "inactive", "inchoative", and "dispositional" stems.[7] The overall system of stem classes (discounting nouns and adjectives) in the two languages is summarized in Figure 1. Those stem classes that are accessible to dispositional roots have boxes under them indicating the suffixes needed to produce the particular stem.[8] Section 2.2 explains each of these classes in turn. Of special interest in the present context are the classes of stative dispositional predicates, since it is these that occur in locative
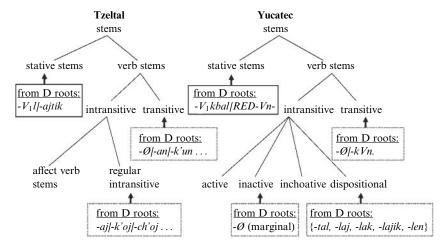
Figure 1.   *Stems produced from dispositional (D) roots in Tzeltal and Yucatec*

predications. These are therefore distinguished in Figure 1 by solid lines around their boxes.

In Section 2.2 we address the various classes of stems derived from dispositional roots. It is the privileges of forming these stems that together define the form class of dispositional roots in each of the two languages.

2.2.   *Stems featuring dispositional roots*

2.2.1.   *Stative predicate stems produced from dispositional roots.*   Dispositional roots require overt derivation to form stative predicates. Both languages provide several different derivational operations for this purpose, including one derivation that is restricted to dispositional roots and produces a form which we call *dispositional stative*. We take the ability to produce dispositional stative stems as the primary diagnostic of dispositional roots. Dispositional stative stems are formed with -$V_1 l$ in Tzeltal and -$V_1 kbal$ in Yucatec (/V/ represents a morphophonemic segment the realization of which depends on the root vowel; /V_1/ is used in the special case in which the segment echoes the root vowel). For example:

(4) TZE wax-<u>al</u>   ta   lum   p'in
        stand.vertically-DIS(B.3)   PREP   ground   pot
        '(A) pot is vertically standing on the ground.'
        ⟨GofS 19⟩

(5) YUC   ti'   wa'l-<u>akbal</u>   ich   le   xàak-o'
          PREP   stand-DIS(B.3)   in   DET   basket-D2
          'There it [bottle] is standing inside the basket.'
          ⟨PosB 62 SBM⟩

The dispositional stative form has a distributive plural counterpart marked by -*ajtik* in Tzeltal[9] and, most commonly, by reduplication plus insertion of -*Vn* in Yucatec. This form indicates that the disposition holds for each individual in a multitude of Figures, e.g., multiple bottles each standing, as in (6) and (7), or for each configuration in a multitude of Figure/Ground relations (e.g., multiple instances of coffee spread out to dry on patios), as in (8):

(6) TZE   chaneb   wax-ajtik   ta
          four   vertically.standing-DIS.(B.3)PL   PREP
          y-util   moch
          A.3-inside basket
          'There are four (bottles) standing upright in the basket [in contrast to four others which are inverted].'
          ⟨PosB 60⟩

(7) YUC   ti'   <u>wa'l-un-wa'l-o'b</u>   te
          there   RED-DIS.PL-stand-B.3.PL   PREP:DET
          lu'm-o'
          ground-D2
          'There [the bottles] are standing one by one on the ground.'
          ⟨PosB 9 SBM⟩

(8) TZE   ji'-ajtik   kajpej ta   jujun amak'
          spread.out.-DIS.(B.3)PL   coffee PREP   each patio
          ta   majosik'
          PREP   Majosik'
          'The coffee is multiply spread out to dry on patios all over Majosik'.'

As we justify in detail in Section 2.3, we argue that dispositional roots lexicalize spatial dispositions as noninherent (or "stage-level") states. That is, the function of the dispositional stative predicate form is the predication of these states over theme arguments referring to the Figure of the particular disposition. This is the reason why it is these dispositional stative predicates, rather than any of the dynamic verb stems derived from dispositional roots discussed in the following subsections, that occur in locative predications and dispositional descriptions.

2.2.2.   *Intransitive verb stems produced from dispositional roots.*   As mentioned above, verb stems are subdivided into intransitive and transitive

stems, which are always marked differentially for aspect. Dispositional roots not only have a stative dispositional form but regularly produce intransitive ''dispositional inchoative'' (DIC) stems which encode the un-caused process of achieving the disposition expressed by the correspond-ing dispositional stative stem. The formation of these intransitive stems requires overt derivation as well. In Tzeltal the basic suffix is -*aj*, in Yuca-tec it is -*tal*:

(9) TZE ya   x-chot-<u>aj</u>   karo
          INC ASP-vert.stand-DIC(B.3)   cart
          'The car becomes standing on all fours (i.e., comes to a
          standstill).'

(10) YUC Pedro-e'   táan   u-wa'l-<u>tal</u>   t-u
          Pedro-TOP   PROG A.3-stand-DIC.INC PREP-A.3
          xa'n le   naj-o' . . .
          palm DET house-D2
          'Pedro, he was in the process of standing up on the thatch
          of the house . . .'

In Tzeltal, the derived stem inflects just like regular intransitive stems (cf. Figure 1). In Yucatec, the intransitive verb stems formed from disposi-tional roots constitute a separate stem class distinguished by a unique paradigm of status inflection. Status in these stems is encoded by ''supple-tive'' portmanteau forms of the very suffix -*tal* that derives the stems. Compare, e.g., the incompletive *wa'l-tal* 'standing up' in (10) above to the completive *wa'l-lah* 'stood up' in (11):

(11) YUC (. . .)   káa   j-wa'l-<u>lah</u>-ih
                    CON   PRV-stand-DIC-CMP(B.3.SG)
          '(. . .) and [the deer] stopped.' ⟨FROG 3 39⟩

This status paradigm yields a secondary diagnostic of dispositional roots in Yucatec (cf. Bricker, Po'ot Yah, and Dzul de Po'ot 1998: 352–353).

2.2.3. *Transitive stems produced from dispositional roots.* In both lan-guages dispositional roots also take suffixes (DIT) to form transitive stems. For Tzeltal, Kaufman (1971) lists no fewer than 15 transitivizing processes, several of which primarily or exclusively derive transitive stems from dispositional roots (-*p'Vn*, -*ts'Vn*, -*ch'Vn*, -*k'Vn*, -*ts'an*, and -*an*). The ability to undergo one of these processes can be regarded as a sec-ondary diagnostic for the identification of dispositional roots in Tzeltal. Yucatec dispositional roots produce overtly derived transitive stems with -*kVn(t/s)*, but this suffix also causativizes inchoative verbs.

(12) TZE ya   j-wax-<u>an</u>   limete ta   ba mexa
          INC   A.1-vertically.stand-DIT bottle PREP   top table
          'I vertically stand the bottle on the tabletop.'
(13) TZE ya   j-bal-<u>ch'un</u>   lok'el   ton
          INC   A.1-be.rolled.up-DIT(B.3) awaywards   stone
          'I roll the stone awaywards.'
(14) YUC k-a   wa'l-<u>kunt</u>-ik
          IMPF-A.2   stand-CAUS-INC(B.3)
          u-tisèera-il-o'b
          A.3-cross.tie-REL-PL
          'You erect the cross ties.'
          ⟨K'axbil 27⟩

Since dispositional roots take overt derivational morphology in both stative and dynamic stems (as seems to be true across Mayan languages, cf. Kaufman 1990), it is hard to determine whether the root itself has a stative meaning (the particular disposition) or a dynamic one (the process of achieving the disposition). However, the situation is actually more complicated. In both languages, a substantial subset of the dispositional roots — as identified by the criterion of forming dispositional stative predicates — also produce transitive stems *without* overt derivation, just as transitive roots do. The resulting transitive stems clearly have a dynamic meaning. This might be considered evidence that the roots lexicalize processes too, although this does not necessarily follow. Example (15a) shows a dispositional stative stem and (15b) a transitive stem formed with the dispositional root *k'at* 'cross' in Yucatec:

(15) YUC a.   ti'   <u>k'at-akbal</u>   y-óok'ol   u-chùun
               PREP   cross-DIS(B.3)   A.3-on   A.3-start\ATP
               le   che'-o'
               DET   tree-D2
               'There [the stick] is across on top of the tree's stump.'
               ⟨PosB 61 SBM⟩
          b.   t-u   <u>k'at-aj</u>   in-bèel
               PRV-A.3   cross-CMP(B.3)   A.1.SG=way
               'He got in [lit.: crossed] my way.'

(16a) and (16b) are parallel Tzeltal examples:

(16) TZE a.   <u>chuk-ul</u>   ta   kantela te   xela-e
               tie-DIS(B.3)   PREP   candle DET   ribbon-CL
               'The ribbon is tied round the candle.'
               ⟨BowPed 4⟩

b. ya   j-chuk   xela   ta   kantela
   INC A.1-tie(B.3) ribbon PREP   candle
   'I tie the ribbon round the candle.'

Mayanists customarily label dispositional roots that produce transitive stems only under overt derivation *P* (for "positional"), since roots that lexicalize body positions are typically found in this set, and those that produce transitive stems without a suffix *T/P* (T for transitive/P for positional (in the most complete Tzeltal dictionary available — Berlin, Kaufman, and Maffi 1990) or *P,T* (in the Yucatec dictionary of Bricker, Po'ot Yah, and Dzul de Po'ot 1998). Haviland (1994) has demonstrated the existence of a continuum in Tzotzil leading from P via T/P to T roots in terms of what derivational morphology roots can take; similar cases can be made for Tzeltal and Yucatec as well. The term "dispositional" is used in this article to designate any root that produces a dispositional stative form regardless of the P-P/T distinction. This should be understood purely as a decision of convenience — our concern here is primarily with the function of dispositional roots in locative predications, and therefore predominantly with dispositional stative forms, which are insensitive to the P-P/T distinction.

   In sum, in both languages, the classes of dispositional roots and transitive roots partially overlap. We have identified 267 dispositional roots for Tzeltal and 152 dispositional roots for Yucatec; the actual sets are probably somewhat larger.[10] In both cases, the majority of these dispositional roots also produce transitive stems without overt derivation. However, given other diagnostics, this overlap does not entail that dispositional roots are not well-defined as a form class.

   Since dispositional roots have access to transitive stems — with or without overt derivation — they also have some of the derivational privileges of transitive roots. Of particular relevance here is the resultative formation in *-bil* of transitive stems in Tzeltal (the "perfect passive participle", Kaufman 1971), and its Yucatec counterpart in *-a'n*.[11] Resultative derivation with a dispositional root provides an alternative route to the dispositional state expressed by the dispositional stative form:

(17) TZE a. bech'-el   ta   ch'ujt ton
                wind.around-DIS(B.3) PREP   belly stone
          b. bech'-bil   ta   ch'ujt ton
                wind.around-RES(B.3) PREP   belly   stone
                'It [rope] is/has been wound around the belly of the stone.'
                ⟨PosB 15⟩

(18) YUC a. ti'   bak'-<u>akbal</u>   te   tunich-o'
                 there wind.around-DIS(B.3)   PREP:DET stone-D2
          b. bak'-<u>a'n</u>   te   tunich-o'
                 wind.around-RES(B.3)   PREP:DET stone-D2
                 'There [the rope] is/has been wound around the stone.'
                 ⟨PosB 15 SBM⟩

The semantic difference between the dispositional stative form and the re-
sultative form is that the latter places a somewhat stronger emphasis on
the process that causes the Figure to be in the particular disposition.
This is preferred for example in reference to atypical instantiations of the
disposition, or to ones for which human intervention was obviously re-
quired. Thus, it may not be very "natural" to find ropes wound around
rocks, as in the picture described in (17)–(18), and speakers who adopt
this view will favor the resultative form.[12]

   The resultative with -*bil*/-*a'n* is distinct from a second type of resulta-
tive, the so-called "perfect", formed in Tzeltal with the suffixes -*oj*/-*ej* and
in Yucatec with -*mah*. The -*bil*/-*a'n* form is intransitive — it entails a
theme role, but at most implicates an actor in addition. In contrast, the
perfect is a transitive stem, preserving the actor role of the transitive
base.[13] Examples can be seen in (29)–(32) below.

2.3. *Semantics of dispositional roots*

We conclude Section 2 with a brief look at the nature of the meanings ex-
pressed by dispositional roots and how these are integrated into the se-
mantics of locative descriptions. We are especially interested in the divi-
sion of labor between dispositional forms and Ground phrases, in view of
our goal of understanding the difference in the use of dispositional forms
between Tzeltal and Yucatec.[14]

   Given the size of the sets of dispositional roots in the two languages, we
cannot provide an exhaustive semantic analysis. Instead of exploring the
semantics of individual roots, we concentrate on the kinds of meanings
lexicalized in dispositional roots as a class, trying to explain why it is
"natural" for a language to have a form class that conflates just these
kinds of information, even though better-studied languages such as En-
glish have no such form class. In general, dispositional roots lexicalize a
different part of the richer relational aspects of the entire spatial array
formed by Figure and Ground. These notions are conceptualized as
stage-level properties of the Figure — its disposition. Distinctions that
enter the conceptualization of dispositional relations include support/

suspension (including, but not restricted to, posture; e.g., 'sit', 'stand', 'lie', 'kneel', 'lean', 'hang', 'droop', 'dangle', 'be mounted on top of something'), blockage of motion (e.g., 'be stuck to something', 'be stuck between two things'), orientation in the vertical (i.e., in the gravitational field; e.g., 'lie face up', 'lie face down', 'lie on side', 'be tilted at an angle'), and configurations of parts of the Figure with respect to each other (e.g., 'be scattered', 'be spread out', 'be in a pile', 'be lined up in a row', 'be bulging', 'be bent', 'be twisted', 'be coiled up'). Individual dispositional roots typically lexicalize distinctions on a number of these dimensions simultaneously. What unites these properties is that they can be predicated of a Figure in abstraction from the specific Ground. Furthermore, the notion of ''force dynamics'' (Talmy 1988, 2000) seems to permeate these concepts: support and suspension relate to the neutralization of the pull of gravity; blockage of motion views the Ground as an ''antagonist'' to a force that would cause the Figure to move; configurations of the parts of the Figure can be thought of as the result of external forces on a Figure of particular inherent material properties and shape. Orientation is not in and of itself a force-dynamic notion; but dispositional roots appear to lexicalize orientation only in the vertical and thus specify which parts of the Figure are most directly affected by the gravitational force vector. Finally, dispositions as lexicalized in dispositional roots are noninherent properties (or ''stage-level'' properties; Carlson 1977). Permanent (i.e., individual-level) properties of the Figure may feature in the dispositional semantics in terms of selectional restrictions, or put differently, in terms of the conditions a Figure has to meet in order for a given disposition to be attributable to it (e.g., mereological (part-whole) structure (count noun vs. collective vs. mass), animacy, axial structure, rigidness). Shape is encoded by dispositional roots primarily as a stage-level configuration of the parts of the Figure with respect to each other, i.e., as noninherent. For instance, 'be round' is normally predicated of things like lumps of dough, not of rubber balls.[15]

We argue that the common thread in these kinds of information is that they all relate more closely to the Figure of the spatial relation than to the Ground. In first approximation, there is a rough division of labor between dispositional predicates and Ground-denoting phrases, with the former encoding predominantly Figure-related information (e.g., that it is standing), and the latter, information about the Ground (e.g., that it is a container). This imposes a boundary condition on our examination of the role of dispositional predicates in locative descriptions in Sections 4–5: it suggests that the encoding of rich spatial information in both the predicate and the Ground-denoting phrase is not redundant. Take, for example, one of our more complex stimuli pictures, the PosB picture 67, of a

bottle upside-down leaning against the inside side of a basket (schematically represented at the top of Figure 2 below). What kinds of information go into the computation of this spatial relation? Spatial properties of the Figure, of the Ground and the relations between them are all relevant: in this example, these include the Figure's shape or axial structure (long-thin), its orientation (upside-down), the Ground as a hollow container canonically oriented with aperture upwards, and the relation between Figure and Ground, with the Figure inside the Ground, leaning at an angle and supported by the side of the Ground. In English, we might describe this configuration by saying:

(19)   The bottle is upside-down in the basket, leaning against the side.

Not all of the spatial information is encoded, with much of it taken for granted, such as the canonical orientation of the container or the effect of gravity. The information that is encoded is distributed across different constituents of the sentence. There is one dedicated site for the encoding of spatial relations — the preposition, in this case, *in*. But this preposition only gives us a small piece of information about the total configuration: namely, that it is a containment relation, with the bottle located inside the container. This has some implications for the nature of the Ground — it is a container, and thus has a 3D (or 2D-enclosure) geometry — and none whatsoever about the Figure. The box at the lower right of Figure 2 below schematically represents the information encoded in the Ground-denoting phrase in English.
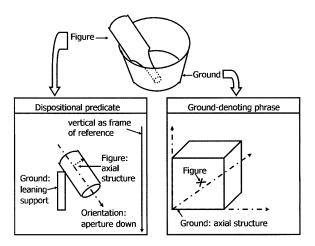

Figure 2.   *Spatial relations encoded in dispositional predicates and ground phrases*

Landau and Jackendoff (1993) claim that representations of spatial relations in language and cognition are reduced to just what is encoded by the Ground-denoting phrase in English, which identifies a point-like Figure and a part of the Ground or a "region" projected from the Ground at which the Figure is located (here: the inside of the basket) — plus the abstract locative function that maps the Figure's location into the relevant part or region of the Ground. This analysis ignores the various pieces of Figure-related information encoded optionally in adjuncts or secondary predicates of various kinds (*upside-down, leaning (against the side)*) in English, but it is precisely these types of distinctions that are encoded in predicates formed from dispositional roots in Mayan languages.

Consider Tzeltal and Yucatec renditions of the same scene:

(20) TZE kojkoltza'   xik'-il   ta   y-ut   moch
         upsidedown   lean-DIS(B.3)   PREP   A.3-inside   basket
         'upside-down [the bottle] is leaning at the inside of the basket'
         ⟨PosB 67⟩

(21) YUC ti'   nak'-akbal   / nok'-okbal   ich
         there lean-DIS(B.3) / aperture.down-DIS(B.3) in
         le   xàak-o'
         DET   basket-D2
         'there [the bottle] is leaning / upside-down in the basket'
         ⟨PosB 67 EMB⟩

In these examples, the Ground phrase encodes approximately the same containment relation as the English one in (19) does. But the head of the clause encodes specific information about the Figure: that it is leaning or positioned with aperture downwards. The box on the lower left of Figure 2 sketches the meanings covered by the dispositional predicates in (20)–(21). Figure 2 attempts to capture the idea that dispositional predicates and the Ground phrase present the Figure-Ground configuration from two different perspectives: the dispositional predicate reduces the Ground to a generic three-dimensional object, whereas the Ground phrase reduces the Figure to a point.

In examples (20)–(21) above, Figure-related and Ground-related information are neatly divided across the dispositional predicate and the Ground phrase — the former does not encode any information about the Ground, other than that it provides support for leaning, and the latter reduces the Figure to a point in space. But this clean division of labor is not characteristic of all dispositional roots. There appears to be a continuum in terms of the extent to which Ground-related information is specified by the root. On one end of the cline are roots that encode configuration of

parts of the Figure and orientation — the use of these does not even re-
quire the existence of a Ground.[16] On the other end are certain support/
suspension or blockage of motion roots with meanings such as 'be
mounted on top of something', 'be inserted in something', 'be stuck
onto/between bifurcated something', etc. While these, like all disposi-
tional roots, can be predicated of a Figure without reference to a specific
Ground, the disposition here dictates the complete relation between Fig-
ure and Ground. In fact, the Figure-Ground relation expressed by the dis-
positional root often cannot be analyzed in such a way as to be consistent
with the very general semantics of the Ground phrase, which only speci-
fies a part of the Ground or a region projected from it as a nonspecific
"landing site" for the locative relation. As an illustration, consider the
following alternative rendition of the same scenario described in (19)–
(21):

(22)   TZE   tik'-il   ta   moch   te   limete-e
              insert-DIS(B.3) PREP   basket   DET   bottle-CLI
              'The bottle is put in (lit.: inserted at) the basket.'

The information about properties of the Ground encoded in this disposi-
tional root *tik'* is so specific that it would be redundant to use the rela-
tional noun *y-ut* 'its-inside' in the Ground phrase, as in (20) (although
in fact such redundancy is sometimes tolerated). Even more "Ground-
specific" are dispositional roots with meanings like 'be immersed in liq-
uid', 'be immersed in granular substance'.[17]

   Mayan languages have a large word class uniquely dedicated to the en-
tire highly complex domain of dispositional properties of the Figure, al-
lowing the expression of all of them in a dedicated place in the clause —
namely, in the predicate. In English, this information is scattered across
adjuncts and secondary predicates and hence syntactically marginal.
There is a corresponding pragmatic difference: in English it is not natural
to specify such detailed information about the Figure without a special
reason for it, while in Mayan languages it is a completely natural ingredi-
ent of spatial descriptions. Furthermore, since often a given spatial con-
figuration has different aspects that can be expressed by different disposi-
tional roots, the choice of which root to use involves taking a particular
perspective on the scene. For example, (20) homes in on the angle of the
bottle (leaning), whereas (22) expresses the insertion and ignores the angle.
Similarly, the two options for dispositional roots in (21) — 'lean' vs. 'ap-
erture down' — exclude one another. There is therefore a large amount of
variability across speakers and across discourse contexts in how a partic-
ular spatial configuration is encoded, depending on the perspective taken
on the scene.

Let us now turn to how this typologically intriguing resource of spatial semantics is used in locative predications and dispositional descriptions in the two languages under consideration.

3. The grammar of locative and dispositional predications

In this section, we discuss the morphosyntactic resources used in Tzeltal and Yucatec locative descriptions. These resources are broadly equivalent. Yet, as we show in Section 4, they are not used equivalently in the two languages. The difference in the conditions under which speakers of the two languages use dispositional forms in their locative descriptions constitutes the central observation of this article.

Locative predications and dispositional descriptions contain a predicate and (optionally) a Ground-denoting phrase in both languages. Different constructions are possible, depending on the construal of the locative relation being described and on the actions that bring it about. Here we take performance on the "Topological Relations Pictures Series" (BowPed) and "Picture Series for Positional Verbs" (PosB) tasks (cf. Section 1) as the basis for our description of the resources available and their patterns of use in the two languages, and we both have additional elicitation and natural language usage data that inform our analyses. We discuss predicate types in Section 3.1 and the structure of the Ground-denoting phrase in Section 3.2.

3.1. *Predication constructions*

In both languages, four distinct construction types occur in the answers to "where" questions asked with respect to the BowPed and PosB stimuli. Beyond these four types, other constructions which sometimes occurred in responses to BowPed pictures by speakers of both languages are not considered here, because they do not constitute pragmatically appropriate answers to "where" questions and thus are not considered in the further analysis in Sections 4–5; this concerns in particular the existential and possessive predications mentioned in Section 3.1.2 below. For current purposes our criteria for including responses as pragmatically appropriate replies to the "where" questions in the elicitation task include the following: the Figure was treated as definite and its location in relation to the Ground was specified. Nonvalid responses included utterances like: "there's a girl", or "he has a hat."

3.1.1.   *Dispositional stative predication.*   The dispositional stative predicate is formed in Tzeltal with the suffix -V_1l or its distributive plural counterpart -*ajtik*, as in (23):

(23)   TZE   <u>tik'-il</u>   ta   y-util   bojch
               inserted-DIS(B.3)   PREP   A.3-inside gourd
               te   mantsana-e
               the apple-CLI
               'The apple is inserted in the gourd bowl.'
               ⟨BowPed 2⟩

The same structure — a dispositional stative predicate optionally expanded by a Ground-denoting phrase — also occurs in Yucatec, where the dispositional stative predicate is formed with -*Vkbal* or its distributive plural counterparts:

(24)   YUC   te'l   <u>kul-ukbal</u>   u-pèek'-il   t-u-pàach
               there sit-DIS(B.3)   A.3-dog-REL   PREP-A.3-back
               le   naj-o'
               DET house-D2
               'There the dog is sitting outside the house.'
               ⟨BowPed 6 ICM⟩

We will establish in 4.1 that the dispositional stative predicate heads the "Basic Locative Construction" (BLC) in Tzeltal. In Yucatec, however, this construction plays a relatively marginal role in locative predications. In contrast, the answers elicited with the PosB stimulus are predominantly formed with dispositional stative predicates in both languages.

3.1.2.   *Generic existential predication.*   Both languages have a monovalent stative predicate dedicated to predicating (a) the existence of an indefinite Figure at a definite or indefinite Ground optionally specified by a Ground-denoting phrase (e.g., 'There is a bug (on your shoulder)'); (b) the location of a definite Figure with respect to a definite or indefinite Ground specified by a Ground phrase (e.g., 'The bug is on your shoulder'); and (c) the possession of an indefinite Figure by a definite and most commonly animate possessor (e.g., 'I have a horse').[18] This generic existential predicate is *ay* in Tzeltal (25) and *yàan* in Yucatec (26):

(25)   TZE   te   timbre,   <u>ay</u>   ta   s-xujk   ala
               DET   stamp   EXIST(B.3) PREP A.3-corner   DIM
               karta
               letter
               'The stamp, it is at the corner of the letter.'
               ⟨BowPed 3⟩

(26) YUC le   lùuch-o', ti'   <u>yàan</u>   y-óok'ol le
         DET cup-D2   there EXIST(B.3) A.3-on   DET
         mèesa-o'
         table-D2
         'The cup, it's there on the table.'
         ⟨BowPed 1 JYU⟩

As we shall show in Section 4.1, this construction — that is, the (b) version of it relevant to locatives — is the BLC of Yucatec, but not of Tzeltal. Even in Tzeltal, however, it is used as a default under certain conditions: for instance, when information about the Figure's spatial disposition is not available, such as in the formulation of "where" questions, or in reference to Figures far away or out of sight, or when the nature of the Figure or the Ground or both do not support the use of any dispositional, such as when the Ground is referred to by a place name.

The locative use of the existential predicate (b) differs from the existential (a) and possessive (c) uses in the definiteness of the Figure and the presence of the Ground phrase (e.g., "The hat is on the man"). Existential and possessive predications with the generic existential predicate sometimes occurred during the BowPed task (e.g., "There is a hat on the man", or "He has a hat"), but these are omitted from the analysis here, since they do not constitute valid responses to the "where" question of the task.

3.1.3. *Resultative predication.* Derived stative resultative stems of Tzeltal and Yucatec have been introduced in connection with dispositional roots in Section 2.2.3 above. These occur in two types of construction. First, forms with *-bil* in Tzeltal (27) and *-a'n* in Yucatec (28) predicate the result state of the event lexicalized in the root over its theme argument without an entailment of causation by an actor. Second, the so-called transitive "perfect", formed in Tzeltal with the suffixes *-oj/-ej* (29) and in Yucatec with *-mah* (30), differs from the *-bil/-a'n* forms in that it is restricted to transitive stems and preserves their actor role.

(27) TZE <u>chuk-bil</u>   ta   x-ch'ujt ala   kantela
         tie-RES(B.3) PREP   A.3-belly DIM   candle
         'It (ribbon) is tied at the belly of the candle [i.e., tied around its middle].'
         ⟨BowPed 4⟩
(28) TZE y-<u>otses-ej</u>   ta   s-k'ab
         A.3-enter:CAUS-PERF PREP   A.3-hand
         'He has made it [the ring] enter (on)to his hand.'
         ⟨BowPed 10⟩

(29)   YUC   le   naj-a'   <u>k'al-a'n</u>   u-pàach   y-éetel
           DET house-D1   close-RES(B.3) A.3-back   A.3-with
           che'-o'b-o'
           tree-PL-D2
           '(...) the house, its outside is enclosed with trees.'
           ⟨BowPed 15 JYU⟩
(30)   YUC   u-p'óok-o',   u-<u>ts'a'-maj</u>
           A.3=hat-D2   A.3=put/give-PERF(B.3)
           t-u=pòol
           PREP-A.3=head
           'His hat, he has put it on his head.'
           ⟨BowPed 5 ICM⟩

Both types of derived resultative stem regularly head both locative predications and dispositional descriptions in both languages. They occur in this function with dispositional roots (e.g., [27], [29]) and also with other roots (e.g., [28], [30]). As the examples show, resultative predications are optionally expanded in both languages with Ground phrases of the same structure as those that accompany dispositional stative predicates and the generic existential predicate.

3.1.4.   *Dynamic verb forms.*   A small number of consultants' first responses to the BowPed task (4% among the Tzeltal speakers and 9% among the Yucatecans) feature clauses headed by dynamic verb forms, such as those in (31)–(32):

(31)   TZE   ya   x-<u>ben</u>   ta   ba   ja'
           INC   ASP-go(B.3) PREP   top   water
           '[The boat] goes (along) on top of the water.'
           ⟨BowPed 11⟩
(32)   YUC   le   chan bàarko-o',   te'l   k-u   <u>máan</u>   ich
           DET DIM boat-D2   there   IMPF-A.3 pass   in
           le   ha'-a'
           DET   water-D1
           'The little boat, there it's moving in the water right here.'
           ⟨BowPed 11 JCM⟩

These constitute valid answers to the "where" questions of the BowPed task, as they treat the Figure as definite and encode the Ground in a Ground phrase of the same structure as those occurring with the three construction types discussed above. No dynamic-verb responses were collected with the PosB stimulus.

3.2. *Structure of the Ground phrase*

The Ground phrase has the same basic structure in all four construction types listed above. In what follows, we only consider Grounds referred to by common nouns, disregarding Grounds denoted by place names. Ground phrases may also be constituted by deictic or anaphoric adverbs or by adverbial clauses headed by place-denoting ('where') pro-forms, but such constructions play only a marginal role in the BowPed and PosB responses. For more information on the Ground phrase in the two languages, see Brown (2006) on Tzeltal and Bohnemeyer and Stolz (2006) on Yucatec.[19]

In general, Mayan languages have only a single generic preposition (Kaufman 1990). Tzeltal is representative here; its single preposition is *ta*, illustrated in (33):

(33) YUC tik'-ajtik   *ta*   (y-util)   ala   moch
            inserted-DIS.(B.3) PL PREP   A.3-inside   DIM   basket
            '[The bottles] are multiply inserted at (the inside of) the
            basket.'
            ⟨PosB 60⟩

As in (33), the Ground phrase may optionally be expanded by what we call here a "Relational Spatial Noun", a relational noun possessed by the nominal referring to the Ground object — in (33), *-util* 'inside'. Relational nouns denote parts of the Ground object or regions projected from it and have meanings such as '(on) top (of)', 'on', 'above', '(at) back (of)', 'underneath', etc.[20] The only variation of the structure in (33) that occurs in Tzeltal is the optional deletion of the possessor marking on some relational nouns, as in (34):

(34) TZE bech'-el   ta   ala   ch'ujt   ton
            wound-DIS(B.3)   PREP   DIM   belly   stone
            'It (rope) is wound around the little belly of the stone.'
            ⟨PosB 15⟩

The structure of the Ground phrase in Yucatec is the same as that illustrated for Tzeltal in (33) with all relational nouns that denote exclusively body or object parts, but there is a somewhat greater amount of structural variation with relational nouns that may denote spatial regions. Some of these are optionally adverbialized with the suffix *-il*. These adverbials then constitute heads of Ground phrases which can be expanded by phrases headed by the generic preposition *ti'* combined with the bare Ground-denoting nominal. Consider the contrast in (35):

(35) YUC a. le   pàal-o'   ti'   yàan   t-u-pàach
                DET child-D2   there EXIST(B.3) PREP-A.3-back

        le   sìiya-o'
        DET   chair-D2
        'The child, there he is at the back of/behind the chair.'
        ⟨BowPed 64 FYK⟩
  b. p'uk-ukbal   jun-túul   máak-i'
        squat-DIS(B.3) one-CLAN   person-D4
        <u>pàach(-il   (ti'))</u>   le   bàanka-o'
        back-REL PREP   DET bench-D2
        'A person is squatting at the back of/behind the chair.'
        ⟨BowPed 64 ICM⟩

While both constructions can have both the nonprojective ('at the back of') and the projective reading ('behind'), the adverbial use of the relational noun in (35b) favors the projective interpretation. Furthermore, as indicated by the parentheses in (35b), both the adverbializing suffix -*il* and the generic preposition *ti'* may be dropped with some relational nouns, rendering their construction preposition-like. Other relational nouns retain possessor marking but occur predominantly without the generic preposition *ti'* (an example is *óok'ol* '(on) top (of)', 'on', 'above' in (15a) and (26) above). Two relational nouns, *chúumuk* '(at/in the) center/middle (of)' and *ich* 'in(side)', may take the adverbial suffix -*il*, but never occur possessed. *Chúumuk* may combine either with a *ti'*-phrase or with the bare Ground-denoting nominal. *Ich* 'in(side)' is the only one that does not fulfill any of the three criteria — it can occur without -*il*, it never takes possessor marking, and it doesn't occur with *ti'*. It is therefore the closest candidate for a second preposition beside the generic *ti'*. In sum, then, the formal distinction between preposition and relational spatial noun is much more muddled in Yucatec than it is in Tzeltal (cf. also Levinson and Meira 2003).

In the next section, we examine the distribution of the four predicate construction types introduced in Section 3.1 across the responses to the BowPed and PosB tasks. The PosB stimuli highlight dispositional properties of the Figure, and this favors dispositional stative predicate responses in both languages. In contrast, the BowPed data establish the dispositional stative predicate construction as the BLC of Tzeltal, while the generic existential predication emerges as the BLC of Yucatec. In Section 5 we discuss possible explanations for this differential use of identical resources.

4.   Spatial descriptions

We now turn to examine the distribution of the four locative predication construction types introduced in the previous section with respect to the

data collected with the "Topological Relations Pictures Series" (BowPed) task and the "Picture Series for Positional Verbs" (PosB) task. These are linguistic elicitation designs that involve the collection of preferred descriptions of two picture series under contextual stipulation of a locative frame: participants were asked to describe the pictures such as to answer an implicit or explicit question about the location of one designated object — the "Figure" — featured in them. The collection of the Tzeltal and Yucatec data followed the methodological protocol described in detail in Ameka and Levinson (this issue). We counted a response type as preferred for a given stimulus item in a language if the majority of speakers of that language chose this construction in their first response to this item. If all speakers choose different response types, we counted the item as having elicited no preferred response.

The findings are clear (cf. Figure 3): Tzeltal speakers strongly prefer to use a dispositional stative predicate in both contexts (61% of consultants' first responses to the BowPed stimuli and 71% of those to the PosB stimuli). Yucatec speakers, in contrast, do not tend to use dispositional stative forms when answering "where" questions in the BowPed context, unless they are prompted to by certain properties of the stimulus (only 11% of their first responses featured dispositional stative predicates). But they do use dispositional stative predicates in the PosB context (in 58% of their first responses), because in the PosB set of pictures (which depict only four different objects in different spatial configurations), disposition is highlighted by the minimal contrasts among the pictures.

The following two subsections discuss our findings for each of the two tasks and for each language separately.
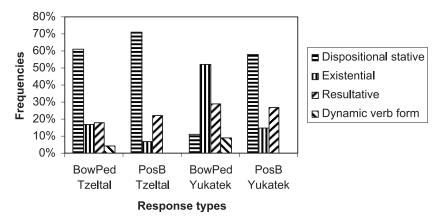

Figure 3.   *Response type frequencies by task and population*

4.1.   *The Basic Locative Construction: the BowPed data*

The BowPed task as described in Ameka and Levinson (this issue) involves the collection of responses to 71 line drawings featuring spatial Figure-Ground relations. Most of these are "topological" relations in the sense of Piaget and Inhelder (1956), i.e., they can be cognitively and linguistically encoded independently of a frame of reference — hence the official name of the stimulus and task, "Topological Relations Picture Series". The participants describe the location of the designated Figure object with respect to the Ground by answering the question "Where is the [Figure]?" The task was carried out with three Tzeltal and five Yucatec speakers. Of the Yucatec sample, we discarded two speakers from the analysis.[21] The relative frequencies in the speakers' first responses (disregarding additional descriptions volunteered by the speakers or elicited in response to follow-up questions) are given in Tables 1 and 2. From these responses we tried to determine the predominant response type for each stimulus item, i.e., the construction type of the predicate featured by the first responses of at least two of the three speakers of each language. There was a large amount of cross-speaker variation; in their first responses the three Tzeltal speakers all proffered the same construction type for only 28 of the scenes elicited, and the Yucatec speakers agreed

Table 1.   *Tzeltal BowPed response type frequencies by participants and tasks [N = 71]*

	AO (male, age ∼ 39)	XCh (female, age ∼ 47)	SM (female, age ∼ 37)	Average
Existential	10 (14%)	14 (20%)	9 (13%)	15%
Dispositional	53 (75%)	40 (56%)	38 (54%)	62%
Resultative	6 (8%)	15 (21%)	19 (27%)	19%
Dynamic	0	1 (1%)	2 (3%)	1%
No valid response	2 (3%)	1 (1%)	3 (4%)	3%
Total	71 (100%)	71 (100%)	71 (100%)	(100%)

Table 2.   *Yucatec BowPed response type frequencies by participants and task [N = 71]*

	JYU (male, age ∼ 24)	JCM (male, age 52)	ICM (male, age ∼ 63)	Average
Existential	46 (65%)	34 (48%)	14 (20%)	44%
Dispositional	0	2 (3%)	17 (24%)	9%
Resultative	17 (24%)	19 (27%)	16 (23%)	24%
Dynamic	6 (8%)	5 (7%)	5 (7%)	8%
No valid response	2 (3%)	11 (16%)	19 (27%)	15%
Total	71 (100%)	71 (100%)	71 (100%)	(100%)

in their first responses on only ten scenes.[22] This amount of variation may seem surprising; but considering that every stimulus item can be described with either an existential-predicate construction or a dispositional construction in both languages, it is clear that whatever factors drive these choices must be subtle and are likely dependent on contextual assumptions.

The clearest discrepancy between the two populations emerged in the use of two construction types: clauses headed by dispositional stative predicates and clauses headed by the generic stative existential/locative predicate. Despite the variation across speakers, Tzeltal consultants clearly preferred to use dispositional statives (in 54 to 75% of the scenes) rather than the existential predicate (13 to 20%), whereas Yucatec speakers preferred to use the existential predicate (in 20 to 65% of the scenes).

Figure 4 maps out the extensions of these two construction types in the preferred responses for the two languages — that is, the classes of scenarios depicted in our stimulus set for which each construction was the

Figure 4. *Extensions of the existential (EXIST) and dispositional stative (DIS) predicate constructions in the BowPed responses*

preferred response. Other responses are merged into a single negatively defined category in this diagram.[23]

The inclusion of an individual scene in the extension of a particular response type in Figure 4 cannot be regarded as highly significant, given the small number of speakers the task was conducted with. In contrast, we consider the relations between the overall distributions of the two construction types in the responses of the two populations as highly representative of actual usage. The scenes that elicited predominantly dispositional stative predicates among the Yucatec speakers are a very small subset of those that triggered predominantly dispositional stative responses in the Tzeltal population (two scenes in Yucatec, [6 'dog next to doghouse' and [40 'cat on mat'], as opposed to no fewer than 44 in Tzeltal). Conversely, the set of scenes that elicited predominantly the generic existential predicates in Tzeltal (7 scenes) is nearly properly included in the set of scenes for which the Yucatec speakers preferred existential predicates (33 scenes); only one scene ([54 'rabbit in cage']) triggered preferred existential responses in Tzeltal but not in Yucatec. This suggests that the two constructions have similar prototypes in the two languages, while their extensions diverge drastically. Furthermore, the extension of the existential predicate construction in Yucatec overlaps to a large extent with that of the dispositional stative predicate construction in Tzeltal — 20 scenes triggered preferred dispositional stative responses in Tzeltal and preferred existential predicate responses in Yucatec, corresponding to 46% of all scenes eliciting predominant dispositional stative responses in Tzeltal and to 61% of all scenes eliciting preferred existential predicate responses in Yucatec.

To establish the Basic Locative Construction (BLC) for each language, we need to consider the position of the scenes on the "localizability hierarchy" that underlies the BLC typology (see Ameka and Levinson this issue). Wilkins (Kita and Walsh Dickey 1998: 55–61; Van Geenhoven and Warner 1999: 61–71), comparing locative descriptions in 11 unrelated languages based on BowPed data, suggests that a prototypical locative description refers to an "easily moved inanimate Figure located in nonattached fashion with respect to Ground." The BLC of any given language is that construction preferred in response to this prototypical scene. As one moves away from the locative prototype along each of a number of conceptual parameters one is more and more likely to encounter constructions other than locative predications. Wilkins formulates a localizability hierarchy among six types of scenes, with the locative prototype at the bottom, so as to compare the semantic extension of the BLC across languages.

The distribution of construction types across the six levels of this hierarchy is depicted in Figure 5 and Figure 6. (Scenes for which no predominant response occurred are omitted from these figures.)
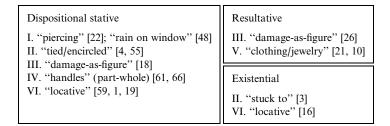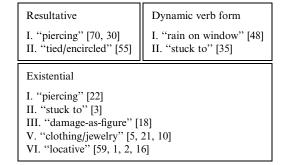
Dispositional stative	Resultative
I. "piercing" [22]; "rain on window" [48] II. "tied/encircled" [4, 55] III. "damage-as-figure" [18] IV. "handles" (part-whole) [61, 66] VI. "locative" [59, 1, 19]	III. "damage-as-figure" [26] V. "clothing/jewelry" [21, 10]
	Existential
	II. "stuck to" [3] VI. "locative" [16]

Figure 5.   *Tzeltal on the BLC typology*

Resultative	Dynamic verb form
I. "piercing" [70, 30] II. "tied/encircled" [55]	I. "rain on window" [48] II. "stuck to" [35]

Existential
I. "piercing" [22] II. "stuck to" [3] III. "damage-as-figure" [18] V. "clothing/jewelry" [5, 21, 10] VI. "locative" [59, 1, 2, 16]

Figure 6.   *Yucatec on the BLC typology*

Figures 5 and 6 establish the dispositional stative predicate construction as the BLC of Tzeltal and the existential predicate construction as the BLC of Yucatec, since these are the constructions used preferentially at level VI (the basic locative level of small inanimate easily moved Figures not attached to Ground) in the two languages. In Yucatec, existential predication is in fact without competition in the preferred responses to the level VI scenes, whereas in Tzeltal, three scenes triggered predominantly dispositional stative responses but in response to one, [16 'ball under chair'], the consultants preferred to use the existential predicate construction — presumably because the ball as a relatively "unfeatured" object is hard to place in the extension of any dispositional root. Arguably, then, existential predication is a "minor BLC" of Tzeltal. This interpretation fits with the observation that the generic existential predicate is used as a default when the Figure's disposition is unknown or the like, for instance in the formation of "where" questions (cf. Section 3.1.2).

The use of the dispositional stative predicate construction extends across the six levels of the typology in Tzeltal, with the exception of level V ("clothing and jewelry", e.g. [21 'shoe on foot']). Here and on one

scene of level III (''damage as Figure'', scene [26 'crack in cup']), Tzeltal speakers preferred resultative constructions. Conversely, the Yucatec consultants used existential predications all the way to the top, except for level IV (''handles'', e.g. [61 'handle on cupboard']), which did not elicit any preferential pattern. Yucatec speakers preferred resultative predications or dynamic verb clauses in responses to most scenes of levels II (''tied'', e.g. [55 'hose around stump'], and ''stuck to'', e.g. [35 'band aid on shin']; but not ''stuck'', e.g. [3 'stamp on letter'], which triggered existential responses) and also to level I (''piercing'', e.g. [70 'apple on stick'], and ''rain on window'' [48 'rain on window']). Tzeltal speakers did not produce dynamic clauses as their preferred response to any scene considered in the localizability typology, just as Yucatec speakers did not produce dispositional stative predications as a preferred response to any of these scenes.

In conclusion, the analysis of preferred use along the levels of the localizability typology very clearly establishes existential predication as the BLC of Yucatec and dispositional stative predication as the BLC of Tzeltal, although Tzeltal speakers may fall back on existential predication as a default where dispositional stative predication is not applicable.

4.2.   *Locative predications under dispositional focus: the PosB data*

The PosB task was conducted with three speakers of each language.[24] This task, describing ''where'' the Figure is in scenes each of which shows one of just eight different kinds of objects in a particular spatial configuration with a Ground object, strongly biased the Yucatec speakers towards using dispositional stative predicates. They used dispositional stative forms of 25 dispositional root types (263 tokens — note that consultants often offered more than one response, or alternative descriptions were suggested to them and they accepted them). All the pictures elicited dispositional stative responses, and only twelve pictures failed to elicit dispositional stative forms among any of the consultants' first responses. A summary of the data for each Yucatec consultant is given in Table 4 below.

In strong contrast to the Yucatec data, the responses of two of the Tzeltal speakers to the PosB stimuli do not look very different from the Tzeltal BowPed ones; by far the majority of responses used a stative dispositional predicate. However, one consultant introduced the picture each time before describing where the Figure was. In her data, there is therefore much more use of the *ay* 'exists' construction (introducing referents), and more of the resultative constructions than the dispositional stative

Table 3. *Tzeltal PosB response type frequencies by participants and task [PosB book missing pictures 53 and 55, so N = 66]*

	AGO (male, age ∼ 47)	ACh (female, age ∼ 52)	XpK (female, age ∼ 34)	Average
Existential	3 (5%)	1 (2%)	13 (20%)	9%
Dispositional	63 (95%)	41 (62%)	33 (50%)	69%
Resultative	0	24 (36%)	20 (30%)	22%
Total	66 (100%)	66 (100%)	66 (100%)	(100%)

Table 4. *Yucatec PosB response type frequencies by participants and task [N = 68]*

	EMB (male, age ∼ 43)	RMC (male, age ∼ 52)	SBM (male, age ∼ 34)	Average
Existential	4 (6%)	12 (18%)	14 (21%)	15%
Dispositional	37 (54%)	44 (65%)	38 (56%)	58%
Resultative	27 (40%)	12 (18%)	16 (24%)	27%
Total	68 (100%)	68 (100%)	68 (100%)	(100%)

ones. But when pressed to specify the location of the Figure, this speaker too tended to give the dispositional stative construction as a response (saying, for example, well, actually, it's *waxal ta mexa*, 'standing on the table'). A summary of the data for each consultant is given in Table 3.

The PosB data for both languages, counted by construction type, are shown in Figure 3 above. Overall, 71% of the Tzeltal consultants' first responses featured a dispositional stative predicate, as compared to 63% in the BowPed task. In stark contrast, the Yucatec speakers used dispositional stative predicates in only 11% of their first responses to the BowPed pictures, but in 58% of their first responses to the PosB stimuli.

The contrast between responses to the two tasks for Yucatec speakers calls for an explanation. Despite the elicitation question being the same in both the BowPed and PosB tasks (namely, 'Where's the Figure?'), the BowPed task biases consultants to talk about location only, whereas the PosB task biases the consultants to talk about location and disposition. This is because the PosB pictures feature the same set of inanimate objects (bottles, balls, rope, pieces of cloth, sticks, a clay pot, beans, cassavas) in different dispositions (e.g., the stick leaning against a tree stump vs. stuck upright in the Ground vs. lying on a table). Presumably this contrastive encoding of dispositions in the stimuli induces participants to pay more attention to dispositional properties as they inevitably compare pictures to determine whether they are identical or, if not, how they differ

from each other. The contrastiveness of the dispositions featured in the PosB pictures leads Yucatec speakers to drastically increase the frequency at which they encode dispositional information with respect to the non-contrastive BowPed stimuli, whereas the effect of the difference between the two tasks is much smaller among Tzeltal speakers, as the latter already encode dispositional information with high frequency in response to the BowPed items.

It is noteworthy that dispositional roots are not generally mutually exclusive in their application to the PosB pictures; that is, the same scene can often be described by more than one dispositional predicate. In fact, only about a third of the stimuli (21 out of the 68 pictures) triggered only a single dispositional root type in Yucatec (for example, almost all scenes in which an elongated Figure is leaning against a Ground object were described using *nak'* 'lean'). In both languages, many pictures were described by different consultants using different dispositional roots, or even one and the same consultant offering alternative descriptions with different dispositional roots. This indicates that selection of the dispositional root is highly descriptive and perspective-dependent. For example, [51 cassavas (Ground)][25] elicited responses with the following four dispositional roots in Yucatec:

ts'ap 'stack' — because the cassavas are "ordered", i.e., arranged in some fashion that displays less than maximal "entropy" or disarray
nik 'scatter' — because the cassavas could be arranged in a way such that they take up less space together (i.e., if they are stacked in parallel)
much' 'gather, pile up' — because the cassavas are in close spatial proximity
pek 'put down, support along dominant axis' — because all cassavas are supported along their dominant axis

The PosB data show that Yucatec speakers readily use dispositional stative predicates in their locative predications when context prompts them to focus on dispositional properties. Yet, unlike Tzeltal speakers, Yucatecans prefer the existential predicate construction in neutral contexts. What could account for this difference? We address this question in the next section.

5.   Why the difference between Tzeltal and Yucatec?

We have shown (in Section 2) that both Tzeltal and Yucatec possess large form classes of dispositional roots. Moreover, speakers of both languages use the same four construction types (introduced in Section 3) in locative

predications. These include, aside from generic stative existential predicate constructions, clauses headed by stative resultative predicates, clauses headed by dynamic verbs forms, and clauses headed by derived dispositional stative predicates. The data collected with the "Picture Series for Positional Verbs" (PosB) indicate that Yucatec speakers, like Tzeltal speakers, prefer to use dispositional stative predicates in their locative predications when context — here, the contrastive occurrence of identical Figures in different dispositions — makes disposition "an issue" (cf. Section 4.2). Yet, in the neutral context of the "Topological Relations Pictures Series" (BowPed), Yucatec speakers predominantly use the generic existential predicate to assert locative relations, while Tzeltal speakers overwhelmingly favor dispositional stative clauses.

In this section, we discuss four hypotheses that might account for this striking discrepancy. To preview them: First, cultural differences might lead the two populations to construe the contents of the stimuli differently (Section 5.1). Secondly, the difference might be contact-induced, influences of differential contact with Spanish (Section 5.2). The third hypothesis has to do with the division of labor between predicate and Ground-denoting phrase in locative predications (Section 5.3). Tzeltal has only a single generic preposition, and Yucatec speakers use a generic existential predicate in their "Basic Locative Construction" (BLC). So perhaps Tzeltal speakers use dispositional stative predicates to encode the spatial information that Yucatec speakers put in the Ground phrase? The final hypothesis we consider is that a typological design feature might be responsible for the difference (Section 5.4). This principle induces Tzeltal speakers to prefer "theme-specific" predicates in clauses with theme arguments, including predicates imposing strong selectional restrictions on the Figure in locative predications — i.e., dispositional predicates.

5.1. *Familiarity with picture stimuli*

Suppose that, in languages which offer a choice between generic existential and dispositional predicates in locative predications, this choice can be influenced, among other factors, by the speaker's judgment of how prototypical the relationship between Figure and Ground in a stimulus picture is, given the type of Figure and the type of Ground. For instance, the most stereotypical spatial relation between a cup and a table is going to be for the cup to be placed on the table in canonical orientation; any other relation, such as the cup upside-down or under the table, will then be viewed as less stereotypical. Speakers may use just the generic existential predicate to implicate a canonical relation, resorting to the more

specific dispositional predicate only in reference to less canonical scenes. Something similar has been shown for languages which prefer one of a small set of positional verbs in the BLC (cf. Levinson 2000).

Suppose, furthermore, that speakers' judgments of how stereotypical the relation between Figure and Ground in a particular stimulus picture is depend on their familiarity with the particular types of objects and the mode of presentation, i.e., the use of pictorial representations. These two hypotheses then add up to a third one: speakers less familiar with the objects shown in the pictures or with the kinds of pictures used will be relatively more likely to use dispositional predicates in their locative predications in response to the BowPed stimulus. This hypothesis predicts that Tzeltal speakers are less familiar with the objects presented in the BowPed images, or with the visual properties of the images, than Yucatec speakers. This does not appear to be borne out. First, our experience suggests that both populations are roughly equally familiar with industrially made visual representations. Second, in our judgment based on many years of fieldwork observations, both the Tzeltal and the Yucatec BowPed responses exhibit typical uses of dispositional stative and existential predicates in locative descriptions in the two languages in natural contexts. Moreover, it seems actually doubtful that the choice between generic existential and dispositional stative predicate depends on the stereotypicality of the Figure-Ground relation in Tzeltal. Speakers of this language routinely use dispositional stative predicates in locative descriptions of canonical configurations such as cup on table (where Yucatec speakers equally routinely use the existential predicate).

5.2.   *Language contact influence*

Spanish, the dominant language of Mexico, is a single-verb language on the BLC typology — locative predications are canonically headed by the stative verb *estar* 'to be (in a stage-level state or position)'. Could it be the case that the common ancestor of Tzeltal and Yucatec was a multiverb language, and that Yucatec has been transformed into a single-verb language due to contact with Spanish, whereas Tzeltal has not? Contact with Spanish initiated at roughly the same time for both languages (in the first half of the 16th century), but has not had the same intensity — the degree of bilingualism is relatively low in the Tzeltal community of this study, but estimated to be at around 85% for Yucatec (Suárez 1983; cf. also Pfeiler 1995). Evidence of contact-induced change is fairly limited in both languages; it is reduced for the most part to the borrowing of lexical items and discourse particles. We cannot at this point conclusively discard or

confirm the language contact hypothesis. However, one prediction generated by this hypothesis is that the frequency at which individual speakers use existential predicates in their locative descriptions is a function of the frequency at which they use Spanish rather than their native language. This appears to be borne out for the Yucatec participants, but not for the Tzeltal speakers. The only Tzeltal consultant with a functional use of basic Spanish (AO, cf. Table 1) is actually the most extreme user of dispositional predicates in the BowPed task (he is also bilingual in another Mayan language, Tzotzil). While we cannot explore this possible line of explanation any further here, there are others that we can.

5.3. *Division of labor between predicate and Ground phrase*

As we have shown in Section 2.3, spatial information in Mayan languages, including information about the geometry of Figure and Ground and the topological relation between the two, is potentially encoded in both the Ground-denoting phrase and in dispositional stative predicates. At the same time, Tzeltal and Yucatec speakers have more leeway in how much spatial information they package in the Ground phrase than do English speakers, since the Ground phrase in Mayan generally provides the option of augmenting a generic preposition with a relational spatial noun (cf. Section 3.2). This suggests the hypothesis (cf. Brown 1994; Grinevald 2006) that Tzeltal speakers prefer to convey more information in the predicate of locative predications, using only the generic preposition *ta* without a relational noun in the Ground phrase (for example, ''The cup is standing *ta* table''), whereas Yucatec speakers prefer the generic existential predicate in combination with a richer Ground phrase formed with a relational noun (e.g., ''The cup is on the top of the table'').

Assessing the nuances of the semantic contributions relational nouns and dispositional roots make to locative predications is a difficult task. But there is a much simpler initial viability test of the division-of-labor hypothesis: we just need to count the frequency of relational nouns in Ground phrases in the BowPed responses of the two populations. The predictions in line with the hypothesis are as follows: First, Tzeltal speakers will produce fewer relational nouns than Yucatec speakers. And second, within languages one should also find a difference between locative predications headed by existential vs. dispositional stative predicates: speakers should use more relational nouns with the spatially empty existential predicates than with dispositional stative predicates. The results are presented in Figure 7 for Tzeltal and Figure 8 for Yucatec.
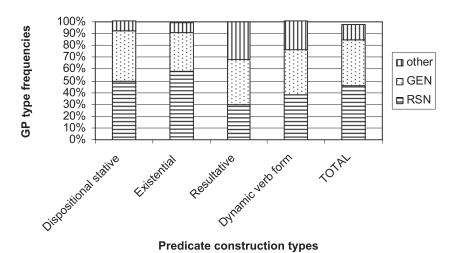
Figure 7.   *Tzeltal BowPed responses: Ground phrase type frequencies by predicate construction types*
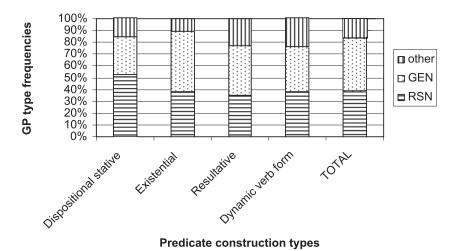

Figure 8.   *Yucatec BowPed responses: Ground phrase type frequencies by predicate construction types*

Figures 7 and Figure 8 group Ground phrase types into three classes (cf. Section 3.2): "GEN" are Ground phrases constituted by the generic preposition *ta* (Tzeltal) / *ti'* (Yucatec) combined with a bare Ground-denoting nominal. "RSN" stands for Ground phrases augmented with a relational spatial noun or headed by Yucatec *ich* 'in' (which may be

considered a preposition in its own right).[26] Finally, the class of ''other'' elements includes Ground phrases constituted by demonstrative and other adverbs, spatial adverbial clauses, and locative predications that contained no Ground phrase at all.

The charts show that the first prediction is not borne out at all: Tzeltal speakers actually used overall slightly *more*, not fewer, relational nouns in their locative predications compared to Yucatec speakers — 46% of Tzeltal locative predications contained a relational noun, as opposed to only 39% of those produced by the Yucatec consultants. The second prediction is borne out for Tzeltal — just barely — where 58% of the existential predications combined with a Ground phrase that contained a relational noun, as opposed to 50% of the dispositional stative predications. But the second prediction, too, fails for Yucatec: here, the percentage of existential predications that combined with relational noun-augmented Ground phrases is actually far lower than that of dispositional stative predicates combining with such Ground phrases (38% as opposed to 53%).

Overall, it seems fairly clear that the division-of-labor hypothesis does not pass the test of initial viability. This does not come as a surprise to us: the analysis of dispositional semantics we presented in Section 2.3 suggests that only one particular subtype of dispositional roots — support/ suspension and blockage of motion roots with meanings such as 'be mounted on top of Ground', 'be inserted in Ground', 'be stuck onto/ between bifurcated Ground', etc. — co-lexicalize information about the topological relation between Figure and Ground. It is only with these roots that the use of relational nouns may in fact become redundant. Other types of dispositional roots, in particular, those expressing orientation or configuration of parts of the Figure, completely ignore Ground topology. In general, the division of labor between individual dispositional roots and relational nouns is preempted, so to speak, by a division of labor built into the semantic motivation of each form class: dispositional roots mainly lexicalize Figure-related information, while relational nouns mainly lexicalize Ground-related information.

But this is an important result in and of itself. It speaks to the significance of Mayan languages having large form classes of dispositional roots in general, and to the significance of Tzeltal speakers using dispositional stative predicates in their BLC in particular: it is not the case that Mayan languages in general and Tzeltal in particular use dispositionals to encode the information that other languages package in adpositions or case markers. Rather, both Tzeltal and Yucatec have unique form classes of roots dedicated to the expression of rich dispositional information that is syntactically marginalized in Indo-European languages. And Tzeltal speakers in fact regularly encode this information as part of their Basic

Locative Construction — information that in Indo-European grammar is cumbersome to deal with, and thus routinely neglected.

5.4.   *Theme specificity*

The fourth and final account we wish to consider here seeks to explain Tzeltal speakers' preference for dispositional predicates in locative predications with reference to a hypothetical general bias in this language for theme arguments to be projected from "theme-specific" verbs. Theme is the semantic role of an entity described as being in a state or undergoing a state change (Jackendoff 1976; some authors prefer "patient" for the latter, especially when causal affectedness is involved). We conceive of theme specificity as a gradual notion: the more information a verb entails about the theme argument and/or the more selectional restrictions it imposes on the theme argument, the more theme-specific is the verb. These are two distinct, though not unrelated, criteria; we examine their possible role in the definition of theme-specificity below.

   Both dispositional predicates and the generic existential predicate subcategorize for a theme argument, which in locative predications usually refers to the Figure. But the only information the existential predicate conveys about the Figure is that it exists (somewhere at some point in time) or is located or possessed by something or somebody. It disregards all those Figure properties that dispositional predicates encode — its support/suspension, blockage of motion, orientation, or configuration of parts of the Figure with respect to each other (cf. Section 2.3). Tzeltal has at least 267 dispositional roots and Yucatec at least 152 — all of these, except for occasional cases of apparent synonymy, differing in the spatial properties they ascribe to the Figure — as compared to just a single generic existential predicate. Clearly dispositional predicates are semantically much more specific in terms of their theme-related entailments compared to the existential predicate.

   The argument for theme-specificity in terms of selectional restrictions is equally straightforward: literally any object (or animal or human) that can at all be construed as the Figure in a locative relation can also be referred to by the theme argument of an existential predicate. In contrast, in order to assert of a Figure that it is, for instance, 'leaning', using an appropriate dispositional root, it must have a certain axial structure (a side suitable as a base with a diameter significantly shorter than the object's primary axis). If a dispositional predicate is used to ascribe to the Figure an orientation, say, face up or aperture down, this presupposes that the Figure is "orientable", i.e., featured in the appropriate way (here: that it has a face, an

aperture, etc.). Predicates from posture roots — with 'sit'/'stand'/'lie'-type meanings — are attributable only to animate beings with the right kinds of bodies. And so on. Obviously, dispositional predicates impose stronger selectional restrictions on their theme arguments than does the existential predicate, and in this sense they are more theme-specific.

Before we move on to consider the hypothesis of a general theme-specificity bias in Tzeltal beyond the domain of locative predications, some final remarks are in order concerning the notion of theme-specificity in dispositional roots. As mentioned above, two alternative characterizations are conceivable: in terms of the entailments about the theme referent a root carries when used in an assertion or in terms of the selectional restrictions a root imposes on the theme argument. The two aspects are not independent of each other — the more properties a verb predicates about the theme referent, the more selectional restrictions it presumably imposes on the argument noun phrase, and vice versa. And under both definitions, dispositional roots are more theme-specific than the generic existential predicate. Theme-specific verbs provide an implicit classification of the theme referent. However, the classificatory function of dispositional stative predicates in Tzeltal and Yucatec cannot be "divorced" from the stage-level dispositional properties encoded by these predicates in the way that this is attested for positional-verb languages such as Dutch or Yélî Dnye (Levinson this issue). Thus, unlike Dutch or Yélî speakers, Tzeltal and Yucatec speakers do not use dispositional stative predicates in "where" questions. Unlike in Dutch or Yélî, a negative statement with a dispositional stative predicate and a Ground-denoting phrase in Tzeltal or Yucatec does not entail or even implicate that the specified Figure is not at the Ground; it merely entails that the Figure is not in the specified disposition. And, again unlike in Dutch or Yélî, one cannot normally use a single dispositional stative form in reference to a multitude of Figures in Tzeltal or Yucatec unless they are in the same disposition.

The hypothesis of a language-specific theme-specificity bias in Tzeltal does not concern lexicalization per se, but rather the use of theme-specific verbs as heads of predicates over theme arguments. Thus even though Yucatec, like Tzeltal, has dispositional roots, according to the hypothesis these are not used by default as heads of locative predicates in Yucatec, since Yucatec, unlike Tzeltal, does not have a "theme-specificity bias". The theme-specificity bias may be characterized as in (36):

(36) *Theme-specificity bias*: theme arguments are by preference licensed by theme specific predicates.

Why should there be a bias in Tzeltal for lexical-semantic specificity in the theme role, but not in other semantic roles? One possible answer

may be an interaction between the theme-specificity bias and the princi-
ples of argument realization proposed by Du Bois (1987). Du Bois ob-
served that actor arguments (subjects in English) of transitive verbs are
far more likely to be pronominalized or "ellipsed" than undergoer argu-
ments of transitive verbs (objects in English) and single arguments of in-
transitive verbs in both English and Sakapultek Maya. Thus, theme argu-
ments are among the most likely to be realized by lexically headed noun
phrases. Brown (2007a) shows that theme specificity in transitive verbs
interacts with argument realization in Tzeltal: the more theme-specific a
verb, the less likely its theme argument is realized by a full lexically
headed noun phrase. Theme specificity facilitates the identification and
tracking of discourse referents by narrowing down the search domain. A
theme-specificity bias in Tzeltal may thus contribute to minimizing the
need for full noun phrases in discourse. If Tzeltal has a theme-specificity
bias, why is the same design feature not operative in Yucatec as well? Yu-
catec (or an ancestor, possibly even the common ancestor of Tzeltal and
Yucatec) may have had a theme-specificity bias as well at some point, but
since lost it, with the consequence of Yucatec speakers using full noun
phrases more frequently to encode theme arguments than Tzeltal
speakers. To directly test the hypothesis that Yucatec differs from Tzeltal
in lacking a theme-specificity bias, actual evidence from argument realiza-
tion in Yucatec discourse is needed, which is lacking to date (see below).
Furthermore, an examination of the basic locative construction in other
Mayan languages might shed light on the time depth of a possible typo-
logical change in Yucatec or an ancestral language.

   Two testable predictions can be derived from the hypothesis of a
language-specific theme-specificity bias in Tzeltal: First, in semantic do-
mains in which there is a contrast between more theme-specific verbs (or
lexical heads of predicates in general) and verbs with only a generic theme
role, Tzeltal speakers are predicted to choose the theme-specific verbs over
the theme-generic ones more frequently than Yucatec speakers. We cannot
at present bring any evidence to bear on the validity of this prediction; it
remains to be tested in future research. And secondly, the hypothesis of a
language-particular theme-specificity bias in Tzeltal would of course be
false if both Tzeltal and Yucatec had only theme-specific or only theme-
generic verbs in all semantic domains involving theme/patient arguments.
We already know this not to be true: in the domain of locative predica-
tions, speakers of both languages can choose between theme-specific dis-
positional roots and the theme-generic existential predicate. But if — and
only if — there is a lexicalization difference regarding theme-specificity
between the two languages in any given semantic domain, Tzeltal is pre-
dicted to be more likely to have theme-specific verbs in that domain.

So let us briefly review the available evidence regarding theme-specificity in lexicalization across semantic domains. First, there is a variety of domains of states or state changes in which neither Tzeltal nor Yucatec has theme-specific roots. This holds in particular for intransitive and semantically monadic state change verb roots, of which both languages have relatively small, closed sets, including verbs of change of location ('ascend', 'exit', 'go', etc.), aspectual verbs ('begin', 'end', 'stop', etc.), and verbs of (dis)appearance ('be born', 'die', 'emerge', etc.). It is unclear at present why it is that theme-specific lexicalization does not occur in these domains. Secondly, there are domains in which both languages offer a contrast between theme-specific and theme-generic verbs. This is case in the domain of locative predications. Another example is the domain of caused motion or placement/extraction events; here, both languages contrast the theme-specific dispositional roots (used in their transitive stem forms in this domain) with theme-generic roots meaning 'put' or 'take'.[27] Third, we are aware of at least one semantic domain in which Tzeltal offers a contrast between theme-specific verbs and a theme-generic verb, whereas Yucatec has only the latter. Berlin (1967) notes that Tzeltal has, in addition to a generic eating verb root *tun* 'eat', at least six more specific roots — all base-transitive like *tun* — which differ in the selectional restrictions they put on the theme argument: *we'* is used for eating tortillas or bread, *ti'* for meat, *lo'* for "mushy or gelatin-like objects", *k'ux* for crunchy things, *ts'u'* for "chewy objects with pulp expectorated", and *uch'* for corn gruel and other liquids. Yucatec only has the generic *uk'* 'drink' for liquids and *hàan* 'eat' for non-liquid foods. Of course, the mere presence of these theme-specific verbs in the Tzeltal lexicon does not mean that they are preferred over the generic ingestion verb in the sense of the theme-specificity bias; this remains to be investigated.

Finally, we know of one domain in which both languages have theme-specific verbs, but theme-specificity seems to play a considerably more prominent role in Tzeltal than in Yucatec. This is the domain of verbs of cutting and breaking. There are a number of different parameters of the conceptualization of cutting and breaking events that might be lexicalized — the agent, the instrument, the manner in which the action is conducted, the type of object that undergoes the event, the "style" in which it breaks (which is related to the type of object — e.g., only glass and ceramics shatter, only wood splinters), and so on. Under the theme-specificity hypothesis, we expect that Tzeltal speakers may use a relatively high number of different cut/break type verb roots all differing in theme-related semantics (type of object or style of breaking). This prediction is encouraged by Pye, Loeb and Pao 1995, who note that K'iche', a Mayan

language very roughly as distantly related to Tzeltal and Yucatec as the latter two are to each other, has no theme-neutral 'break' verb; instead, different transitive roots are used to refer to the breaking of different kinds of objects (wood, ceramics, stone, fabric, paper, etc.). Like K'iche', Tzeltal and Yucatec lack generic "break" verbs.

As part of a separate study (cf. Bohnemeyer et al. 2001), we elicited Tzeltal and Yucatec descriptions of cut and break events presented in a series of video clips showing one or two actors breaking various objects (plates, sticks, carrots, pieces of cloth or string, etc.) using various instruments (a knife, a hammer, an axe, their hands, etc.). A core set of 28 scenes systematically cross-classify instruments and/or manners of cutting/breaking actions with theme types in a grid design, so as to permit identification of instrument-specific, manner-specific, and theme-specific verbs. The data collected with this task are still being analyzed. But preliminary results suggest that object type or style of breaking plays a relatively more important role in the semantic differentiation of the Tzeltal set of cut/break verbs (Brown 2007b), whereas instrument or manner of action play a more important role in the Yucatec inventory. Preferred Tzeltal responses to the 28 core scenes did not include a single verb type sensitive exclusively to the instrument or manner of action, whereas Yucatec preferred responses included four such verb types. Conversely, preferred Yucatec responses included only two verb root types that were shared exclusively across scenes featuring identical objects, whereas Tzeltal preferred responses included four such types. For example, Tzeltal *tuch'* 'tear' occurs only with objects made of fabric or fibers, such as pieces of cloth or string, regardless of whether the breaking is inflicted cutting with a knife, or using a chisel brought down in one blow, a hammer brought down in one blow, or with the hands, applied either pulling on the object or hacking karate-style. There is no such verb in Yucatec.

We should also note that while there are at least two notional domains in which Tzeltal has more theme-specific verbs than Yucatec, or in which only Tzeltal has dispositional verbs, we are not aware of any domain in which the opposite distribution occurs between the two languages. In summary, there is some preliminary evidence from lexicalization in support of the hypothesis of a general theme-specificity bias in Tzeltal; but a test in terms of a comparative study of usage preferences in domains (other then locative predications) in which both languages offer a contrast between theme-specific and theme-generic verbs has to remain the subject of future research. We have to content ourselves here with noting that this is a possibility consistent with everything we know about these two languages.[28]

6. Conclusions

Two major conclusions emerge from this study. First, two genetically related and typologically similar languages with identical structural and lexical resources for locative predications may nevertheless differ in their "Basic Locative Construction" (BLC). Hence a language's BLC is not necessarily among its most time-stable typological properties. This is confirmed by the fact that languages as closely related as Dutch and German diverge in their BLC (with Dutch being a positional verb language and German a borderline case between a positional and a dispositional language; see Kutscher and Schultze-Berndt this issue).

Secondly, Tzeltal speakers put just as much information in the Ground-denoting phrase as do Yucatec speakers, even though the former use the Ground phrase predominantly with a dispositional stative predicate, while the latter combine it predominantly with a generic existential predicate. This distribution does not support the hypothesis, proposed by Brown (1994) and Grinevald (2006) that dispositionals in languages such as Tzeltal encode information that is conveyed in the Ground phrase in languages such as Yucatec. The information lexicalized in dispositional roots in Mayan languages is largely distinct from the topological information encoded elsewhere in adpositions and case markers. The former lexicalize predominantly Figure-related information, while the latter express mostly Ground-related information. So Mayan languages have a form class of roots dedicated to the lexicalization of dispositional properties which in other languages are expressed in various kinds of adverbials or secondary predicates, and often enough not encoded at all. The fact that this information is expressed in the BLC of Tzeltal all the more undermines Landau and Jackendoff's (1993) generalization according to which linguistic and cognitive representations of locative relations generally abstract away from Figure-related information.

Given that the distribution of information in locative descriptions offers no obvious explanation for the difference between Tzeltal and Yucatec locative descriptions, we considered three possible "external" factors: cultural differences (differences in familiarity with picture stimuli), language contact, and a more general typological contrast between the two languages. The available evidence led us to all but discard the first of these. The evidence for language contact as the factor driving the difference in locative predications is not encouraging at present, but certainly merits further research. We found a modest amount of evidence in support of the third option: the possibility that what is responsible for the use of dispositional stative predicates in the BLC of Tzeltal is a general bias that favors the projection of clauses with theme arguments from

theme-specific predicates, i.e., predicates which entail a higher amount of information about the theme and/or impose a greater amount of selectional restrictions on the theme argument. This is supported by the finding that theme-specificity plays a more important role in the lexicon of Tzeltal than in that of Yucatec in two semantic domains: verbs of ingestion and verbs of cutting and breaking. What is now called for is a study of further lexical domains and in particular a contrastive examination of usage preferences in the two languages outside the domain of locative descriptions.

Notes

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1.   Both tools are introduced in Ameka and Levinson (this issue). The Tzeltal data were collected by Brown (in collaboration with Stephen Levinson) in Tenejapa, Chiapas, and represent the East Central dialect of the language, according to Kaufman's (1971) tentative classification. The Yucatec PosB data were collected by Bohnemeyer in Yaxley, Quintana Roo; the BowPed Picture Series data were collected by Christel Stolz in X-Hazil Sur, Quintana Roo, and by Elisabeth Verhoeven in Valladolid, Yucatán, and Yaxley, Quintana Roo. We are grateful to these colleagues for making their data available to us. The Yucatec data represent the Eastern variety of the language, based on the classification proposed by Edmonson (1986: 2–7) and Pfeiler (1995).

2.   Such form classes have been attested, for example, in Chontal (Knowles 1984), Huastec (Edmonson 1988), Itzá (Hofling 1991), Jakaltek (Day 1973), K'iche' and Motosintlek (Kaufman 1990), Q'anjob'al (Martin 1977), Tojolab'al (Furbee-Losee 1976), Tzotzil (Haviland 1994), Tz'utujil (Dayley 1985), and of course in the two languages discussed in this paper, Tzeltal (Brown 1994, 2004, 2006) and Yucatec (Bohnemeyer and Stolz 2006; Lucy 1994). Kaufman (1990) indicates that all Mayan languages have such a form class, with the possible exception of Mam.

3.   The label "dispositional roots" disregards a customary Mayanist distinction of two classes of roots that both produce stative dispositional predicates in locative predications, but differ in their transitivization privileges; cf. Section 2.2.3.

4.   In this paper, we follow the orthographical conventions set by the governor of Chiapas for Tzeltal. The following abbreviations are used in interlinear morpheme glosses: '-' indicates a morpheme boundary; ':' separates distinct meanings of portmanteau morphemes; 1/2/3 — first/second/third person; A — Cross-reference Set A ('ergative', possessor); AN — Animate (classifier); ASP — Neutral aspect; ATP — Antipassive; B — Cross-reference Set B ("absolutive"); CAUS — Causative derivation; CL — Classifier (numeral or possessive); CLI — clause-final clitic; CMP — Completive;

CON — Connective particle; D1 — Proximal; D2 — Distal; D3 — Textual deixis; D4 — Locative/Negative clause particle; DET — Definite determiner; DEM — Demonstrative stem; DIM — diminutive; DIC — Dispositional inchoative; DIS — Dispositional stative; DIT — Dispositional transitive; EXIST — Existential predicate; IMPF — Imperfective aspect; IN — Inanimate (classifier); INC — Incomplete; PERF — Perfect derivation; PL — Plural; PREP — Generic preposition; PROG — Progressive aspect; PRV — Perfective aspect; RED — Reduplication; REL — Relational noun suffix; RES — Resultative derivation; SG — Singular; TOP — Topic.

5. More precisely, it is a suffix that discontinuously marks plural number in combination with the set-A person prefixes. The actual order of this plural suffix with respect to the set-B suffix is subject to complex rules; (1) represents the basic order for Yucatec.

6. There are five status subcategories in Yucatec: completive, incompletive, subjunctive, imperative, and extra-focal (a category that only occurs in certain focus constructions). Selection among these categories depends on the preverbal aspect-mood marker, the construction in which the verb form occurs, and the illocutionary force of the utterance (see Bohnemeyer 2002). Tzeltal has a much simpler status system which distinguishes fewer subcategories (perfective, subjunctive, imperative). In both languages, the form of the status suffixes depends on the stem class and hence codes transitivity.

7. According to Kaufman (1971), Tzeltal affect verb stems are derived from roots across the board by various processes with iterative, frequentative, etc. meanings. Affect verbs differ from regular intransitives in taking an additional aspectual prefix and excluding imperative inflection. Yucatec active verbs stems lexicalize activities and processes; many are produced from "action noun" roots without overt derivation. Inactive and inchoative verb stems express state changes without reference to their cause. There is a class of fewer than 100 inactive roots (with meanings such as 'ascend', 'begin', 'burst', 'die', 'end', 'exit', 'explode', 'be born', etc.) and a number of more or less productive processes that derive inactive stems from transitive roots, the most frequent of these being the anticausative (or middle). Inchoative stems are exclusively derived from stative roots; all stative content word classes participate in this derivation. Dispositional stems are discussed below. The Yucatec verb class system is discussed extensively in Bohnemeyer (2004), Lehmann (1993), Lucy (1994), and references therein.

8. We refrain from presenting an account of the overall system of verbal derivation here in view of its considerable complexity, especially in Yucatec; see Kaufman (1971) for Tzeltal and Bohnemeyer (2002: 143–152), Lehmann (1993), Lucy (1994), and references therein for Yucatec.

9. Taking the *-ajtik* plural distinguishes dispositional roots from roots of other classes (A and N) which also have distinct *-Vl* forms.

10. For Tzeltal, in the current field dictionary of Tzeltal (Brown and Levinson n.d.), of 267 dispositional roots, 103 are classified as positional and 164 produce both dispositional statives and also — without overt derivation — transitives; cf. Brown (1994) and Haviland (1994) for details. For Yucatec, Bricker et al. (1998: xiv) count only 39 P roots in their Yucatec dictionary, which at the same time includes about 90 T,P roots. Yet the dictionary lists several roots as producing exclusively T stems which in our database do have attested dispositional stative stems. This may reflect a dialect difference. More importantly, however, the existence of the P-T/P-T continuum means that the accessibility of dispositional stative stems is a matter of degree for T roots.

11. While Tzeltal *-bil* occurs only with transitive roots or transitivized stems (e.g., *chojtan-bil* 'having been stood up'), Yucatec *-a'n* is also compatible with inactive intransitive roots. When applied to transitive roots, it has the additional function of demoting the A-argument (e.g., *t-u k'al-ah* '(s)he closed it' > *k'al-a'n* 'it is closed'). Another opera-

tion on transitive roots that positional roots also participate in is the formation of "anticausative" or "middle-voice" intransitive stems. In Yucatec, some positional roots actually produce anticausative stems without producing the corresponding (simplex) transitive stems; cf. Bricker et al. (1998: 353–354) for examples.

12. The sense of highly circumscribed use is even stronger if the resultative form is derived from an already derived causative stem, i.e., *-an-bil* in Tzeltal or *-kVnt-a'n* in Yucatec. This complex form may be glossed as 'having been caused *by someone* to be in such-and-such a disposition'.

13. Tzeltal also has a perfect derivational suffix (*-em*) for intransitives; e.g., *och-em* 'it has entered'.

14. The only in-depth study of the semantics of dispositional roots in any Mayan language to date is Martin (1977) on Q'anjob'al. Haviland (1994) provides an overview of notional classes of dispositionals in Tzotzil, similar to what we attempt in the present section for Tzeltal and Yucatec.

15. A very few positional roots have semantics not characterizable with *any* of the semantic features we describe here — for example Tzeltal *ch'ab* 'be quiet/calm', *kux* 'be living', *chap* 'get ready, arrange', or Yucatec *xil* 'be bristling (angry dog)'. Both languages have several dispositional roots that express various kinds of cessation of movement; e.g., Tzeltal *kech* 'stop in the middle', 'be half-finished'; Yucatec *ak* 'settle', 'form puddles'.

16. Orientation as lexicalized in dispositional roots is in fact conceptualized with respect to the vertical as a frame of reference (e.g., 'facing down'), which replaces a Ground.

17. There is an additional complexity in Tzeltal: some dispositional roots allow their spatial properties to be predicated of *either* the Figure or the Ground of the locative description. For example, *pach* means 'be positioned canonically upright (of a bowl-shaped container)'. These properties can apply either to the Figure of the locative description, as in (i), or to the Ground, as in (ii):

(i) TZE   pach-al   ta mexa   bojch
          be.sitting.(bowl.container).upright-DIS(3A) AT table   gourd
          'The bowl is sitting on the table.'

(ii)   pach-al   ta bojch   mantzana
          be.sitting.(bowl.container).upright-DIS(3A) AT gourd   apple
          'The apple is in the bowl.'

This "Figure/Ground ambiguity" characterizes several Tzeltal roots expressing containment and other configurations. See Brown (1994), for further details.

18. In Yucatec predication-of-possession constructions, there are two ways to encode the possessor: either it is treated as a metaphorical locative Ground (e.g., 'There is a horse on me', meaning 'I have a horse') or it is simply encoded as the nominal possessor of the noun phrase referring to the possessed (e.g., 'A horse of mine exists'). Tzeltal only has the latter option.

19. One property of Ground-denoting phrases in both languages that is of some relevance to the present discussion is that they do not encode the distinction between locative relations and "path" functions in motion events (cf., e.g., Jackendoff 1983). Thus the same Ground phrase that means 'at (the back of) the chair' in locative predications means 'to(wards) (the back of) the chair', '(away) from (the back of) the chair', or 'past (the back of) the chair' in motion event descriptions.

20. Many relational spatial nouns denote merological relations, including parts of inanimate objects (e.g., 'corner', 'edge') as well as animal and human body parts (e.g., 'head', 'nose', 'belly', 'feet'). Levinson (1994) shows that Tzeltal speakers possess algorithmic knowledge enabling them to productively apply terms for body parts of living

beings to inanimate objects, depending on their geometric properties. For instance, depending on their shape, bottles may have "butts", cups may have "ears" and "noses", etc. Similar observations apply to Yucatec as well. A second dimension of semantic extension is the projective use of certain relational nouns as denoting, not a part of the reference object, but a region projected from it. This occurs, for instance, when a term with the primary meaning 'forehead', 'front' is used to designate the region of space in front of a reference object, rather than the frontal part of the object itself. The set of Tzeltal relational nouns is discussed in Brown (2006) and in Levinson (1994); for that of Yucatec, see Bohnemeyer and Stolz (2006) and references therein.

21. The two Yucatec speakers whose responses we did not include in the analysis were a seven-year-old boy and a woman who, even though she was fluent in Yucatec, we could not ascertain to be a native speaker. Information about the age and gender of the participants can be found in Tables 1–4. All of the Yucatec participants, but only one of the Tzeltal speakers (AO in Table 1), have a functional use of basic Spanish.

22. We refrained from performing statistical tests, as the results would almost certainly be misleading, given the amount of inter-speaker variation.

23. Figure 4 is designed as follows: The set labeled "Tzeltal EXIST" includes all those scenes that elicited existential-predicate descriptions as the preferred response type among Tzeltal speakers. The sets labeled "Tzeltal DIS", "Yucatec EXIST", and "Yucatec DIS" are defined accordingly. The set labeled "Other" includes all those scenes that did not elicit either an existential-predicate description or a description featuring a dispositional stative form in either language. These are scenes that elicited either nondispositional-resultative responses, dynamic-verb-form responses, or no preferred response type in both languages.

24. For the Tzeltal task, the PosB book used in the field was missing pictures 53 and 55.

25. Speakers of both languages construed the pictures of cassavas as locally relevant root vegetables.

26. As mentioned in Section 3.2, the inventories of relational spatial nouns in both languages include large sets of items that denote exclusively body or object parts — terms meaning 'nose', 'foot/leg', 'hand/arm', 'edge', 'corner', etc. For the purposes of the present analysis, we did not count these as relational nouns, but as constituents of the Ground nominal. We used two criteria to delimit the two subsets: items that cannot at all be used as projecting spatial regions and in addition only apply to a highly confined set of Ground objects were excluded from the relational noun category.

27. Preliminary evidence from research involving a series of video clips points to a preference for dispositional forms in both populations in this domain. However, we suspect that this pattern may be an artifact of the stimulus and task, similar to how the PosB stimulus appears to push Yucatec speakers towards a preference for dispositional forms.

28. Further evidence of the importance of theme specificity in Tzeltal comes from the facility with which young children learn theme-specific verbs (Brown 1998).

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