

Children's first verbs in Tzeltal: evidence for an early verb category¹

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Abstract

A major finding in studies of early vocabulary acquisition has been that children tend to learn a lot of nouns early but make do with relatively few verbs, among which semantically general-purpose verbs like do, make, get, have, give, come, go, and be play a prominent role. The preponderance of nouns is explained in terms of nouns labelling concrete objects being "easier" to learn than verbs, which label relational categories. Nouns label "natural categories" observable in the world, verbs label more linguistically and culturally specific categories of events linking objects belonging to such natural categories (Gentner 1978, 1982; Clark 1993).

This view has been challenged recently by data from children learning certain non-Indo-European languages like Korean, where children have an early verb explosion and verbs dominate in early child utterances. Children learning the Mayan language Tzeltal also acquire verbs early, prior to any noun explosion as measured by production. Verb types are roughly equivalent to noun types in children's beginning production vocabulary and soon outnumber them. At the one-word stage children's verbs mostly have the form of a root stripped of affixes, correctly segmented despite structural difficulties. Quite early (before the $mlu = 2.0$ point) there is evidence of productivity of some grammatical markers (although they are not always present): the person-marking affixes cross-referencing core arguments, and the completive/incompletive aspectual distinctions. The Tzeltal facts argue against a natural-categories explanation for children's early vocabulary, in favor of a view emphasizing the early effects of language-specific properties of the input. They suggest that when and how a child acquires a "verb" category is centrally influenced by the structural properties of the input, and that the semantic structure of the language — where the referential load is concentrated — plays a fundamental role in addition to distributional facts.

1. Introduction

How do children learn the meaning of verbs in their language? How do they begin developing verb argument structure? And how do they develop a grammatical category “verb”? These questions have come to the forefront of theoretical debates in language acquisition in recent years, as the pendulum swings away from the earlier focus on nouns (Tomasello and Merriman 1995). In this paper data from children learning the Mayan language Tzeltal will be presented, to address two central issues in these current theoretical debates:

First, verbs (and, in general, relational words) have been claimed to be “harder” to learn than concrete nouns (Clark 1993; Gentner 1978, 1982). This claim is based on the robust finding for English and other European languages that nouns predominate in children’s early vocabularies. It is explained on the grounds that it is more difficult to pin down the reference of verbs in context (Gleitman 1990), and that verbs, and relational words in general, are more language-specific in meaning and their meanings are more linguistically determined, less real-world determined, than the meanings of concrete nouns (Gentner 1988; Gentner and Boroditsky i.p.). Clark (1993) summarizes this view:

Categories of actions appear to be less coherent than categories of objects. Activities are relations that link an act and its participants, but each kind may apply to a large range within any one category ... The range, largely determined by how an activity is adapted to each object it affects, may make it harder to set up categories of actions in the first place. This in turn may make it more difficult initially for children to create meanings for verbs than for some types of nouns (1993: 46–47).

If verbs are harder to learn than nouns, however, why do we find, for children learning a language like Korean (Choi i.p., this issue), that instead of a noun explosion there is an early verb explosion? The general point at issue here is this: just how variable across languages, and across individual children, is the process of verb learning?

A second claim to be addressed in this paper is that semantically general or “light” verbs dominate in children’s early language use. Again, Clark (1993) puts it succinctly:

For talking about actions, [children] frequently rely at first on general-purpose verbs like *do*, *make*, *get*, and *go*. They use these verbs for talking about many different activities ... These verbs are gradually displaced as children add more specific verbs to their repertoire and use those instead (1993: 30).

... [C]hildren appear to be slower to learn labels for actions than for objects and rely on general-purpose verbs (usually *to do*, *to go*, *to get*, and *to put*) in their first year of so of talking about actions (1993: 55).

Others go on to argue that such light verbs have a core role in the verb-learning process, being more or less pure expressions of argument relations without much additional semantics (Hollebrandse and van Hout 1994; Ninio 1996). Ninio calls these “pathbreaking verbs,” arguing (on the basis of children learning English and Hebrew) that they lead the way in syntactic development, surfacing whenever there is a significant advance in verb syntax, and leading the way “precociously,” with a significant time lag until other verbs join the particular syntactic pattern being learned. New syntactic learning, in this view, is initially item-based and “lexical”: “Pathbreaking verbs are the verbs undergoing item-based, lexically-specific syntactic learning; later categorical knowledge is based on a generalization from these few pathbreaking verbs” (Ninio 1996: 1).

Children learning the Mayan language Tzeltal provide some interesting fodder for these debates, because, although the structural properties of the language might cause one to predict difficulties in distinguishing nouns from verbs, children learn verbs early in Tzeltal, and they seem to rely mostly on semantically “heavy” verbs for launching into argument structure. Before age 2;6 there is evidence for the acquisition of (some) argument cross-referencing on the verb, for (limited) productivity of verbs, and for a category “verb”: this evidence includes an early verb explosion, some early productive cross-referencing affixes, and early aspectual marking (in parts).

In what follows I first sketch the structural facts relevant to the establishment of verb and noun categories for the Tzeltal learner. I then present data from the early vocabularies and multimorpheme utterances of two Tzeltal children to support the above claims. Finally, I discuss the factors I believe have a bearing on this result, and the implications for theories of verb learning.

1.2. *The noun/verb distinction in Tzeltal*

Certain structural properties of Tzeltal make it interesting for the question of when and how children acquire a category of “verb.” Tzeltal is a VOS language that allows free dropping of nominal arguments; a sentence therefore often consists of nothing but a verb with its associated morphology — that is, minimally, a root plus its ergative and/or absolutive person marking and its aspect marking. The lexicon consists of a relatively small number of roots (on the order of 3000),² with a very productive deriva-

tional morphology, so that verb roots can be freely transformed into nouns, and vice versa. In the adult language there are well-defined root and stem classes for nouns and verbs. However, from a child's perspective these classes may well be obscured by the fact that much of the obligatory inflectional morphology, as well as some other nonobligatory but very frequent morphology, applies both to nouns and to verbs. For example, the same ergative person-marking prefixes are used on nouns (and pronouns) to mark possessor and on transitive verbs to mark agent (A). There are two sets of ergative prefixes, one for consonant-initial roots, as in (1), and another for vowel-initial roots, as in (2); both sets have this dual function with nouns and transitive verbs (prefixes and their glosses are in italics):

- (1) Consonant-initial set: *j-*, *a'-*, *s-*³
- | | |
|----------------------|--------------------|
| <i>j</i> -tzak | <i>j</i> -k'ab |
| 'I grasp (it)' | 'my hand' |
| <i>a'</i> -tzak | <i>a'</i> -k'ab |
| 'you grasp (it)' | 'your hand' |
| <i>s</i> -tzak | <i>s</i> -k'ab |
| 'he/she grasps (it)' | 'his/her/its foot' |
- (2) Vowel-initial set: *k-*, *a'w-*, *y-*:
- | | |
|----------------|--------------------|
| <i>k</i> -il | <i>k</i> -akan |
| 'I see' | 'my foot' |
| <i>a'w</i> -il | <i>a'w</i> -akan |
| 'you see' | 'your foot' |
| <i>y</i> -il | <i>y</i> -akan |
| 'he/she sees' | 'her/his/its foot' |

The absolutive suffixes also function across word classes: they obligatorily cross-reference the subject (S) of intransitive verbs (as in [3]) and the object (O) of transitive verbs (as in [4]), but they can equally be attached to nouns, to adjectives, and even to some particles, to predicate (as in [5]):

- (3) ya x-'ok'-*on*
 'I cry.'
 ya x-'ok'-*at*
 'you cry'
 ya x-'ok'-*0*
 'he/she cries'
- (4) ya y-ut-*on*
 'she scolds me'
 ya y-ut-*at*
 'she scolds you'
 ya y-ut-*0*
 'she scolds him/her'

- (5) antz-*on*
 'I am a woman'
 luben-*on*
 'I am tired'
 sok-*on*
 'with me'

Finally, two frequent optional morphemes, the achievement-of-change-of-state suffix, *-ix*, and the diminutive particle, *ala*, can both modify nouns and verbs in the same sort of way:

- (6) la k-il-*ix*
 'I saw (it)' (i.e. I succeeded in seeing it)
 ju'-*ix*
 'it is already finished' (it has achieved the state of being finished)
 kerem-*ix*
 'he is already a boy' (he has achieved boyhood)
- (7) y-*ala ala* ni'
 'her little nose'
 ya x'-*ala* ben
 'she a-little walks'

Only verbs, of course, take obligatory aspect marking, which thus distinguishes finite verbs from everything else, but the productive derivation of verb roots into nouns and vice versa might be expected to obscure this distinction, since the roots are the core meaning-bearers, and the same meaning-bearer, given the appropriate derivational form, can appear as either a noun or a verb in a sentence.

These formal facts could suggest to the novice observer (one who was actively discerning patterns and unbiased as to what to expect to find) that the big split is between transitive and intransitive (which have different aspect markers), and that there is something fundamental in common between transitive verbs and possessed nouns, as well as between intransitive verbs, nouns, and adjectives as predicates.

These potentially obfuscating facts about the noun/verb distinction do not, however, seem to cause problems for Tzeltal learners, probably due to two important mitigating facts. First, Tzeltal derivational morphology is extremely regular. A careful pattern-matcher will eventually notice that a certain suffix always appears on a given verb root if it is derived into a noun, and vice versa. In this respect, with few exceptions Tzeltal provides a formal morphological signal when verbs are used as nouns or nouns as verbs, in a way that a language like English, for example, often does not. Second, there are large-scale distributional properties that

distinguish nouns from verbs as form classes: for example, only nouns take determiners, only verbs take aspect marking. In addition, the variability of the form of verbs across utterances and the relative stability of nouns (Tzeltal has no case-marking; only possession and [sometimes] plural are marked on nouns) may also be important cues.

A final characteristic of Tzeltal that bears on the noun/verb category distinction is the nature of noun and verb semantics. Although, from an Indo-European perspective, nouns canonically label individuable things, while verbs mostly label activities, processes, or states, in Tzeltal and other Mayan languages, neither verbs nor nouns fit this picture well.⁴ On the one hand, inanimate nouns in Tzeltal tend to label unindividuated “stuff” — for example, the same word *lo'bal* can mean ‘banana fruit’, ‘banana tree’, ‘banana leaf’, etc. Thus noun semantics — at least for inanimate nouns — omits individuating features; nouns may be individuated by a numeral classifier. On the other hand, the semantics of many verbs incorporates specific features of the nominal arguments that can go with them. As in other Mayan (and, indeed, many Mesoamerican) languages, many transitive and positional roots⁵ in Tzeltal are semantically specific, in the sense that they are restricted to arguments with particular features: different verbs for eating depending on what you are eating, different verbs for carrying depending on its shape and how you carry it, different verbs for breaking depending on the shape, texture, etc., of what breaks.⁶ This trait of coding certain object properties in verbs, instead of in nouns, may provide some of the basis for the earliness of Tzeltal children’s verbs, since the reference of such semantically specific verbs is restricted to a relatively coherent set of extensions, delimited by the properties of the referents of the nominal arguments the verbs can take. For verbs like these, a child has to construct categories for which the members are less diverse than for semantically general verbs.

1.3. *Questions about Tzeltal children’s development of a verb category*

The specific questions to be addressed here are these:

– How does the acquisition of nouns compare with that of verbs in Tzeltal children’s early vocabularies?

– Do children use semantically “light” verbs to launch into morpheme or word combinations?

– Is there any evidence that children learning Tzeltal have a verb category distinct from a noun category at the one- to two-word stage?

1.4. *Data*

The data on which this paper is based consist of monthly audiotaped recordings (usually two hours), supplemented by six-weekly videotaped sessions (ranging between four and six hours total each) for each of two Tzeltal children, a boy whom I call Mik and a girl Xan.⁷ For the current analysis I have examined all child utterances in these production samples up through the session in which the first 500 morpheme-combination types occur (for Xan age 1;3-2;3, and Mik 1;5 to 2;5). Morpheme rather than word combinations are considered here, since in Tzeltal verbal cross-referencing affixes are sufficient to indicate core arguments, and lexical argument deletion is rampant in adult speech as well as in children's.

It should be made clear that the limitations of the sampling in this data make certain leaps of inference necessary in order to compare it with data reported for Indo-European languages, and for Japanese, Korean, and other languages spoken in modern industrialized societies. In the Tzeltal community reported on here, most people are illiterate, and children's learning of language is not a culturally emphasized interest. Collecting parental reports of children's vocabulary acquisition turned out to be unfeasible; it was therefore not possible to collate a complete list of each child's new words as they appeared in production. The cumulative vocabulary discussed is thus primarily SAMPLED cumulative vocabulary. Nonetheless, I believe, the patterns that emerge in these samples are representative of the children's lexical acquisition pattern and provide an adequate basis for inferring the nature of the verb category that emerges.

2. **Verb development of Xan and Mik**

2.1. *Verbs are early and dominant*

The very first words recognized by Tzeltal caregivers in a young child's vocalizations tend to be nouns: the words for 'mother', 'father', siblings, and other caregivers' names are always mentioned as appearing first. Along with these I have observed a number of deictic forms that parents fail to report: words meaning 'this/that', 'look at this', 'here/there', and the "presentational deictics" *ila* and *ixtal*, uttered upon giving or receiving (respectively) anything from someone else. Both Xan and Mik started speaking like this between 15 and 17 months of age, but then their vocabulary acquisition, as tapped by my production samples, diverged. Mik entered into a long one-word stage lasting beyond age 2, acquiring

roots — both nouns and verbs, mostly stripped of prefixes and suffixes — gradually throughout this period; for over six months no verbal cross-referencing or aspect marking appeared on his verbs. Xan produced very little speech at all in the 8 months after her first reported words at 15 months, in over 25 hours of my videotaping her interacting with other children and caregivers in the household.⁸ She began taking a more active role in verbal interactions at the age of 2;0, by which time she was already using some multimorpheme combinations.

Treating the cumulative vocabulary sampled as representative though not exhaustive of the children's active production vocabulary, the data samples were divided into periods on the basis of vocabulary spurts: period I ("early one-word stage") is 50 words or less, period II is marked by a session where there was a leap in new words used (the number of new words at least doubling for both children in the one session), and period III showed another leap in new vocabulary as well as a sudden increase in morpheme combinations. These leaps represent leaps in both nouns and verbs; there is no prior "noun explosion." New verbs and nouns appear together from the earliest recordings, at first in roughly equal numbers in each session. For both children, by period II, before their *mlu* exceeds 1.5, new verbs outnumber new common nouns (not including proper names) in their cumulative production vocabulary,⁹ as shown in Table 1. And by the time morpheme combinations are frequent, at the end of period III, still well before the *mlu* 2.0 point, new verbs outnumber all new nouns, including proper names.¹⁰

The same picture emerges even more strongly if we compare utterances of different types: those with verbs, those with nouns, and those with both, as shown in Table 2. By the end of periods I–II (roughly the period of the first 20 morpheme combinations), nearly 50% more combinations contained verbs than those that contained nouns for Xan, and more than three times as many for Mik.

Although the children doubtless comprehend many more nouns and verbs than is shown by their sampled production, it is verbs that dominate both in the input¹¹ and in the children's own productions, due at least in part to the prevalence of argument deletion in contexts where their referents are given information, and to the use of deictics rather than full nominals to represent known, physically present arguments.¹²

2.2. *Verb semantics at the one- to two-word stage*

We now turn to ask whether there is something special about the semantics of children's early verbs in Tzeltal that promotes early learning of

Table 1. *Numbers of new verb types and noun types, in production data of two Tzeltal children^a*

| | mlu | V types ^b | Common N types ^c | Proper N types | Other ^d | TOTAL |
|--------------|------|----------------------|-----------------------------|----------------|--------------------|-------|
| Xan: | | | | | | |
| I (2;1.3) | 1.15 | 20 | 26 | 5 | 1 | 52 |
| II (2;2.20) | 1.5 | 77 | 71 | 10 | 24 | 182 |
| III (2;3.20) | 1.77 | 156 | 107 | 11 | 42 | 316 |
| Mik: | | | | | | |
| I (1;9.10) | 1.00 | 9 | 10 | 6 | 0 | 25 |
| II (2;2.9) | 1.07 | 61 | 50 | 10 | 26 | 147 |
| III (2;5.26) | 1.76 | 152 | 128 | 6 | 64 | 350 |

- a. Criteria: not repeats, used at least twice, meaning clear in context.
 b. V types (including different inflected forms of verbs per session).
 c. N types, including different inflected forms, excluding proper names (proper names in separate column). Words ambiguous between noun and verb at the one-word stage were counted in both categories if used in ways that could be either noun or verb.
 d. Other referring/modifying words = pronouns, adjectives, numbers, adverbials, Q-words.

Table 2. *Nouns and verbs in multimorphemic utterances (mmu.s) of different types, in the first 200 mmu.s of two children;^a number (percent)*

| | N + N | N + X ^b | N + V | V + X | Other ^c | Total noun utterances (columns 1 + 2 + 3) | Total verb utterances (columns 3 + 4) |
|-----|-----------|--------------------|------------|-------------|--------------------|---|---------------------------------------|
| Xan | 11 (6) | 23 (12) | 69 (35) | 72 (36) | 25 (13) | 103 (52) | 141 (71) |
| Mik | 2 (1) | 20 (10) | 27 (14) | 124 (62) | 27 (14) | 49 (25) | 151 (76) |

- a. Criteria: not repeats of prior utterances, meaning clear in context.
 b. X = morpheme that is not a noun or a verb.
 c. Other = combinations with no nouns or verbs: i.e. those with adjectives, deictics, pronouns, etc.

them. Are they, as in Indo-European languages, predominantly "light" verbs? The first 40 verb types uttered by each child (in my samples, corresponding roughly to periods I and II) are listed in Table 3. There is relatively little overlap between the two children (they share less than half of their first 40 verb types).¹³ Although some of the putative universally general verbs are among these shared early words ('exist', 'go',

Table 3. First 40 Tzeltal verb roots of Xan and Mik^a

| Mik (1;5-2;0) mlu about 1 | Xan (1;3-2;2) mlu to 1.43 |
|---|--|
| ba 'go/allgone' | <i>we</i> ' 'eat [tortillas]' |
| la' 'come!' | <i>chu</i> ' 'suckle [breast]' |
| <i>we</i> ' ^b 'eat [tortilla]' | ay 'exist, be located' |
| ak' 'give' | <i>boj</i> ' 'cut [with machete]' |
| <i>tzak</i> ' 'take, grasp [in hand]' | <i>k'ux</i> ' 'eat [beans, crunchy things]' |
| jach 'get/stand up' | (ma) na' 'don't know' |
| <i>chu</i> ' 'suckle [breast]' | ba 'gone, go' |
| <i>tza</i> ' 'shit' | jun 'accompany' |
| poj 'take away; steal' | <i>pet</i> ' 'carry [in arms]' |
| ay 'exist' | ch'ay koel 'fall down' |
| <i>tek</i> ' 'step on something [2-footed]' | <i>tam</i> ' 'pick up, gather [thing dropped on ground]' |
| <i>muk</i> ' 'cover over [with cloth]' | <i>lo</i> ' 'eat [fruit, soft things]' |
| tak' '(I) can('t)' | <i>chik</i> ' 'insert [wood into fire]' |
| way 'sleep' | ta 'reach/find it' |
| ajch' 'get wet' | xi' 'fear (it)' |
| <i>pet</i> ' 'carry [in arms]' | way 'sleep' |
| k'an 'want' | <i>tij</i> ' 'play [radio/tape recorder]' |
| <i>chux</i> ' 'pee' | ak' 'give' |
| <i>pix</i> ' 'wrap [in cloth]' | laj 'die', 'finish' |
| <i>mes</i> ' 'sweep [with broom]' | k'opoj 'speak' |
| k-il 'I see' | tal 'come' |
| <i>chuk</i> ' 'tie [ropelike thing]' | <i>poch</i> ' 'peel [skin off fruit]' |
| <i>lo</i> ' 'eat [fruit, soft things]' | k'ux 'hurt' |
| pas 'do' | och 'enter' |
| laj 'finish' | <i>juch</i> ' 'grind [corn]' |
| <i>pach</i> ' 'carry, set down [bowl, upright]' | <i>tz'us</i> ' 'close [door]' |
| <i>tz'ap</i> ' 'insert [sticklike thing tightly]' | k'ej 'put away' |
| och 'enter' | lok' 'exit' |
| <i>kay</i> ' 'open [hinged thing, door]' | <i>til</i> ' 'burn [flame, flashlight]' |
| tal 'come' | <i>tek</i> ' 'stand [on two legs]' |
| k'ux 'hurt' | k'an 'want' |
| xi' 'fear' | il 'see' |
| ch'ay 'fall' | <i>puk</i> ' 'mix [corngruel with hand]' |
| <i>pok</i> ' 'wash [outside surface, hands]' | <i>xet</i> ' 'break [flat thing in half]' |
| <i>lap</i> ' 'put on [clothes on body]' | <i>tuy</i> ' 'cut [meat, crossways]' |
| ok' 'cry' | <i>pach</i> ' 'carry, set down [bowl, upright]' |
| lok' 'exit' | <i>mal</i> ' 'spill [liquid]' |
| <i>nit</i> ' 'pull [by string]' | pas 'make/do' |
| <i>mal</i> ' 'spill [liquid]' | <i>mes</i> ' 'sweep' |
| <i>tuy</i> ' 'cut [meat, crossways]' | <i>k-uch</i> ' 'I drink' |

- The 40 verb roots used in data samples, for two children at the one- to two-word stage. Criteria: used at least twice; not a repeat of the prior utterance; not a frozen formula; meaning clear in context.
- Italics indicate "heavy" verbs restricted to specific arguments; verbs in regular type are "light" verbs.

'enter', 'fall', 'give', 'want', 'make/do'), the fact that more than half of the children's early verb repertoires are not shared already suggests child-specific and context-specific word learning, not a reliance on universal categories or "light" verbs.

Verbs were categorized as semantically "heavy" or "light" on language-internal grounds: verbs that can only apply to specific kinds of arguments being "heavy," those able to apply to a wide range or to unspecified arguments being "light." Thus the eating verbs are "heavy" in Tzeltal: each verb subcategorizes for a particular class of "things eaten"; similarly for verbs of carrying, holding, breaking, inserting, opening. Other Tzeltal verbs are indifferent as to the nature of their arguments: you can, for example, 'hit', 'see', 'fear', 'want', 'put away', or 'take away/steal' anything, regardless of its specific properties. All intransitive verbs listed are "light" in these terms; they are indifferent to the nature of their single argument (except for general features like animacy).¹⁴

Table 4 shows the different verbs for each child, classified by semantic weight. Semantically "light" verbs do occur in these early vocabulary lists: especially *pas* 'do/make', *ak* 'give', *k'an* 'want', *ch'ay* 'fall', *ba* 'go', *tal* 'come', *ay* 'exist'.¹⁵ But as Table 4 shows, for both children semantically specific verbs dominate. The children's early use of the few light verbs is explainable on grounds of frequency: these are among the most frequent verbs in the language. This can be seen in Table 5, which lists the most frequent verbs in adult conversation. More tellingly, there is no evidence in the data that the children overextend these general verbs to apply to situations for which adults do not use them — they do NOT say things like "Do' my belt for me" rather than "Tie' my belt for me", or "I 'go' to pee," rather than the more specific verb (*k-a'y chux* "I 'feel pee") that an adult would use. This is particularly noticeable with the verb *pas* 'do/make'; adults use this verb for any creation (making tortillas, houses, toy towers, etc.), as well as in questions when what is being done or made is at issue, and more generally for prohibitions ("don't do that!"). The children use it only for building and making things with toys.

Do these few semantically general verbs play a special role in multimorpheme combinations, as Ninio (1996) would predict? If her argument extends to Tzeltal, then we should find that the first verbs to enter multimorpheme combinations, and the ones to initiate new syntactic learning, are just these semantically general "generic verbs," conveying highly general relations between arguments. To test this prediction for Tzeltal we need to distinguish intransitive roots, which are all general, from transitive and positional roots, which can be either general or specific. We will look at what verbs occur in at least five different combinations in the children's first 200 multimorpheme utterances (for Xan,

Table 4. *Categories of verb types in first 40 verbs, Mik and Xan*

| | Transitive roots: general | Transitive/positional: specific | Intransitive | Other ^a |
|----------------------|--|--|--|---|
| Mik 1;5 to 2;0 | ak' 'give' poj 'take away/ steal' k'an 'want' k-il 'I see' pas 'do/make' xi' 'fear it' | we' 'eat [tortillas]' tzak 'take [in hand]' tek' 'step on [2-footed]' muk 'cover [w. cloth]' pet 'carry [in arms]' pix 'wrap [in cloth]' mes 'sweep [w. broom]' chuk 'tie [rope or cloth]' lo' 'eat [soft things]' pach 'carry, set down [bowl, upright]' tz'ap 'insert [stick]' kay 'open [door]' pok' 'wash [outside of]' lap 'put on [clothes]' nit 'pull [by string]' mal 'spill [liquid]' tuy 'cut [crossways]' | ba 'go' jach 'get up' chu' 'suckle' ^b tza' 'shit' ^b way 'sleep' ajch' 'get wet' chux 'pee' ^b laj 'finish' och 'enter' tal 'come' ch'ay 'fall' ok' 'cry' lok' 'exit' | la' 'come!' ay 'exist, be located' tak' 'be able' k'ux 'hurt' |
| Total | 6 | 17 | 13 | 4 |
| Xan 1;3 to 2;2 | na' '(don't) know' jun 'accompany' ta 'find/reach' xi' 'fear it' ak' 'give' k'ej 'put away' k'an 'want' il 'see' pas 'do/make' | we' 'eat [tortillas]' boj 'cut [w. machete]' k'ux 'eat [beans]' pet 'carry [in arms]' tam 'pick up, gather [things dropped]' lo' 'eat [soft things]' chik' 'insert [wood in fire]' tij 'play [radio, taperecorder]' poch' 'peel [skin off fruit]' juch' 'grind [corn]' tz'us 'close [door/lid]' til 'burn [flame]' tek' 'stand [on 2 legs]' puk' 'mix in hand [corn]' xet' 'break [flat thing in half]' tuy 'cut [crossways]' pach 'set down [bowl]' mal 'spill [liquid]' mes 'sweep [w. broom]' k-uch' 'I drink [liquids], | chu' 'suckle' ^b ba 'go' ch'ay 'fall' way 'sleep' laj 'die, finish' k'opoj 'speak' tal 'come' och 'enter' lok 'exit' | ay 'exist' k'ux 'hurt' |
| Total | 9 | 20 | 9 | 2 |

- a. "Other" are one-argument verbs that don't take the normal aspect markers of verbs or are defective in person, and la', which is the frozen imperative form of 'come'.
- b. These "verbs" are noun roots used by the children to label activities, not objects; they should be morphologically marked with intransitivizing suffixes, which the children do not yet use.

Table 5. *Verb frequencies in adult Tzeltal (verbs listed in descending order of frequency in a sample of 13,000 words of natural speech; these are the only verbs appearing more than 20 times in the sample)*

| Verb root | Total occurrences in sample |
|---|-----------------------------|
| Five most frequent: | |
| ay 'exist/be located' | 319 |
| ba 'go' | 183 |
| tal 'come' | 140 |
| xi 'said' | 123 |
| a'y 'hear/feel/understand' | 108 |
| Others with more than 20 appearances in the sample: | |
| k'an 'want' | 72 |
| laj 'die/finish' | 68 |
| il 'see' | 58 |
| lijk 'begin' | 46 |
| ak' 'give' | 43 |
| ich' 'receive' | 40 |
| ut 'say' | 37 |
| al 'tell' | 36 |
| pas 'do/make' | 35 |
| lok' 'exit' | 35 |
| na' 'know' | 33 |
| ti'wan 'hurt' | 29 |
| jul 'arrive' | 26 |
| ta 'find/encounter' | 25 |
| tak' 'be able' | 24 |

corresponding to periods I and II; for Mik, who uses fewer combinations, extending into period III).

For the transitive verbs, light verbs do not seem to lead the way in combinations. The first transitive verbs of Xan to become prolifically used in different combinations are eating verbs, which in Tzeltal are semantically specific. There is a general eating verb *tun* 'to eat [anything]', used when you don't know what is being eaten (as in questions); this does not appear in the children's speech at all during the period sampled, although it is sometimes used in speech to them. Table 6 shows all the verbs that enter into at least five different combinations (in decreasing order of variability), during the period of the first 200 combinations for Xan.¹⁶ For transitives these are four verbs: 'eat tortillas', 'eat soft things', and 'eat/bite [meat]', plus the verb 'want'. Two of these semantically specific verbs appear the most "productive," in that they occur in more than one person in these early utterances, while *ti* 'eat/bite [meat]' takes

Table 6. *Verbs that enter into morpheme combinations in Xan's first 200 combinations (in decreasing order of combination types)**

| Root and gloss | No. of comb. types | Person | Glosses | Date 1st appearance |
|---------------------------|--------------------|------------------------|--|---------------------|
| Transitive | | | | |
| we' 'eat tortillas' | 12 | 1st, 2nd (imp), 3rd | ASP mouse eats | 11Jan95 |
| | | | "cutneck" eats | " |
| | | | eat! | " |
| | | | I eat | " |
| | | | ASP I eat | " |
| | | | (I) don't eat | " |
| | | | go eat | " |
| | | | (I) eat tortilla | 17Jan95 |
| | | | eat like-this | " |
| | | | (it [chicken]) has-eaten-ix ^b | " |
| | | | ASP (I) have-eaten | " |
| (I) eat my-tortilla | " | | | |
| lo' 'eat soft things' | 6 | 1st, 2nd, 3rd | (I) eat corngruel | 11Jan95 |
| | | | (we) eat our-squash | 17Jan95 |
| | | | eat squash | " |
| | | | you eat too | " |
| | | | you eat | " |
| eat mud | " | | | |
| ti' 'eat/bite meat' | 6 | 1st, 2nd, 3rd | (it) bites-you your-foot | 11Jan95 |
| | | | (it) bites | 17Jan95 |
| | | | doll eats (it — meat fat) too | " |
| | | | ASP eats (it) too | " |
| | | | (it) bites me | " |
| k'an 'want' | 5 | 1st only | ASP (it) bites me | " |
| | | | (I) want (it) -ix | " |
| | | | (it's) this (I) want | " |
| | | | (I) want | " |
| | | | two (I) want | " |
| I not want | " | | | |
| Intransitive | | | | |
| ay 'exist, be located' | 13 | 3rd only | here is machete | 1Nov94 |
| | | | here (it) is | " |
| | | | exists (its) nipple [balloon] | 11Jan95 |
| | | | exists (its) nipple this-one | " |
| | | | there still is (its) cave [mouse] | " |
| | | | (its) nipple exists (for) nik | " |
| | | | (its) eye exists | " |
| | | | its-mouth exists | " |
| | | | where-is Xut? | 17Jan95 |
| | | | where-is coffee? | " |
| where-is stick? | " | | | |

Table 6. (Continued)

| Root and gloss | No. of comb. types | Person | Glosses | Date 1st appearance |
|----------------|--------------------|------------------------|--|---|
| | | | exist pull shirt (it pulls on my shirt) | " |
| | | | this (is) where it is is | " |
| ba 'go' | 9 | 1st, 2nd (imp), 3rd | (he's) gone-ix (he's) gone-ix (for a) walk go! go eat! gone (to) see cow (he's) gone-ix there I go too ASP I go too gourd gone | 11Jan95 " " " " " 17Jan95 " " |
| tal 'come' | 5 | 3rd only | "cutneck" has come come (to) eat here scarecrow came nothing came Mrs. came | 11Jan95 " 17Jan95 " " |

- a. Criteria: not a repeat of prior utterance; meaning clear in context.
 b. *-ix* is the aspectual suffix indicating achievement of change of state.

only third person, and *k'an* 'want' takes only first person during this period. Xan's only other verbs entering into combinations of more than one type are 'grind' (three forms) and 'spill' (two forms), both of which are specific, plus the semantically general verb 'do/make' (in two different forms); all of these appear only in the third person.

The story is somewhat different for intransitives, of which there are only about 40 roots in the language (many fewer than transitives), and which in the Tzeltal children's speech are all semantically general in the sense used here. Here the three single-argument verbs leading the way in Xan's combinations (both diachronically, and in terms of quantity) are *ay* 'exist', *ba* 'go', and *tal* 'come', precisely the ones predicted by the "pathbreaking verbs" hypothesis. Before leaping to the conclusion that these are first because of their general semantics, however, one should eliminate the alternative hypothesis that they are first in children's combinations due to their frequency in the input, and/or their importance for expressing ideas children want to express. As we have seen above, in Table 5, these are in fact among the five most frequent verbs in the language; *ay* is the general existence/location predicate (and not, technically, a verb since it doesn't take aspect), and *ba* 'go' and *tal* 'come' are

Table 7. Verbs that enter into morpheme combinations in Mik's first 200 combinations (in decreasing order of combination types)*

| Root and gloss | No. of comb. types | Person | Glosses | Date 1st appearance |
|------------------------------|--------------------|--------------------------|---|---|
| Transitive | | | | |
| pas 'do, make' | 11 | 1st and 2nd (imperative) | '(I) do boxing', i.e. pretend to box (I) do this make house house make (I) make (it) make into house do (it) like-this do/make this! [blow up bag] do it for this [fix load] do it for me do it mama | 6Dec95 7Jan96 5Feb96 " " 6Mar96 " " " " |
| k'an 'want' | 6 | 1st only | (I) don't want (I) want (some) too (I) want two (I) want this (I) want another (I don't) want anymore | 2Oct95 5Nov95 7Jan96 " 25Mar96 " |
| tzak 'take [in hand]' | 5 | 1st and 2nd (imperative) | a tak '(I) take (it)' i tzak ni '(I) take this' tzak ja'ni '(I) take stick' tzaka 'take (it)!' take (boy) cow! | 6Sept95 13Dec95 7Jan96 6Mar96 25Mar96 |
| a'y 'feel, hear, experience' | 5 | 1st and 3rd | chajp k-a'y bad I-feel ya'yem (he) has got it ERR ya'yoj (it) got it ya'y ya'yoj papa | 7Jan96 6Mar96 25Mar96 " " |
| Intransitive | | | | |
| ay 'exist, be located' | 15 | 3rd only | here it is [reply to 'where is it?'] it's still here where is it? there are two (of) this where's another one? where's papa gone? where's mama this (is) where they are where's dog where's candy there is here there is (a) ball there-are wasps | 9Jan96 6Mar96 " " " 25Mar96 " " " " " " " |

Table 7. (Continued)

| Root and gloss | No. of comb. types | Person | Glosses | Date 1st appearance |
|----------------|--------------------|-------------------|------------------------|---------------------|
| | | | here is car | " |
| | | | where is this? | " |
| tal 'come' | 9 | 2nd and 3rd | (he) has come | 5Dec95 |
| | | | you-come | 6Mar95 |
| | | | come again | " |
| | | | rain came | 25Mar96 |
| | | | another came | " |
| | | | papa came | " |
| | | | another's coming again | " |
| | | | hit coming [car] | " |
| | | | this-one came | " |
| ba 'go' | 4 | 2nd (imp), 3rd | where's papa gone? | " |
| | | | go mama! | " |
| | | | (it) went here | " |
| | | | (he's) gone to mama | " |

a. Criteria: not a repeat of prior utterance; meaning clear in context.

both grammaticalized as auxiliaries and as directional adverbs as well as being finite verbs. The different picture for transitive verbs, where specific verbs lead in Xan's combinations, suggests that frequency may be more important than their general semantics in promoting their early appearance in children's productions.

A look at the combinations of the second child, Mik, muddies the picture somewhat, since the verbs that lead his early combinations are different from those of Xan. Gone is the predominance of 'go' and the eating verbs; for Mik the verb 'to do/make' does seem to be the prolific combiner predicted by the light-verb hypothesis, along with 'want', 'take/grasp', and 'feel/experience', these four verbs being the only transitives in his first 200 combinations to appear in at least five different combinations. For Mik's intransitives, 'exist' retains its predominance, as for Xan, but 'come' has supplanted 'go', and no other intransitive appears in five different combinations for Mik (see Table 7).

Looking more closely at the contexts in which these "general" verbs are used by Mik, however, we find that for this child the verb *pas* 'do/make' is restricted to talk about the manipulation and arrangement of toys, or to idioms constructed with *pas*, that is, to contexts where adults also use the verb *pas*. Mik never uses it as a general-purpose verb

Table 8. *Productive verbal constructions with different lexical arguments (for construction types used at least 3 times, by the 500 mmu point)*

| | Verb root and arguments | No. of different lexical arguments |
|------------|--|------------------------------------|
| Xan | | |
| tv + DO | lo' 'eat [soft things]' + 'corngruel', 'squash', 'mud' | 3 |
| | we' 'eat [tortillas]' + 'tortilla', 'my-tortilla [different root]' | 2 |
| | ti' 'eat/bite meat' + 'foot', 'me', 'doll', 'your-foot' | 4 |
| | uch' 'drink' + 'coffee', 'water' | 2 |
| | kuch' 'carry' + 'doll', 'wheel' | 2 |
| | juch' 'grind' + 'cornmash', 'cold cornmash' | 2 |
| | pas + 'its-wheel' [i.e. fix it for me], 'our-beds' | 2 |
| | ixlan' 'play with' + 'water', 'rope' | 2 |
| | mal' 'spill' + 'water', 'boiling' | 2 |
| | muk' 'cover up' + 'foot', 'head', 'doll' | 3 |
| | k'an' 'want/need' + 'shirt', 'firewood' | 2 |
| | k'aboj' 'look at' + 'Antun [her brother]', 'chicken' | 2 |
| | (plus many used with only one argument) | |
| tv + A | lo' 'eat [soft things]' + 'you' | 1 |
| | puk' 'mix in hand' + 'father', 'you', 'small-scarecrow' | 3 |
| | ti' 'eat [meat]' + 'I', 'doll', 'chicken' | 3 |
| tv + O + A | bojben k'ab xutax 'scarecrow cut-me (my)-hand' | |
| | tzakoj te' wax 'Wax has grasped (the) stick' | |
| | ya la k'an i xapon i jtat i 'Father wants soap, he says' | |
| | we' waj i alal i 'doll eats tortillas' | |
| | lo'ben tomut Antun i 'Antun is eating me my egg' | |
| | yixlanbet laso tat Antun i 'Antun is playing-with father's rope on you' | |
| | la jlajinix chenek' i 'I finished the beans' | |
| iv + S | tal' 'came' + 'scarecrow', 'PochnuK', 'child', 'Wax' | 4 |
| | ba' 'go' + 'gourd', 'dog', 'Wax' | 3 |
| | lok'em' 'gone-out' + 'Antun', '(his) ass's shit' | 2 |
| | och' 'enter' + 'important work', 'Wax', 'fly' | 3 |
| | ajch' 'get wet' + 'shirt', 'back', 'Wax' | 3 |
| Neg. + X | ju'uk' 'no' + 'step on', 'eat [tortillas]' | 2 |
| Mik | | |
| tv + DO | k'an' 'want' + 'two', 'this', 'breast', 'another', 'Pepsi', 'beans' | 6 |
| | lo' 'eat [soft things]' + 'corngruel', 'mango', 'melon', 'banana' | 4 |
| | pas' 'do/make' + boks' 'do boxing', + k'op' 'do fighting' [both idioms], + 'this', 'house' | 4 |
| | tzak' 'grasp' + 'stick', 'toy cow', 'toy car', 'this' | 4 |
| | k-ich' 'I receive' + 'this', 'two' | 2 |
| | k-il' 'see' + 'mama', 'this', 'cow' | 3 |
| | (plus many used with one argument only) | |

Table 8. (Continued)

| | Verb root and arguments | No. of different lexical arguments |
|------------|--|------------------------------------|
| tv + A | ya ta-on ja'al 'rain touches me' | 1 |
| | ya'yoj + 'papa', 'kaltea' | 2 |
| | (plus many different verbs with ja'at 'you' as A) | |
| iv + S | ba'ay 'where-is' + 'mama', 'dog', 'candy', 'this', 'car', 'our-dog', 'another' | 7 |
| | tal 'come' + 'rain', 'another one', 'papa', 'this', 'dog' | 5 |
| | jil + 'this', 'chicken', 'car', 'dog', 'mama' | 5 |
| | tup' 'extinguish' + 'this', 'its-this', 'it's that' [tape recorder] | 3 |
| | ay 'there is' + 'two (of) these', 'ball', 'another', 'car' | 4 |
| | ba'ay tal i karo 'where did this car come (from)'/ba'ay bajt i papa 'where did papa go' | 2 |
| | (plus many used with one argument only) | |
| tv + O + A | te k'an lo'bal mutike 'our chicken wants (a) banana' | |
| | lo' lo'bal jo'on 'I eat banana' | |
| | jam papatik kala mik ini 'papa opens this (for) my-little Mik' | |
| | pojbe jo'on a ja' ni 'I steal this from him' | |
| | (plus many others where A or O is cross-referenced, the other argument lexical) | |
| Neg. + X | ju'uk 'no' + 'sour', 'do', 'want', 'cry' | 4 |

for other actions for which Tzeltal has specific verbs. Furthermore, despite its canonical "manipulative activity" semantics, it does not lead the way in transitive activity descriptions for this child. This can be seen if we look now through all three periods, at the first 500 combinations, looking at constructions that are productive as evidenced by being used multiple (at least three) times with different arguments. We then ask which verbs with lexically expressed arguments in each of the constructions are productive for the children during this period. Table 8 shows that for neither Mik nor Xan does the verb *pas* 'do/make' have a special place in the transitive (V + DO, V + A and V + DO + A) constructions. This is also so at the first emergence of each of these constructions: for example, all but one of the verbs in the chronologically first five instances of Mik's V + DO construction are semantically specific: 'eat tortillas', 'open door', 'drink water', 'grasp stick'. The one semantically 'general' verb (*pas boks* "'do" boxing', i.e. pretend to box with each other), is a frozen expression, an idiom. The verb *pas* does not seem to be leading the way to transitive constructions, however appropriate for denoting "transitive action" its

semantics may be. For both children, the other "light" verbs whose meanings approximate to "pure argument structure" ('give', 'get') appear nearly always in frozen expressions during this period.

In short, the lexical repertoire of these two Tzeltal children during the one- to two-word stage is mostly verbs, and verbs dominate in their utterances. Of course, it is not at all obvious what these facts imply about the presence of a "verb" category. Are these actually "verbs" for the children, or are they just event words used for predicating, undistinguished from nouns and adjectives, which can also predicate? Tomasello and his colleagues have argued persuasively that when children begin to use syntactic marking to indicate some particular roles in a scene, they learn to do this independently for different scenes, on a verb-by-verb basis (Tomasello 1992). These "verb islands" are said to be characteristic of children's multiword utterances until around the age of 3:

... the vast majority of children's early word combinations are produced as they combine individual words with one another or with some member of the category of "noun" or "noun phrase" However, there are no *productive* syntactic symbols in these early word combinations to symbolically indicate specific participant roles, presumably because children at this age have yet to discern the function of these special symbols in the adult language they hear (Tomasello and Brooks i.p.: 11).

Is this true for the Tzeltal children's early combinations? To answer this, we need to see whether and how nouns and verbs are treated formally alike at this period, and at what point there is a shift to productive marking of participant roles.

2.3. *The form of early verb combinations*

If children are developing a verb category, as opposed to verb islands, during this early period, it should appear in the productivity of the morphology accompanying their verbs. We shall look at the development of ergative and absolutive cross-referencing affixes, of the "benefactive" suffix, and of aspect marking, to see what morphemes first become productive, and how these map onto individual verbs.

2.3.1. *Person-marking affixes.*

Ergative. Ergative prefixes obligatorily cross-reference the subject of the transitive verb (the agent [A] participant role), as well as the possessor role on possessed nouns. There are two distinct sets: one for vowel-initial

roots, one for consonant-initial roots (see [1] and [2] above). The latter are canonical for Tzeltal verb roots, but there are a handful of vowel-initial transitive roots important in early child discourse (for example, verbs meaning 'see', 'hear', 'play-with', 'receive', 'tell', 'give', 'drink'). In the Tzeltal children's data vowel-initial roots often first appear stripped of prefixes, despite the segmentation difficulties of isolating the root (Brown 1997). When they do appear with prefixes, at first the forms are probably unanalyzed forms conveying the same event meaning with different participants ('I-see', vs. 'you-see', vs. 'he-sees', for example). However, we find quite early productivity (by period III) of these vowel-initial person-marking affixes: the words no longer appear inappropriately stripped of their prefixes, and these are appropriately switched across turns to indicate the relevant participant (e.g. Mother: 'You see [it].' Child: 'I see [it].') The consonant-initial set, being phonetically minimal and therefore harder to identify (for both child and analyst), lags behind.¹⁷

The words with these ergative prefixes appearing in each child's data, up through the session in which 500 mmu.s have been sampled (period III, for both children prior to the *mlu* = 2.0 point) are given in Table 9. For both children by this point, the production data shows that more than ten vowel-initial roots receive the ergative prefix, many in a number of different utterances, and no vowel-initial prefixes are inappropriately omitted. Although there is no evidence in this data that all of these words receive the prefix in all three persons (second person is relatively sparsely represented), this is likely to be a consequence of sampling, since both children display understanding of the meanings of all three persons in cross-speaker switching. It is conceivable that at this point the child has simply memorized three distinct forms for each vowel-initial root, one for 'I doing X', one for 'you doing X', and one for 'he/she/it doing X', and likewise for vowel-initial nouns (one for 'my-X', one for 'your X', one for 'his/her/its X'). There are not so many of these vowel-initial roots that this would be impossible.¹⁸ However, it seems to me that by the time the child has ten or so different forms in three persons she is bound to have noticed the commonality across them (that they all start with *k*- if referring to 'I', *a*'w- if 'you', and *y*- if 'he/she/it') and have formed an abstract 1st-2nd-3rd-person category applicable to both nouns and verbs.¹⁹ Indeed, having the same prefixes for both nouns and verbs may well call attention to this commonality and thereby promote their early acquisition. In this early data, no distinction is made by the children between the cross-referencing on vowel-initial verbs and on nouns: both appear at the same time, both appear productive by the end of the period

Table 9. Ergative cross-referencing affixes on vowel-initial roots: Mik and Xan: all data, including repeats

| V-initial root | 1st person [k-] | 2nd person [a'w-'] | 3rd person [y-] | 1st person pl. inclusive [-tik] |
|-----------------------------------|---|----------------------------------|--|--|
| Mik ^a -il 'see' | k-il 'I see' | il-a'w-il 'look you see' | | ya k-il-tik-ix a 'we-inclusive see it' |
| -a'y 'hear/feel/sense/experience' | k-a'y 'I feel' | | y-a'y-oj papa 'papa has heard' | k-djikix 'we-inclusive see' |
| -ich 'receive' | k-ich 'I get (it)' | la 'w-ich i 'you got it' (Pepsi) | y-a'y-em 'it has "got" it' | k-a'y-tik 'we-inclusive feel' |
| -ak 'give' | k-ak 'I give (it)' k-ak'ix 'I have given it' | | y-ich-oj pelota 'he got (the) ball' | k-ak' tik 'we give it' |
| -ut 'scold' | | | | k-a(k)-be 'I give it to him' |
| -uch 'drink' | k-uch' (ja) 'I drink (water)' | | ya y-ut-on 'she scolds me' | k-ak' -be-tik 'we give it to him' |
| -ixtab 'toy' | k-ixtab 'my toy' | | | |
| -akan 'foot' | k-akan 'my foot' | | | |
| -ichan 'cousin' | k-ichan 'my cousin' | | | |
| -ut 'inside' | | | | |
| -u'un 'belonging to' | | | | |
| Xan ^a -uch 'drink' | a k-uch' kajpej 'I drink coffee' | | | k-u'un-tik 'ours' |
| | k-uch' [matz] 'I drink [corngruel]' | | y-akan 'his foot' | |
| | ya k-uch' ek 'I-drink (it) too' [corngruel] | | y-ut na 'inside of house' | |
| -a'y 'hear/feel/sense/experience' | | | y-uch'i ja, y-uch' ja, 'he drank water.' | |
| -ixlan 'play with' | | | la y-uch'ix ja 'he has drunk water' | |
| | | | la y-uch' 'he drank' | |
| | | | y-ixlan ja'i 'he-plays with water' | |

| | | | | | |
|----------------------|---|---|--|--|--|
| -ich 'receive' | le k-ich 'tik a 'we-incl. receive (it) | y-ich 'he-receives' [gets in trouble for something] y-ich ix 'it (bug) received (it) [i.e. got done in] | | | |
| -ak 'give' | ya k-ak 'be-tik we' mut ya 'tik 'we-incl. give chickens (it) to eat now [food] | | | | |
| -akan 'foot' | ay ch'ich'el y-akan alal a 'there's blood (on) doll's foot there' mukbe y-akan 'cover her- foot' [doll] ma me kasbe y-akan 'don't break its-foot recorder' y-ak ul son 'iis-cord tape | ay ch'ich'el y-akan alal a 'there's blood (on) doll's foot there' mukbe y-akan 'cover her- foot' [doll] ma me kasbe y-akan 'don't break its-foot recorder' y-ak ul son 'iis-cord tape | | | |
| -ak'ul 'cord' | | | | | |
| -ej 'mouth' | ay y-ej 'there is its-mouth' | ay y-ej 'there is its-mouth' | | | |
| -it 'butt' | y-it 'its-butt' | tup'ix y-atz'am-ul 'extinguished its-salt' [i.e. its salt is all gone] | | | |
| -atz'am 'salt' | | | | | |
| -ot 'tortilla' | ja' ini. y-ot 'this is it, his tortilla' | ja' ini. y-ot 'this is it, his tortilla' | | | |
| -u'un 'belonging to' | ma ba k-u'un-tik 'it's not mine' ja' k-u'un-tik 'it's mine' | ay y-u'un i pakbile 'there is his folded [Br's food] y-u'un me'tik | | | |
| -ala 'a little' | | | | | |

a. Ergative prefixes definitely present in data by the 500 mmu point.

Table 10. *Absolute cross-referencing suffixes in first 500 mmu.s, for Xan and Mik^{a,b,c}*

| Person | Utterance | Gloss | |
|--|---|---|-------------------------|
| Xan (<6 sessions, Dec94–Feb95, age 2;1–2;3, mlu 1.15–1.77) | | | |
| 1st person | we'-on | 'I eat [tortillas]' | |
| | ti'-on | '(it) bites me' | |
| | ba-on ek | 'I go too' | |
| | k'ajin-on | 'I sing' | |
| | mo-on-ix | 'I have ascended' | |
| 2nd person | ti'-at w-akan | '(it) bit your foot' ^d | |
| | ja'at ek | 'you too' | |
| | mo-at | 'you ascend [onto chair]' | |
| 3rd plural | yakal-ik a'tel | 'they are in the process of working' ^e | |
| | chebal-ik | 'the two of them' | |
| Mik (<4 sessions, age 2;3–2;5, mlu 1.76) | | | |
| 1st person | jelaw-on | 'I crossed' | |
| | tek'-on | 'I stand on' ^f | |
| | ju'uk a ch'ay-on | 'I didn't fall [lit: Neg. CMP fall-I]' | |
| | alal-on R | 'I am a child' [N] | |
| | mamal-on R | 'I am an old man' [N] | |
| | ch'ay-on ko(el) | 'I fell down' | |
| | tek'l-on | 'I stand [on chair]' | |
| | way-on | 'I sleep' | |
| | ya ba-on ~ ba-on-ix | 'I'm going', 'I've gone' | |
| | ko-on-ix | 'I've descended' | |
| | we'-on | 'I eat [tortillas]' | |
| | tal-on | 'I come' | |
| | jitz-on | 'I come-closer' | |
| | jun-on | '(you) accompany me' [tv] | |
| | tzak-on mono | '"monkey" grabs me' [tv] | |
| | och-on | 'I enter' [onto bike] | |
| | ya ta-on ja'al | 'rain touches me' [tv] | |
| | ya y-ut-on | 'she scolds me' [tv] | |
| | 2nd person | mut-at R | 'you are a chicken' [N] |
| | | tes-at | 'you-comb' ^g |
| | | joyinat | '(I) encircle you' [tv] |
| kak' way-at | | 'I (won't) let you sleep' [caus. + iv] | |
| way-at papatik ek | | 'you sleep, papa, too' | |
| chujte' way-at | | 'you sleep (on) board' | |
| 'tak' way-at | | 'you (can't) sleep' | |
| yakuk way-at | | 'okay you sleep' | |
| way-at eke | | 'you sleep too' | |
| j-pet-at | | 'I carry [in arms] you' | |
| chuk-at kalo | | 'car ties you' ^h | |
| net'-at kalo | 'car bumps-into you' | | |
| ch'oj-at | 'I throw you' (i.e. 'I throw something at you') | | |

Table 10. (Continued)

| Person | Utterance | Gloss |
|------------|-----------|--------------------------|
| | ba we'-at | 'you go eat [tortillas]' |
| | jil-at | 'you stay behind' |
| | tanal-at | 'you are naked' [Adj] |
| 1st plural | way-otik | 'we-incl. sleep' |

- a. First and second person only for singular (third person is \emptyset).
- b. Absolutive suffixes mark O on transitive verbs and S on intransitive verbs.
- c. All data, including repeats, marked R.
- d. Abs/Ben error; it should be *ti'bet*.
- e. Contrasts with yakal-O beel, 3rd sg. unmarked, 'it [a bug] is in the process of walking'.
- f. Abs/Erg error: he means 'I kick it', so it should be *ya j-tek'*.
- g. Abs/Erg error: he means 'I comb you (your hair)' [tv].
- h. Abs/Erg error: he means 'you tie the car'.

sampled. This suggests that verbs and nouns, for these purposes, are being treated alike.²⁰

Absolutive. Absolutive suffixes are the general predicators in Tzeltal; they mark the participants in utterances of the type 'I-am-X', 'you-are-X', 'he/she/it-is-X' where X may be nominal, adjectival, or verbal. They obligatorily cross-reference the direct object of a transitive verb (O) and the subject of an intransitive verb (S). The third person singular absolutive is a zero morpheme and is therefore not included in this assessment of the children's development.²¹ The first-person (-*on*) and second-person (-*at*) absolutive suffixes come to be productively used to indicate predication with both verbs and adjectives, as well as cross-referencing both transitive O and intransitive S, during the period of the first 500 combinations. They are rarely used with nouns yet.²² Table 10 shows the first and second person absolutive uses for both children in this data. Xan uses the suffixes much less frequently than Mik, but there is no evidence that she is leaving them off inappropriately by the 500-morpheme-combination point (although this of course is hard to determine, since missing absolutive conveys third person reference). It seems more likely to be due to her relative neglect of reference to first and second person in the data sampled. She switches appropriately across turns and shows every sign of understanding the semantic distinction between 'I' and 'you' that they mark. Mik uses these suffixes prolifically, with several innovative uses indicating their productivity for him, and, by the end of period III, entirely appropriately.

Both children have productive use of the independent pronouns *jo'on* 'I' and *ja'at* 'you', also constructed with these suffixes, in this period, and they both use these to mark possession on nouns in a way not modeled by adults, as shown in Table 11. They also use them with verbs to clarify what participant is being referred to, which, given that their consonant-initial cross-referencing ergative prefixes are often still missing, may be otherwise unclear (for example: *k'an jo'on* 'want I' instead of *ya j-k'an* 'I want [it]'). A few examples of children's nonadultlike use of these independent pronouns to mark the direct object participant (for example Mik's *lutz jo'on* [lit. 'cuddle I', meaning 'you cuddle me'], where an adult would say *ya lutz-on* to convey the meaning) suggest that for this child,

Table 11. *Independent pronouns replacing the ergative marker*^a

| | Utterance | Gloss |
|--|--|---|
| 1. Independent pronouns used (instead of the possessive pronouns <i>ku'un</i> 'mine'/ <i>a'wu'un</i> 'yours') as possessive markers: | | |
| Xan | <i>jo'on k-ixtab</i> <i>tat jo'on</i> <i>me'tik jo'on</i> <i>laso ja'at i</i> | 'I my-toy', i.e. '(it's) my toy' 'father I', i.e. 'my father' 'grandmother I', i.e. 'my grandmother' 'rope you', i.e. 'your rope' |
| Mik | <i>patz jo'on</i> <i>ja'at nuk'</i> <i>yan we'el a ja'at</i> | 'patz [a kind of food] I', i.e. 'my patz' 'you neck', i.e. 'your neck' 'different food you (i.e. yours)' |
| 2. Independent pronouns used (instead of or in addition to the ergative prefix) to mark agent of transitive verb: | | |
| Xan | <i>puk' ja'at</i> | 'mix you', i.e. you mix [instead of <i>ya 'puk'</i> 'you mix' OR <i>puk'ben</i> 'mix for me'] |
| Mik | <i>k'an jo'on</i> <i>lo' lobal jo'on</i> <i>pojbe jo'on ja'ni</i> <i>nojpun jo'on</i> <i>lutz jo'on</i> <i>uch'o ja'at</i> <i>pasa ja'at</i> <i>tes ja'at</i> <i>mal ja'at</i> <i>tzaka'at</i> <i>koj ja'at</i> <i>ban ja'at</i> <i>ya jel tze'k ja'at</i> | 'I want' 'I eat banana' 'he (dog) steals it-this from me' [instead of <i>ya s-poj-ben</i>] 'school I' [i.e. 'I go to school'] 'cuddle I' [i.e. (you) cuddle me] 'you have drunk (it)' 'you do it' 'you comb' [ERROR: he means I comb you] 'you spill' 'take (it)-you!' 'you descend' 'you go' 'you change skirt you' [i.e. your skirt] |

a. *jo'on* 'I' and *ja'at* 'you'.

at this point, the independent pronouns are standing in for the absolutive suffixes, which soon, however, replace them in these constructions.²³

Benefactive. A third set of participant cross-referencing morphemes is the “benefactive,” which in Tzeltal are bound morphemes (*-ben*, *-bet*, *-be*, 1st, 2nd and 3rd person, respectively) that introduce an additional argument on transitive verbs, supplanting the otherwise obligatory direct object cross-referencing. This set is used in canonical “transfer” events (*la k-ak'-bet* ‘I gave [it] to you’), as well as more generally when the speaker wants to convey a participant “affected by” the event (*la s-maj-ben k-al* ‘he hit-for-me-my-child’). It is almost always used to cross-reference the possessor when the direct object argument is a possessed noun (e.g. *la k-il-be s-sit* ‘I saw-her her-face’).

These suffixes appear interestingly early in the children’s speech, and not only in frozen forms. For example Xan’s (8) is a novel utterance constructed on the spot with several attempts:

- (8) *y-ixlan-bet laso antun i, ... y-ixlan-bet laso tat antun i, laso ja’at i.*
 ‘Antun plays_with for_you rope, ... Antun plays_with for_you rope
 father, your rope’ [telling her father, tattling on her brother Antun’s
 misdemeanor].

Table 12 gives the examples of these benefactive morphemes occurring in the children’s first 500 combinations. Xan uses them more than Mik, but both children contrast different persons with the same roots for at least some of their uses, for example Mik’s contrast in (9) among three different versions of his report about their dog having gone off with his bag:

- (9) *poj-be jo’on ja’ni, ... poj bel. ... ya j-poj-be tal.*
 ‘I(‘ll) steal this from_him, ... (He) [the dog] stole it away. ... I(‘ll)
 steal it from_him coming’, [i.e. ‘I will steal it back from him’].

Furthermore, both children seem to be attuned to the language-specific nature of these suffixes: they don’t simply use them at first for canonical transfer scenes, but for both children some scenes that are not canonical transfer scenes are among those where this “affected” participant is indexed, as shown in Table 12.

To sum up: at this point in the children’s development — at the end of period III, when Xan is 2;3 and Mik is 2;5 — the cross-referencing of arguments with ergative prefixes, and with absolutive or benefactive suffixes, is not fully adultlike yet. Yet the children clearly understand the meanings of these affixes, switching appropriately across turns and using independent pronouns to emphasize or replace these argument markers. It thus looks as if they are indeed using “productive syntactic symbols

Table 12. *Benefactive suffixes present in Xan's and Mik's first 500 mmus*

| 1st person -ben | 2nd person -bet | 3rd person -be |
|---|---|--|
| Xan: | | |
| puk'ben, a puk' me'tike 'mix it for me, Mrs. mixes it [corngruel]' | bojbet 'cut for you' | kak'be 'I give (it) to it [offer to feed chickens]' |
| puk'ben maiz' me ch'in xataxe 'little scarecrow mixes corngruel for me' | yixlanbet laso antuni 'Antun plays with for you (your) rope' | kak'be ek 'I give (it) it too [food to chicken]' |
| ti'ben mut 'chicken bites me it' [my foot] | yixlanbet laso tat antun i, laso ja'at i. 'Antun plays with, for you, father's rope, your rope' [i.e. 'he's playing with your rope on you'] | mukbe yakan 'cover it its foot [doll]' |
| pojben alal '(he) steals me (my) doll' | | jambe jol ch'ix 'open it (its) head [doll]' |
| bojben k'ab xutax 'scarecrow cuts me (my) hand' | | mukbe jol 'cover it its head [doll]' |
| i chukben i 'tie this for me' | | ma me kasbe yakan 'don't break it its foot [doll]' |
| chukben ch'ujt 'tie me (my) belly' [i.e. my belt] | | la k'ech'be nuk' alal '(he) grasped for him (its) neck, the doll [what the "scarecrow" did]' |
| i nupbe ek i, ... nupbe ek 'blow (it) for it [fire]' | | tijbetik 'we-incl. move it for her' |
| lo'ben mut, 'the chicken eats (it) for me' | | |
| lo'ben tomut antuni 'Antun eats me my egg' | | |

Mik:

pasben i 'do it for me'

ak'ben la papa 'papa gives (it) to me, he
says [medicine]pojbe jo'on ja ni 'I steal this from him'
[plastic bag, from dog]

pasbe ini [ERROR for 1st person]

ya k'ejbe pontz 'I put (it) away for him,
Ponso [candy]

ya tijbe kalo 'I drive (it) for him [toy car]

poj bel i, ya jpojbe tal '(he) [the dog] stole
(it) [a bag] away. I'll steal (it) back from
him'

kak'be 'I give (it) to him'

kak'betik 'we (incl.) give (it) to him'

Semantics of children's first verbs with benefactive: not all 'transfer' Vs:

Xan:

mix [cornmeal in hand]

bite/eat [meat]

steal/take from

tie [rope, string]

blow on [fire]

eat [soft things]

cut [with big blow from machete]

play with

give

cover [with cloth]

uncover

break

grasp in both whole hands

move

Mik:

do/fix [toy]

give [medicine]

steal/take [plastic bag]

put away/save [candy]

drive [toy car]

in these early word combinations to symbolically indicate specific participant roles" (Tomasello and Brooks i.p.), well before the age of 3, before the mlv 2.0 point, and before they are speaking in fully grammatical sentences. It seems likely that the common form of the ergative/absolutive affixes for both nouns and verbs, rather than being a source of confusion, is actually an aid to the discovery of their common semantics.

2.3.2. *Aspect.* Aspect marking — complete, incomplete, or stative — is the core morphological distinguisher of verbs in Tzeltal; it is obligatory on finite verbs and distinct for transitives and intransitives. This, being criterial, should play a central role in the development of a category "verb." It is, however, difficult to assess its significance in early child speech, since the intransitive complete is a zero morpheme, and therefore the absence of aspect marking in intransitive utterances may be meaningful (indicating complete) or not. In general, fully productive and accurate aspect marking is a late development, not achieved until after the age of four for some of the children in my study.²⁴

During the early combination period at issue here, however, aspect begins to be regularly marked. Children's first utterances have no aspect marking (with the exception of a few frozen forms). As shown in Table 13, for Xan it is the nonobligatory aspectual morpheme *-ix* (achievement of change of state) that is the first to appear in many different contexts, on both nouns and verbs, in period II; it contrasts with incomplete *ya*. But Mik doesn't use *-ix* at all in this early period. As for obligatory aspect marking, incomplete marking is the first to develop for both children, starting in period II and occurring with many different verbs

Table 13. *Different verb roots (types) with aspect marking^a in first 500 mmu.s, Xan and Mik*

| | Transitive incompl. compl. <i>ya</i> ICP <i>la</i> CMP | | Intransitive incompl. + neutral <i>ya</i> ICP x- NEU | | Achievement <i>-ix</i> | Transitive stative <i>-oj</i> | Intransitive stative <i>-em</i> |
|-----|--|---|---|---|---------------------------|-------------------------------------|---------------------------------------|
| Xan | | | | | | | |
| I | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| II | 13 | 1 | 2 | 0 | 14 | 2 | 2 |
| III | 12 | 9 | 4 | 1 | 21 | 7 | 4 |
| Mik | | | | | | | |
| I | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| II | 4 | 0 | 1 | 0 | 0 | 0 | 0 |
| III | 21 | 2 | 7 | 1 | 15 | 1 | 3 |

a. Aspect marking is obligatory: *-ix* is not, but *-ix* comes in before and instead of *la*. Complete intransitive is a \emptyset morpheme and is not included here.

by the 500 mmu point, although it is not yet treated as obligatory: the children frequently use the same verb both with and without the appropriate aspect. The stative aspect markers (*-em* for intransitives and *-oj* for transitives) are few and do not appear to be productive by this point.

Within a few months of the period under examination here, before the age of 3;0, the transitive aspect markers *la* (completive) and *ya* (incompletive), are productive for both children. Stative aspect marking lags behind (at least, it is used much less often), and a particular "neutral" aspect marker *x-*, required on intransitive incompletives in addition to the *ya*, is apparently the most difficult to acquire: many children do not productively use it in all obligatory contexts until after the age of four (Brown 1997).

3. Discussion

3.1. Summary of findings

The findings for these two Tzeltal children in their first months of morpheme combinations may be summarized as follows:

- Verbs are early in Tzeltal children's vocabulary acquisition; they are not preceded by a noun explosion.

- Verbs exceed nouns in new vocabulary acquisition during the early period of morpheme combinations (as shown by production samples).

- There is no evidence of a special role for semantically light "path-breaking" verbs, at least for transitives: many of the first verbs are specific, and these enter early into productive combinations.

- There is positive evidence for early productivity of the absolutive suffixes, and of the vowel-initial ergative cross-referencing affixes (indicating the basic argument structure of their verbs), prior to children reaching a mlu of 2.0. The same morphemes occur with a multiplicity of different verbs and nouns, are switched appropriately across speaker turns, and are used in the appropriate contexts before the age of 2;6. Productivity of the consonant-initial ergative prefixes lags behind, as these are acoustically less salient.

- Additional verb-specific morphology (benefactive, aspect) begins to develop during this period, distinguishing classes of verbs.

We can conclude that at the end of the period under examination, prior to the mlu 2.0 point, there is some evidence for (limited) productivity of verbs: the early verb explosion, some early productive cross-referencing affixes, and early aspect (in parts) distinguishing transitives and intransitives consistently. There is no evidence yet for productivity

of valence-changing suffixes (causative, transitivity, intransitivity, nominalizing, deverbalizing, etc.), which play an important role in vocabulary generation in adult Tzeltal.

Assessing whether or not this evidence indicates that Tzeltal children have, at this point, something as abstract as a "verb" category requires caution. Tests used to establish the presence of a "verb" category for, say, English children are not applicable in this case. In Tzeltal, verb distinctiveness is only obviously formally marked by aspect and by verb-only derivational suffixes, plus by the placement of particles that go in the second slot, between aspect and verb. Word order is not a good test for a distinctive verb category, both because it can vary (focused nouns are preposed), and because arguments are so often elided leaving only the verb. Auxiliaries and directional adverbs are not a good test in Tzeltal — they tend to go automatically with certain verbs even for adults. Placement of second-slot sentential particles (between aspect and verb) is probably automatic at first (memorized) and is NOT early. It might be argued that my evidence for verb distinctiveness in the children's first 500 mmu.s is not actually knockdown evidence for a "verb" category: (i) although verbs are early, they may not actually be "verbs" for the child, they may simply be predicates undistinguished from nouns or adjectives in this respect, and (ii) although vowel-initial ergative marking appears productive, the child may have simply memorized three distinct forms for each vowel-initial root. Perhaps the best evidence for a "verb" category in Tzeltal is contrastive aspect marking on many different verbs. It seems reasonable to assume that as soon as a child has the complete/incomplete contrast (bare root vs. *ya[x]* for intransitives, and *la* vs. *ya* for transitives), and certainly as soon as the child utters her first unique (not repeated or memorized) utterances with contrastive aspect and/or particles, she has a category "verb." This happens for both children in this study prior to the 500 mmu point, and on these grounds we may tentatively conclude that both children have a "verb" category at the end of the period under discussion. This is not to say that they are productively constructing all their utterances at this point: many verbs display the characteristics of "verb islands" (Tomasello 1992), or "distributional learning" (Lieven et al. 1997; see also Lieven, this issue): they occur only in limited constructions, or with only a given participant. This is doubtless inevitable considering the sampling; there does not appear to be any point in this data where a quantum leap takes the children beyond verb islands to fully creative sentence construction.

Returning to the question of the structural properties of Tzeltal that might potentially obscure the difference between nouns and verbs (ergative prefixing, suffixes that can go on both nouns and verbs), it seems

that children do indeed at first treat nouns and verbs formally the same in their early uses. This applies not only to the ways in which adults treat them the same, but also to children's innovations: their independent pronoun marking of agent on verbs and possessor on nouns in nonadult ways. Neither child uses the collocationally distinguishing markers of a noun category (e.g. determiners) in this data. This nondifferentiation of nouns from verbs does not, however, seem to provide any difficulties for these children, as by the end of the period under discussion verbs are emerging with distinctive marking. It would appear that the regular marking in the input of the transitive/intransitive distinction and the presence of aspect are sufficient to set verbs apart.

This brings us back to the question we started with: are the meanings of verbs "harder" than those of concrete nouns to learn? Why do Tzeltal children learn the supposedly "hard" things — verbs — first?

3.2. *Reasons for early verbs in Tzeltal*

There are several factors specific to Tzeltal and to the language-learning context in this community that may have a bearing on how "easy" or "difficult" verbs are to learn, in comparison with nouns. These include structural facts (*morphological regularity and distinctiveness*), semantic facts (*verb specificity*), interactional facts (*the prevalence of turn-adjacent conversational repeats*), and cultural facts (*an emphasis on activities as opposed to objects, in children's early socialization*), all of which could affect the ease of verb learning in this speech community.

Formal factors. Formal properties that on the face of it make Tzeltal verbs "hard" to learn include the ergative/absolutive inflectional morphology that applies both to nouns and verbs, potentially muddying the boundary between them (as discussed in section 1.2 above). In addition, the prosodic structure of the language is such that verb roots are often resyllabified and relatively rarely²⁵ receive prominent stress, making them hard to isolate from the surrounding linguistic material. Things, on the other hand, that help make verbs "easier" than in, say, English, are the extreme regularity of morphological marking, as well as the relative absence of morphophonemic variation at morpheme boundaries. Both roots and grammatical morphemes are acoustic chunks that keep their shape across utterances with relative reliability. Massive argument ellipsis, making verbs often the only words in an utterance, also increases their salience. These factors in balance seem to make Tzeltal a "verb-friendly" language (Gentner and Boroditsky i.p.).

Semantic factors. Another factor whose relevance is perhaps more controversial is the semantic structure of verbs in the language. As mentioned above, many Tzeltal verbs are semantically specific in a particular way: their meanings incorporate features of arguments that can occur with them. Taking as an example the verbs of eating encountered above, as frequent among children's earliest verbs: there are some eight eating verbs specialized for particular kinds of foods: *ti'* 'eat [meat]', *lo'* 'eat [soft things]', *k'ux* 'eat [crunchy things]', *tz'u'* 'eat [sugarcane]', *bik'* 'swallow without chewing', etc. These are basic-level words, frequent in everyday discourse, and early learned. Now what might this mean for the learning of verbs? It is possible that it makes verb learning easier, as meanings do not have to be extended across widely differing referential circumstances. This seems to me at least as plausible as the contrary argument that has been made for generic verbs: that their very generality makes them easy to learn, as the child doesn't have to identify distinct language-specific criteria for distinguishing their meanings and can just apply some cognitively salient conceptual framework along the lines of 'X acts on Y' (for 'do'), or 'X transfers object Y to Z' (for 'give'), for example. It is not, however, obvious whether it is easier for a child to map a word onto a relatively narrow and coherent set of extensions or onto a very general universal meaning covering a multiplicity of diverse extensions.

Discourse factors. The structure of Tzeltal conversational discourse also doubtless plays a role in children's verb learning. There is a discourse convention in this speech community (and indeed, in many Mayan language communities) of repeating a salient part of the interlocutor's utterance as a form of backchannel. This repeated part is often the verb, and the process highlights verb constructions and paradigmatic contrasts in adjacent turns in the input, providing a high-frequency spotlight on verb structure (Brown 1996).

Cultural factors. One likely reason for the lack of early noun proliferation in Tzeltal children's speech production is that object naming is not a culturally elaborated routine with small children. The only culturally normal tutorial questions prompting children to label things apply to their body parts ("Where is your nose?", etc.) Nor are there very many objects in a Tzeltal child's world, compared with Western households: there are no books, almost no toys, very little furniture, and only the simplest of household implements and tools. This cultural deemphasis on objects goes along with a cultural emphasis on activities: thus (contrary to the pattern noted by Gentner and Boroditsky i.p. for English children) a Tzeltal child is much more likely to be asked, and to ask "What are

you doing?" rather than "What is that?" While the correspondence of nouns with objects and verbs with activities is by no means perfect, and while it may well be, as Maratsos (1990) has argued, that nouns are at first learned primarily on the semantic basis of object status of their referents, but verbs on the basis of their small-scale distributional properties, the Tzeltal cultural emphasis on activities rather than objects presumably does affect the ratio of object words to activity words in the speech around and to small children.

4. Conclusion

In trying to understand when and how children acquire grammatical categories like "noun" and "verb," there are distinct theoretical approaches. One strategy — the one associated with the universalist approach in linguistics — is simply to assume that these categories are not learned but are innate, and there is no need to discuss their acquisition. Another is more cognitively oriented: to look for characteristics of the referents of prototypical members of these categories (e.g. "objects" for nouns) and consider what differentiates these sets of referents that bears on children's developing cognitive abilities, and hence on their ability to form categories of them. This is the line that has dominated much theorizing in acquisition for the past 20 years: it is the line taken by Gentner (1982; Gentner and Boroditsky i.p.) in her "natural partitions" argument for concrete nouns,²⁶ as well as by many researchers who start from Quine's logical problem of reference to propose cognitive principles or "lexical constraints" children must rely on in learning the meanings of new words, these being different for nouns and verbs.²⁷

The Tzeltal data summarized above support yet a third approach, one that treats each language as presenting the learner with its own set of problems and its own cues to their solution, in a given cultural milieu. This tack has been eloquently expressed by Küntay and Slobin (1997: 284):

... [E]ach language presents the learner with a particular set of multiply-intersecting problem spaces. Part of acquiring a language lies in determining the relevant cues to each of those spaces. In Turkish the child must learn to track lexical items across varying utterance positions, with different associated collections of agglutinated morphemes, moving in and out of patterns of ellipsis. This mother did not seem at pains to simplify these tasks for the child. If anything, we would propose that the entire set of cues is necessary for the child to be able to solve the problem.

In the same spirit I would suggest that, for Tzeltal, rather than thinking abstractly in terms of the easiness/hardness of the learning of particular classes of words, we should consider the particular problem Tzeltal presents to a child, along with its support mechanisms as summarized in section 3.2 above. The Tzeltal data (as well as the Korean data mentioned above) suggest that verbs are not per se "harder" than nouns for children to learn. An important part of what children want to do with language is COMMUNICATE; if their language puts the communicative load into verbs, as it does to a large extent in Tzeltal, then that is what children will learn first.

Received 29 July 1997
Revised version received
20 January 1998

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Nijmegen

Notes

1. I am grateful to the following people for very helpful discussions on some of the ideas developed in this paper: Heike Behrens, Melissa Bowerman, Elena Lieven, Wolfgang Klein, Stephen Levinson, Dedre Gentner, and David Wilkins. Correspondence address: Max Planck Institute for Psycholinguistics, P.O. Box 310, NL-6500 AH Nijmegen. E-mail: pbrown@mpi.nl.
2. Inferring from the much-better-described closely related language Tzotzil (Laughlin 1975 lists 2715 roots).
3. The practical orthography used for Tzeltal is roughly phonemic, with symbols corresponding approximately to their English equivalents, except that *j* = *h*, *x* = *sh*, and ' indicates a glottal stop or glottalization of the preceding consonant.
4. See Brown (1994), Haviland (1994), Lucy (1992) for more details of Mayan noun and verb semantics.
5. Positionals are a large class of roots in Mayan languages with distinct derivational morphology, semantically often combining features of shape, position, and configuration; they are important in predicating location (Brown 1994; Haviland 1994). They compose perhaps a third of the verbal lexicon, on analogy with Tzotzil (Haviland 1994).
6. Like the specificity provided in numeral classifiers for nouns, such that the classifier can stand on its own for the whole NP, these Tzeltal verbs are like classifiers for actions since they apply only to actions with respect to specific kinds of arguments (specific kinds of foods, places of carrying, positions, shapes, or orientations of O). This is a different kind of specificity from that provided, e.g., by a manner component in verbs in other languages — the manner component qualifies/specifies the nature of the action/motion/state, whereas verb specificity in Tzeltal qualifies/specifies what kinds of things the action can apply to (though it often implicitly conveys manner). For details about this property of Mayan languages see Brown and Levinson (1993), Brown (1994, 1998, i.p.) for Tzeltal; Haviland (1992, 1994) for Tzotzil; Pye (1993) for K'iche'. See also de León (1997, i.p.) for early acquisition of semantically specific verbs in Tzotzil.

7. The samples total about 30 hours, comprising 2100 utterance turns, for Xan, and 50 hours (12,600 utterance turns) for Mik, of which the great majority are agreement tokens and other communicative nonwords. These data are drawn from a larger longitudinal database consisting of over 600 hours of data, collected over three and a half years in a rural hamlet of the highland municipio Tenejapa, in Chiapas, Mexico. This data was videotaped (six-weekly by me) and/or audiotaped (monthly, by the child's father) in five extended families; the monthly tapings were one hour each over two successive days, the videotaping ranged between four and eight hours across several days during my six-weekly visits. These data are still being processed and analyzed; this is work in progress.
8. The failure to talk is not attributable only to shyness in front of the investigator (who had been visiting the family regularly since before she was born); it was also reported by her parents during this period and was characteristic of her brother even at the age of four. Several factors probably influence this: Tzeltal children in general seem to be somewhat delayed in producing talk, in comparison with middle-class Western children. This is due perhaps to the general cultural practice of not treating babies as interlocutors and not paying much attention to children's early vocalizations; children tend therefore to be relatively passive participants in social life at first. Xan, in particular, being the youngest in an extended family with three other children within two years of her in age, silently followed the other children in whatever they did for many months. By the time she was saying more than ten utterances per hour of session, at age 2, she was already putting morphemes together in combinations.
9. A cumulative vocabulary list was compiled for each child listing every new word the child produced, either by parental report (for the first few words), or in my videotaped or audiotaped data samples. A handful of words could be either verb or noun; these were categorized on the basis of how the child used them, the criteria for inclusion being clear meaning in context and interlocutor response.
10. In period I, *mlu* was calculated on the entire sample (ignoring *uh*s and *u'uh*s, etc.), ranging between 200 and 250 utterances for each of the children. For periods II and III, it was calculated on the number of morphemes in samples of 300 contentful utterances. This measurement doubtless underrepresents a child's morpheme-combining capacity in Tzeltal, due to free argument deletion and null grammatical morphemes in Tzeltal.
11. In a 13,000-word sample of adult Tzeltal natural conversation, verb tokens were almost exactly twice as frequent as noun tokens (there were 1870 verbs and 942 nouns in the sample). This count was made with a strict criterion for verbs as those words that take aspect; two of the five most frequent predicates in the language (*ay* 'exist' and *xon/xat/xi* 'I/you/he/she said'; see Table 5) were therefore not included.
12. It might be objected that verbs dominate due to a sampling artifact: perhaps verbs are auditorally clearer, or communicatively clearer, or perhaps nouns are more likely to be repeated across turns and therefore not counted. In fact, it is verbs that are more likely to be repeated across turns in this data.
13. They share only the intransitive roots for 'go', 'suckle', 'exist', 'finish/die', 'fall', and 'hurt' and the transitives 'eat [tortilla]', 'eat [soft things]', 'give', 'carry [in arms]', 'want', 'sweep', 'see', 'carry [bowl upright]', 'fear', and 'make/do'.
14. Note that this is a stricter criterion for semantic weight than that provided by Clark (1993) or Ninio (1996). Manner-specific verbs (e.g. 'hit') are light by this criterion if they don't subcategorize for a subset of arguments.
15. Verbs with meanings corresponding to English *get* and *put* are divided into different kinds of "getting" (grasping in different ways, in the hand, etc.), and "putting" (in

different-shaped containers, on surfaces, positioned differently, etc.). The general Tzeltal verb *ich'*, translating as 'receive' is used in these children's early speech only in frozen idioms.

16. "Combinations" here include roots with bound prefixes and/or suffixes, as well as word combinations. The "combinations" count does NOT include third person singular absolutive, even when it is clear in the context that a third person referent is intended, since 3rd person sg. absolutive is null in Tzeltal and it is not yet clear at what point children have a distinct null category, distinguishing 3rd person from 1st and 2nd. So children may well be intending to communicate a specific object referent by saying, for example, just *maj* 'hit (him)', but this will be a single surface morpheme in Tzeltal for the child (prior to using aspect and ergative prefixes that mark subject). Similarly for completive intransitives: the completive marker is null and the communicative intention (for example, 'He cried') will be conveyed by a single surface morpheme (*ok'*), for both adult and child.
17. One anonymous reviewer suggests that the second person vowel-initial marker *a'w-* should be expected to be learned later than the phonetically simpler second-person consonant-initial *a'*. However, phonetic simplicity interacts with phonetic salience: the consonant-initial forms of both first-person (*j-* = [h]) and second-person (*a'*, elided to just a glottal stop after the [a] of the preceding aspectual *ya* or *la*) are often more or less inaudible, and therefore nonsalient, both for the child to hear them and for the researcher to be confident that the child has produced them.
18. There are perhaps 15 vowel-initial verbs, and 30 nouns, that are frequent and relevant in a small child's world — including some words for body parts, kin terms, spatial words, food, and familiar household objects — plus the possessive pronouns and the diminutive *ala*.
19. One would need experiments with novel made-up vowel-initial words to be confident of this; such experiments are, however, probably not feasible in this speech community. Note that the Tzeltal data here contrast with what Pye (1992: 269–73) argues for his Quiche' ergative prefixes: there is no evidence in this early Tzeltal data of children misanalyzing a V-initial root as C-initial. Such evidence would show the child treating a verb's person marker as part of the root — e.g. failing to switch person markers appropriately across turns, or double-marking the root with both C-initial and V-initial prefixes, as Pye (1992) shows for Quiche'. This is a later — and indeed, marginal — phenomenon (around age 3;6) in my data, suggesting a later reanalysis of the root.
20. Preliminary evidence suggests a possible exception to this when the consonant-initial markers develop: ergative marking seems to be fully productive on verbs before it is on nouns. The third person consonant-initial prefix *s-* is left off of nouns some of the time, by some children, for several years.
21. Many of the children's early one-morpheme utterances are referring to third-person situations, but we do not yet know at what point the absence of a marker becomes distinctive in contrast to the presence of first or second person marking. It appears to be so by the end of the period under discussion here.
22. Nominal prediction in the first and second person is quite restricted even in adult speech; there are not many occasions for saying things like *antz-on*, *antz-at* 'I am/you are a woman'. The one example of child use in the data under discussion here (aside from a couple of exact repeats, on request, of an adult utterance) was Mik's *pontz-at* 'you are Ponso', teasing his mother that she was actually his brother Ponso.
23. See Brown (1998) for further details. See Pye (1980, 1985, 1992) for a largely analogous picture for K'iche' Mayan. However, Pye (1992: 283) observes that, since the two forms — independent pronouns and person marking — aren't in complementary

distribution in his K'iche' data, we can't assume that the pronouns are standing in for person marking at this stage. This conclusion does not seem to apply to these early Tzeltal data, where independent pronouns are used almost exclusively when the person marking is missing (see Brown 1998 for details).

24. This may be a Mayan language pattern; Pye found similar late development for K'iche' aspect (Pye 1992).
25. About 11% of the time, in a sample of child-directed speech (Brown 1997).
26. However, Gentner's "relational relativity" claim that verb meanings are learned via linguistic experience is closer to the position I am taking here.
27. See Golinkoff et al. (1994, 1995) for recent reviews; Maratsos (1990) for a critique of explanations based on the object/activity distinction.

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