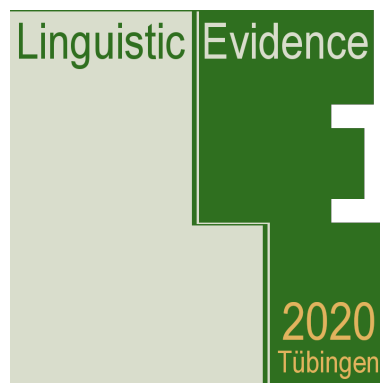


Nico Lehmann & Elisabeth Verhoeven

2022

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The Yucatec Mayan Preverbal Domain Revisited



in

Robin Hörnig, Sophie von Wietersheim, Andreas Konietzko & Sam Featherston (eds.),
Proceedings of Linguistic Evidence 2020: Linguistic Theory Enriched by Experimental Data
pp. 459–477

Tübingen: University of Tübingen

<https://publikationen.uni-tuebingen.de/xmlui/handle/10900/119301>

Discourse-Independent Variation in V-Initial Constituent Order: The Yucatec Mayan Preverbal Domain Revisited

Nico Lehmann & Elisabeth Verhoeven

Humboldt-Universität zu Berlin, Humboldt-Universität zu Berlin

nico.lehmann@hu-berlin.de, verhoeve@cms.hu-berlin.de

1 Mayan Languages and V-Initial Properties

Mayan languages are mainly V-initial languages, referring to the linearization of subject, object and verb that qualifies as basic word order by means of structural criteria. Assumptions about basic word order go back to Greenberg (1963, p. 60), who noticed that “[t]he vast majority of languages have several variant orders but a single dominant one.” Contrary to Steele (1978, p. 587), who defines basic word order as only “a surface ordering of subject, object and verb relative to one another that is at least more common than other possible orders”, we follow a structural base order approach along the lines of England (1991), according to which syntactic criteria are more crucial for base orders than frequency of occurrence (see also Frey & Pittner, 1998; and criteria from Brody, 1984, 713ff.). In this sense, V-initial languages such as Greek (Philippaki-Warbuton, 1987, 1989) and Hungarian (Kiss, 1998) are analyzed structurally as VSO languages while the Austronesian language Chamorro alternates between VOS and VSO (Chung, 2005). However, several studies indicate that this type of language exhibits particular characteristics; namely, the linearization that appears more frequently in discourse is S-initial – Lascaratou (1998) reports an SVO frequency of 80.9 % for Greek; similarly, Behrens (1982) shows that SVO order occurs in 71 % of observed Hungarian clauses. Chamorro also displays a preference for SVO surface order patterns under certain thematic continuity conditions in narrative discourse (Cooreman, 1987).

This discrepancy equally holds for Mayan languages, which use VSO and/or VOS orders in syntactically and pragmatically most unmarked contexts (England, 1991), but also display non-V-initial linearizations, e. g. using preverbal positions for topic and focus constructions. A prime example is Yucatec Maya, a Mayan language spoken primarily in Yucatán, México, which has been analyzed as having the basic word order VOS (Norman & Campbell, 1978) while speakers produce SVO surface orders in the majority of instances (Durbin & Ojeda, 1978; Bricker, 1979; Gutiérrez-Bravo & Monforte y Madera, 2008), shown also by natural production data where 70 % of transitive verbs with all arguments realised overtly displayed an SVO linearization (Skopeteas & Verhoeven, 2005). V-initial languages often make use of a preverbal configuration to signal topichood. As topics are usually given information, they tend to precede new information in discourse (cf. Clark & Haviland, 1977).¹ A high frequency of SVO surface orders despite a structural V-initial makeup could therefore be explained on the one hand by the fact that topic–comment configurations are more frequent in natural discourse than all-new configurations and on the other hand by argument asymmetries in topicalization, i. e. because subjects are more likely than non-subjects to occur as topics (e.g., Hopper, 1979; Hopper & Thompson, 1980; DuBois, 1987).

¹ Krifka (2008) notes that speakers use such linguistic means to signal the degree of givenness of a referent, and to indicate that “the denotation of an expression is present in the immediate [common ground] content” (p. 262), so that the addressee can retrieve the information more easily.

Yet there is evidence that some preverbal constituents in Yucatec Maya are not necessarily associated with discourse features. Researchers have proposed different explanations for these occurrences, for example referring to processing restrictions that can trigger pragmatically unmarked subjects of transitive verbs to occur preverbally or alternatively re-analysing Yucatec Maya as a split word order language with obligatory SVO order in transitive clauses while still being V-initial for intransitive clauses. Furthermore, there is initial evidence for a possibly different behavior of subjects of intransitive verbs depending on their thematic role as agents vs. patients. Still, there is room for improvement in the empirical basis for these observations and associated accounts. We therefore conducted a forced choice experiment to review the occurrence of pragmatically neutral subjects in preverbal configurations. Section 2 presents the background on Yucatec Mayan word order, followed by Section 3, which discusses two alternative approaches for explaining the high frequency of SVO linearizations in Yucatec Mayan natural discourse. In Section 4, we will present a forced-choice acceptability study on alternative linearizations of subjects in the pre- vs. postverbal domain. It will turn out that the results support the claims made about preverbal constituents lacking discourse features. In Section 5, we will discuss the insights gained from the experiment and how they relate to the claims made about word order in Yucatec Maya. In conclusion, Section 6 summarizes the results of this paper.

2 Word Order Variation in Yucatec Maya

In syntactically and pragmatically unmarked contexts, Yucatec Maya (YM) has been reported to display VOS linearization in transitive clauses (1a) and VS in intransitive clauses (1b) (see England, 1991; Skopeteas & Verhoeven, 2005, 2009a,b), leading to the conclusion that the basic word order in YM is VOS.² Alternative linear permutations are usually analyzed as being licensed by additional pragmatic factors and a subset of them is accompanied by additional morphological marking.

- (1) a. *T=u jaan-t-aj oon Pedro.*
 PFV=A.3 eat-TRR-CMPL[B.3.SG] avocado Pedro³
 [V O S]
 ‘Pedro ate avocado.’ (Skopeteas & Verhoeven, 2005)
- b. *Táan u wen-el le paal-al-o’ob=o’.*
 PROG A.3 sleep-INCMPL DET child-COLL-PL=D2
 [V S]
 ‘The children are sleeping.’ [Yuc_text⁴: t’uup_233]

Licensing of postverbal reordering of the arguments is influenced by asymmetries in animacy, definiteness or weight (Bohnenmeyer, 2009; Skopeteas & Verhoeven, 2005). Previous analyses of SVO linearizations identified similar licensing factors. As other Mayan languages, YM allows constituents to occur in preverbal positions to signal discourse relations, i. e. topic or focus (see Durbin & Ojeda, 1978; Skopeteas & Verhoeven, 2009a,b; Gutiérrez-Bravo & Madera, 2010).

² Throughout this paper, subjects and objects in examples are formatted differently for ease of readability, the former portrayed in bold type and the latter underlined.

³ The following abbreviations are used in the glosses: 0=euphonic marker, A/B=Set.A and Set.B markers for cross-referencing subjects/possessors and objects respectively, CAUS=causativizer, CL.AN=animate classifier, CL.INAN=inanimate classifier, CMPL=completeive, COLL=collective marker, CONJ=conjunction, D1/2/3=deictic clitics, DEF.FUT=definite future, DET=determiner, F=feminine marker, INCMPL=incompleteive, IPFV=imperfective, LOC=locative preposition, M=male marker, PFV=perfective, PL=plural, PROG=progressive, SG=singular, SUBJ=subjunctive, TRR=transitivizer, QUOT=quotative

⁴ Corpus collection edited by C. Lehmann (2020).

Two distinct positions are assumed in the preverbal domain for information structural purposes (see (2)), both able to host constituents such as subjects, objects or adverbials.

- (2) [_{Ext} TOPIC] [_{Int} FOCUS ASPECT=SET.A V-SET.B Object Subject]

Left-dislocation Pre-predicate

The position immediately left-adjacent to the verb is the so-called pre-predicate position as exemplified in (3), which is a clause-internal position associated with a narrow focus interpretation, hosting constituents fronted via movement operations. It therefore does not allow a co-referent pronoun to appear in the core clause and has the core clause as its binding domain. It is also accompanied by a special inflectional verb form when filled by the agent of an active transitive verb, called the agent focus form (for more information on this construction, see among others Bricker, 1979; Tonhauser, 2007; Verhoeven & Skopeteas, 2015).

- (3) *Pedro il-ik-ech.*
 Pedro see-INCMPL-B.2.SG
 ‘ PEDRO (not somebody else) sees you.’ (Gutiérrez-Bravo & Madera, 2010)

The leftmost position is a clause-external position for left-dislocated elements, which signals topichood and is marked by a deictic enclitic at the right edge as in (4).

- (4) *Le áak*(=e’) t=u jaan-t-aj su’uk.*
 DET turtle=D3 PFV=A.3 eat-TRR-CMPL(B.3.SG) grass
 ‘ The turtle ate grass.’ (Skopeteas & Verhoeven, 2012)

Deictic enclitics, e. g. proximal =*a* ‘D1’, distal =*o* ‘D2’ and unspecified =*e* ‘D3’, appear at the right edge of intonation phrases in a subset of Mayan languages when “licensed by a language-specific set of triggers (determiners, complementizers, and deictic elements)” (Skopeteas, 2010, p. 312). In Example (4), the determiner *le* ‘DET’ licenses the deictic clitic =*e* ‘D3’, which appears at the right edge of the left-dislocated constituent in YM because it forms its own intonational phrase. In contrast, the pre-predicate position does not allow deictic clitics to appear at its right edge as it forms an intonational phrase together with the core clause. The marking with deictic clitics thus indicates the clause-external status of the left-dislocated phrase, along with properties such as the lack of binding options with the core clause and the optional occurrence of a co-referent pronoun in the core clause. For a summary of the properties of left-dislocation and the pre-predicate position see Table 1 (cf. Bricker, 1979; Aissen, 1992; Tonhauser, 2003, 2007; Skopeteas & Verhoeven, 2009a,b; Verhoeven & Skopeteas, 2015):

Table 1. Characteristics of left-dislocation and pre-predicate position in Yucatec Maya

	Left-dislocation	Pre-predicate
linearization	no adjacency	left-adjacent to V
	precedes NEG	follows NEG
distribution	may be iterated	unique
	co-referent pronoun in core clause possible	no co-referent pronoun possible
	distribution free	restricted possibilities
movement	no binding options	binding domain of core clause
	no island sensitivity	sensitive to island constraints
intonation	separate intonational phrase	intonational phrase with core clause

3 Discourse-Independent Licensing of Preverbal Subjects

3.1 Preliminaries

A closer inspection of production data provides evidence that subjects in YM also occur in the preverbal domain without topic or focus interpretation, i. e. being pragmatically unmarked. In a production study eliciting semi-spontaneous narration by Skopeteas & Verhoeven (2009b), speakers placed discourse-new subjects of transitive clauses in a preverbal position (as illustrated in (5)) in 88.9 % of cases.

- (5) *Le máak=o' táan u táas-ik jun-p'éel k'áanche'.*
 DET person=D2 PROG A.3 bring-ICMPL[B.3.SG] one-CL.INAN chair
 'The man is bringing a chair.' [F 31.17]

Similarly, when Gutiérrez-Bravo & Madera (2010) and Gutiérrez-Bravo & Monforte y Madera (2008) consulted native speakers about their preferences for pre- and postverbal placement of pragmatically neutral subjects of transitive clauses, the consultants preferred the subject in the preverbal domain in eight out of ten instances (as in B from (6)).

- (6) A: *Ba'ax k=u y-úuch-ul?*
 what IPFV=A.3 0-happen-ICMPL
 'What happens?'
 B: *Le koolnáal=o' t=u jats'-aj le máak=o'.*
 DET peasant=D2 PFV=A.3 hit-CMPL[B.3.SG] DET man=D2
 'The peasant hit the man.' (Gutiérrez-Bravo & Monforte y Madera, 2008)

As for intransitive clauses, the production data by Skopeteas & Verhoeven (2009b) revealed a proportion of 88.2 % of pragmatically unmarked subjects in a postverbal position, cf. (7).

- (7) *J lúub jun-p'éel che'*
 PFV fall one-CL.INAN branch
 'A branch fell down, ...' (Skopeteas & Verhoeven, 2009b)

These data suggest that (some) preverbal constituents in Yucatec Maya might not necessarily be associated with the discourse features depicted in Section 2. In Sections 3.2 and 3.3, we will delineate possible explanations for these frequencies that have been presented in the literature focusing on the difference between transitive and intransitive verbs. As for intransitive verbs, due to size limitations the production study by Skopeteas & Verhoeven (2009b) did not distinguish between subclasses of intransitive verbs, in particular between unergative verbs taking an agent subject and unaccusative verbs taking a patient subject. Section 3.4 discusses the possible impact of split intransitivity and thematic role on subject placement in the preverbal domain.

3.2 A Dedicated Preverbal Subject Position

Explanations for the high frequency of SVO next to VS constituent orders in YM will have to present a motivation for why pragmatically neutral subjects are placed in different positions depending on verbal transitivity and occurrence of an overt object. One approach, most prominently advocated in Gutiérrez-Bravo & Madera (2010) and Gutiérrez-Bravo & Monforte y Madera (2008), assumes a basic SVO order for YM, proposing a constraint-based approach which accounts for a split word order with an obligatory clause-internal preverbal position for subjects of transitive clauses and a clause-internal postverbal subject position for intransitive clauses and transitive clauses with phonologically empty objects (Gutiérrez-Bravo & Madera,

2010). From this follows that S_{tr} VO linearization as in (8a) is the syntactically unmarked order⁵ for pragmatically unmarked transitive clauses, provided that the object is realized overtly. For all other clause setups, including intransitive clauses and clauses with phonologically empty objects, VS is the presumed base order: (8b) illustrates a transitive clause where the object is not lexically realized but only cross-referenced by the set B person marker on the verb⁶ while the subject occurs in the postverbal domain; the example in (8c) presents an intransitive clause, which lacks a structural object, showing postverbal subject placement.

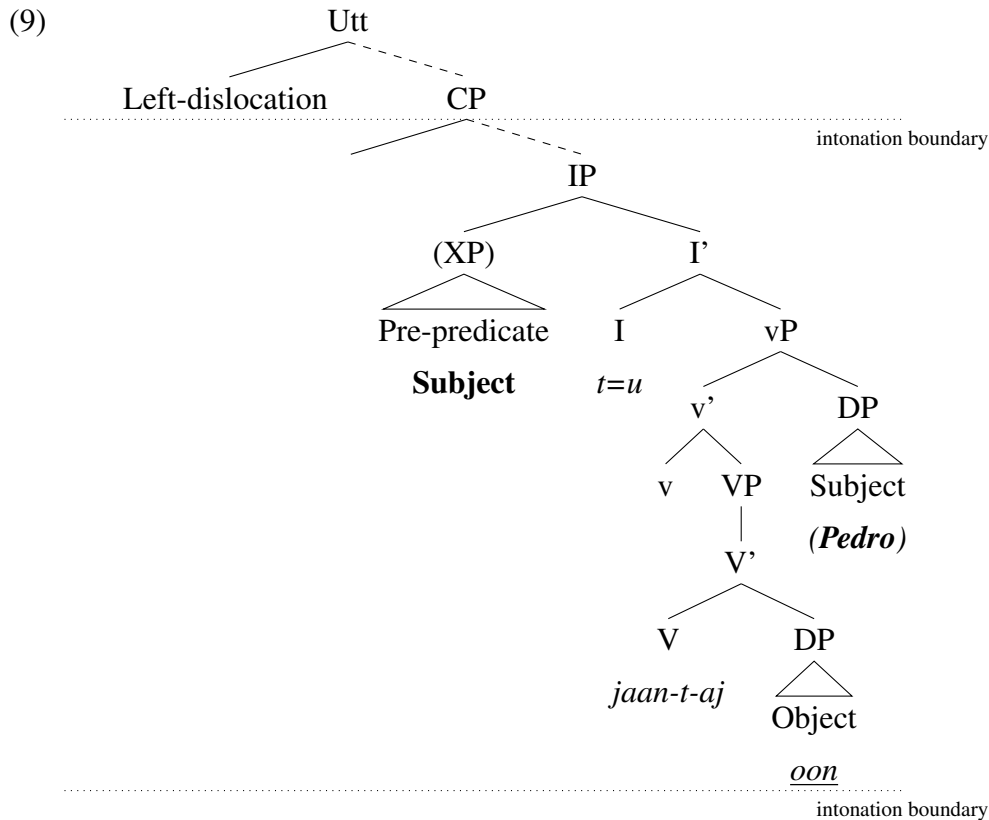
- (8) a. [*Leti'*] *t=u ordenar-t-aj ka'a-túul saapo u*
 that.one PFV=A.3 order-TRR-CMPL[B.3.SG] two-CL.AN toad A.3
bi-s-ej.
 go-CAUS-SUBJ[B.3.SG]
 'He commanded two toads to take it away (a box).' (Sapo-1)
 (Gutiérrez-Bravo & Madera, 2010)
- b. *Káa t=u mach-aj nuxib j-koj=e'*
 CONJ PFV=A.3 seize-CMPL[B.3.SG] big:male M-puma=D3
 'Then the old puma seized it ...' [Yuc_text: koh_78.1]
- c. *J k'uch u péektsil-il*
 PFV arrive[CMPL][B.3] A.3 news-REL
 'The news arrived ...' [Yuc_text: HK'AN_422.1]

Structurally, pragmatically neutral transitive subjects are suggested to occupy SpecIP, the same position argued for to host focused constituents, i. e. the proposed subject position is identical to the pre-predicate position but lacks a focus association (Gutiérrez-Bravo, 2011; Gutiérrez-Bravo & Madera, 2010; Gutiérrez-Bravo & Monforte y Madera, 2008). An EPP constraint requires subjects in the presence of overt postverbal objects to fill the specifier of the highest inflectional projection. As aspect markers occupy the head of IP and preverbal subjects always precede aspect markers, their most viable landing site is SpecIP following this constraint. This is schematically illustrated in the syntactic representation in (9), which demonstrates the basic structure proposed by Aissen (1992) for Mayan V-initial languages and their left-peripheral positions.

Occurrences of VOS order, as in (10), which are rare in YM natural discourse, are explained as marked variants that are only felicitous when “there is no unique constituent of which the rest of the clause is predicated” (Gutiérrez-Bravo & Madera, 2010, p. 161); in such instances, the clause is argued to present the propositional content uniformly without logical predication between, for instance, a syntactic subject and a syntactic predicate. In fact, semantic predication is one factor influencing the categorical distinction in topic-comment structures (Jacobs, 2001) and lack of such predication gives rise tothetic sentences, which have no topic constituent (Krifka, 2008). Gutiérrez-Bravo & Madera (2010) propose that there is athetic condition in YM according to which sentences interpreted asthetic, i. e. lacking a categorical topic-comment structure or, in other words, logical predication, are associated with a VOS linearization. This, however, leaves unexplained what the assumed difference is between pragmatically neutral subjects occurring in the suggested dedicated preverbal subject position, i. e. in SVO, and subjects inthetic sentences, i. e. in VOS. Pragmatically neutral subjects as well as subjects

⁵ Gutiérrez-Bravo & Madera (2010) use the term “base order” for SVO in YM, but seem to understand the term in the line of Steele (1978) as delineated in Section 1, which contrasts with our conception. From their constraints follows that they derive the SVO order from an underlying VOS structure.

⁶ YM has two sets of cross-reference markers called SET.A and SET.B in Mayan linguistics, which agree with subjects and objects, respectively – the SET.B marker being zero for the third person singular in non-final position. Null-subjects and null-objects are possible.



inthetic sentences are neither interpreted as topic nor focus and generally lack information-structural influences.

- (10) *Je' bin k=u la'ach-ik u jo'ol x-nuk reyna=o'.*
 DEF.FUT QUOT IPFV=A.3 scratch-ICMPL[B.3.SG] A.3 head F-great queen=D2
 'And the great queen truly scratched her head.'

(Gutiérrez-Bravo & Madera, 2010)

In sum, the split word order account predicts that SVO should generally occur in YM pragmatically unmarked transitive clauses with two lexical arguments due to syntactic constraints. VOS order is predicted forthetic judgments whereby the distinction between such sentences and pragmatically unmarked sentences in all-new contexts remains unclear. Intransitive clauses are expected to be realized with postverbal subjects in pragmatically neutral contexts, i. e. when there are no other licensing factors warranting a preverbal placement such as topicalization or focus. Importantly, a dedicated subject position in the preverbal domain, that is internal to the clause, is postulated: SpecIP, which according to this approach hosts information-structurally unmarked transitive subjects. Moreover, it follows that the pre-predicate position would not inherently be associated with focus.

3.3 Anti-Crowding with Two Postverbal NPs

Another possible explanation for the SVO/VS dichotomy looks at a condition based on processing (Skopeteas & Verhoeven, 2009b). YM is a head-marking language and nominal arguments are not marked for case. A structure with two adjacent postverbal arguments is ambiguous between a VOS or VSO interpretation. In (11), it can either be (i) the peasant or (ii) the man who hits the other person. With referents of equal status and no other context information, a sentence such as (11) is underspecified as to who does the hitting. In general, however, aspects such as definiteness or animacy help speakers to disambiguate between argument roles.

- (11) *T=u jats'-aj le máak le koolnáal=o'.*
 PFV=A.3 hit-CMPL[B.3.SG] DET man DET peasant=D2
 'The peasant hit the man. / The man hit the peasant.'

(Gutiérrez-Bravo & Monforte y Madera, 2008)

Nevertheless, the necessary process for disambiguation of argument roles increases the parsing effort in communication. Speakers have to create the intended constituent structure from a form that is particularly vague (see Table 2) because 1) arguments are adjacent in V-initial languages, 2) have no dependent marking in YM, and 3) are of the same syntactic form.

Table 2. Mapping of linearization to constituency in V-initial languages

Constituency:	[<i>clause</i>	[<i>VP ...</i>]]
Linearization:			<np,	np>

Experimental data from language comprehension provide evidence for the processing difficulty involved in interpreting adjacent postverbal arguments: Skopeteas & Verhoeven (2005) found that speakers tended to interpret two adjacent arguments as a single constituent. The complement clause in (12) has two lexically realized bare noun arguments and is therefore ambiguous between a VOS or VSO interpretation – instead of choosing one option from the two linearizations, speakers went for a third option and interpreted both bare nouns as a single compound object, i. e. a single referent. The semantic agent of the dependent clause then corresponds to the subject of the matrix clause via co-reference, possibly due to ambiguous cross-reference marking.

- (12) *Pedro=e' t=u y-a'al-aj t=u kiims-aj looxnáal chakmol.*
 Pedro=D3 PFV=A.3 0-say-CMPL PFV=A.3 kill-CMPL boxer puma

Intended: 'Pedro said that a puma killed a boxer.'

Translated: 'Pedro said he killed a boxer named puma.' (Skopeteas & Verhoeven, 2005)

To avoid such ambiguity as well as parsing difficulties, speakers of YM adhere to the so-called **distinctness condition** (Neeleman & Koot, 2017; Richards, 2006), which constrains word order to only one NP argument in the postverbal domain. It appears to be the subject that leaves the postverbal domain in YM due to the resulting anti-crowding effect. Crowding is not an issue, though, when an overt object is placed preverbally for independent information-structural reasons such as topic or focus or when the object is of a different syntactic category, e. g. clausal. And empirical data in fact show that subjects appear preverbally less frequently in these contexts (Skopeteas & Verhoeven, 2009a,b).

The anti-crowding requirement causes subjects of transitive clauses to be left-dislocated to a clause-external position, cf. the syntactic representation in (9) (Skopeteas & Verhoeven, 2009b). A consequence of this is that in YM left-dislocation is not only a means for topicalization but is also used to facilitate processing in constructions with two lexical NPs to the effect that the subject preferably occurs in the left-dislocated position. The subsequent predictions for linearization in YM are based on preferences because the distinctness condition is not obligatory. It is a mechanism to support understanding and not a grammatical prerequisite. It follows that non-topical subjects, e. g. pragmatically unmarked or neutral subjects, occur much more frequently preverbally when two lexical arguments are realized as NPs. In intransitive clauses, on the other hand, for they can ever only have one NP argument, speakers should prefer subjects in the postverbal domain. What is more is that under this account left-dislocation in YM is not inherently associated with topichood as it would also host pragmatically neutral transitive subjects.

3.4 The Role of Split Intransitivity

Next to the number of overt lexical arguments, another factor might reasonably influence the placement of subjects in the preverbal domain, i. e. the thematic role properties of the intransitive subjects (S_{ag} vs. S_{pat}), cf. split intransitivity hypothesis (Perlmutter, 1978). The grammar of YM distinguishes several intransitive verb classes. Most importantly, the distinction between unergative and unaccusative verbs is manifested in specific inflectional properties (see status inflection in Table 3) and the availability to enter specific argument structural operations (see argument alternations in Table 3). Unergative verbs take an agent (S_{ag}) as their single argument, which is external to the VP and hosted by the S position. The event can be associated with a patient argument via a transitivizing operation marked by the suffix *-t* on the verb. Unaccusative verbs take a patient (S_{pat}) as their single argument, which is an internal argument and originates in the verbal complement position. Adding an argument to unaccusative verbs can be achieved via a causativization operation adding the suffixes *-s* or *-bes* on the verb.

Table 3. Status inflection & argument alternations for YM intransitive verb classes (Verhoeven, 2007)

	Status inflection		Argument alternations	
	Incomplete	Complete	Operator	Operation
intransitives with S_{ag}	\emptyset	<i>-nah</i>	<i>-t</i>	Extraversion ⁷
intransitives with S_{pat}	<i>-VI</i>	\emptyset	<i>-s, -bes</i>	Causativization

In addition to the structural differences, agents are generally more prone to be topics in discourse than patient arguments. One criterion for topics is an informational separation, i. e. separate processing of topic and comment, in order to allow the semantic file of the topic referent to be accessed first before processing the comment that is to be stored with said file (Jacobs, 2001). Unaccusatives with a patient argument can more easily integrate the subject informationally while unergatives are expected to have a natural informational separation between subject and predicate, therefore facilitating a topic interpretation despite an all-new context.

As already mentioned in Section 3.1, the production study by Skopeteas & Verhoeven (2009b) raised the issue of whether subjects of unergative verbs pattern with subjects of transitive verbs in displaying an information-structure independent preference for preverbal placement. Due to the rather small size of the corpus, the study could not present a reliable answer to this question; however, initial numerical evidence suggests that pragmatically neutral subjects of unergative verbs tend to occur preverbally more often than neutral subjects of unaccusatives, but less often than neutral subjects of transitives.

4 Experiment

In the following we present a forced choice experiment that seeks to substantiate the evidence for the occurrence of preverbal subjects in pragmatically neutral contexts and investigates the possible role of transitivity as well as the effect of thematic role as was discussed in Section 3.

4.1 Study Design

In order to determine whether transitivity plays the predicted role with linearization preferences in neutral contexts, the current study is extending an exploratory judgment task performed by Gutiérrez-Bravo & Madera (2010), in which speakers were asked to judge transitive answers to all-new questions such as *What happened?* Out-of-the-blue type questions are assumed to elicit

⁷ For basic intransitive verbs this operation leads to adding a natural patient object (C. Lehmann & Verhoeven, 2005)

pragmatically neutral responses, for no referent is previously given in the discourse, meaning that the whole sentence constitutes the focus domain (Aissen, to appear; Krifka, 2008). Answers judged as appropriate by speakers will less likely be interpreted with a topic or focussed subject that could license an SV(O) order, i. e. they are interpreted as all-new orthetic sentences. In order to be able to test the impact of transitivity on the preverbal vs. postverbal placement of subjects we included a set of intransitive sentences next to the transitive ones.

A second adjustment was made in the type of question used. Questions of the *What happened?* type allow arguments in the responses to be more easily construed as topics via context enrichment. A question using the interrogative adverb *why* was used instead because it is a more reliable trigger for all-new answers and seems to better prevent reinterpretation effects. This question introduces a context which an answer will be about, so that the answer will more likely lack a topic-comment structure in itself, instead functioning as a comment (as a whole) for the situation presented in the *why*-question (cf. Krifka, 2008). Furthermore, we opted against the use of visual stimuli to set the context, for seeing visual representations of actors or things may lead participants to perceive of them as given in the situation, making it easier to assign discourse features and associate a topic-comment structure with the presented sentence.

Another change from the original design is required with respect to definiteness marking of the subjects. If YM subjects in SVO structures can occupy a dedicated subject position, presumably residing in SpecIP and thus being clause-internal, they are expected to form an intonational phrase together with the core clause (see Section 2), in which case deictic clitics should not be able to attach to such preverbal subject constituents. This is where our experiment not only extends but also diverges from the setup in Gutiérrez-Bravo & Madera (2010), whose examples contained subjects with constituent final deictic clitics (see (6)). We expect constituents in a clause-internal preverbal position such as SpecIP to not allow any deictic enclitic following evidence provided by Skopeteas (2010). To avoid an influence from any implications made by further assumptions that are irrelevant for the current question under investigation, our experiment uses morphologically unmarked subjects, i. e. indefinite noun phrases, as exemplified in (13).

- (13) *Jun-túul máak t=u kíin-s-aj le koolnáal=o'*
 one-CL.AN person PFV=A.3 die-CAUS-CMPL[B.3.SG] DET peasant=D3
 'A person killed the peasant.' (Gutiérrez-Bravo & Madera, 2010)

Using indefinite noun phrases has further valuable merits: topics are frequently definite because the denotation expressed by a topic constituent must be identifiable for an addressation relation to be established (Jacobs, 2001; Lambrecht, 1994); indefinites, on the other hand, can be unspecific and are – together with an all-new context, e. g. triggered by an all-new question – not identifiable in the common ground, which in turn makes them unlikely topics because no specific semantic file can be targeted. By relying solely on indefinite arguments in the experiment, we therefore strongly support an all-new interpretation.

Additionally, the experiment will examine effects predicted by the split intransitivity hypothesis. We implemented a condition for a possible influence of theta role, as motivated in Section 3.4. In order to control for effects in the intransitive targets arising from their intransitive class, i. e. the thematic role of the subject, we implemented a set of items for each intransitive verb class.

This experiment design allows us to substantiate previous observations about varying subject placements under pragmatically neutral conditions and investigate the role of some of the possible factors at play more closely, i. e. transitivity and theta role. The goal is to test whether speakers prefer preverbal subjects in pragmatically neutral contexts (without an indication for the subject being topic or having narrow-focus) over their placement in the postverbal domain.

In particular, we will examine whether a putative preference depends on transitivity and/or theta role, as delineated in Section 3.

4.2 Variables

The dependent variable of interest is SUBJECT PLACEMENT, either preverbal or postverbal. The experimental study examines the impact of VERB CLASS (fixed factor), as illustrated in Table (14), on the choice of SUBJECT PLACEMENT.

(14)	VERB CLASS	Transitivity	Theta Role
(a)	S of transitive verbs	transitive	agent
(b)	S of unergative verbs	intransitive	agent
(c)	S of unaccusative verbs	intransitive	patient

We examined three levels of the fixed factor VERB CLASS which are nested in two different ways: case (a) contrasts with (b)/(c) regarding TRANSITIVITY and cases (a)/(b) contrast with (c) regarding THETA ROLE of the subject. This design will offer the possibility to test two alternative hypotheses concerning SUBJECT PLACEMENT in YM: is it determined by transitivity (assuming two overt arguments) or by theta role (or by a combination of both factors)?

4.3 Materials

The materials were constructed with the help of a native consultant. They contain a total of 24 question and answer pairs, with 8 different lexicalizations for each level of the Factor VERB CLASS (using 8 transitive, 8 unergative and 8 unaccusative verbs; find the respective items in Tables 6-8 in the Appendix). The same set of questions was used for each verb class. Each question had two possible answers depending on the choice of subject placement. All items used only indefinite arguments marked with a variant of the numeral classifier *juntúull/jump'éel*. None of the items contained deictic clitics. Unergative sentences, as they involve agentive event participants, used animate subjects (humans and animals). Unaccusative sentences had inanimate subjects (e. g. plants, buildings, objects). The transitive sentences involved animate and inanimate event participants, resulting in target sentences with two animate beings, as in 'A man dropped a baby' or animate beings acting on an inanimate object, as in 'A passenger broke a window.'

We distributed the eight items of each condition equally across four lists. Each participant saw only items of one list, so that they were presented each case of the Factor VERB CLASS twice, which resulted in $3 \times 2 = 6$ targets (each target containing the choice between the two alternative linear orders).⁸ The target items were mixed with 18 fillers in a target:filler ratio of 1:3. This design resulted in a total of 2 (repetitions) \times 20 (participants) = 40 observations per experimental condition.

4.4 Participants and Procedure

The experiment was carried out with 20 native speakers of YM, ranging in age from 19 to 49 (15 females: mean age = 23.7, 5 males: mean age = 38.8). The participants were recruited in Felipe Carrillo Puerto, a city in the Mexican state Quintana Roo, situated on the Yucatán peninsula. They grew up either in the city or in a nearby village. Each speaker received 100 pesos for

⁸ The original acceptability judgement design had twice the number of items, but trials in the field proved unsuccessful because the information-structural differences were too fine-grained for speakers to provide such judgements. The design had to be changed ad-hoc in the field into a forced-choice design, which halved the target items (rating two variants vs. selecting one variant out of two) and time restrictions did not allow us to add more items for this field trip.

participating in the experiment. The experiment lasted on average 30 minutes and took place in various personal homes and classrooms of education centres.

The experiment ran on a computer with the software PsychoPy. Participants were presented a context question followed by the target sentences (auditorily alongside visual representation), which contained the two orders (preverbal subject, postverbal subject), as shown in (15) for unergative items, (16) for unaccusative items and (17) for transitive items. The two options were presented next to each other underneath the question. Participants were instructed to select the option (each containing one of the linear order variants) they prefer in the given context by pressing the left or right arrow on the keyboard, left for the option on the left side, right for the option on the right side.⁹ The two linear orders appeared on either side equally often.

(15) *Ba'axten jach ya'ab wíiniko'ob te'ej k'úiwiko'?*

'Why are there so many people in the park?'

a. **Option 1:** *Tuméen táan u y-óok'ot jun-túul x-ch'úup.*
because PROG A.3 0-dance[INCMPL] one-CL.AN F-woman

b. **Option 2:** *Tuméen jun-túul x-ch'úup táan u y-óok'ot.*
because one-CL.AN F-woman PROG A.3 0-dance[INCMPL]

'Because a woman is dancing.'

(16) *Ba'axten j je'el le buus jo'oljeako'?*

'Why did the bus stop yesterday?'

a. **Option 1:** *Tuméen ts'o'ok u y-úuch-ul jun-p'éel loob.*
because TERM A.3 0-happen-INCMPL one-CL.INAN accident

b. **Option 2:** *Tuméen jun-p'éel loob ts'o'ok u y-úuch-ul.*
because one-CL.INAN accident TERM A.3 0-happen-INCMPL

'Because an accident happened.'

(17) *Ba'axten le ajts'aako' táan u bin Tulum?*

'Why is the doctor going to Tulum?'

a. **Option 1:** *Tuméen t=u lúub-s-aj jun-túul chan paal*
because PFV=A.3 fall-CAUS-CMPL[B.3.SG] one-CL.AN little child
jun-túul xiib.

one-CL.AN man

b. **Option 2:** *Tuméen jun-túul xiib t=u lúub-s-aj jun-túul*
because one-CL.AN man PFV=A.3 fall-CAUS-CMPL[B.3.SG] one-CL.AN

chan paal.

little child

'Because a man dropped a baby.'

4.5 Results

The results of the study are presented in Table 4 and plotted in Figure 1 (with confidence intervals). Participants selected the option with the preverbal placement of the subject in 3/4 of instances for transitive clauses, but nevertheless preferring postverbal subjects 25 % of the time. Both intransitive verb classes show a clear preference in the opposite direction, yet the preverbal

⁹ For our assumptions on the informativity of binary and n-point scale judgements see Langsford et al. (2018).

option fared better for unergative clauses with participants choosing this option over a third of cases. Unaccusative targets show the clearest preference for postverbal subject placement (75 %).

Table 4. Frequencies of SUBJECT PLACEMENT depending on VERB CLASS

	transitive		unergative		unaccusative	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
postverbal	10	25	26	65	30	75
preverbal	30	75	14	35	10	25
total	40	100	40	100	40	100

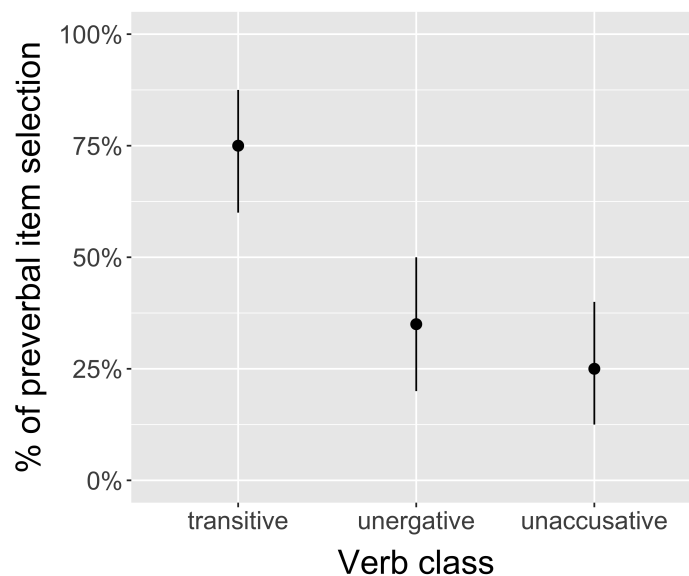


Figure 1. SUBJECT PLACEMENT depending on VERB CLASS (Y-bars: .95 confidence intervals)

The result was fitted by a generalized linear mixed-effects model, using SUBJECT PLACEMENT as dependent variable (zero level: postverbal subjects), VERB CLASS as fixed factor, and random intercepts of PARTICIPANTS (including slopes with the fixed factor), see the parameters in Table 5. A Log-Likelihood Test on the difference between models (with or without VERB CLASS) reveals that removing the fixed factor has a significant impact on the informativity of the model: $\chi^2(2) = 18.9, p < .001$. The three-way distinction of the fixed factor was contrast-coded based on (14) (zero-level for transitivity: intransitive; for theta-role: agent).

Table 5. Model estimates: SUBJECT PLACEMENT depending on VERB CLASS

	<i>estimate</i>	<i>SE</i>	<i>z</i>	<i>p</i> <
intercept	-.6	.33	-1.8	-
VerbClass:Transitivity	1.7	.51	3.4	.001
VerbClass:ThetaRole	-.75	.71	-1.1	-

5 Discussion

The generalized linear mixed-effects model results indicate that the difference between transitive sentences with two overt arguments and intransitive sentences has a significant impact on

subject placement. There is no evidence that the thematic properties of the subject (agent vs. patient) play a role in subject placement. The results confirm previous observations about subjects occurring in preverbal configurations for discourse-independent reasons in YM. The dispreference for intransitive subjects of any kind in the preverbal domain suggests that these tend to occur in the postverbal domain in accordance with general assumptions about the base order in YM. In contrast, transitive subjects (in sentences with lexically realized objects) were significantly preferred in the preverbal domain, hence substantiating the crucial role of factors involved in transitivity for subject linearization in pragmatically unmarked contexts.

The experimental results are generally compatible with both approaches when explaining the preverbal occurrence of transitive subjects presented in Sections 3.2 and 3.3. They are in line with a split word order account (Section 3.2) where the transitive subject is syntactically constrained from appearing in the postverbal domain together with another lexical NP argument. What is yet to be clarified regarding this approach is the differentiation between the licensing conditions for pragmatically neutral subjects in SVO vs. VOS linearizations. The context presented in the experiment was suitable to elicit thetic judgments, which should have resulted in preferences for VOS linearization. Nevertheless, participants selected SVO in the majority of cases. The experimental results are also consistent with the assumption that the base word order is V-initial in YM for both transitive and intransitive clauses but processing requirements, i. e. the distinctness condition (Section 3.3), lead to a deviation from the base order when two lexical arguments are present. In this case, as in other languages, dislocation of constituents may occur without semantic-pragmatic triggers, instead being due to a processing advantage (cf. Verhoeven & N. Lehmann, 2018), similar to processing facilitation through right-dislocation of long or embedded phrases.

The fact that transitive clauses with postverbal subjects were still selected at a rate of 25 % needs to be addressed by either account. The processing account, which stems from communicative needs that are subject to speaker choices, may explain this data via semantic-pragmatic processing facilitators, such as world knowledge, which speakers may have used to interpret the two arguments in their semantically most probable relation to the verb. Future investigations could incorporate conditions that vary such facilitators; a closer look at the influence of animacy may also be promising in this respect. The split word order account may attribute the amount of VOS choices to the thetic condition (Section 3.2) while leaving unexplained the exact differentiation between the triggers of pre- vs. postverbal occurrence of the subject.

This is the first study on YM which specifically tested the impact of split intransitivity on subject placement in a controlled design. It turned out that the descriptively visible difference between agent subjects (35 % of preverbal preference) and patient/theme subjects (25 % of preverbal preference) is not statistically significant. Hence we can conclude that transitivity (implemented here with two overt NP arguments) is the crucial factor for determining the preverbal placement of subjects. Nevertheless, our results are similar to the numeric tendencies reported in the production study by Skopeteas & Verhoeven (2009b), namely that agentive subjects of intransitive verbs show a stronger tendency to be placed preverbally than non-agentive intransitive subjects. We speculate that the role of agenthood plays out here. A topic interpretation may have been construed more easily with subjects of unergative verbs due to the natural association of agency and topichood (cf. Section 3.4). Thus, the preverbal placement of agentive intransitive subjects may be due to a reinterpretation effect where subject referents are perceived as topics under the assumption that the participants enriched the common ground. This would mean that in those cases involving reinterpretation effects intransitive subjects are placed in the preverbal domain for information-structural reasons.

6 Conclusion

Many structurally V-initial languages are inclined to place subjects in the preverbal domain for pragmatic reasons. The evidence from YM suggests that V-initial languages which possess mechanisms for pragmatic reordering of constituents might also make use of them for discourse-independent reasons. YM has two preverbal configurations for information-structural purposes, the pre-predicate position and left-dislocation. Previous analyses have demonstrated a focus association with the pre-predicate position as well as left-dislocation of primarily topic constituents. The reality in YM discourse, however, does not support such a clear association, for pragmatically neutral subjects may also appear in the preverbal domain. Accounts diverge as to the reasons for these occurrences, postulating for instance that these subjects occupy SpecIP or that they are left-dislocated. The results from the experimental study presented in this paper back up the claim that pragmatically neutral subjects do appear in the preverbal domain, yet predominantly conditioned by transitivity. Thematic properties of arguments could not be shown to influence linearization preferences. The experiment presented demonstrates that YM makes use of a mechanism that is usually reserved for information structural packaging for discourse-independent deviations from the base word order. It is subject to future research to further investigate the motivations in YM for placing subjects in the preverbal domain in neutral contexts, and in particular to determine the nature of the licensing conditions as syntactic or based on processing conditions.

Acknowledgments

The authors wish to thank Amedée Colli Colli for her guidance as a consultant, support with compiling the experimental material and help with the participants as well as all the participants themselves for taking part in the experiment. For their insightful comments on the topic and the experimental setup, our thanks further go to Rodrigo Gutiérrez-Bravo, Christian Lehmann, Stavros Skopeteas and Barbara Blaha Degler Pfeiler. The authors are also very grateful for the discussions during the “Linguistic Evidence 2020” conference and the extremely helpful and inspiring comments and suggestions of two anonymous reviewers that have contributed greatly to the improvement of this article. This work is part of the project VE 570/3-1 “Yucatec Maya: Variation in Time and Space” funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation).

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Appendix

The following is a full list of the items used in the experiment, divided into verb class and presenting the Yucatec Mayan original question and answers as well as an English translation for each.

Table 6. Items of the unergative verb class set

Question	Answer
<i>Ba'axten ma' táan u taal le buuso'?</i> Why is the bus not coming?	<i>Tuméen j máan yáalkab juntúul peek' táanil ti'.</i> Because a dog ran in front of it.
<i>Ba'axten j paachalchaj u k'uchul le buus bejla'ako'?</i> Why is the bus late today?	<i>Tuméen j aawatnaj juntúul máak te háalbejo'.</i> Because a man shouted by the wayside.
<i>Ba'axten le ajts'aako' táan u bin Tulum?</i> Why is the doctor going to Tulum?	<i>Tuméen táan u sen saasak'kaal juntúul paal.</i> Because a boy is coughing badly.
<i>Ba'axten jach yaan juum waye'?</i> Why is it so loud here?	<i>Tuméen táan u toojol juntúul peek'.</i> Because a dog is barking.
<i>Ba'axten j je'el le buus jo'oljeako'?</i> Why did the bus stop yesterday?	<i>Tuméen j k'oja'anchaj juntúul wíinik.</i> Because a passenger got sick.
<i>Ba'axten jach ya'ab wíiniko'ob te'ej k'íiwiko'?</i> Why are there so many people in the park?	<i>Tuméen táan u yóok'ot juntúul xch'úup.</i> Because a woman is dancing.
<i>Ba'axten le buuso' ma'atáan u bin Mérida te'ej p'ísk'iina'?</i> Why is the bus not driving to Mérida this week?	<i>Tuméen táan u báaxlo'ob jun múuch' wíiniko'ob yóokól noj bej.</i> Because a group of people is playing on the main road.
<i>Ba'axten ch'uul le noj bejo'?</i> Why is the street wet?	<i>Tuméen j wiixnaj juntúul peek'i'.</i> Because a dog urinated.

Table 7. Items of the unaccusative verb class set

Question	Answer
<i>Ba'axten ma' táan u taal le buuso'?</i> Why is the bus not coming?	<i>Tuméen j líub junkúul che' te'ej yóok'ol jump'éel bejo'.</i> A tree fell onto a road.
<i>Ba'axten j paachalchaj u k'uchul le buus bejla'ako'?</i> Why is the bus late today?	<i>Tuméen j wáak' jump'éel llantáaj.</i> Because a tire broke.
<i>Ba'axten le ajts'aako' táan u bin Tulum?</i> Why is the doctor going to Tulum?	<i>Tuméen j eel jump'éel naji'.</i> Because a house burned.
<i>Ba'axten jach yaan juum waye'?</i> Why is it so loud here?	<i>Tuméen ts'o'ok u k'uchul jump'éel ka'amkach ja'.</i> Because a storm has arrived.
<i>Ba'axten j je'el le buus jo'oljeako'?</i> Why did the bus stop yesterday?	<i>Tuméen ts'o'ok u yúuchul jump'éel loob.</i> Because an accident happened.
<i>Ba'axten jach ya'ab wíiniko'ob te'ej k'íwiko'?</i> Why are there so many people in the park?	<i>Tuméen táan u tóop'ol jump'éel lool.</i> Because a flower is blossoming.
<i>Ba'axten le buuso' ma'atáan u bin Mérida te'ej p'ísk'iina'?</i> Why is the bus not driving to Mérida this week?	<i>Tuméen k'aalal jump'éel sak bej.</i> Because a road is blocked.
<i>Ba'axten ch'uul le noj bejo'?</i> Why is the street so wet?	<i>Tuméen j xiixchaj jump'éel botelláaj.</i> Because a bottle exploded.

Table 8. Items of the transitive verb class set

Question	Answer
<i>Ba'axten ma' táan u taal le buuso'?</i> Why is the bus not coming?	<i>Tuméen tu kuchaj junkúul che' juntúul chofer.</i> Because a driver hit a tree.
<i>Ba'axten j paachalchaj u k'uchul le buus bejla'ako'?</i> Why is the bus late today?	<i>Tuméen tu k'alajo'ob jump'éel noj bej jun múuch' wíinik.</i> Because a group of people blocked a street.
<i>Ba'axten le ajts'aako' táan u bin Tulum?</i> Why is the doctor going to Tulum?	<i>Tuméen tu lúubsaj juntúul chan paal juntúul xiib.</i> Because a man dropped a baby.
<i>Ba'axten jach yaan juum waye'?</i> Why is it so loud here?	<i>Tuméen táan u k'ayik jump'éel baladáa juntúul xch'uup.</i> Because a woman is singing a ballad.
<i>Ba'axten j je'el le buus jo'oljeako'?</i> Why did the bus stop yesterday?	<i>Tuméen tu yop'aj jump'éel ventana juntúul pasajero.</i> Because a passenger broke a window.
<i>Ba'axten jach ya'ab wíiniko'ob te'ej k'úwiko'?</i> Why are there so many people in the park?	<i>Tuméen tu jaantaj jump'éel je' juntúul kaan.</i> Because a snake ate an egg.
<i>Ba'axten le buuso' ma'atáan u bin Mérida te'ej p'isk'iina'?</i> Why is no bus driving to Mérida this week?	<i>Tuméen tu k'ask'úunsaj jump'éel puente jump'éel chak ik'al.</i> Because a hurrican destroyed a bridge.
<i>Ba'axten ch'uul le noj bejo'?</i> Why is the street so wet?	<i>Tuméen táan u weekik aaceite jump'éel buus.</i> Because a bus is leaking oil.