

OPTIMALITY, COMPLEX PREDICATION, AND PARALLEL STRUCTURES IN ZAPOTEC

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Abstract:

Auxiliary verbs in San Dionicio Ocotepc Zapotec, an Otomanguean language spoken in Oaxaca, are associated with two constituent structure representations: one monoclausal and the other biclausal. The Zapotec auxiliaries show syntactic similarities to causatives in German, Spanish, and French, as well as the Urdu instructive/permissive, where constituency tests also give evidence for two c-structures. Using Optimality-Theoretic LFG, this paper argues that these cases involve predicates with a single f-structure representation where two c-structures emerge as equally optimal under the relevant constraint evaluation. These structures exist in parallel to each other, recalling Goodall's (1987) more general approach to parallel structures in syntax.

1 Introduction¹

In a number of languages, complex predicates show evidence for two or more distinct constituent structures. For example, McKay's (1985) treatment of German and Goodall's (1987) treatment of French and Spanish argue that the behavior of causatives in these languages is best treated by positing two phrase structure representations – one monoclausal and one biclausal. Similarly, Butt's (1995) treatment of the Urdu instructive and permissive posits two syntactic structures – one in which the permissive/instructive matrix verb and verbal noun form a c-structure V' constituent, and one in which the verbal noun heads a distinct phrase.

This paper will pursue a more general account of parallel syntactic structures and complex predicates. Using Optimality-Theoretic Lexical-Functional Grammar (Bresnan 2000), I will argue that these cases involve predicates with a single f-structure representation where two c-structures emerge as equally optimal under the relevant constraint evaluation. These structures exist in parallel to each other, recalling Goodall's (1987) more general approach to parallel structures in syntax.

The argument is based on the behavior of auxiliary verbs in San Dionicio Ocotepc Zapotec (SDZ), an Otomanguean language spoken in Oaxaca, Mexico. I will show that auxiliary

with two c-structures – one monoclausal and one biclausal.

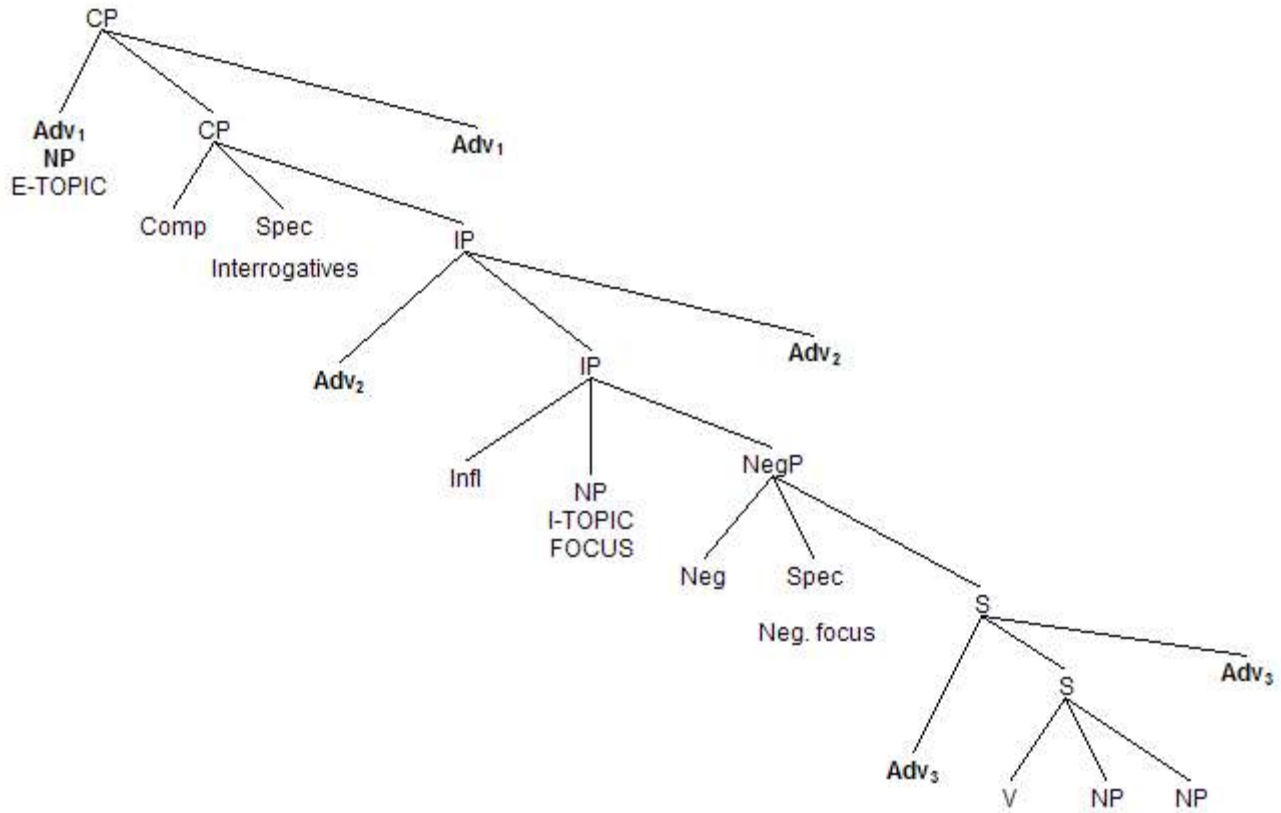
¹ SDZ is an Otomanguean language spoken in San Dionicio Ocotepc, Oaxaca, Mexico by 2,000 - 3,000 people. I thank Pamela Munro and members of the audience at LFG 03 for useful discussion of this material. Special thanks to Luisa Martínez, who provided all the SDZ data.

The orthography for SDZ is adapted from the practical orthographies for other Zapotec languages spoken in the Valley of Oaxaca. In the SDZ orthography symbols have their usual phonetic values, with the following exceptions. <x> = /š/ before a vowel and /ž/ before a consonant, <xh> = /š/, <dx> = /dž/, <ch> = /tš/, <c> = /k/ before back vowels, <qu> = /k/ before front vowels, <rr> = trilled /r/, and <eh> = /ɛ/. Doubled vowels are long. SDZ is a language with four contrastive phonation types: breathy <Vj>, creaky <V'V>, checked <V'>, and plain <V>.

Glosses use the following abbreviations: a=animal, aff = affirmative, cer = certainty, com = completive aspect, con = continuative aspect, cs = causative, def = definite future aspect, dem = demonstrative, foc = focus, hab = habitual aspect, neg = negative, p = possessed, plur = plural, pot = potential aspect, q = question, r=respect, ref=reflexive, rel = relative, stat= stative aspect, top=topic.

2.1 Background

In previous work, I've argued for the following overall syntactic structure for SDZ:



Note in particular that this analysis uses the non-endocentric category S. I reject the widespread assumption in Principles and Parameters theory that VSO order must be derived by V or VP movement (cf. Lee 1999 and Black 2000 on other varieties of Zapotec).

The most neutral word order is VSO:

- 1) Ù-zìì' Juààny tòyby xhùmbrehèhjl. VSO
com-buy Juan a hat

'Juan bought a hat.'

In addition to this word order, SDZ also has several word orders in which one or more constituents with a special discourse function precede the verb. Of these variants, one in which the subject appears in the internal topic position is particularly frequent, yielding SVO order:

- 2) Juàány ù-zì' tòyby xhùmbrehjl. SVO
 Juan com-buy a hat
 'Juan bought a hat.'

2.2 Aspect marking

SDZ verbs are preceded by one of six possible aspect markers. The most frequent allomorphs of these aspect markers are shown below, but there is a significant degree of irregularity in the aspect marking system.

- 3)
 completive (g)u-/be-
 continuative cá(y)-
 negative ni-/ny-
 potential gí-/gú
 habitual r-
 definite future s-/z-

The completive, continuative, habitual, and potential aspect markers are shown for the following fairly regular verb /-ù'ld/ 'to sing':

- 4) bì-'ld=bí 'S/he sang.'
 com-sing=3
 cáy-ù'ld=bí 'S/he is singing.'
 con-sing=3
 r-ù'ld=bí 'S/he sings.'
 hab-sing=3
 gú-'ld=bí 'S/he will sing.'
 pot-sing=3
 s-ú'ld=bí 'S/he will sing.'
 def-sing=3

The negative aspect does not typically appear in a main clause, but only in the complement to a predicate of negation:

- 5) Íity Juàány ny-ù'ld 'Juan didn't sing.'
 not Juan neg-sing

2.3 SDZ auxiliaries²

The SDZ auxiliaries under discussion are *ràjc* 'to be possible; can', *byàlòò* 'to stop', and *zéhzáà* 'to continue'. They appear in examples like the following. Note that the main verb matches the auxiliary in aspect.

- 6) R-àjc r-ù'ld Juáàny
hab-can **hab**-sing Juan

'Juan can sing.'
- 7) B-yàlòò b-yàjb nìjsgì.
com-stop **com**-fall rain

'Rain stopped falling.'
- 8) B-yàlòò ù-dòàb Juáàny gèhjs.
com-stop **com**-smoke Juan cigarette

'Juan stopped smoking.'

The auxiliary *zéhzáà* 'to continue' is irregularly inflected.³ Its aspectual forms are as follows:

- 9) zéhzáà habitual aspect
gwìzàà completive aspect
chíízàà potential aspect

Despite the unusual inflection of the auxiliary *zéhzáà* 'to continue', its complement continues to show regularly inflected, matching aspect:

- 10) Zéhzáà rr-gòàb Juáàny gèhjs.
hab:go **hab**-smoke Juan cigarette

'Juan keeps smoking cigarettes.'

² These auxiliaries correspond to what are labeled 'non-modal auxiliaries' in San Lucas Quiaviní Zapotec (Munro and Lopez 1999).

³ Compare this to the irregular inflection of the verb *zéhéh* 'to go': *zéhéh* habitual aspect, *gwì* completive aspect, *chíí* potential aspect.

- 11) Gwìzàà ù-dòàb Juáàny gèhjs.
com:go com-smoke Juan cigarette

'Juan kept smoking cigarettes.'

- 12) Chízàà cóáb Juáàny gèhjs.
pot:go pot:smoke Juan cigarette

'Juan will keep smoking.'

A very distinctive property of auxiliary verbs in SDZ is that they are the only verbs in the language that are not followed by overt subjects:

- 13) *R-àjc Juáàny r-ù'ld
 hab-can Juan hab-sing

'Juan can sing.'

This is very important, since SDZ is not a pro-drop language, and all other verbs are obligatorily followed by overt subjects.

- 14) a. Ù-zì' Juáàny tòyby xhùmbrehèhjl.
 com-buy Juan a hat

'Juan bought a hat.'

- b. *Ù-zì' Ø tòyby xhùmbrehèhjl.
 com-buy a hat

'Bought a hat.'⁴

In this respect, SDZ is rather like English. It requires a pronominal subject in such instances, which will normally be cliticized to the verb. The pronominal clitic does not co-occur with an overt post-verbal subject.⁵

⁴ I've included a null symbol Ø in the position of the missing subject purely as an expository device; by this I do not intend to suggest that there is a corresponding empty category in the c-structure representation.

⁵ SDZ does have a construction like English left-dislocation ('John, he bought a hat'), but this requires the subject to appear in the external topic position at the left periphery of the clause. See Broadwell (2001) for more discussion

- 15) a. Û-zì'=é**hby** tòyby xhùmbrehèhjl.
com-buy=3 a hat
'He bought a hat.'
- b. *Û-zì'=é**hby** Juààny tòyby xhùmbrehèhjl.
com-buy=3 John a hat
'John he bought a hat.'

The fact that auxiliaries are not followed by subjects seems to distinguish them sharply from raising predicates such as *càady* 'still not', which must be followed by a subject, which is interpreted as the subject of a following XCOMP:

- 16) a. Càady Màrí [gí-dòbyá' Ø].
still:not Maria pot-worry
'Maria still isn't worrying.'
- b. *Càady [gí-dòbyá' Màrí].
still:not pot-worry Maria

Thus, although auxiliaries are frequently treated as raising verbs in syntactic analyses of English and other languages, that is not the correct analysis for Zapotec.

I will argue that sentences containing such auxiliaries form monoclausal f-structures with the main verbs that follow them. But the auxiliary and main verb appear in one of two possible c-structures, approximately as follows:



Figure 2 Two c-structures for auxiliary verbs

The following sections present evidence that there is a single, monoclausal f-structure for auxiliaries, while there are two possible c-structures – one monoclausal and one biclausal.

3 Monoclausality at f-structure

Control and selection facts seem to argue for a monoclausal f-structure, as argued in the following sections.

3.1 Control

Evidence for monoclausality comes from the behavior of auxiliaries when they occur in combination with control verbs.

Like English, SDZ allows the subject to be omitted from c-structure in control contexts. However, SDZ imposes an additional, somewhat unusual, condition on control. A complement clause may have a missing subject only if its antecedent is non-pronominal. Consider the following examples with the control verb *rrcà'z* 'to want'.⁶

- 18) Rr-cà'z Juààny [gú-'ld Ø gitàrry].
 hab-want Juan pot-play guitar

'Juan wants to play guitar.'

- 19) Rr-cà'z=**bí** [gú-'ld=**bí** gitàrry].
 hab-want=3 pot-play=3 guitar

'He wants to play guitar.'

- 20) *Rr-cà'z=**bí** [gú-'ld Ø gitàrry].
 hab-want=3 pot-play guitar

'He wants to play guitar.'

Only a subject may be omitted in a control context; all other arguments of the verb in the complement clause must be overt:

- 21) a. Rr-cà'z Juààny [í-chàgí'ld Ø Màríí].
 hab-want Juan pot-tickle Maria

'Juan wants to tickle Maria.'

- b. *Rr-cà'z Juààny [í-chàgí'ld Màríí Ø].
 hab-want Juan pot-tickle Maria

⁶ The fact that null subjects and pronominal subjects alternate with each other, based on the pronominal status of the antecedent seems to argue that these cases should be treated as anaphoric control, rather than functional control. See Dalrymple (2001:328ff) for discussion of cross-linguistic and/or cross-analytic variation on this point.

(Juan wants Maria to tickle him.)

In that light, consider the following examples:

- 22) Rr-cà'z Juààny [í-zálòò gùny Ø yù'.]
 hab-want Juan pot-stop pot:do house

'Juan wants to stop (i.e. finish) building the house.'

- 23) a. Rr-cà'z=**bí** [í-zálòò gùny=**bí** yù'.]
 hab-want Juan pot-stop pot:do=3 house

'Juan wants to stop building the house.'

- b. *Rr-cà'z=**bí** [í-zálòò gùny Ø yù'.]
 hab-want Juan pot-stop pot:do house

'Juan wants to stop building the house.'

Note that in (22), we see omission of the subject in the lower clause. Furthermore, (23) shows that such omission is only available with a non-pronominal subject of the upper clause. If the syntactic subject of 'finish' were not 'Juan', this would be a puzzling anomaly, since the two subjects would not be coreferential.

However, we can understand this example if we think of 'stop building' as a complex predicate with 'Juan' as its subject, along the following lines:

PRED	'want < SUBJ, COMP >'								
ASP	HABITUAL								
SUBJ	[PRED 'Juan']								
COMP	<table style="border-collapse: collapse; border-left: 1px solid black; border-right: 1px solid black;"> <tr> <td style="padding-right: 10px;">PRED</td> <td style="padding-left: 10px;">'stop - building < SUBJ, OBJ >'</td> </tr> <tr> <td style="padding-right: 10px;">ASP</td> <td style="padding-left: 10px;">POTENTIAL</td> </tr> <tr> <td style="padding-right: 10px;">SUBJ</td> <td style="padding-left: 10px;">[PRED 'PRO']</td> </tr> <tr> <td style="padding-right: 10px;">OBJ</td> <td style="padding-left: 10px;">[PRED 'house']</td> </tr> </table>	PRED	'stop - building < SUBJ, OBJ >'	ASP	POTENTIAL	SUBJ	[PRED 'PRO']	OBJ	[PRED 'house']
PRED	'stop - building < SUBJ, OBJ >'								
ASP	POTENTIAL								
SUBJ	[PRED 'PRO']								
OBJ	[PRED 'house']								

3.2 Selection

There also seem to be selectional facts that support a monoclausal f-structure. Verbs which select for a lower COMP or XCOMP impose selectional restrictions on the aspect of that clause.

For example, the verb *rr-cà'z* 'to want' requires potential aspect in its COMP :

- 24) a. Rr-cà'z Juààny [gú-'ld Ø gítàrry].
 hab-want Juan pot-play guitar
 'Juan wants to play guitar.'
- b. *Rr-cà'z Juààny [r-ú'ld Ø gítàrry].
 hab-want Juan hab-play guitar
 'Juan wants to play guitar.'

We could express this in the lexical entry for *rr-cà'z* as follows:

- 25) *rr-cà'z* V (↑ PRED) = 'want <SUBJ, COMP>'
 (↑ COMP SUBJ PRED) = 'PRO'
 (↑ COMP ASP) = POTENTIAL

When there is a complex predicate in the COMP of *rr-cà'z*, both verbs must be inflected for potential aspect:

- 26) Rr-cà'z Juààny [í-zálòdò gùny Ø yù'.]
 hab-want Juan **pot-stop** **pot:do** house
 'Juan wants to stop building the house.'

There is a similar argument available from the raising predicate *íity* 'not'. This predicate requires that its complement appear in the negative aspect:

- 27) Íity Juààny ny-ù'ld 'Juan didn't sing.'
 not Juan **neg-sing**

If the complement is an auxiliary + main verb complex predicate, then both verbs appear in the negative aspect. Compare the following two examples:

- 28) Gàjc cú' bxxhùùz=ríí' mìis.
pot:can **pot:have** priest=that mass
 'That priest can celebrate the mass.'
- 29) Íity ny-àjc ní-gú' bxxhùùz=ríí' mìis.
 not **neg-can** **neg-have** priest=that mass
 'That priest cannot celebrate the mass.'

The fact that auxiliary and main verb share the same aspect marking, and that selection of clause aspect by a higher predicate determines the aspect of both verbs seems to argue for a monoclausal f-structure as well.

4 Diagnostics of c-structure monoclausality

The primary diagnostic for c-structure monoclausality comes from the placement of adjuncts. The basic principle of SDZ adjunct placement is that adjuncts adjoin to the S, IP, or CP that they modify. The position of the adjuncts is determined by their scope, and adjuncts fall into three groups, which I have labeled labeled Adv₁, Adv₂, and Adv₃ in Figure 1.⁷

The most informative group of adjuncts for our purposes is Adv₃, which is made up of manner adverbials and instrumental adjuncts. Adjuncts of this class may appear either at the beginning or end of the S constituent, but no higher in the tree.

- 30) a. [Cùn dè] ù-dì'by Màríi làjdy.
with soap:powder com-wash Maria clothes
- b. Ù-dì'by Màríi làjdy [cùn dè]
com-wash Maria clothes with soap:powder
- 'Maria washed the clothes with soap powder.'

Note that placement of an Adv₃ higher in the tree is ungrammatical or leads to the wrong reading.

- 31) a. Bì-èhlà'z=á' [ù-dì'by Màríi làjdy [cùn dè]
com-forget=1 com-wash Maria clothes with soap:powder
- 'I forgot that Maria washed the clothes with soap powder.'
- b. *[Cùn dè] bì-èhlà'z=á' [ù-dì'by Màríi làjdy
with soap:powder com-forget=1 com-wash Maria clothes

In sentences which contain an auxiliaries, manner adverbs and instrumental adjuncts freely appear before the auxiliary:

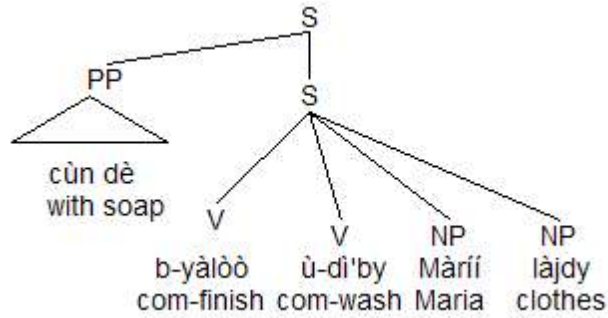
- 32) a. B-yàlòò ù-dì'by Màríi làjdy [cùn dè].
com-finish com-wash Maria clothes with soap:powder

⁷ Principles of adjunct placement and their utility in identifying constituency are discussed in more detail in Broadwell (2001).

- b. [Cùn dè] b-yàlòò ù-dì'by Màrí lājdy .
 with soap:powder com-finish com-wash Maria clothes

'Maria finished washing the clothes with soap powder.'

This argues for a monoclausal structure for the auxiliaries. If we assign a c-structure like the following, then the adjunct placement facts make sense:



7 Diagnostics for a biclausal c-structure

There are also phenomena that seem to show the possibility of a biclausal analysis for the auxiliaries.

7.1 Coordination

Consider the following examples of auxiliaries with coordinated complements.

- 41) Bál chízàà [còàb Juáàny] [g'í Juáàny], zùùn=ní máàl lèh'èhby.
 if pot:continue pot:smoke Juan pot:drink Juan pot:do=3i harm 3

'If Juan continues smoking and drinking, it will do harm to him.'

Note that in this example, 'continue' is interpreted as taking scope over both verbs. That suggests that *còàb Juáàny* 'Juan smokes' forms a constituent, contrary to the predictions of the monoclausal analysis.

The following example shows the same thing for the auxiliary *byàlòò*:

- 42) B-yàlòò [gù' Juáàny] chì'í [ù-dòàb=bí gèhjs].
 com-stop com:drink Juan and [com-smoke=3 cigarette

'Juan stopped drinking and smoking cigarettes.'

Since SDZ does not seem to show any other instances of non-constituent coordination, the most straightforward analysis of such examples would suggest that the main verb and subject form a

constituent, as follows:

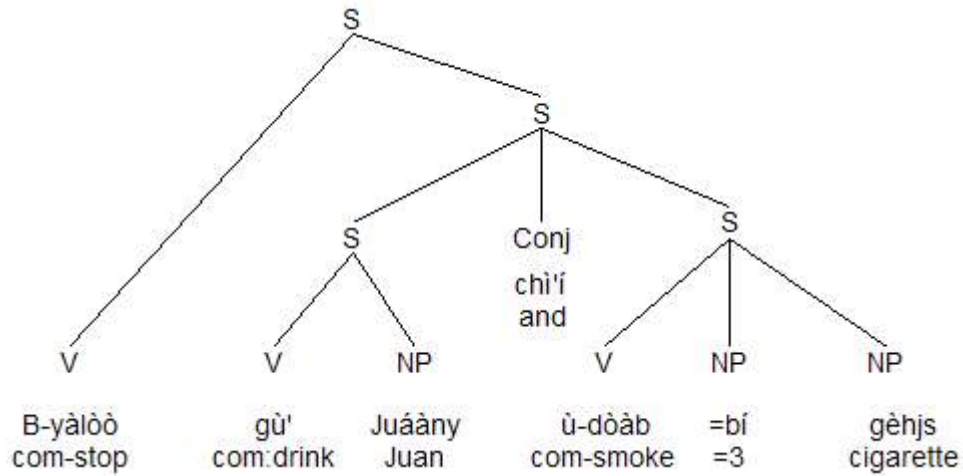


Figure 4 C-structure for example (41)

7.2 Adverb placement

While some adverb placements support the monoclausal structure, others support the biclausal structure. Consider the following examples:

- 44) Zájç ì-cuá' Màríí gèhèht xî.
 pot:can pot-throw Maria tortilla tomorrow

'Maria can make tortillas tomorrow.'
 'Maria puede echar tortillas mañana.'

OK Zájç xî ì-cuá' Màríí gèhèht.
 pot:can tomorrow pot-throw Maria tortilla

- 45) Ràjç rr-xrù'ny Juáàny ngàngá'.
 hab:can hab-run Juan quickly

'Juan can run quickly.'
 'Juan puede correr rápido.'

OK Ràjç ngàngá' rr-xrù'ny Juáàny.
 hab:can quickly hab-run Juan

These word orders seem to necessitate a biclausal structure. Since in the biclausal structure, there are two S nodes, it should be possible for an adverb of the right type to adjoin to either of

these S's. If auxiliaries had a strictly monoclausal representation, it would be very difficult to explain why S-adjoined adverbs should be able to appear inside the S.

The most appropriate c-structure seems to be along the following lines:

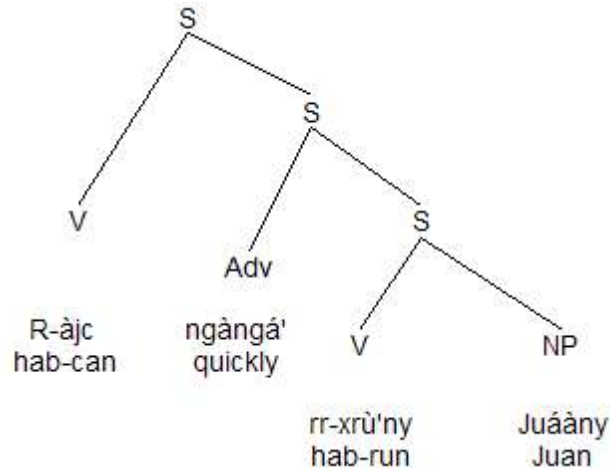


Figure 5 C-structure for (44)

But this c-structure presupposes the possibility of a biclausal representation for the auxiliary + main verb.

9 Toward a general account of parallel structures

I would like to suggest that the tension between monoclausal and biclausal structures arises from the relative ranking of two broad families of constraints: F-C ISOMORPHISM constraints favors candidates in which elements of f-structures correspond directly to elements of c-structures. LCS-C ISOMORPHISM constraints favor candidates in which elements of Lexical-Conceptual Structures (Jackendoff 1990, 1991) correspond to elements of c-structures. I believe that there may be a number of such constraints, depending on which elements of these structures are considered.

The specific constraints that are relevant in this case are the following:

- 50) LCS (EVENT) = C-STR (CONSTIT)
Lexical-Conceptual Structure Events are in a one-to-one correspondence with C-structure constituents.
- 51) F-STR (NUCLEUS) = C (CONSTIT)
F-structure nuclei are in a one-to-one correspondence with C-structure constituents.

If we consider an SDZ sentence like (52) containing an auxiliary it will have a biclausal

LCS (shown in simplified form as in figure 6), but a monoclausal f-structure (as in figure 7).⁸

52) B-yàlòò ù-dòàb Juáàny gèhjs.
com-stop com-smoke Juan cigarette

'Juan stopped smoking cigarettes.'

$[_{Event} \text{STOP} ([[_{Event} \text{smoke} (\text{John}, \text{cigarette})]])]$

Figure (6) Lexical-Conceptual structure for (52)

$\left[\begin{array}{l} \text{PRED} \quad \text{'stop-smoking (SUBJ, OBJ)'} \\ \text{ASP} \quad \text{completive} \\ \text{SUBJ} \quad [\text{PRED} \quad \text{'John'}] \\ \text{OBJ} \quad [\text{PRED} \quad \text{'cigarette'}] \end{array} \right]$

Figure (7) F-structure for (52)

In a language where F-STR (NUCLEUS) = C (CONSTIT) strictly outranks LCS (EVENT) = C-STR (CONSTIT), c-structures will be uniformly monoclausal, because fidelity to f-structure is more important than fidelity to LCS. In a language where LCS (EVENT) = C-STR (CONSTIT) strictly outranks F-STR (NUCLEUS) = C (CONSTIT), c-structures will be uniformly biclausal.

However, in languages where these two constraints have overlapping strength, we would predict that both monoclausal and biclausal structures would be optimal, and in any particular case would be dependent on the relative strength of the two constraints at instantiation.

We can think of the tableau in the following way, where the input is taken to be the LCS and the candidates are f-str/c-str pairs:

⁸ Jackendoff (1991:38) gives a more precise LCS for 'stop', the details of which are not crucial to this argument.

<p>[_{F,EVENT} STOP ([_{F,EVENT} smoke (John,cigarette)])]</p> <p>LCS input</p>	<p>F-STR (NUCLEUS) = C (CONSTIT)</p>	<p>LCS (EVENT) = C-STR (CONSTIT)</p>
<p>[PREP 'stop-smoking (SUBJ,OBJ)' ASP completive SUBJ [PREP 'John'] OBJ [PREP 'cigarette']]</p> <p>☞ [s stop smoke John cigarette]</p> <p>(monoclausal c-structure)</p>		<p>*</p>
<p>[PREP 'stop-smoking (SUBJ,OBJ)' ASP completive SUBJ [PREP 'John'] OBJ [PREP 'cigarette']]</p> <p>☞ [s stop [s smoke John cigarette]]</p> <p>(biclausal c-structure)</p>	<p>*</p>	

More generally, in such an analysis the appearance of parallel structures in French, Spanish, Urdu, and Zapotec is a result of overlapping strength between the constraint that favors LCS -- c-structure isomorphism and the constraint that favors f-structure – c-structure isomorphism. Viewed in this light the emergence of two constituent structures in complex predication is a consequence of the interactions of the constraints that regulate the parallel representations of clause structure.

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