On the Derivation of Relative Clauses in Teotitlán del Valle Zapotec*

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1 Introduction

- **Externally headed relative clauses** (RCs) like that in (1) have received a number of analyses in the literature.

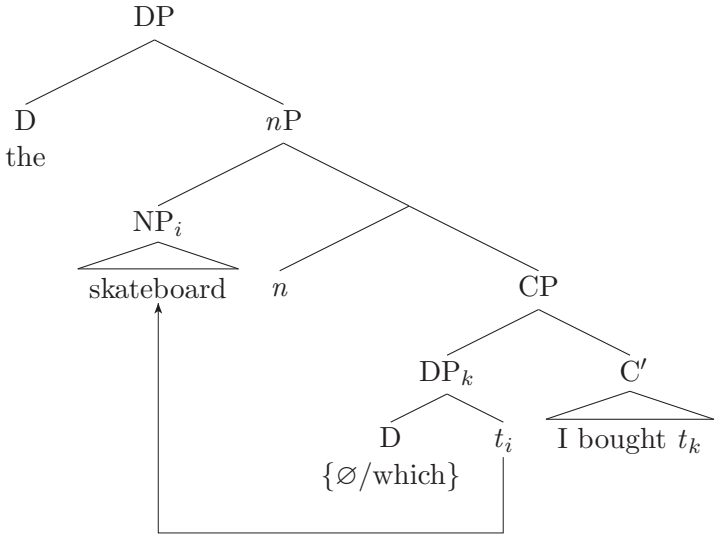
  (1) the [$_{\text{head}}$ skateboard] [$_{\text{RC}}$ that I bought]

- On the traditional **head-external** analysis (e.g., Chomsky 1973, 1977), RC-formation involves the movement of an overt or null relative pronoun (e.g., *which*, *who*, ∅).

- The head is base-generated outside the RC, and the RC adjoins to it: the [$_{\text{NP}}$ [$_{\text{NP}}$ skateboard] [$_{\text{CP}}$ that I bought]]

- On the **head-raising** analysis (Åfarli 1994, Kayne 1994, Bianchi 1999, Bhatt 2002), the head originates inside the RC and raises out of it. One implementation of this analysis is shown below:

(2)



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- Finally, the **matching** analysis holds that the visible head is generated outside the RC, and an identical NP inside the RC is elided under identity with the visible head.
- Much recent work (Åfarli 1994, Kayne 1994, Bianchi 1999, Bhatt 2002) argues that some or all externally headed relative clauses are derived by **raising**.
- Here, we present novel findings on relative clauses in Teotitlán del Valle Zapotec (TdVZ), an Oto-Manguean language spoken in the town of Teotitlán del Valle (30 km east of the city of Oaxaca in Oaxaca State, Mexico) and in parts of California.
- These data show that relative clauses in this language lack the head-raising derivation entirely...
- ...indicating that the derivation of externally headed relative clauses is subject to cross-linguistic variation which is not obvious on the surface.

1.1 Roadmap

- Basic properties of TdVZ relative clauses
- Evidence against head-raising
  - Reciprocal binding
  - Variable binding
- Apparent evidence for head-raising
  - Idiom interpretation
  - Low readings of RC-head modifiers
- Analysis
- Conclusion

2 Background: Basic properties of TdVZ relative clauses

- TdVZ relative clauses are postnominal and externally headed.
- The language minimally allows relativization of subjects, direct objects, indirect objects, and locative and temporal adjuncts.[1]

(3) *Subject relativization*

benih **ni** ka-yul
person REL PROG-read
'the person who's reading'

(4) *Direct object relativization*

libr **ni** ba-to'o Mari
book REL PERF-sell Mari
'the book that Mari sold'

(5) *Indirect object relativization*

[1]Abbreviations used: A = animal; COP = copula; EMPH = emphatic; H = human; HAB = habitual; INAN = inanimate; LOC = locative; NEUT = neutral aspect; PERF = perfective; PL = plural; PROG = progressive; REL = relativizer.

benih **ni** ba-ded Roos te libr
person REL PERF-give Roos a book
'the person Roos gave a book to'

- When a nominal phrase is relativized, the RC is introduced by a left-peripheral element *ni*.
- We take this element to be a relative complementizer, primarily because it cannot cooccur with a pied-piped preposition (a point we return to in §5).
- TdVZ relative clauses are formed by Ā-movement. RCs themselves are islands, and relativization out of an RC is impossible.

3 Evidence against head-raising

3.1 Reciprocal binding

- In English, the reciprocal *each other* can occur in an RC-head and take an antecedent inside the relative clause:

(6) The [cars of **each other**$_i$'s] [that **Elsa and Benito**$_i$ saw yesterday] are blue.

- On the standard assumption that *each other* is subject to (some version of) Condition A, sentences like (6) strongly suggest that English relativization structures can be formed by head-raising...
- ...allowing *each other* to be bound by its RC-internal antecedent in its base position:

(7) ... [$_{\text{RC}}$ that **Elsa and Benito**$_i$ saw [$_{\text{DP}}$ [$_{\text{D}}$ ∅] cars of **each other**$_i$'s] yesterday] ...

- TdVZ also allows a reciprocal (*sa'adan* 'each other') to appear in an RC-head (here with a matrix antecedent):

(8) **Sofie kun Markuh**$_i$ ri-zhulaaz d-maset xten **sa'a-d-an**$_i$ ni ba-in Oliib.
Sofie with Markuh HAB-like PL-pot of SA'A-PL-3H REL PERF-make Oliib
'Sofie and Markuh like the pots of each other's that Oliib made.'

- But TdVZ, unlike English, does not allow a reciprocal in an RC-head to take an antecedent inside the RC:

(9) *Nga'a naa d-kamion xten **sa'a-d-an** ni ba-yee **Els kun Beniit** nai.
blue COP PL-car of SA'A-PL-3H REL PERF-see Els with Beniit yesterday
int. 'The cars of each other's that Els and Beniit saw yesterday are blue.'

- A sentence like (9) can be made acceptable by placing the PP *xten sa'adan* 'of each other's' inside the RC:

(10) Nga'a naa d-kamion ni ba-yee Els kun Beniit **xten sa'a-d-an** nai.
blue COP PL-car REL PERF-see Els with Beniit of SA'A-PL-3H yesterday
'The cars of each other's that Els and Beniit saw yesterday are blue.'

- The relative positions of *xten sa'adan* 'of each other's' and *nai* 'yesterday' in (10) show us that the PP *xten sa'adan* is truly RC-internal in these examples, and not RC-external but extraposed.
- In (10), *nai* 'yesterday' is interpreted as modifying the relative clause predicate *bayee* 'saw', not the matrix predicate *nga'a* 'blue'.
- So *nai* 'yesterday' must be inside the relative clause, and hence so must *xten sa'adan* 'of each other's', which precedes it.
- In (10), it is impossible to invert *xten sa'adan* 'of each other's' and *nai* 'yesterday':

(11) *Nga'a naa d-kamion ni ba-yee Els kun Beniit nai **xten sa'a-d-an**.
blue COP PL-car REL PERF-see Els with Beniit yesterday of SA'A-PL-3H
int. 'The cars of each other's that Els and Beniit saw yesterday are blue.'

- So *sa'adan* 'each other' is illicit outside of an RC when its would-be antecedent is inside the RC.
- Hence, *sa'adan* 'each other' does not display binding connectivity in relativization structures: an instance of *sa'adan* in an RC-head cannot take as its antecedent a nominal phrase inside the RC.
- To square this fact with a head-raising analysis of TdVZ relatives, one might suggest that the reciprocal never reconstructs for binding.
- But *sa'adan* 'each other' can reconstruct for binding in clear cases of Ā-movement:

(12) *Sa'adan 'each other' reconstructs for binding under wh-question formation*
[Xi d-maset xten **sa'a-d-an**$_i$] gu-dee **Juan kun Marie**$_i$ ___?
what PL-pot of SA'A-PL-3H PERF-carry Juan with Marie
'Which pots of each other's did Juan and Marie carry?'

(13) *Sa'adan 'each other' reconstructs for binding under topicalization*
[D-maset xten **sa'a-d-an**$_i$] gu-dee **Juan kun Marie**$_i$ ___.
PL-pot of SA'A-PL-3H PERF-carry Juan with Marie
'Each other's pots, Juan and Marie carried.'

- So the binding nonconnectivity displayed by the reciprocal in (9) is an effect specific to relativization.
- If TdVZ relativization structures could be formed by **head-raising**, then a reciprocal in the head of an object relative like that in (9) would have a copy c-commanded by its RC-internal potential antecedent.
- Therefore, we would expect that its binding needs would be met in its base position and (9) would be acceptable.

3.2 Bound variable anaphora

- A second strand of evidence against head-raising comes from bound variable anaphora. Consider the following:

(14) Idee de ke sru'in-te naa-**m**$_i$ ba-in **kadga bekuh**$_i$ feliis.
idea of that pretty-EMPH COP-3A PERF-make each dog happy
'The idea that it$_i$ was really pretty made each dog$_i$ happy.'

- In (14), the clitic *-m* 'it', which is the subject of the clausal complement to the noun *idee* 'idea', is interpreted as a variable bound by the quantified nominal *kadga bekuh* 'each dog'.
- We take this to be the result of Quantifier Raising: *kadga bekuh* raises covertly and binds the variable *-m* 'it', as in (15).

(15) [**kadga bekuh**]$_1$ [idee de ke sru'in-te naa-**m**$_1$ ba-in t_1 feliis]
[each dog]$_1$ idea of that pretty-EMPH COP-3A$_1$ PERF-make t_1 happy

- This QR operation apparently does not induce a weak crossover violation in TdVZ or in English, plausibly because the pronominal being crossed over is so deeply embedded, and/or because of the causative nature of the main-clause predicate.
- In English, the complex DP containing the bound pronoun in a sentence like (14) can be "relativized out" and the bound variable reading preserved:

(16) We talked about the idea that it$_i$ was really pretty that made each dog$_i$ happy.

- This constitutes more evidence that English relativization structures can be formed by head-raising. If (16) is formed by head-raising, then the bound variable reading can come about as follows:

(17) the [idea that it was really pretty]$_k$ ...
that **[each dog]**$_1$ [$_{DP}$ [$_D$ ∅] [idea that it$_1$ was really pretty]$_k$] made t_1 happy

- Because there is a copy of [*idea that it was really pretty*] inside the relative clause, *each dog* can covertly QR past it and reach a position near the left edge of the relative clause, from which it can bind *it*.

- If TdVZ lacks head-raising, then the TdVZ counterpart of (16) should not have the bound variable reading. This prediction is correct:

(18) *Ba-yuy-un xten idee de ke sru'in-te naa-**m**$_i$ ni ba-in **kadga bekuh**$_i$ feliis.
PERF-talk-1.PL of idea of that pretty-EMPH COP-3A REL PERF-make each dog happy
int. 'We talked about the idea that it$_i$ was really pretty that made each dog$_i$ happy.'

- The variable inside the RC-head cannot be bound inside the relative clause, because there is no copy of the RC-head inside the relative clause.

- The variable inside the RC-head cannot be bound in its surface position, because this would require *kadga bekuh* 'each dog' to QR out of the relative clause—which is an island.

4 Apparent evidence for head-raising

- There are two strands of evidence that initially appear to suggest that TdVZ does have head-raising after all.

4.1 Relativization of a VP-idiom chunk

- TdVZ has at least one VP-idiom, which is illustrated below:

(19) Nai gu-**daw**-an **ru'u** Marie.
yesterday PERF-**eat**-3H **mouth** Marie
lit. 'Yesterday he ate Marie's mouth.'
id. 'Yesterday he kissed Marie.'
[Felicitous if the referent of the subject kissed Marie on the mouth or anywhere on her face.]

- The idiom is *-daw- ru'u* (*X*)—literally 'eat (X's) mouth', but interpreted as meaning 'kiss (X) (on the mouth or anywhere on the face)'.

- When *ru'u* 'mouth' is used as the head of an object relative and the relative clause predicate is a form of *-daw-* 'eat', the relativization structure can be interpreted idiomatically:

(20) **Ru'u** ni gu-**do** Marie naa Beed.
mouth REL PERF-eat Marie COP Beed
lit. 'The mouth that Marie ate is Beed.'
id. 'The person that Marie kissed was Beed.'

- Examples like (20) have an extra layer of semantic complexity to them: the subject refers not to a mouth but to the person whose mouth it is. We tentatively take this to be a synecdoche phenomenon that arises outside the semantic composition proper, but more work is needed here.

- On the standard assumption that two constituents that could serve as the chunks of an idiom must be highly local to one another at LF for the idiomatic interpretation to be available...
- ...(20) would seem to suggest that TdVZ relatives can be derived by head-raising after all.
- On this analysis, (20) has an idiomatic reading because the RC-head (*ru'u* 'mouth') has raised from the object position of *-daw-* 'eat', and hence forms an underlying constituent with it.
- We argue, though, that these facts can be given an alternative analysis which is compatible with our head-external analysis of TdVZ relatives.
- We can capture the interpretation of sentences like (20) by positing that they involve a special meaning of the verb *-daw-* 'eat' (cf. Kratzer 1996:114-115):

(21) a. $[\![\textbf{-daw-}_1]\!] = \lambda x\ .\ \lambda y\ .$ y ate x
b. $[\![\textbf{-daw-}_2]\!] = \lambda x : x$ is a mouth $.\ \lambda y\ .$ y kissed x

- On this analysis, a relativization structure like *ru'u ni gudo Marie* (lit. 'the mouth that Marie ate')—*even* on a head-external analysis of TdVZ relatives—will have the following interpretation available to it (by Predicate Modification):

(22) ιx [x is a mouth and Marie kissed x]

4.2 Low readings of RC-head modifiers

- Another phenomenon that initially appears to provide evidence for head-raising in TdVZ has to do with low (relative-clause-internal) readings of RC-head modifiers (Bhatt 2002).
- The phenomenon can be illustrated using English examples:

(23) the first book that John said Tolstoy had written
a. **High reading:**
'the book that John said Tolstoy had written before he said Tolstoy had written any other book'
(Order of saying matters; order of writing is irrelevant.) $\boxed{\textit{first} \gg \textit{said}}$
b. **Low reading:**
'the book that John said Tolstoy wrote before he wrote any other book'
(Order of writing matters; order of saying is irrelevant.) $\boxed{\textit{said} \gg \textit{first}}$

[adapted from Bhatt 2002:57, (20)]

- It appears that, on the "low" reading of *first* in (23), *first* is interpreted within the scope of the RC-internal verb *said*. An analogous ambiguity shows up when *first* is replaced with *only* or with an ordinary superlative such as *longest*.
- Bhatt (2002): (many) English RCs are formed by head-raising. The low reading of an RC-head modifier comes about when LF interprets the RC-internal copy of the modifier, not its RC-external copy.
- Low readings of RC-head modifiers are robustly available in TdVZ, which may initially seem to point to head-raising. We begin by examining the ordinal *primer* 'first'.

4.2.1 Low readings of *primer* 'first'

(24) [Context: Juan said that Marie wrote the book *Dbaalih* [*The Stars*]. Then he said, "She also wrote the book *Dmàín* [*Animals*], and that's the first book she wrote."]
D-màín naa **primer** libr ni **gu-ni** Juan ba-kaa Marie.
PL-animal COP first book REL PERF-say Juan PERF-write Marie
'*The Animals* is the first book Juan said Marie wrote.' *said* ≫ *first*

- The felicity of (24) indicates that *primer* 'first' can be interpreted low in (24), within the scope of the RC-internal verb *guni* 'said'.
- This seems like a problem at first, but consider the following relativization structure in English:

(25) the second mammal that we know emerged from the water (Heycock 2005:379, (77))

- This phrase does not have a classical Bhatt-style low reading, with *second* interpreted within the scope of *know*. That is, it cannot be paraphrased as follows:

(26) the x (*or:* the mammal) such that we **know** that it was the **second** mammal to emerge from the water

- This is because factive predicates like *know* block low readings of Bhatt modifiers (Heycock 2005).
- But although straightforward reconstruction of the RC-head into its base position does not give the right reading for (25)...
- ...its most salient reading is nonetheless one on which the scale associated with the ordinal *second* is a timeline of *emergences*, not states of *knowing*:
- "[I]n a scenario where there are 3 mammals, A, B, and C, about which we are sure that A and B emerged from the water, and in that order, while we do not know whether or not C emerged from the water at all, B can accurately be described by [(25)]" (Heycock 2005:380).
- This shows that the scale associated with an ordinal in an English RC-head can be constructed with the help of RC-internal material without reconstruction of the head into the RC.
- Therefore, low readings of ordinals in English RC-heads do not necessarily tell us anything about whether those RC-heads got to their surface position by head-raising.
- Heycock's "mammal" observation can be replicated in TdVZ:

(27) [Context: We're talking about the development of three species of animals: A, B, and C. We know that at some point a long time ago, A emerged from the water, and we know that B emerged from the water at some point after that. As for C, we have no idea if it emerged from the water, let alone when, if it did. For all we know, it could have emerged from the water before A, or between A and B, or after B, or not at all.]

B naa **rarup** màín ni **na-n-oon** zaa lo nis.
B COP second animal REL NEUT-know-1.PL NEUT.come P_{LOC} water
'B is the second animal we know came from the water.'

- (27) shows that, in TdVZ too, the scale associated with an ordinal in an RC-head can be constructed with the help of RC-internal material without reconstruction of the head into the RC.
- This suggests that scales associated with ordinals in TdVZ may be constructed largely on the basis of what properties are most contextually salient. If this is so, *rarup* 'second' in (27) may have the following (type ⟨e,t⟩) denotation:

(28) $[\![\textbf{rarup}]\!] = \lambda x\ .\ \exists!y\ [y <_s x]$
where $<_s$ = 'precedes (on some contextually salient scale s)'

- ...and be interpreted in situ.
- TdVZ is like English here: low readings of ordinals modifying RC-heads do not necessarily indicate that head-raising has occurred.

4.2.2 Low readings of *-zi* 'only'

- Low readings are also robustly available for another modifier of RC-heads: the clitic *-zi* 'only' ((29)).

(29) [Context: Mart said, "Felip saw the movie *Dbel* [*The Snakes*]. Oh wait, no—the only movie he saw was *Dbedund* [*The Hummingbirds*]."]

D-bedund naa tee-**zi** pelikuh ni **gu-ni** Mart ba-yee Felip.
PL-hummingbird COP one-only movie REL PERF-say Mart PERF-see Felip
'*The Hummingbirds* is the only movie Mart said Felip saw.' *said* ≫ *only*

- Sentence (29) would be false on a high reading of *-zi* (*only* ≫ *said*), because *The Hummingbirds* is not the only movie about which Mart said that Felip had seen it.
- But it is true on a low reading of *-zi*, since Mart did say at one point that Felip had seen only *The Hummingbirds*.
- The felicity of (29) shows that *-zi* can be interpreted low (i.e., within the scope of the RC-internal predicate).
- But this fact about *-zi* does not force the conclusion that TdVZ relatives can be derived by head-raising.
- There are two broad kinds of analyses one can give for inverse scope (see Fox 1999, Fox & Nissenbaum 2004):

(30) a. **Syntactic reconstruction:** Inverse scope is available because A, which c-commands B in surface syntax, has moved from a position below B, and it can be interpreted in this lower position at LF.
b. **Semantic reconstruction:** Inverse scope is available not because A has moved from below B, but because some element has a denotation whose effect is to place the denotation of A within the scope of B in the process of semantic composition.

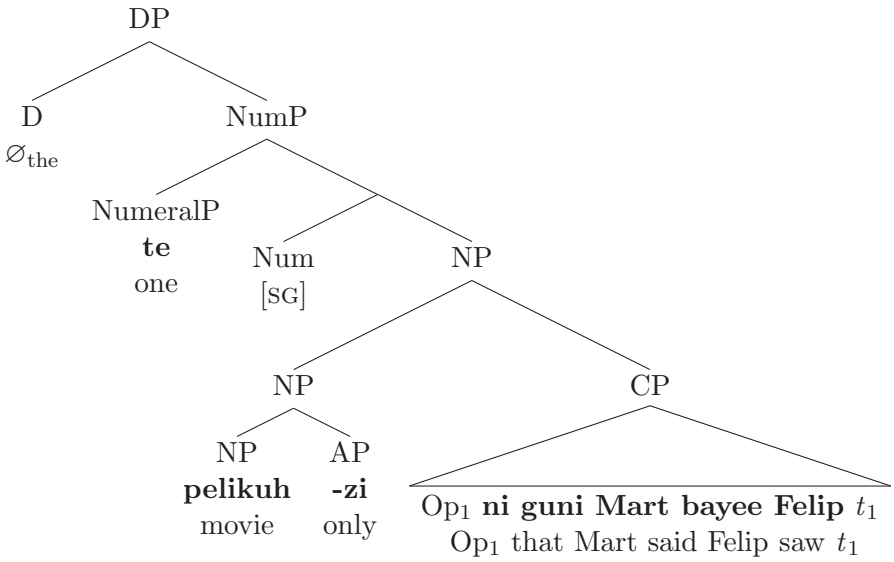
- A syntactic reconstruction analysis of low readings of *-zi* 'only' would require positing head-raising, making it very difficult to understand the reciprocal binding and bound variable anaphora facts in §3.
- Therefore, we will pursue a semantic reconstruction analysis of low readings of *-zi*.
- We illustrate the basic proposal with the structure in (29), repeated here:

(31) [Context: Mart said, "Felip saw the movie *Dbel* [*The Snakes*]. Oh wait, no—the only movie he saw was *Dbedund* [*The Hummingbirds*]."]

D-bedund naa **tee-zi pelikuh ni gu-ni Mart ba-yee Felip**.
PL-hummingbird COP one-only movie REL PERF-say Mart PERF-see Felip
'*The Hummingbirds* is the only movie Mart said Felip saw.' *said* ≫ *only*

- On our analysis, the phrase boldfaced in (31) has the following syntactic structure:

(32)



- And *-zi* 'only' has the following denotation:

(33) $[\![\ [_{\text{AP}}\ \textbf{-zi}]\ ]\!] = \lambda f_{e,st}\ .\ \lambda Q_{\langle\langle e,st\rangle,st\rangle,st\rangle}\ .\ \lambda z\ .\ \lambda w\ .\ f(z)(w) = 1 = Q(\lambda g_{e,st}\ .\ \lambda w''\ .\ g(z)(w'')$ and $\neg\exists v$ [$v \neq z$ and $f(v)(w'') = g(v)(w'') = 1$]$)(w)$

- ...yielding the following denotation for the underlying NP 'only movie that Mart said Felip saw':

(34) $[\![\ [_{\text{NP}}\ \textbf{pelikuh -zi Op}_1\ \textbf{ni Mart guni}\ t_1\ \textbf{C Felip bayee}\ t_1]\ ]\!] =$
$\lambda z\ .\ \lambda w\ .$ z is a movie in w and Mart said something in w and $\forall w'$: w' is compatible with what Mart said in w [Felip saw z in w' and $\neg\exists v$ [$v \neq z$ and v is a movie in w' and Felip saw v in w']]

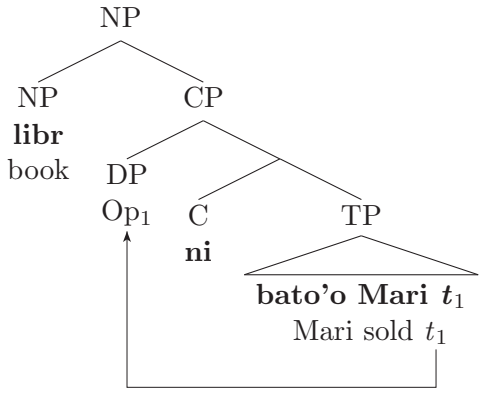
- With this semantic reconstruction analysis, we can understand low readings of *-zi* 'only' without becoming unable to account for the binding nonconnectivity effects discussed in §3.

5 A head-external analysis of TdVZ relatives

- A relativization structure like (35) will have the derivation shown in (36):

(35) *Direct object relativization* (= (4))
libr **ni** ba-to'o Mari
book REL PERF-sell Mari
'the book that Mari sold'

(36)



- A null relative operator is base-generated in the "core" of the clause and then moves to [Spec,CP].

- The resulting CP adjoins to the head NP, which is never inside the CP at any point in the derivation.
- This structure can be interpreted by the composition principles familiar from Heim and Kratzer (1998)—most importantly Predicate Abstraction (for the CP) and Predicate Modification (for the higher NP).

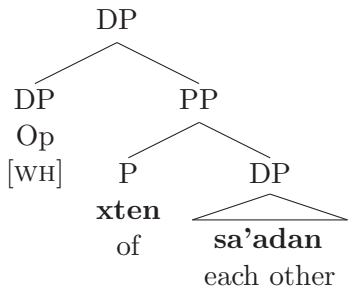
5.1 A puzzle: apparent RC-internal "stranding" of *xten sa'adan* 'of each other's'

- We can now consider a TdVZ-internal puzzle: why can the PP *xten sa'adan* 'of each other's' be "stranded" inside an RC?

(37) Nga'a naa d-kamion [$_{CP}$ ni ba-yee Els kun Beniit **xten sa'a-d-an** nai].
blue COP PL-car REL PERF-see Els with Beniit of SA'A-PL-3H yesterday
'The cars of each other's that Els and Beniit saw yesterday are blue.'

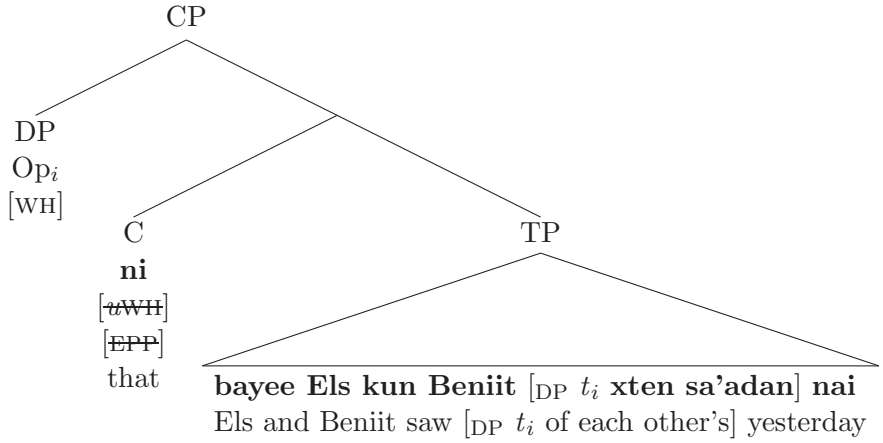
- Intuitively, *xten sa'adan* 'of each other's' seems to be modifying the NP head (here *kamion* 'car').
- This apparent "split constituency" would be relatively straightforward to understand if the NP head could raise out of the RC, stranding the PP inside the RC.
- We argue, though, that *xten sa'adan* 'of each other's' is an adjunct not to the NP head (which is never inside the RC at any point) but rather to its "proxy" inside the RC—the null operator:

(38)



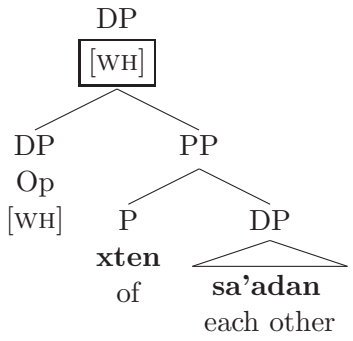
- The DP in (38) can be merged as the direct object of a verb (such as *bayee* 'saw'), and further structure building will bring us up to the relative complementizer *ni*.
- On our analysis, *ni* inherently bears an unvalued WH-feature. It therefore probes for a goal bearing a valued WH-feature, finds one, and Agrees with it.
- *Ni* also bears an EPP feature, forcing the goal to move.
- However, there is a problem. What exactly is the goal that *ni* finds and Agrees with in a derivation like this?
- If it is Op, then we apparently have exactly what we want:

(39)



- However, recall that [PP *xten sa'adan*] 'of each other's' is adjoined to [DP Op].
- Thus, the WH-feature on the lower segment of the DP will project to its higher segment, as in (40), on the assumption that all the segments of a single category have identical featural content.

(40)

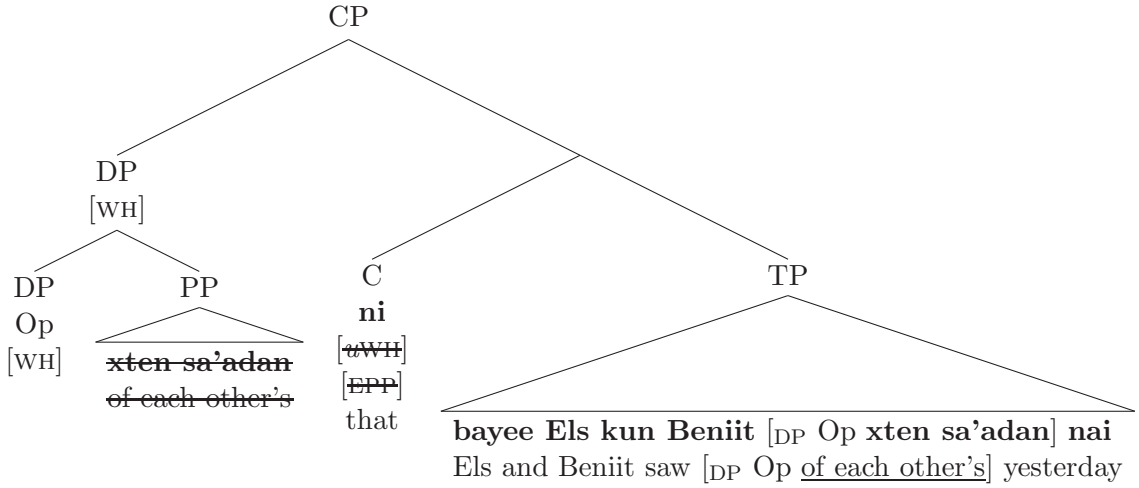


- Therefore, the Agree search conducted by C in (39) should find the *maximal* DP in (40), and this entire constituent should be attracted to [Spec,CP]—or at least this should be possible.
- So why is *xten sa'adan* pronounced in its base position?
- A clue comes from the fact that TdVZ apparently never allows overt material to be pronounced in the specifier of the relative complementizer *ni*. We can explain this fact by making the following two independently justified assumptions:

(41) a. The **Doubly-Filled Comp Filter** is active in TdVZ.
b. There is no silent relative C in TdVZ.

- These properties of TdVZ make it impossible to spell out the WH-DP [DP Op *xten sa'adan*] in [Spec,CP]...
- ...forcing an unconventional spellout option: pronunciation of the lower copy of *xten sa'adan* ((42)).

(42) *Low pronunciation of PP adjoined to Op*



- This analysis makes a couple of predictions.

- **Prediction 1:** TdVZ relative clauses should not allow pied-piping of an overt preposition to [Spec,CP].
- This prediction is borne out.
- When *bangu* 'chair' is relativized out of (43a) below, the preposition *lo* 'on' may appear in situ with a resumptive pronoun ((43b)), or it may disappear ((43c)), but it may not be pied-piped to the left periphery of the RC ((43d)).

(43) *TdVZ equivalents of English PP-relatives*

a. Sofie zub-an **lo** te bangu.
Sofie is.sitting-3H on a chair
'Sofie is sitting on a chair.'

b. bangu **ni** zub Sofie **la'agu-en**
chair REL is.sitting Sofie on/face-3INAN
semilit. 'the chair that Sofie is sitting on it'
id. 'the chair that Sofie is sitting on'

c. bangu **ni** zub Sofie
chair REL is.sitting Sofie
semilit. 'the chair that Sofie is sitting'
id. 'the chair that Sofie is sitting on'

d. bangu ⟨***lo**⟩ ni ⟨***lo**⟩ zub Sofie
chair ⟨*on⟩ REL ⟨*on⟩ is.sitting Sofie
'the chair that Sofie is sitting on'

- **Prediction 2:** Locative and temporal relatives should not begin with a sequence X *ni*, with X a locative or temporal (*wh*-)adverbial.
- Confirmation: the locative and temporal relativizers *kud* 'where' and *chi* 'when' cannot cooccur with the relative complementizer *ni* ((44-45)).

(44) Ri-zhulaaz-a ye'e ⟨***ni**⟩ kud ⟨***ni**⟩ gu-zi Mart yexih.
HAB-like-1.SG market ⟨*REL⟩ where ⟨*REL⟩ PERF-buy Mart avocado
'I like the market where Mart bought avocados.'

(45) zhman ⟨***ni**⟩ chi ⟨***ni**⟩ ba-zub Juan te yu'u
week ⟨*REL⟩ when ⟨*REL⟩ PERF-build Juan a house
'the week when Juan built a house'

- *Kud* 'where' and *chi* 'when' cannot be in the highest [Spec,CP] in the relative clauses they introduce: if they were, they would have to be cooccurring with a null relative C, but TdVZ has no such lexical item.
- Therefore, we analyze *kud* 'where' and *chi* 'when' as special realizations of the relative complementizer *ni*.

6 Conclusion

- We have argued that relative clauses in TdVZ do not have the head-raising derivation available to them.
- A reciprocal in the head of a TdVZ relative clause cannot be bound by an RC-internal DP, even though reciprocals reconstruct for binding under Ā-movement generally.
- On our analysis, this is because the head of a TdVZ relative clause is never inside the relative clause at any stage of the derivation.
- Analogously, a would-be bound variable inside an RC-head cannot be bound by an RC-internal quantifier. The reason is the same: the head is never RC-internal.
- The curious phenomenon of "stranding" of *xten sa'adan* 'of each other's' inside certain relative clauses comes about when this PP is adjoined to the null operator:
  - The resulting adjunction structure, a WH-DP, is attracted to [Spec,CP]...
  - ...but spelled out in its base position owing to the Doubly-Filled Comp Filter.
- In summary, externally headed relative clauses are (or can be) derived by head-raising in some languages (e.g., English) but not in others (e.g., TdVZ).

The takeaway: Externally headed relative clauses are a cross-linguistically heterogeneous category. Garden-variety relative clauses in Teotitlán del Valle Zapotec and English look quite similar on the surface, but have very different derivational histories.

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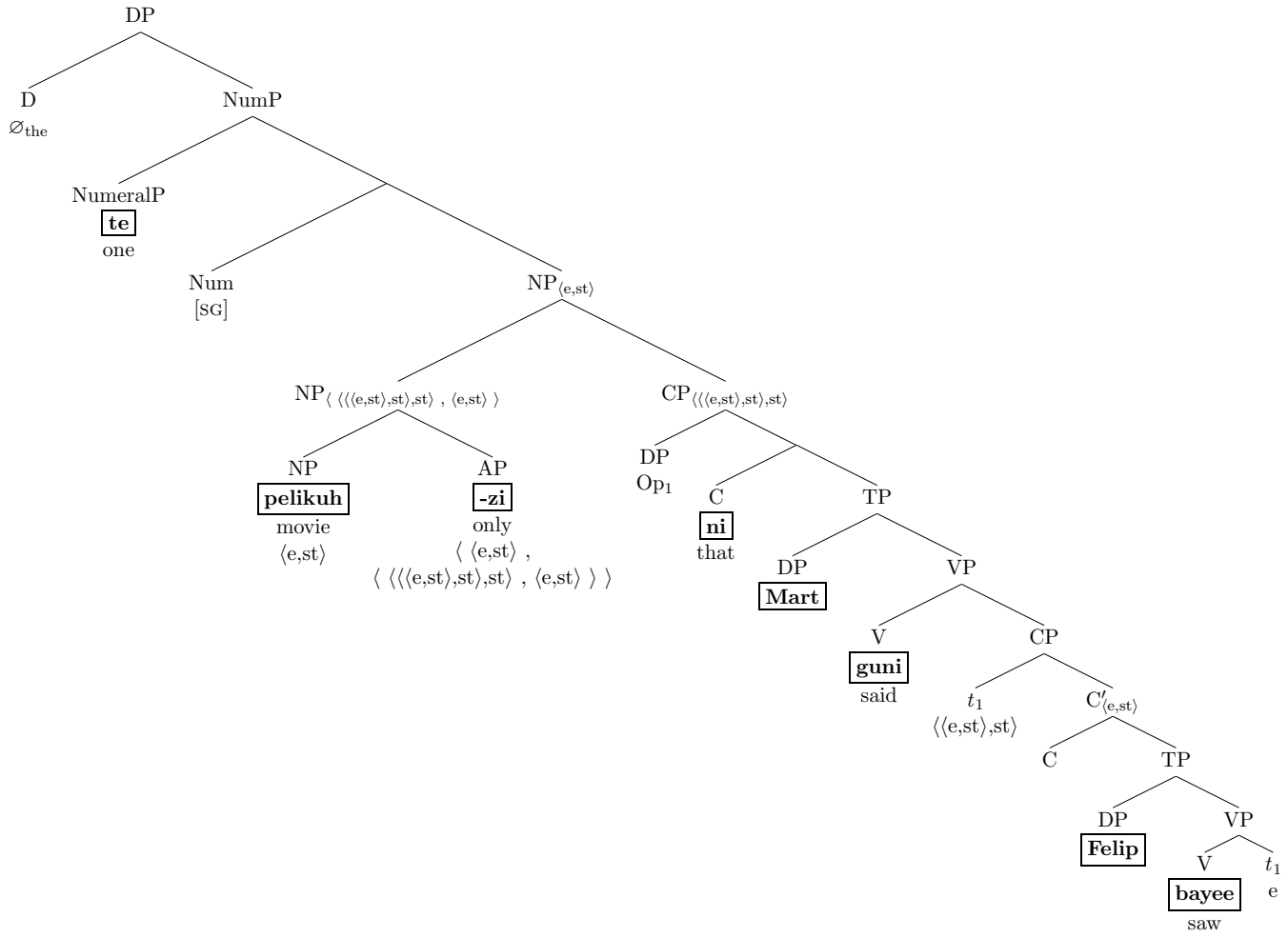
Appendix: a sketch of our semantic reconstruction analysis of low readings of *-zi* 'only'

(46) [Context: Mart said, "Felip saw the movie *Dbel* [*The Snakes*]. Oh wait, no—the only movie he saw was *Dbedund* [*The Hummingbirds*]."] (= (29))

D-bedund naa tee-**zi** pelikuh ni **gu-ni** Mart ba-yee Felip.
PL-hummingbird COP one-only movie REL PERF-say Mart PERF-see Felip
'*The Hummingbirds* is the only movie Mart said Felip saw.' *said* ≫ *only*

(47) *Structure of the postcopular nominal in (46) (irrelevant projections omitted)*



A sketch of the semantic composition yielding the denotation of the maximal NP in (47)

(48) *Workspace 1*

a. $[\![\ [_{C'}\ \textbf{C Felip bayee}\ \boldsymbol{t}_1]\ ]\!] = \lambda x\ .\ \lambda w\ .$ Felip saw x in w

b. $[\![\ \textbf{[guni]}\ ]\!] = \lambda p_{st}\ .\ \lambda x\ .\ \lambda w\ .$ x said something in w and $\forall w'$: w′ is compatible with what x said in w $[p(w') = 1]$

c. $[\![\ [_{CP}\ \textbf{Op}_1\ \textbf{ni Mart guni}\ \boldsymbol{t}_1\ \textbf{C Felip bayee}\ \boldsymbol{t}_1]\ ]\!] = \lambda P_{\langle\langle e,st\rangle,st\rangle}\ .\ \lambda w\ .$ Mart said something in w and $\forall w'$: w′ is compatible with what Mart said in w $[P(\lambda x\ .\ \lambda w\ .$ Felip saw x in w$)(w') = 1]$

(49) *Workspace 2*

a. $[\![\ [_{\text{NP}}\ \textbf{pelikuh}]\ ]\!] = \lambda y\ .\ \lambda w\ .\ y$ is a movie in w

b. $[\![\ [_{\text{AP}}\ \textbf{-zi}]\ ]\!] = \lambda f_{e,st}\ .\ \lambda Q_{\langle\langle e,st\rangle,st\rangle,st\rangle}\ .\ \lambda z\ .\ \lambda w\ .\ f(z)(w) = 1 = Q(\lambda g_{e,st}\ .\ \lambda w''\ .\ g(z)(w'')$ and $\neg\exists v\ [v \neq z$ and $f(v)(w'') = g(v)(w'') = 1])(w)$

c. $[\![\ [_{\text{NP}}\ \textbf{pelikuh -zi}]\ ]\!] =$
$\lambda Q_{\langle\langle e,st\rangle,st\rangle,st\rangle}\ .\ \lambda z\ .\ \lambda w\ .\ z$ is a movie in w and $1 = Q(\lambda g_{e,st}\ .\ \lambda w''\ .\ g(z)(w'')$ and $\neg\exists v\ [v \neq z$ and v is a movie in w'' and $g(v)(w'') = 1])(w)$

d. $[\![\ [_{\text{NP}}\ \textbf{pelikuh -zi Op}_1\ \textbf{ni Mart guni}\ \boldsymbol{t}_1\ \textbf{C Felip bayee}\ \boldsymbol{t}_1]\ ]\!] =$
$\lambda z\ .\ \lambda w\ .\ z$ is a movie in w and Mart said something in w and $\forall w'$: w' is compatible with what Mart said in w [Felip saw z in w' and $\neg\exists v\ [v \neq z$ and v is a movie in w' and Felip saw v in $w']]$