

BEARING THE BRAZILIAN CROSS¹

SUSTENTANDO A CRUZ BRASILEIRA

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RESUMO: O português brasileiro apresenta um padrão “cruzado” em sua marcação do presente: o sufixo -a/ẽw é associado ao indicativo com verbos da classe I, mas ao subjuntivo com outros verbos; o sufixo -i(n) é a imagem espelhada, subjuntivo com verbos da classe I, mas indicativo com outros verbos. Nós mostramos que esse padrão pode ser capturado, mantendo-se uma morfologia baseada em princípios unificada à sintaxe, sem postular regras sensíveis ao contexto ou operações morfológicas específicas. A chave é levar em consideração a fonologia especial que afeta as raízes verbais quando estas são sufixadas por -i(n).

PALAVRAS-CHAVE: Português brasileiro, morfossintaxe, subjuntivo, indicativo, Nanossintaxe, elevação vocálica, verbos irregulares, portmanteau, supleção de raiz.

ABSTRACT: Brazilian Portuguese displays a “cross” pattern in its marking of the present tense: the suffix -a/ẽw is indicative with verbs of class I, but subjunctive with other verbs; the suffix -i(n) is the mirror image, subjunctive with verbs of class I but indicative with other verbs. We show that this pattern can be captured while keeping a principled morphology unified with syntax, and without postulating context-sensitive rules or morphology-specific operations. The key is to take into account the special phonology affecting verbal roots when they are suffixed by -i(n).

KEYWORDS: Brazilian Portuguese, morpho-syntax, subjunctive, indicative, Nanosyntax, vowel raising, irregular verbs, portmanteau, root suppletion.

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1 THE CROSS

Spoken Brazilian shows a surprising morpheme swap. The following contrast between the indicative and subjunctive present suggests that -a is specialized in the indicative (of the 2/3sg), while -i is specialized in the subjunctive (of the 2/3sg):

- (1) a. fal -a
speak 2/3sg.IND
you/she/he speak(s)
b. fal -i
speak 2/3sg.SUBJ
that you/she/he speak

It thus comes as a surprise to see:

- (2) a. diskut -i
argue 2/3sg.IND
you/she/he argue(s)
b. diskut -a
argue 2/3sg.SUBJ
that you/she/he argue

The morpheme which used to express indicative now expresses the subjunctive, while the previous subjunctive marker now expresses the indicative, creating a cross pattern:

(3)

	IND	SUB
fal	a	i
diskut	i	a

The same happens in the plural:⁴

- (4) a. fal -ẽw
speak 2/3pl.IND
you/they speak
b. fal -im
speak 2/3pl.SUBJ
that you/they speak
- (5) a. diskut -im
argue 2/3pl.IND
you/they argue

⁴ Throughout the paper, the data will be given in IPA, so as to avoid orthographical confounds, and will come from spoken Brazilian, in particular from the native judgments of Thayse Leticia Ferreira and Val Rammé. Deciding on the exact transcriptions is sometimes delicate, but not in ways that affect our analysis. The 2/3pl suffix was for instance initially transcribed as /ẽj/, but /im/ seems to us to be a more faithful representation of the variety spoken by our consultants.

- b. diskut -ẽw
 argue 2/3pl.SUBJ
 that you/they argue

Verbs typically described as class I, with an -a thematic vowel, pattern like (1); verbs of class II (thematic vowel -e) and class III (thematic vowel -i) pattern like (2). A more complete summary of the present tense, indicative and subjunctive, would thus be:⁵

	IND	SUB
fal.2/3.sg	a	ɪ
fal.2/3.pl	ẽw	m
(6) diskut.2/3.sg	ɪ	a
diskut.2/3.pl	m	ẽw
viv.2/3.sg	ɪ	a
viv.2/3.pl	m	ẽw

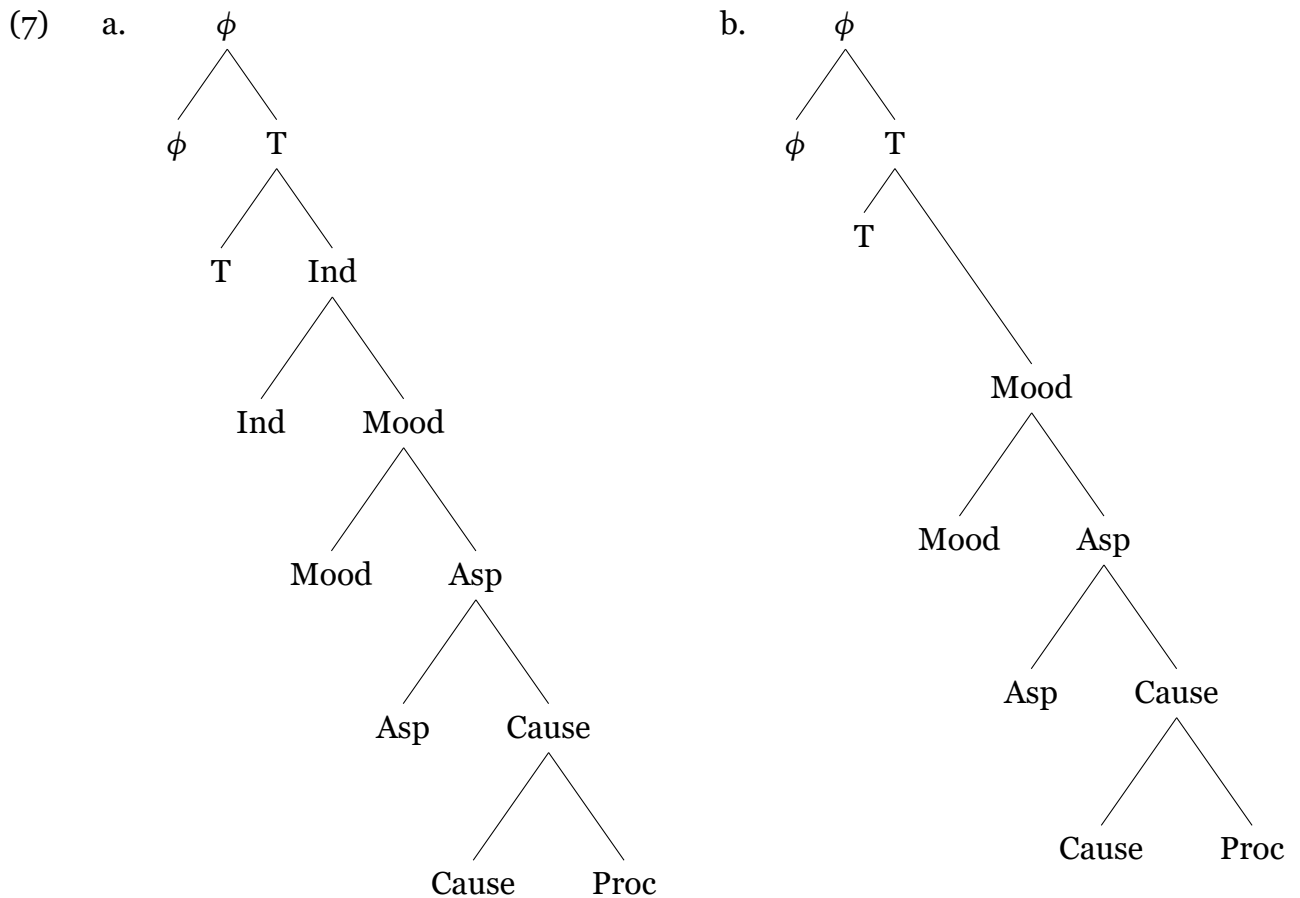
At first sight, this cross pattern calls for context-sensitive rules: the morphemes -a/ẽw are indicative in the context of roots of class I, and subjunctive elsewhere; the morphemes -ɪ/m are subjunctive in the context of roots of class I, and indicative elsewhere. In this paper, we aim to show that the cross can be captured in a more insightful way if one refrains from bringing the heavy artillery of context-sensitive rules to linguistic theory.

We'll in fact claim that the core of the cross pattern needs nothing more than the simple and universal lexicalisation procedure of nanosyntax. Let's sketch the general picture step by step, and we'll fill in the details in subsequent sections.

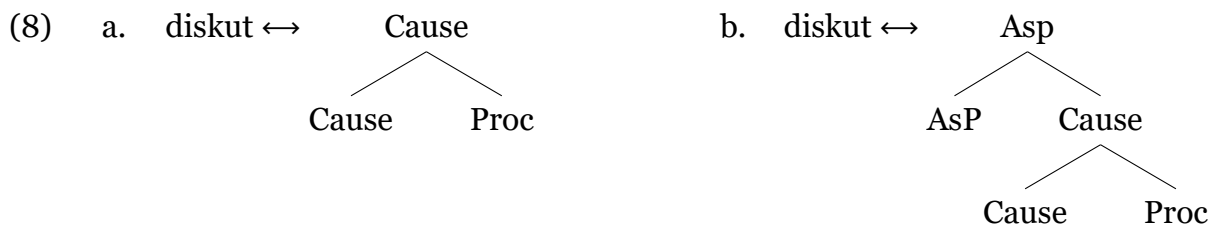
The cross involves two contrasts: indicative versus subjunctive, and class I versus class II/III. How are those contrasts represented in the grammar? Let's start with indicative/subjunctive: those are different semantics, expressed by different features. Since all features are simple (unary, privative), the indicative/subjunctive distinction will come down to the presence versus absence of at least one feature. At its simplest, either the subjunctive is an impoverished version of the indicative, missing at least one feature, or the indicative is an impoverished version of the subjunctive. Syntax, semantics and morphology suggest that indicatives have additional properties compared to subjunctives. Syntactically they are productively capable of standing alone in a root clause, whereas subjunctives aren't. Semantically, they can have their own time reference independent of any other clause, whereas subjunctives can't. Morphologically, Starke (2021) argues that French verbal morphological alternations favor indicatives having an additional feature compared to the subjunctive.

⁵ Since spoken Brazilian doesn't use the morphological 1st plural, this inversion pattern characterises the entire present tense except the 1st singular. The 1st singular has its own set of morphological puzzling behaviours, discussed by TARALDSEN (this volume), and is left aside in this paper.

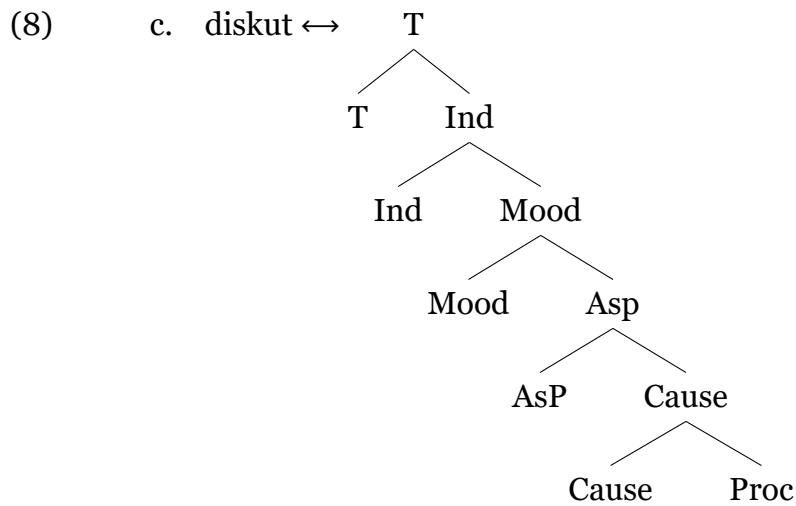
We thus adopt these (simplified) structures for indicatives and subjunctives:⁶



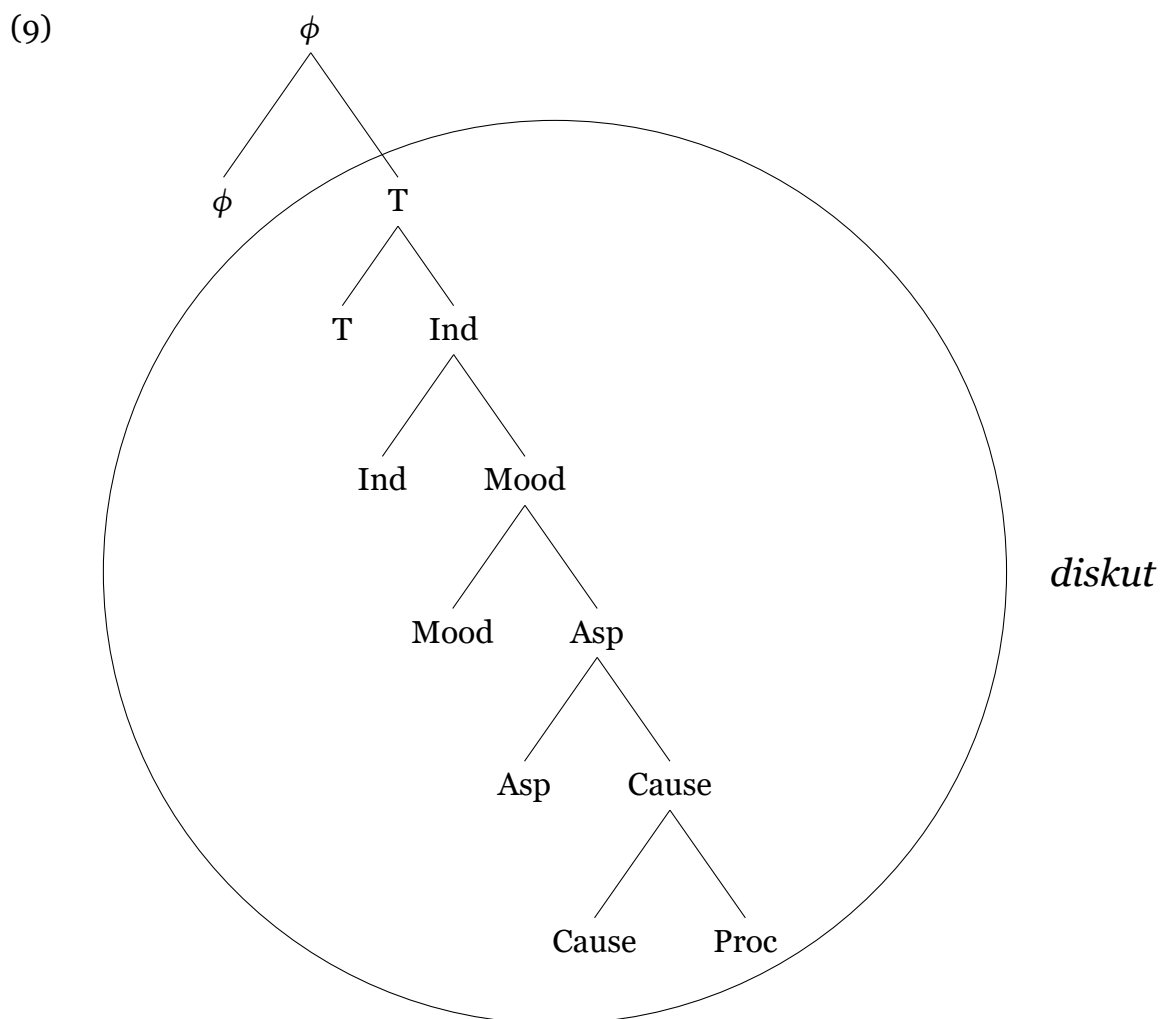
Let us turn to the second contrast involved in the Brazilian cross, class I versus class II/III. This leads us to the second ingredient of the lexicalisation procedure: lexical items are stored syntactic trees paired with phonology (and concepts). Roots for instance typically lexicalise the lower thematic layers, as in (8a), perhaps along with with some aspectual or mood features, along the lines of (8b), or even together with high tense features, as in (8c):



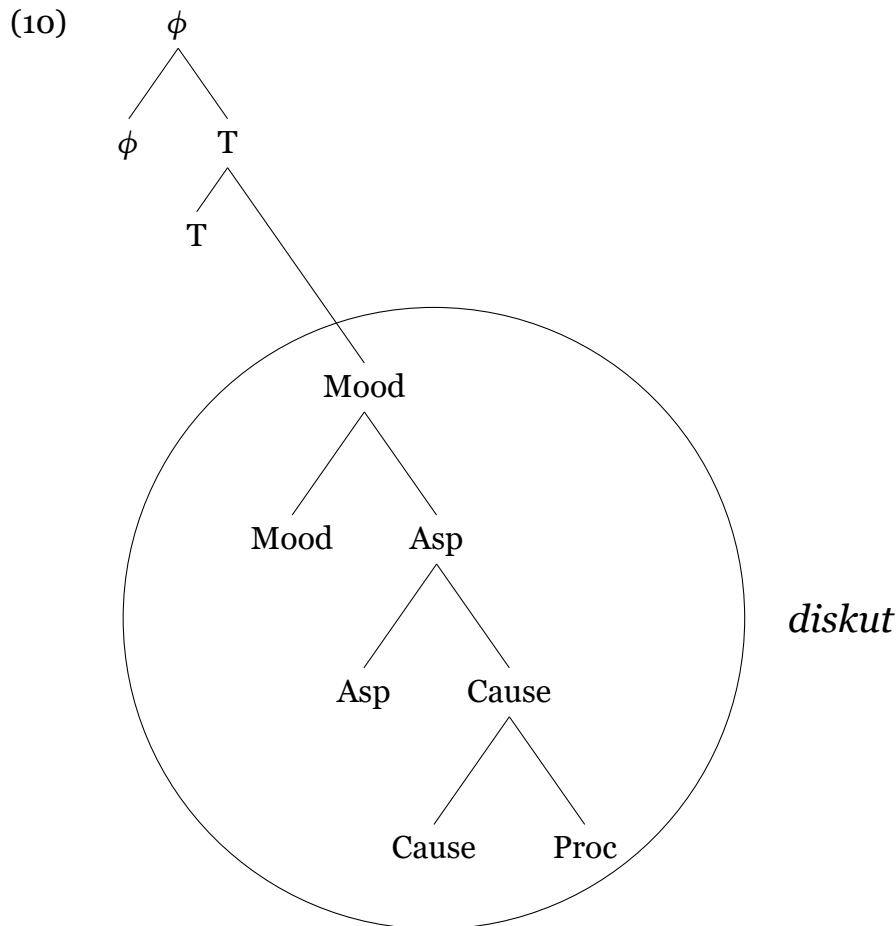
⁶ We use the following abbreviations: Proc = process, Asp = aspect, Ind = indicative, T = tense, ϕ = agreement, # = number, Pl = plural, π = person, TV = thematic vowel, COND = conditional.



In order for a lexeme to lexicalise a syntactic representation, the syntactic tree must exactly match a constituent of the tree stored inside the lexeme. If syntax is building an indicative structure as in (7) above, the lexical entry (8c) exactly matches the tree up to T, and leaves only ϕ features to be lexicalised:



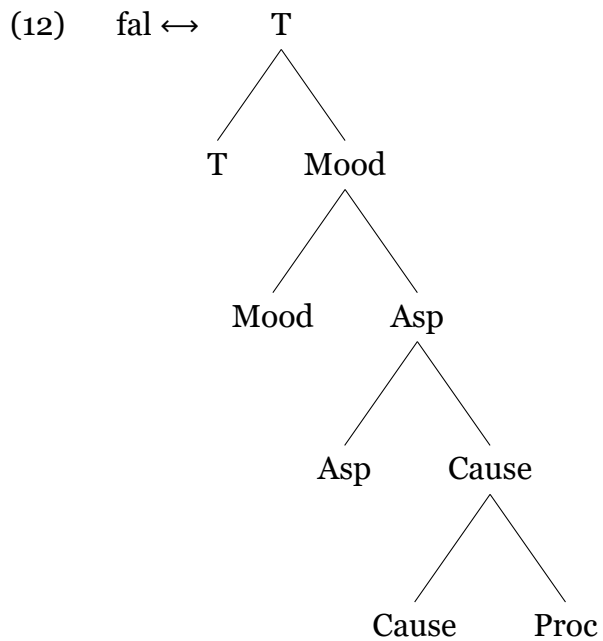
What happens if syntax builds a subjunctive instead? Now the Ind feature is missing from the tree built by syntax, and hence the structure lexicalised inside (8c) doesn't match anymore what the syntax has built. But there is a constituent inside the entry (8c) which matches the lower part of the syntactic tree: the [Mood [Asp [Cause Proc]]] constituent is exactly identical in both the lexical entry and the syntactic tree. The lexical entry (8c) can therefore lexicalise this smaller part of the subjunctive:



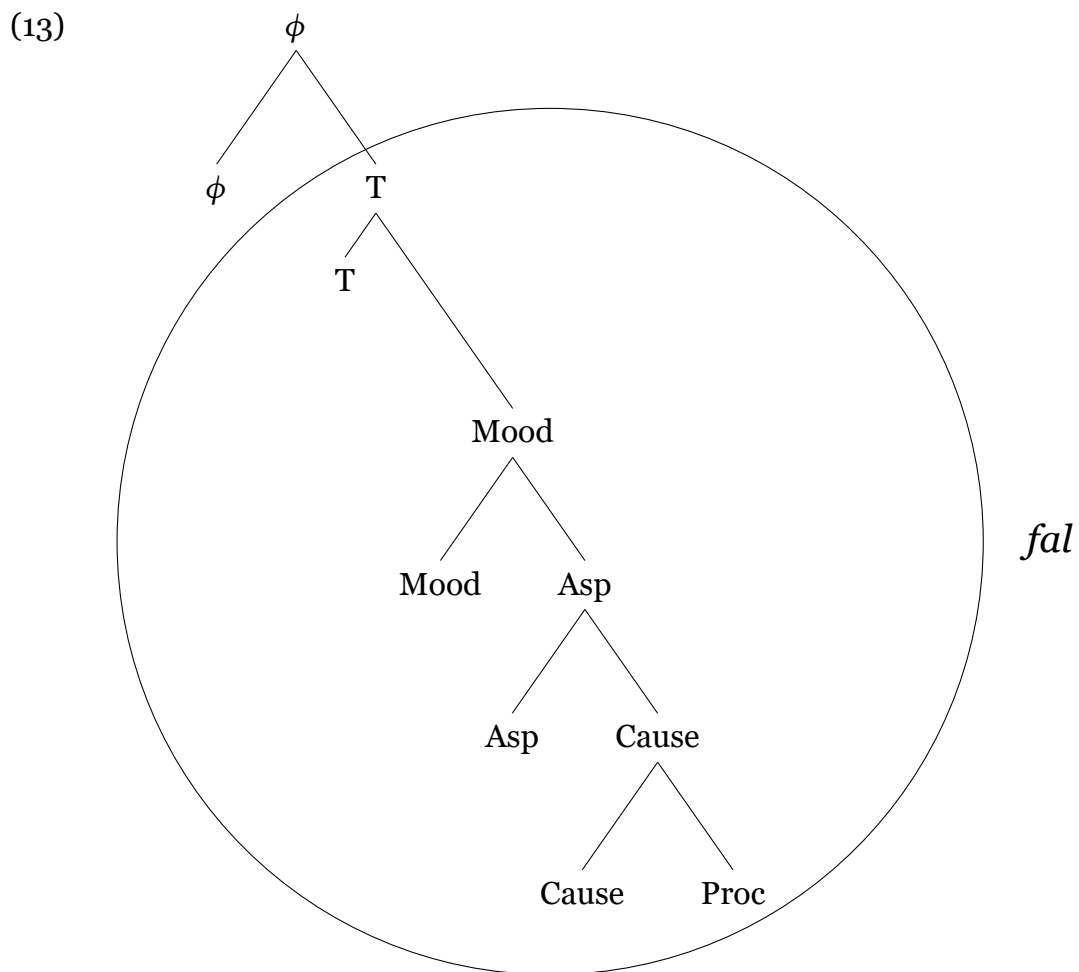
In this subjunctive derivation, two layers remain to be lexicalised: T and ϕ . The suffix for the subjunctive will therefore be different from the suffix of the indicative: the subjunctive suffix will start at T and lexicalise both T and ϕ . Let's call this suffix 'a', and let's call 'i' the indicative suffix which lexicalise just ϕ :

- (11)
- a. $a \leftrightarrow [\phi [T]]$
 - b. $i \leftrightarrow [\phi]$

Now let's examine what would happen if there was a different class of roots, with lexical entries of the type:

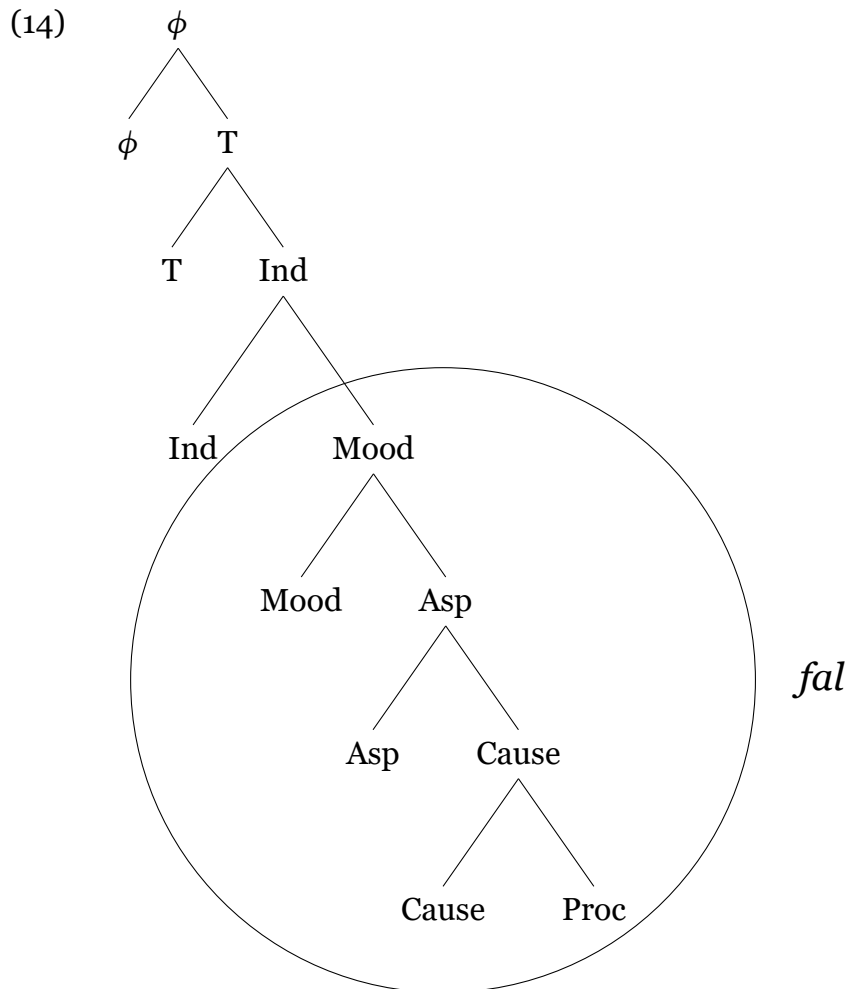


When the syntactic engine builds a subjunctive tree, the full lexical entry (12) is an exact match for the syntactic tree all the way up to T:



Only ϕ remains to be lexicalised, and hence we expect the suffix $-i$ to show up on subjunctives of this class of verbs. But recall that ‘ i ’ was the indicative suffix for discutiir-type verbs! We thus have derived one half of the Brazilian cross: the indicative suffix for discutiir-type verbs is the subjunctive suffix for falar-type verbs.

When syntax builds an indicative structure, the falar-type roots will not match the Ind feature, and hence will only match the lower part of the tree:



Here Ind + T + ϕ remain to be lexicalised. Our suffix ‘ a ’ will do the job for T and ϕ , leaving Ind to be lexicalised by something else. In the next section, we will turn to exactly that: who lexicalises Ind? But putting that aside for now: if ‘ a ’ indeed lexicalises T and ϕ , we are now well on our way to deriving the other half of the Brazilian cross: the subjunctive suffix for discutiir-type verbs is the indicative suffix for falar-type verbs.

2 VOWEL HEIGHT

Who lexicalises Ind in falar-type indicatives? It looks like our approach predicts a null morpheme for this layer of syntax. That turns out to be a correct prediction – and interestingly the morpheme is not fully null, it has detectable phonological life, albeit not a melodic phonological life.

The first clue comes from a traditional observation about class III (e.g. Lima, 1973; Cunha & Cintra, 2001): their subjunctive roots are either suppletive or have their last vowel raised (provided it is the type of vowel that can be raised). We will look at the suppletive cases in section 3 and concentrate here on vowel raising:

- (15) a. sɛrvɪ (serve, IND)
 b. sirva (serve, SUBJ)
- (16) a. fɛrɪ (wound, IND)
 b. fira (wound, SUBJ)
- (17) a. dɔrmɪ (sleep, IND)
 b. durma (sleep, SUBJ)
- (18) a. sɔbɪ (climb, IND)
 b. suba (climb, SUBJ)

In these cases, the mid-low [ɛ, ɔ] raise to high [i, u].⁷ This suggests that there's a raising morpheme (H) between the root and the suffix in the subjunctive forms (see also Taraldsen (this volume)).⁸

The morphological situation is thus:

- (19) a. sɛrv-H-a > sirva
 b. fɛr-H-a > fira
 c. dɔrm-H-a > durma
 d. sɔb-H-a > suba

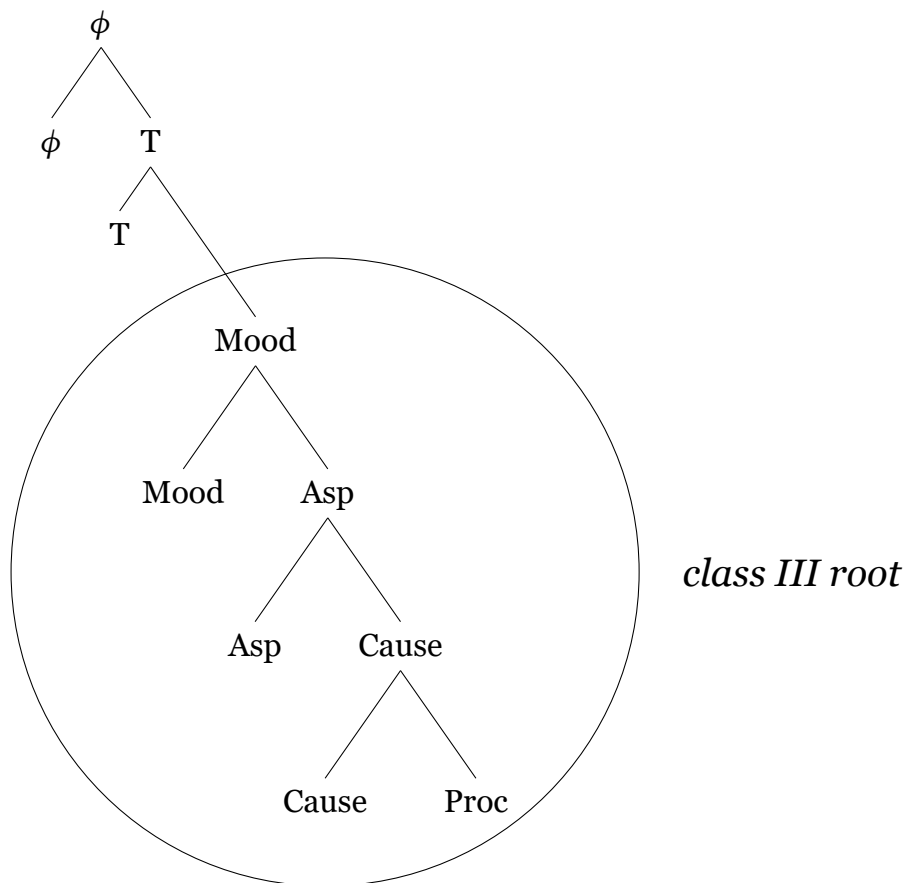
We did therefore find a null morpheme; in fact better, a morpheme that is melodically null, but phonologically active and hence phonologically detectable. We however found it in the wrong place: we predicted it in the indicative of class I, but found it in the subjunctive of class III. Let's follow its trail further, for further clues.

First, H forces us to revise our assumptions about the size of roots of class III. The division of labor in the lexicalisation of class III subjunctives looked like this:

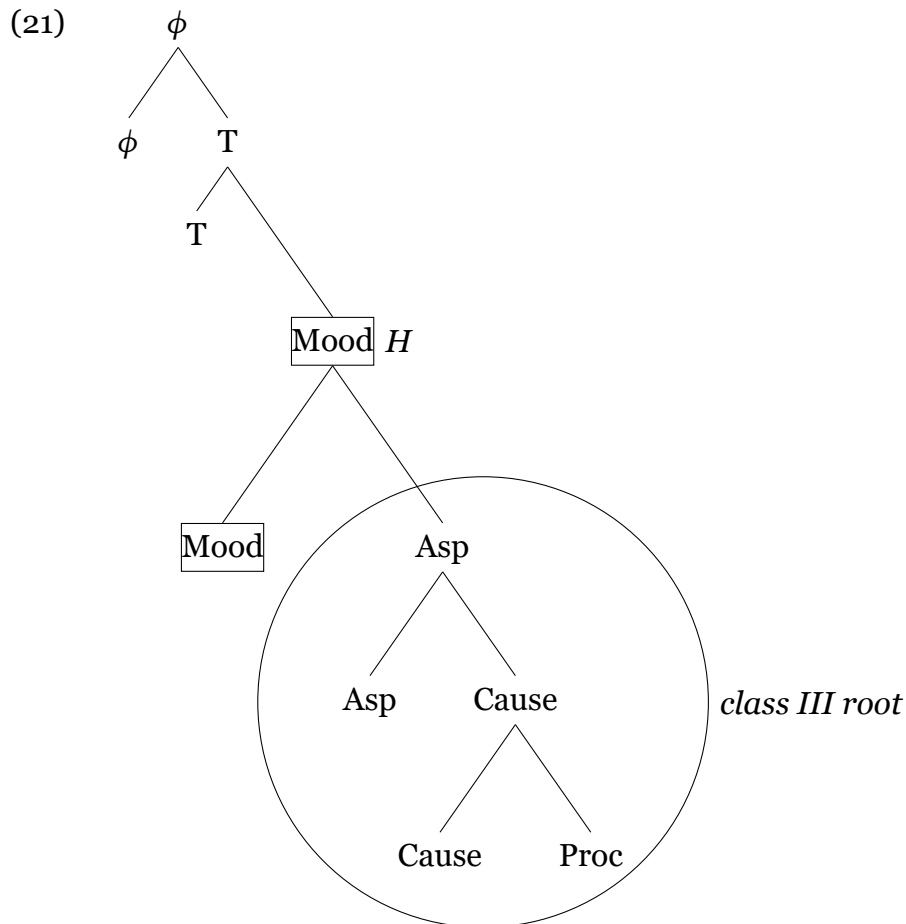
⁷ Roots which end in a high vowel cannot raise further and hence stay as they are, e.g. 'diskut-a' (argue, SUBJ). Roots with a final /a/ vowel don't undergo raising, e.g. parta, bata. Quicoli (1990) argues that this is because the Portuguese vowel inventory has no higher counterpart to /a/. See also Cobb (2003) for a different approach.

⁸ At first sight, the alternation could also be phrased in terms of lowering in the indicative. That would however make wrong predictions: roots with the high vowel [i, u] would be predicted to lower to the mid-low [ɛ, ɔ] in the indicative. That doesn't happen - class III roots with high root vowels retain them in the indicative, e.g. dividɪ, diskutɪ

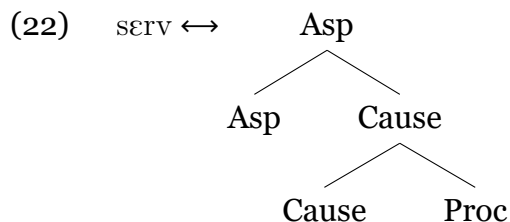
(20)



In order to be part of the lexicalisation, the raiser H must lexicalise some features of (20). As a result, the root must be a bit smaller than we thought, leaving some layers to be lexicalised by H. Let's thus revise (20) minimally: the root stops one notch lower, i.e. at Asp, leaving the Mood feature to be lexicalised by H.



The lexical entry for roots of class III becomes:



But now we have a curious side-effect. Since class III roots stop at Asp (and H lexicalises Mood), nobody can lexicalise Ind in class III either. It thus turns out that the puzzle of who lexicalises Ind in class I is the wrong question to ask, a better question is: who lexicalises Ind in at least class I and III? Given this discovery, let's examine class II.

There, similar facts about vowel raising hold:

- (23) a. bebi (drink, IND)
b. beba (drink, SUBJ)

- (24) a. devı (owe, IND)
b. deva (owe, SUBJ)

- (25) a. kəhi (run, IND)
b. koha (run, SUBJ)

- (26) a. m_{OV}I (move, IND)
 b. m_{OV}A (move, SUBJ)

The mid-low vowels [ɛ, ɔ] raise to mid-high [e, o], and hence class II also has a raising morpheme. But while class III raises the mid-low vowels [ɛ, ɔ] to the high [i, u], class II raises them to the mid-high vowels [e, o]:

- (27) a. s_{ERV}-a > sirva
 b. b_{EB}-a > beba

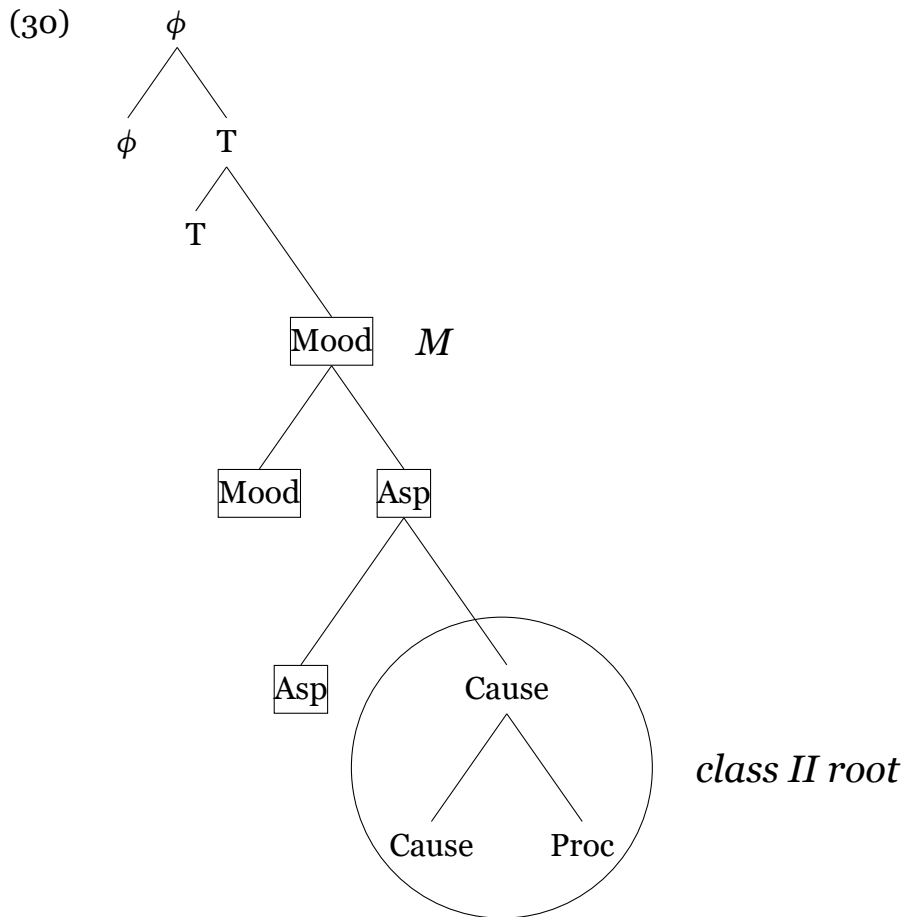
(28)		IND	SUB
	III	[ɛ, ɔ]	[i, u]
	II	[ɛ, ɔ]	[e, o]

This means that we are looking at two different raising morphemes: a raise-to-high morpheme (H) in class III, and a raise-to-mid-high morpheme (M) in class II.

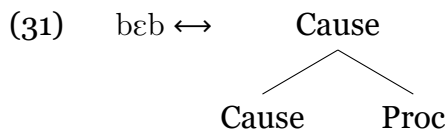
- (29) a. s_{ERV}- H -a > sirva
 b. b_{EB}- M -a > beba

As before, the size of roots of class II needs to be adjusted to make space for the raising morpheme. We now know that roots of class II need the help of M to lexicalise the syntactic tree, but how much help do they need? It cannot be that roots of class II reach up to Asp: that would make them identical to class III roots, and we would expect H to appear above them. If we maintain that class III roots reach up to Asp, the only option left is that class II roots are even smaller, not reaching beyond Cause.⁹ The M raiser now lexicalises Mood + Asp:

⁹ The other logical possibility is to swap the two: class III is smaller and class II reaches Asp. At this stage we have no evidence to choose either way and leave it open for future research. It is likely that adding other tenses into the picture will be helpful in this regard.



And class II roots become:



This leads us to the same side-effect: in the indicative, nobody is able to lexicalise the Ind layer. The root stops too low (at Cause) and the agreement morpheme starts too high (at ϕ), leaving Ind unhandled. The real question with respect to Ind is then not about class I or class III, but rather: who lexicalises Ind in all (present) indicatives?

The phonology of the raising morphemes gives us a number of clues. The first is that while they can raise the preceding vowel, (32), they never lower it, (33).

- (32) a. sɛrv -H-a > sirva
 b. bɛb -M-a > beba

- (33) viv -M-a > viva

In (32), the raisers H and M are higher than the mid-low root vowel /ɛ/, and raise it to /i/ and /e/, respectively. In (33) on the other hand, the raise-to-mid-high morpheme M is lower than the root vowel /i/ and has no effect on it. The non-melodic morphemes M and H thus have the power of raising vowels, but are unable to lower them.

Another property of the raising morphemes is that they have the same height as the corresponding thematic vowels (Harris, 1974; Quicoli, 1990; Wetzels, 1995; Taraldsen (this volume)). Class III has a high thematic vowel /i/ and a raiser which raises to high (H); class II has a mid-high thematic vowel /e/ and a raiser which raises to mid-high (M).

Given these two phonological properties of raisers, what would it look like for class I roots to also be accompanied by a raiser? The second property implies that a class I raiser would be a raise-to-low (L) morpheme: class I has a low thematic vowel -a, (34), and its raiser would thus ‘raise’ to that level, i.e. L.

(34) fal -a -ria
 speak TV 2/3sg.COND

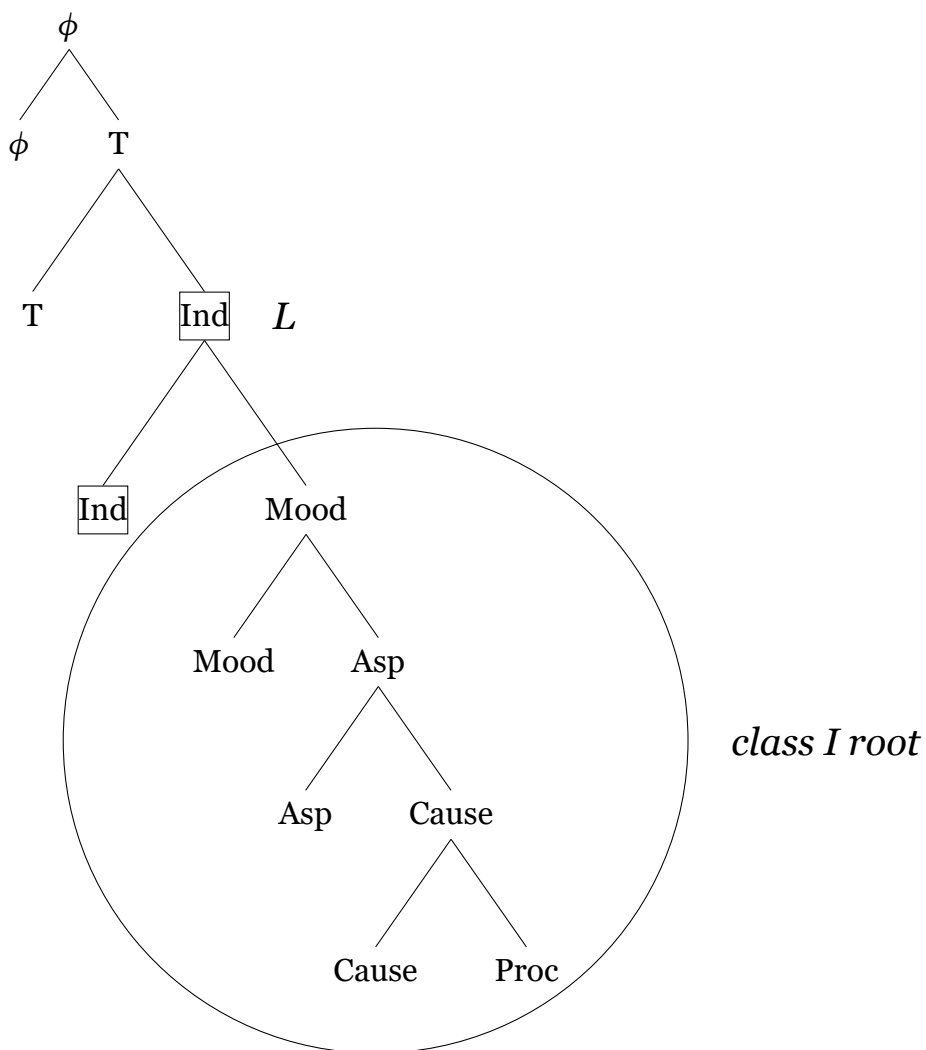
The first phonological property (“raise but don’t lower”) tells us that this L would never do anything: in order to have a raising effect, L would need to act on a vowel that is ‘below low’, and it would never affect vowels which are above or equal to low. Since there are no ‘below low’ vowels, this raiser would never do anything - it would act like an invisible null morpheme. Which is what we find:

(35) a. fal - L > fal-
 b. sɛk - L > sɛk-
 c. mɔr - L > mɔr-
 d. fik - L > fik-
 e. kōsum - L > kōsum-

Following the trail of the phonological raising phenomenon has finally led us back to our initial puzzle: a predicted but mysterious null-like morpheme in class I. Could L be the one?

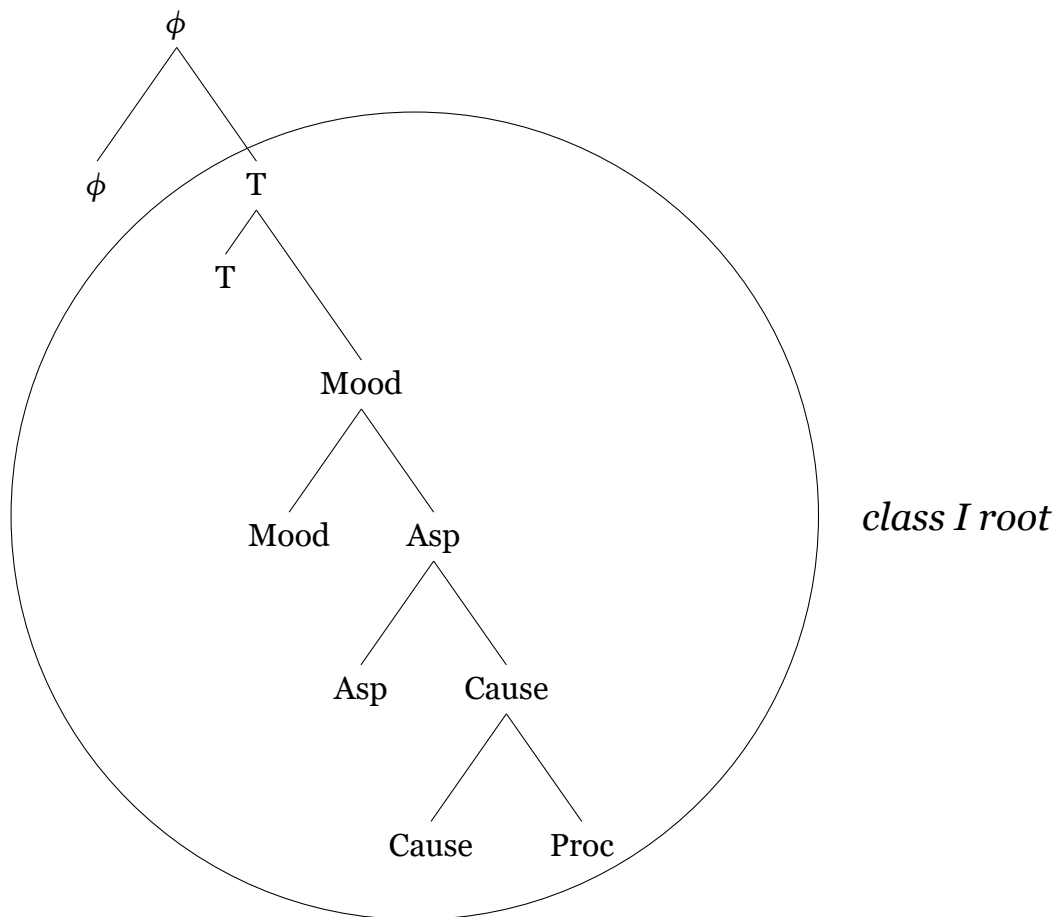
Up to now, raisers have been dedicated to subjunctives, but for L to be our mysterious class I morpheme, it would have to lexicalise Ind. Can raisers be responsible for Ind? Let’s see what would happen in class I. The root lexicalises all the way up to Mood, L would then take over for Ind, and -a/ẽw lexicalise T and ϕ :

(36)

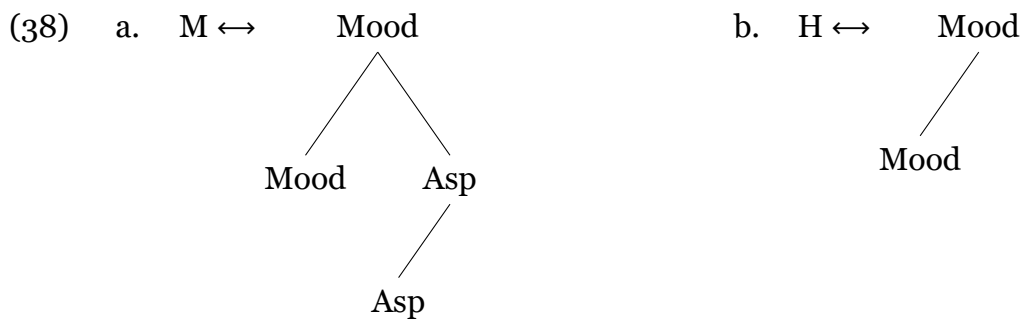


The L morpheme is thus a perfect fit, predicting the correct phonology and morphology, the initial mystery of the cross seems solved! The subjunctive derivation of class I remains unchanged:

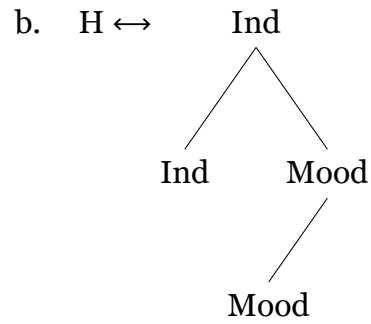
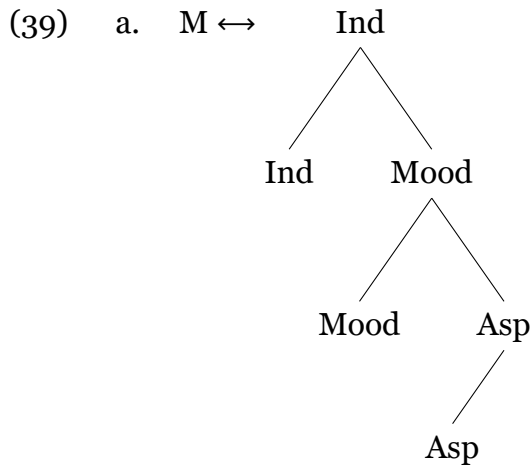
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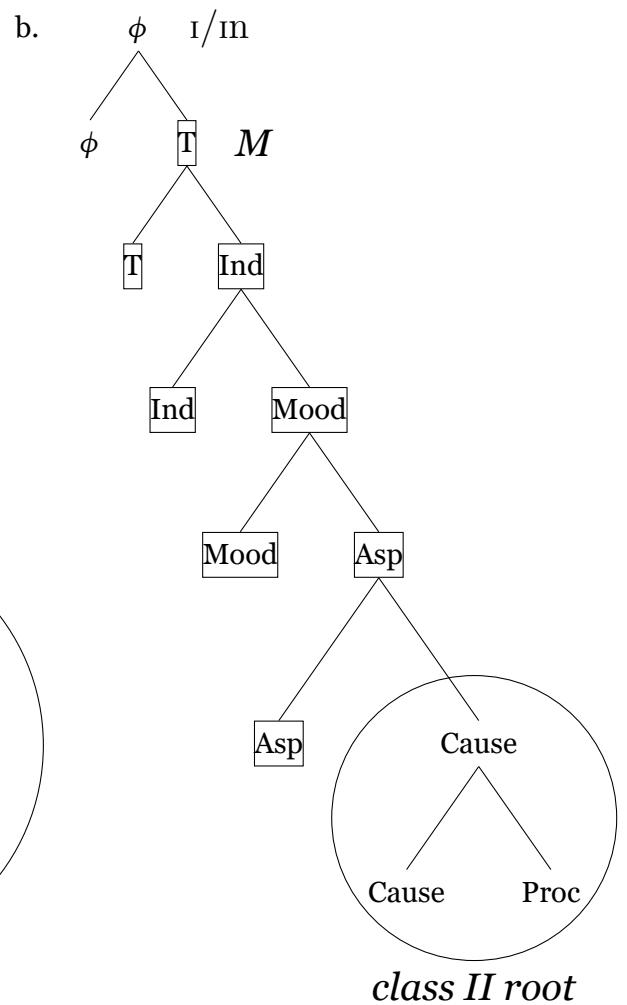
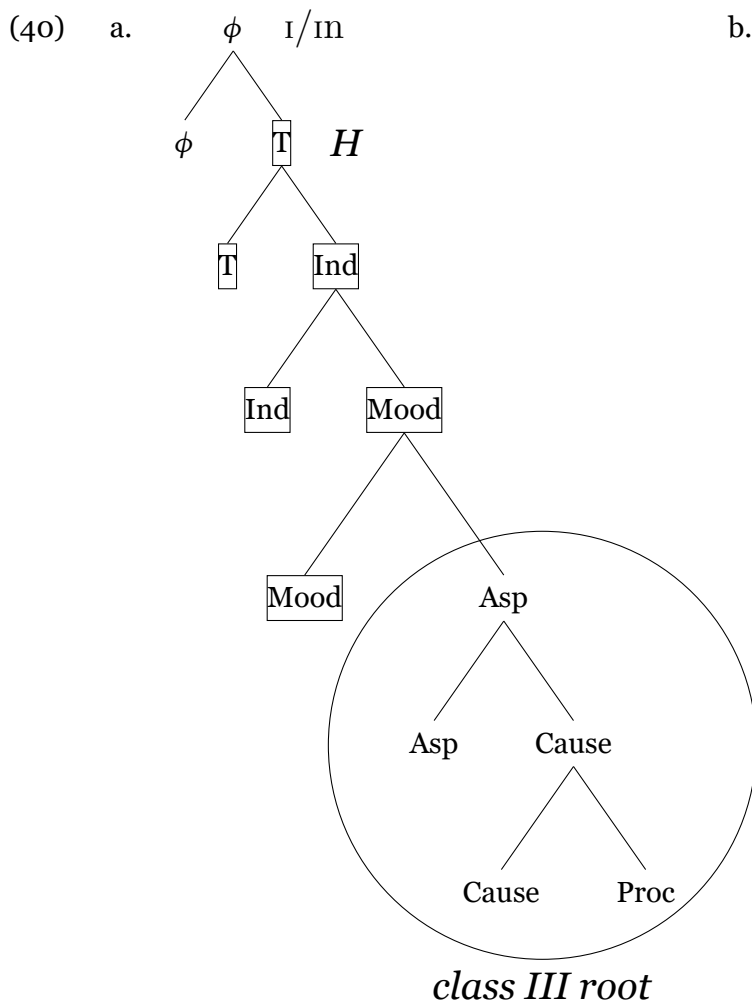
While solving this mystery, we however discovered another one: who lexicalises Ind in class II/III? Can raisers resolve this too, could M & H lexicalise Ind in class II/III? Currently, the lexical entry of M and H are:



Coincidentally, both of them currently stop at Mood, exactly below Ind. It thus fits perfectly that they would be responsible for Ind, extending (at least) one step up:



What would indicative derivations now look like? As before, class II and III roots lexicalise up to Cause and Asp respectively, and the suffixes *-i/m* lexicalise ϕ . The raising morphemes must then take care of the features in between, growing to Ind and then to T:



The morpho-syntax thus lines up perfectly. On the phonological side, we however seem to have a problem: M and H cause the last vowel in the root to shift, so we seem to predict that the last vowel of the root should raise in the indicative, just like it does in the subjunctive. But it doesn't:¹⁰

- (41) a. bɛb -M -ɪ
b. beb -M -a

- (42) a. sɛrv -H -ɪ
b. sirv -H -a

There are several ways to look at this. Here is one, in which phonology gives us another clue: raisers followed by a full vowel (/a/) cause the root to shift its vowel, whereas raisers followed by a reduced vowel (/ɪ/) don't. An interpretation of this would be that the raiser associates to the left by default, but when it is followed by a deficient vowel, the deficient vowel "attracts" the raiser in order to become more specified (Nevins, 2005; D'Alessandro & van Oostendorp, 2020).¹¹

- (43) a. beb- \Leftarrow M -a
b. sirv- \Leftarrow H -a

- (44) a. bɛb- M \Rightarrow -ɪ
b. sɛrv- H \Rightarrow -ɪ

One last step is needed: the indicative suffix of class II will now be M + /ɪ/, whereas the indicative suffix of class III will be H + /ɪ/. Shouldn't they then sound different? As it turns out, these present tense suffixes are always unstressed, and unstressed vowels neutralize in (Brazilian) Portuguese, such that the mid to high front vowels collapse into a single sound (e.g. Lima, 1973; Cunha & Cintra, 2001). It follows that an unstressed M + /ɪ/ will end up sounding exactly the same as an unstressed H + /ɪ/.

The mystery of the Brazilian cross is now solved:

¹⁰ Except in the 1sg, see Taraldsen, this volume. That is however of no help to us, as we predict this raising in all other persons too, contrary to fact.

¹¹ We would like to thank Edoardo Cavirani and Markus Pöchtrager for discussion of the phonological mechanisms underpinning the raising morphemes.

Proc	Cause	Asp	Mood	Ind	T	φ
fal				L	a	
fal				L	ẽw	
fal						I
fal						In
serv			H			I
serv			H			In
serv			H		a	
serv			H		ẽw	
bɛb		M				I
bɛb		M				In
bɛb		M			a	
bɛb		M			ẽw	

Significantly, the solution did not require the addition of any powerful mechanism to morpho-syntax, beyond the usual syntactic operations, and did not require any morphology-specific or exception-specific machinery either. On the contrary, refraining from adding such tools led us towards greater empirical adequacy: it led us to take into account vowel-raising, vowel-neutralization and the interplay with thematic vowels. We take this to be a general moral of this story: refraining from powerful technology forces one into more careful, empirically detailed account, taking into account subtle or irregular facts often left out of formal theories.

Speaking of irregular facts, let us turn to root suppletions and other irregular verbs - can we account for those too, with the above setup? Happily, we can.

3 IRREGULAR VERBS

A number of Brazilian verbs are “irregular” in that they pattern differently than class I/II/III above. From the perspective of the cross, they fall into two types: those that follow the cross pattern, but with unexpected roots, and a tiny but spectacular class, which refuses to follow the cross. Let’s start with unexpected roots, either because they are suppletive, as in (46), or because they are a portmanteau covering the otherwise expected agreement suffix, as in (45), or both, as in (47).

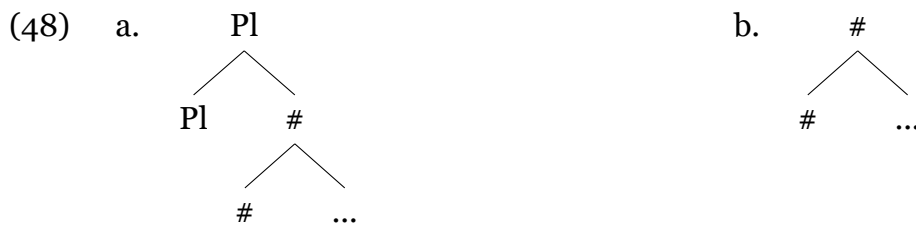
(45) kōduz
 lead.2/3sg.IND
 you/she/he lead(s)

(46) a. pɛd -ɪ
 ask.for 2/3sg.IND
 you/she/he ask(s) for
 b. pɛs -a
 ask.for 2/3sg.SUBJ

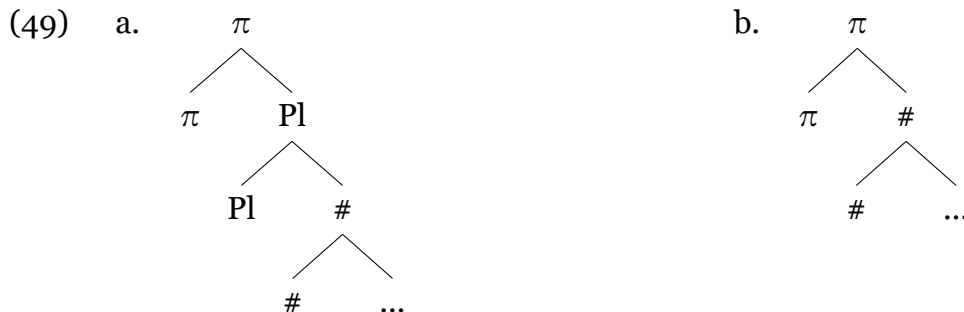
that you/she/he ask for

- (47) a. *ker*
 want.2/3sg.IND
 you/she/he want(s)
- b. *kejɾ -a*
 want 2/3sg.SUBJ
 that you/she/he want

With these verbs, the difference between singular and plural will sometimes be relevant. We thus first need to show how we express that difference: as before, one of the two will have an additional feature, creating the distinction. In this case, plurals will have a plurality feature, building on a number feature (#), whereas singulars will lack the plurality feature:



Person features are merged above this, yielding:



For the purposes of this article we don't need to go into the distinction between persons, so we will keep them collapsed into a single π ; and we will also mention the singular/plural distinction only when relevant, otherwise collapsing it into a single #.

3.1 PORTMANTEAU ROOTS

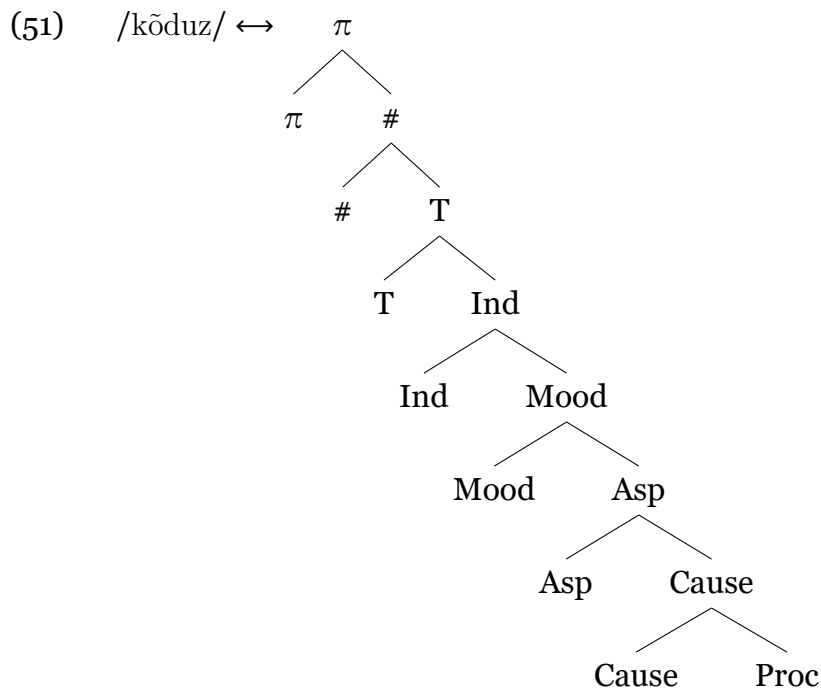
Some verbs seem to have a missing suffix, such as the indicative singular /*kõduz*/,¹² instead of the expected /*kõduz-ɾ*/:

- (50) *kõduz*
 lead.2/3sg.IND

¹² /z/ devoices to [s] when in word-final position (Cunha & Cintra 2001). We will however keep the underlying representation here.

you/she/he lead(s)

This is equivalent to describing it as a portmanteau covering both the slot of the root and the slot of the suffix. That in turn suggests a straightforward analysis: the morpheme /kõduz/ is able to lexicalise all the features up to π on its own:



This analysis predicts that in the plural, an agreement suffix will appear again. This is because /kõduz/ lexicalises structures with a missing plural morpheme as above. This means that when syntax builds a plural structure, the top part of the syntax does not match the lexical entry of /kõduz/. Only the part up to # matches. And hence somebody else needs to lexicalise the layers above, Pl and π . This is indeed the case:

(52) kõduz -m
lead 2/3pl.IND

In the subjunctive, the lexical entry of such roots will match an even smaller part of the syntax: the lexical entry expects an Ind feature to be present, but subjunctives lack that. And hence only the [Mood [Asp [Cause Proc]]] constituent matches, and a/\tilde{e}_w will kick in to lexicalise the higher layers, as described in section 2.

We thus derived a so-called “irregular” verb, and again, we didn’t need to add any new mechanism to our theory for that. It simply so happens that a few roots have bigger lexical entries than most verbs, those entries however follow the regular format of lexical entries and the regular rules apply to them.

3.2 SUPPLETIVE ROOTS

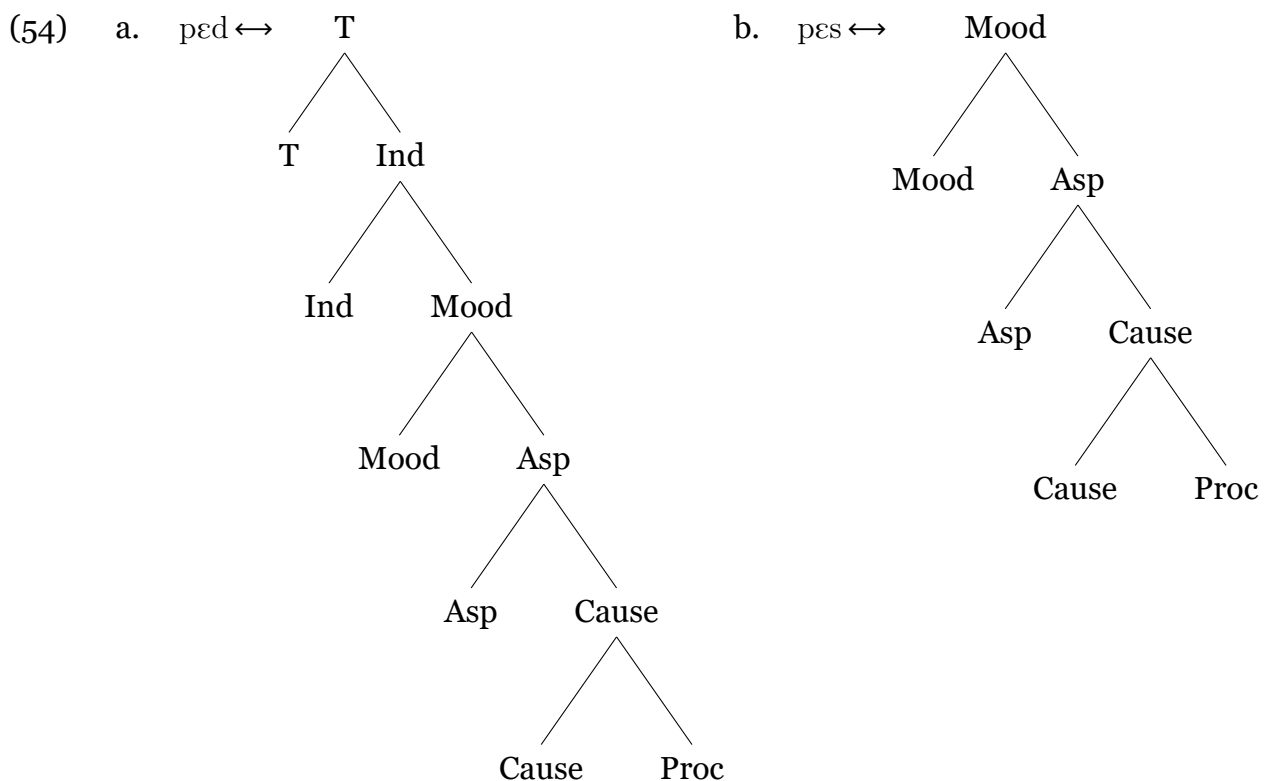
Verbs such as ‘pedir’ differ in two ways from class II/III:

- (53) a. pɛd -ɪ
ask.for 2/3sg.IND
b. pɛs -a
ask.for 2/3sg.SUBJ

First their subjunctive has a suppletive root, and second, their subjunctive root lacks vowel raising - the root of ‘pedir’ for instance keeps /ɛ/ in the subjunctive instead of the /i/ that would be produced by the raising morpheme. Why do these two properties go hand in hand? Why does suppletion “erase” vowel-raising?

We will adopt Taraldsen (this volume) in his elegant idea that these suppletive roots are also portmanteau: in descriptive terms, they lexicalise both the slot of the root and the slot of the raising morpheme. In more theoretical terms, they lexicalise all the way up to the Mood/Ind/T layer. Because they lexicalise the slot of the raiser, there is no raising of the vowel, which remains /ɛ/ in ‘pedir’.

Concretely, the lexical entries are:



When syntax builds an indicative, the lexical entry pɛd will match up to T, leaving only # + π to be lexicalised, which will yield -ɪ/in. In the subjunctive, both /pɛd/ and /pɛs/ match the tree up to Mood, and neither matches higher (/pɛd/ requires the next feature to be Ind which subjunctives don’t have, and /pɛs/ doesn’t have anything above Mood). Given this competition, the most specialised item wins (Elsewhere Principle, Kiparsky, 1973), and here /pɛs/ is more specialised as it can realize fewer features than /pɛd/, and hence matches less contexts than /pɛd/. Subjunctives are thus correctly

predicted to have a /pɛs/ root, followed by a suffix lexicalising T, # and π, which is -a/ẽw.

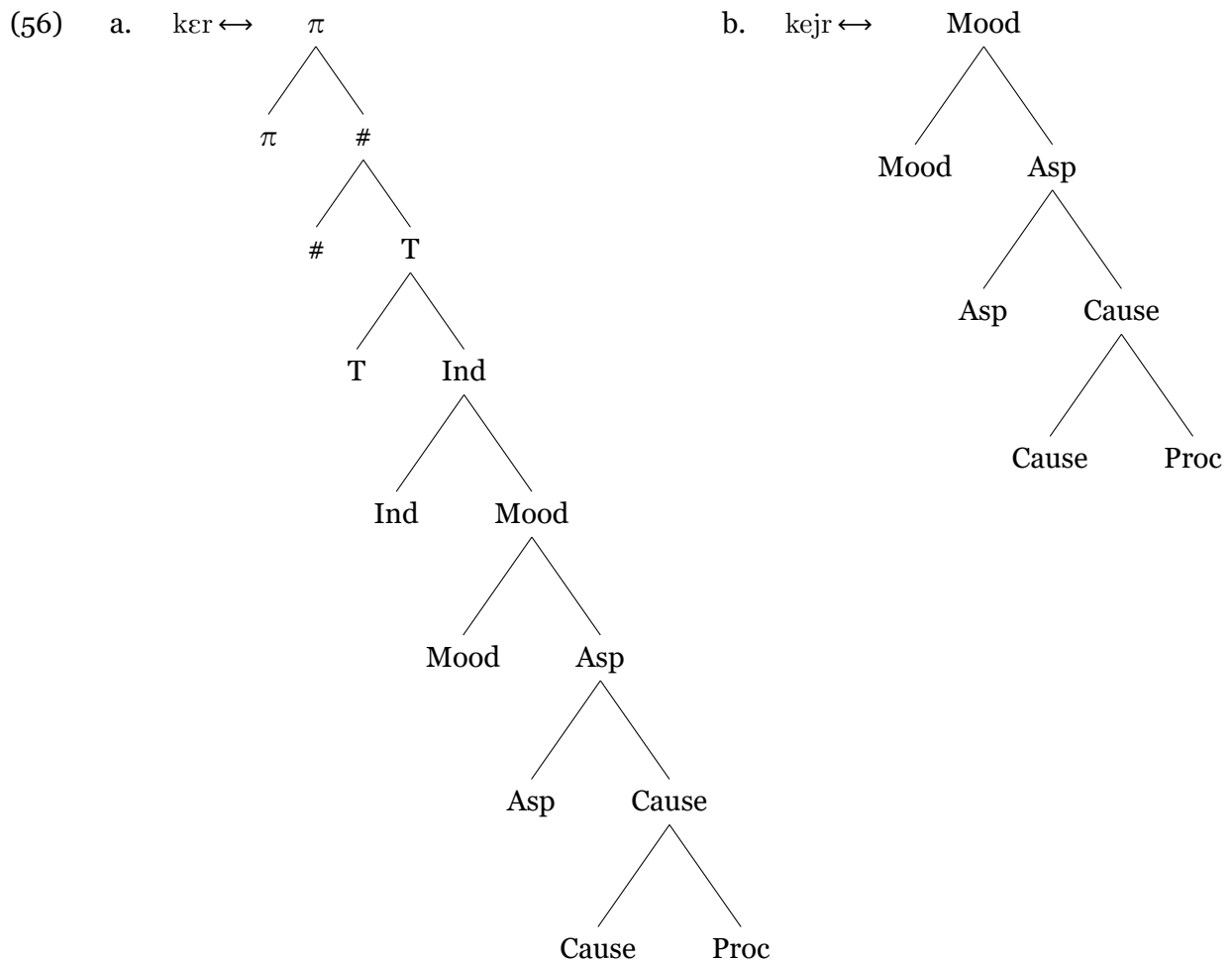
Verbs with root suppletion therefore also fall out from our system, with no added complication beyond the obvious fact that they have a second root, i.e. a second verbal lexical entry for the same concept.

3.3 ROOT SUPPLETION COMBINED WITH PORTMANTEAU

The third type of irregularity is a combination of the previous two: a root which can do the indicative singular on its own and a competing suppletive root in the subjunctive. The verb ‘querer’ for instance doesn’t show any suffix in the 2/3sg indicative forms, and surfaces with a different root in the subjunctive, with that subjunctive root being immune to vowel-raising but requiring the regular suffix -a:

- (55) a. kɛr
want 2/3sg.IND
b. kejr -a
want 2/3sg.SUBJ

The analysis is straightforward: as with /kõduz/, the lexical entry of /kɛr/ is so big that it can lexicalise all the way to agreement features on its own without the help of any inflectional suffix. As with ‘pedir’, the verb ‘querer’ has a second, smaller, lexical entry competing (and winning) in the subjunctive, /kejr/:



The derivations proceed exactly as in ‘conduzir’ and ‘pedir’ above, again deriving the right forms.¹³

At this stage, we have derived both the cross pattern and the bulk of irregular verbs, still using only the regular tools of (nano)syntax. Let us finally turn to the cross violators.

4 WHEN THE CROSS GOES MISSING

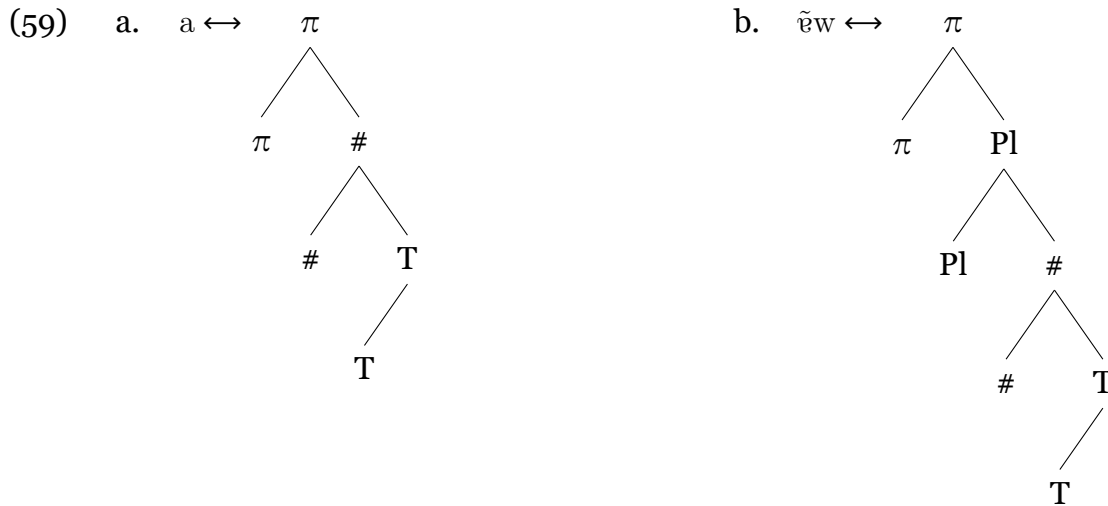
Surprisingly, some verbs do not follow the cross pattern. Instead, they show the same suffixes in the subjunctive and in the indicative. That’s for instance the case of ‘estar’:

- (57) a. izt -a
be 2/3sg.IND
- b. izt -a/ẽw
be 2/3pl.IND

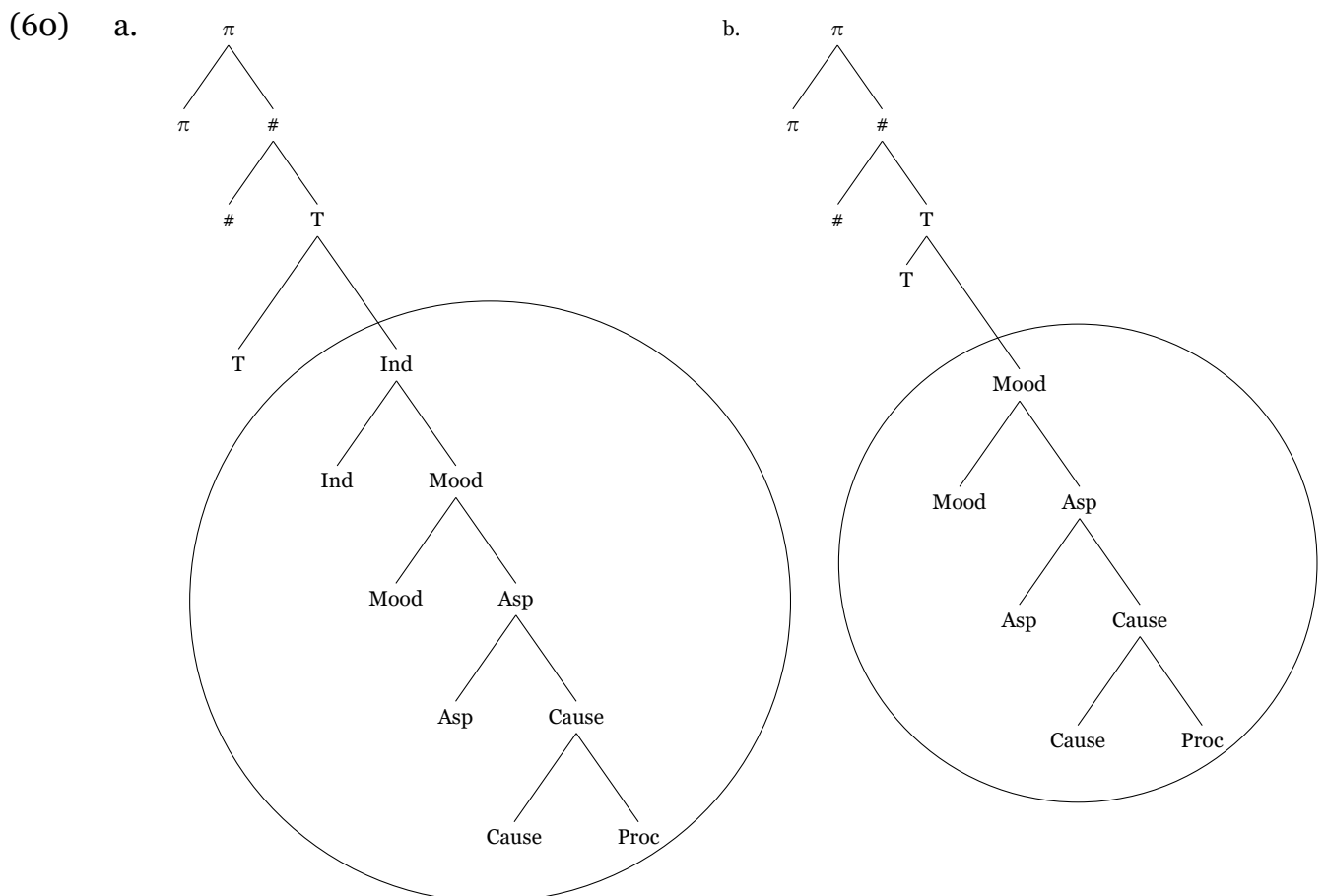
¹³ The verbs ‘pôr’, ‘ter’ and ‘vir’ may present a further complication, depending on how their phonology is resolved and hence how they are segmented. One possibility is that they involve three suppletive roots, but their phonology is not clear enough to us at this point to decide on an analytical path.

- (58) a. izte₃ -a
 be 2/3sg.SUBJ
 b. izte₃ -a/ $\tilde{e}w$
 be 2/3pl.SUBJ

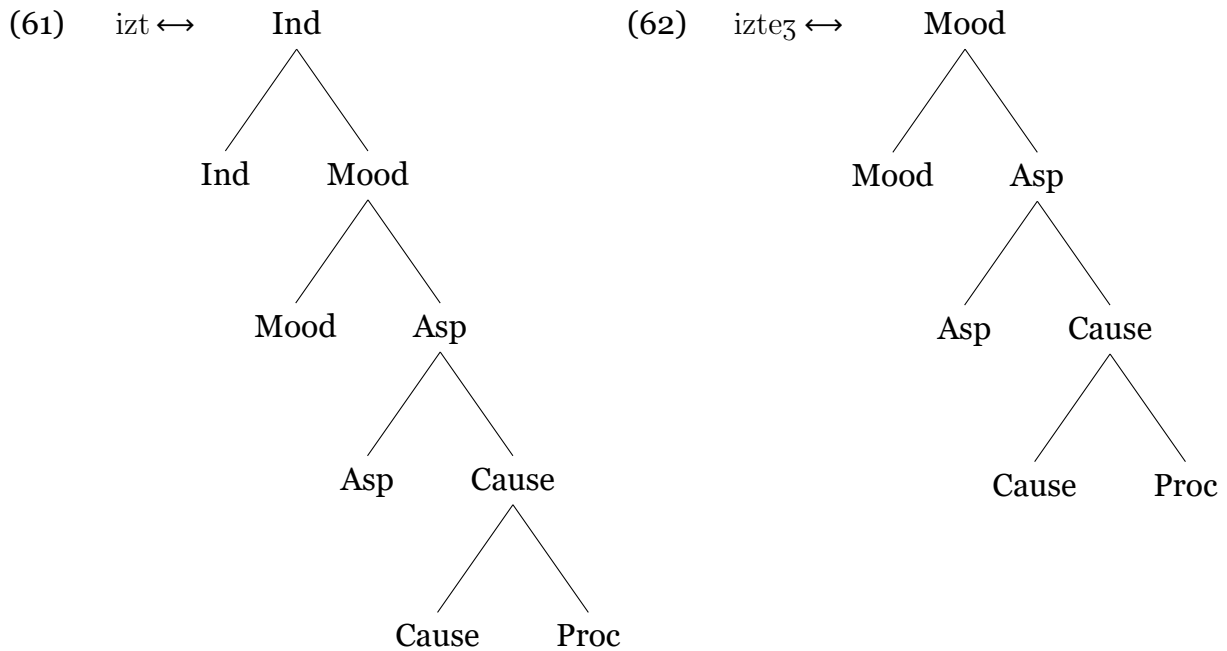
Our entire approach was built to handle the cross pattern, how does it fare with these invariant suffixes? The lexical entries for the -a/ $\tilde{e}w$ suffixes are:



This means that that they leave a different amount of unlexicalised structure below them in the indicative and subjunctive:



It is thus again straightforward to assign lexical items to /izt/ and /izteʒ/:



When syntax builds an indicative, only (61) matches the tree up to Ind, (60a). In the subjunctive derivation (60b), on the other hand, the root /izteʒ/- is the best match for the [Mood [Asp [Cause Proc]]] constituent. Both roots leave the same amount of features unlexicalised above them, T + # + π , and hence both are followed by the same suffix, -a.¹⁴

CONCLUSION

Brazilian present tense agreement shows a pattern impossible to derive when restricting morphemes to regular lexical entries and not supplementing the grammar with context-specific tools. In that pattern, two morphemes switch function depending on the environment, creating a cross pattern. The fact that one morpheme acts differently in different environments is easy to model with the equivalent of the subset/superset approach to lexicalisation, but having two morphemes swap roles is impossible.

A natural reflex in such situations is to enrich the theory (with context-sensitive operations, in this case). This reflex is pervasive in approaches to morphology, which typically resort to powerful mechanisms - with the unfortunate side-effect of pushing them towards the descriptive rather than explanatory domain. Above, we have illustrated a different methodology: looking at the empirical facts with an extra magnifying glass, taking into account subtleties of distribution, interpretation and pronunciation that are often left aside in discussions of syntax and morpho-syntax. This has led us

¹⁴ ‘Ser’ and ‘ir’ also belong in this class. Contrary to ‘estar’, they have a suppletive root in the indicative singular, a fact which would bring us into technological issues that we will leave for another occasion.

to phonological facts which reveal that the morphological situation is in fact not a simple morphological swap. Rather, there is a non-melodic raising morpheme between many roots and agreement morphemes in the Brazilian present tense, and those raising morphemes combine with the various sizes of roots to create an optical illusion of a cross pattern. Once this descriptive work is done, the grammar does not need to be enriched: both the apparent cross pattern, and all so-called “irregular” verbs can be derived from the usual universal syntactic operations of nanosyntax, operating on lexical entries which only store well-formed syntactic objects.

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