

The articulated *v* layer: evidence from Tamil

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1 Introduction

This paper contributes to the ongoing discussion of the proper analysis of the clausal region immediately above the verb, arguing that we need to recognize not just one or two functional heads, but a full layer of structure corresponding to Kratzer (1996)'s Voice or Chomsky (1995)'s *v*.¹ This layer should include at least four functional heads arrayed above the root as in 1:

(1) Pass(ive) > Mid(dle) > Voice > v_{cause} > $\sqrt{\quad}$

¹We would like to thank the editors for putting together this volume and for organizing the Little *v* workshop in Leiden in October 2013. Thanks also to audiences at that workshop, at GLOW 37, and at Olinco 2014 for comments and discussion on earlier versions of this work. Above all, thanks to two anonymous reviewers for extremely careful and insightful feedback. Blame for all remaining errors and confusions of course lies with us.

The primary evidence for this proposal comes from the Dravidian language Tamil, which is extremely informative due to its highly inflecting, agglutinative nature, and its flexibility in combining together distinct elements traditionally subsumed under the heading of ‘voice’. Employing standard Mirror Principle reasoning, we can use the rigidly ordered sequences of verbal suffixes that the language supplies to argue for a specific hierarchy of syntactic heads.

1.1 Background

A body of work in the late 1980s and early 1990s uncovered evidence for a syntactic position or positions above the location of the main verb in V, but below the representation of tense and agreement in Infl. As the arguments for the position were largely syntactic, and could not easily be correlated with familiar morphological or semantic categories, the identity of this head (and whether there was just one or several) remained controversial and unclear, alternatively being labeled as Pr(ed), μ , or an additional segment of a layered VP structure (see e.g. Larson, 1988; Pesetsky, 1989; Johnson, 1991; Bowers, 1993).

In a seminal paper, Kratzer (1996) motivated the existence of such a head on semantic rather than just syntactic grounds. She argued that the special status of external arguments as opposed to internal arguments (established e.g. by Williams, 1981; Marantz, 1984) could not be sufficiently accounted for if they were simply specifier and complement of a single

syntactic object. Rather, a more radical solution was called for, whereby only the traditional internal argument is syntactically an argument of the verb, and the external argument (henceforth EA) is introduced by a distinct (functional) head. Kratzer labels this head Voice, associating it with traditional voice phenomena (i.e. passive vs. middle vs. active) and the assignment of structural accusative case, and suggesting that it is responsible for the various syntactic facts discussed by the previous authors.

Subsequent work adopted Kratzer's basic proposal, sometimes preferring the label *v* introduced by Chomsky (1995). An array of additional functions were associated with this functional head, including causative and eventive semantics (Pylkkänen, 2002), information related to inner aspect or *Aktionsart* (Ramchand, 2008), and the verbalization of category-neutral roots (Marantz, 1997). This led to the obvious question of whether a single head could in fact be responsible for so many distinct syntactic and semantic phenomena. Work on causative constructions and alternations in particular (see e.g. Pylkkänen, 2002; Alexiadou, Anagnostopoulou, and Schäfer, 2006) uncovered convincing evidence that a single Voice/*v* head as assumed in earlier work would not do, and must be split into two projections. The lower one — usually labelled *v* or Caus(e) — is responsible for causative/eventive semantics and for the verbalization of non-verbal structure below. The higher one — usually labelled Voice — is responsible for the introduction of the EA, for agentive semantics and for the traditional 'voice' phenomena. The arguments for this move come

primarily from how causative/inchoative alternants and various passive types differ in their semantics and in their ability to combine with particular modifiers and PPs. Harley (2013) bolsters this analysis with clear morphosyntactic evidence from Hiaki. In this language, an applicative suffix appears morphologically outside the causative suffix, hence by the Mirror Principle (Baker, 1985) the applicative is assumed to be above the causative head hierarchically. Yet the argument introduced by the applicative is asymmetrically c-commanded by the EA, so the latter must be introduced by a head higher than the applicative. Since the causativizer is below the applicative, and the head that introduces the EA must be above the applicative, they must be distinct heads. In Harley (this volume), Harley reviews the Hiaki data from Harley (2013), as well as data from Turkish and Korean causatives, to explicitly argue for a pure CAUS head that is categorically and morphologically distinct from a verbalising *v* head. Alexiadou and Lohndal (this volume) argue on the basis of differences in how the meanings of roots are determined in English, Greek and Hebrew that *v* must play different roles in different languages and therefore must be distinct from the head that introduces external arguments (see also Harley, this volume; Wood and Marantz, this volume; Ramchand, this volume). Other recent work (e.g. Collins, 2005; Bruening, 2012; Alexiadou and Doron, 2012; Alexiadou, Anagnostopoulou, and Schäfer, 2015) has uncovered further syntactic, semantic and comparative evidence that the passive, at least in some languages, involves a dedi-

cated Pass(ive) head above the head that introduces the EA. Schäfer (this volume) argues that in canonical passives, the lower of these two heads introduces an external argument variable, while the upper head existentially binds the variable, but that there is also a second kind of passive (which he calls the ‘medio-passive’) in some languages that bundles these two functions into a single head.

1.2 Contribution of this paper

This paper aims to contribute to this evolving discussion by introducing novel data from Tamil, which provides transparent morphological evidence for even further articulation in this layer of the clausal structure (see also Harley, this volume; Ramchand, this volume, for other arguments and discussions to this effect, from the morphosyntactic and syntactico-semantic perspectives, respectively). Tamil is a highly inflected, agglutinative language, in which a typical verbal form involves a series of functional morphemes with a rigid relative ordering. E.g. the form *oɖækkæpat̪adũ* ‘(it) was broken’ breaks down as follows:

- (2) **oɖæ-** ‘break’
-kkæ- transitive
-pat̪- passive
-t̪- past
-adũ 3sg neuter agreement

The possible combinations and orderings of such morphemes will allow us to make clear proposals about the underlying functional sequence, based on standard Mirror Principle argumentation.

We will specifically argue for the existence of four heads, responsible respectively for the syntax and semantics of causativity, transitivity, ‘get’-like middles, and the passive, all of which can — perhaps surprisingly — co-occur. The hierarchy is as in 3:

$$(3) \text{ Pass(ive)} > \text{Mid(dle)} > \text{Voice} > v_{\text{cause}} > \sqrt{}$$

As such, we contend that it is appropriate to talk about an articulated *layer* or *domain* of Voice/*v* material rather than just one or even two heads — much along the lines of the articulated C layer/domain proposed within the cartographic framework (Rizzi, 1997, , etc.). In this sense, our conclusions have much in common with those in Harley (this volume) who ultimately also sketches a cartographic model of verbal projections, with the locus of parametric variation lying solely in the “bundling” or “spanning” of these (sets of) features/projections.

We start our investigation with the innermost, *v_{cause}* head, in Section 2, and work our way outward, moving to the Voice head in Section 3 which introduces the EA, and then in Section 4 the morpheme *kol*, ending in Section 5 with the highest head in the sequence, Pass, which builds the Tamil passive. We see how the entire sequence of morphemes fits together in Section 6, which provides the final justification for our con-

tention that the v domain in Tamil involves a single functional sequence containing at least four distinct, rigidly ordered heads. Finally, in section 7, we consider, and reject, two possible alternative analyses suggested by a reviewer.

2 The v_{cause} head

With most verbs in Tamil, there is no distinct overt realization of causative-eventive semantics or verbalization. However, we do see an overt morpheme playing this role when an adjective is verbalized. (4a) shows that a basic adjective like *segappū* ‘red’ can be used uninflected and without a copula as the main predicate of a clause, with a purely stative meaning. In (4b), we see an inchoative built on this by the addition of the suffix *aag-* (glossed simply as CAUS for ‘light verb’).²

- (4) a. Maṅṅaa segappū.
 mango red
 ‘The mango is red.’
- b. Maṅṅaa segapp- aag- i- ččū.
 mango red- CAUS.INTR- PST- 3NSG
 ‘The mango became red.’

The *aag-* morpheme verbalizes the structure, which can then e.g. be inflected for tense and subject agreement as in (4b). It also introduces the

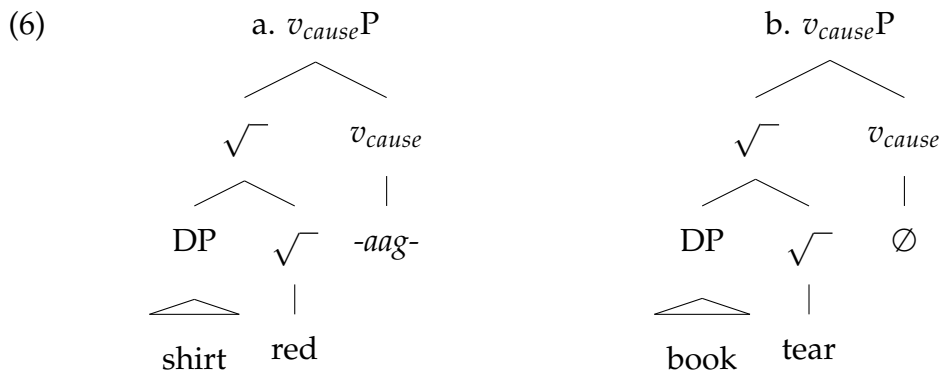
²We use the Leipzig Glossing Rules and the associated standard abbreviations, as detailed here: <https://www.eva.mpg.de/lingua/resources/glossing-rules.php>. We additionally use the abbreviations ANAPH for anaphor and MID for middle.

causative-eventive semantics, yielding a caused change-of-state, without indicating that this cause necessarily involves an Agent.

We thus seem to have an instance of the v or Caus(e) head argued for by Pylkkänen (2002); Alexiadou et al. (2006); Harley (2013). We will call it v_{cause} , to make its dual function clear, and assume that it appears directly above the root (understood in the sense of Marantz, 1997, , and other work within Distributed Morphology).³ We will adopt the common assumption that this head is generally present with caustive change-of-state predications, but just happens to have a null realization with most basic verbs, as in (5):

- (5) Pustagam ki.ɿ- Ø- nɕ- adũ.
 book.NOM tear- CAUS- PST- 3NSG
 ‘The book tore.’

We thus have structures like the following:



³We are not so concerned here with the details of the analysis of roots and the structures they appear in. Nor are we taking any strong position on whether roots can take arguments. For concreteness, we will draw our trees such that internal arguments appear as complements of the root, but we are not committed to this position.

3 The Voice head

In this section, we will discuss the rather interesting evidence provided by Tamil for a Voice head introducing the EA. We will start by working through the basic morphosyntactic evidence, which involves a certain amount of morphophonological complexity, and then focus on the distinction between Voice and v_{cause} .

3.1 Motivating Voice

Let's compare the basic inchoative sentence from above, repeated in (7a), with its transitive counterpart in (7b):

- (7) a. Saṭṭæ segapp- aag- i- ččü.
shirt red- CAUS.INTR- PST- 3NSG
'The shirt became red'
- b. Seetha saṭṭæ- jæ segapp- aakk- in- aa|.
Seetha shirt- ACC red- CAUS.TR- PST- 3FSG
'Seetha made the shirt red.'

(7b) has an agentive interpretation: not only did the shirt become red, but *Seetha* was responsible for this happening. Morphologically, (7b) is built on the *aag-* morpheme, just like its inchoative variant, and it also inflects for tense and agreement. The crucial overt distinction is that, while the former involves the v_{cause} morpheme *aag-* in its bare form, the latter involves a geminated variant of it — *aakk-*.

Indeed, transitivity alternations in Tamil are quite typically marked by exactly such alternations in the presence of gemination, involving either the final consonant (cluster) of the verb itself or the immediately following suffix. In either position, a simplex consonant in the intransitive is geminated in the transitive, in turn triggering phonologically regular devoicing and (potentially) cluster simplification. Thus the unaccusative form of ‘break’ is *oɖæ-nɖ̥-* in the past, with a voiced nasal + obstruent cluster as the past marker, as in (8), whereas the transitive form is *oɖæ-čč̥-*, with a voiceless geminate, as in (9):

(8) **Unaccusative:**

Paanæ oɖæ- nɖ̥- adũ/ *oɖæ- čč̥- adũ.
 Pot break- INTR- 3NSG/ *break- TR- 3NSG
 ‘The pot broke.’

(9) **Transitive:**

Sri paanæ- jæ oɖæ- čč̥- aan/ *oɖæ- nɖ̥- aan.
 Sri pot- ACC break- TR- 3MSG/ *break- INTR- 3MSG
 ‘Sri broke the pot.’

Further examples showing different variants of the alternation are provided in Table 1, either affecting the root itself (above the horizontal line) or affecting a following suffix (below the line).

Where in the complex verbal form the gemination is realized seems to be regulated by the following generalization. When the verb stem (i.e. verbal root + any verbalizing heads, like *v_{cause}*) ends in a geminable consonant, this is geminated and devoiced, with subsequent cluster simplification, as in examples 1-3 in Table 1. When the verb ends in a non-

	TRANSLATION	UNACCUSATIVE PAST	TRANSITIVE PAST
1.	SHRINK	suruŋg-in-	surukk-in-
2.	MELT	urug-in-	urukk-in-
3.	RUN	ooḍ-in-	ooṭṭ-in-
4.	BREAK	oḍæ-nḍ-	oḍæ-čč-
5.	GROW	va ar-nd-	va ar-tt-
6.	BURST	veḍi-nḍ-	veḍi-čč-

Table 1: Unaccusative and transitive forms

geminal segment — either a vowel or a consonant that does not permit gemination — then the immediately following suffix is affected, as in examples 4-6 in Table 1. Given the region of clause structure involved here, this is typically a tense/aspect or infinitival marker.

In order to understand what the syntactic correlate of a morphophonological process might be, we will adopt the general approach of Bye and Svenonius (2012), who argue that patterns which have typically been analyzed in terms of morphological processes (and indeed have been presented as evidence for process-based morphology) can, in fact, be profitably analyzed as piece-based. The pieces involved just happen to have phonologically underspecified forms that trigger phonological operations. For the specifics of the Tamil transitivity alternation, we follow Christdas (1988), who proposes that the transitive variant involves a highly underspecified affix, consisting solely of a consonant slot — call it /C/ — with no specification for place or manner of articulation. The missing feature values are then copied autosegmentally from the closest

eligible consonant slot, deriving the apparent mobility of the alternation according to the shape of the verb. The result will, in any case, be gemination, which triggers the further phonological rules of devoicing and cluster simplification (see Christdas, 1988, , for details). Under this approach, the transitivity alternation is thus the result of fully concatenative morphology, not a morphologically triggered ‘process’ of gemination. This is crucial because it means that once we get past the surface phonological complexity, we can take the abstract morphology behind it to transparently reflect syntactic structure. We can argue in particular that /C/ is the phonological realization of a syntactic head.

Based on its syntactic and semantic role in tracking transitivity, this is specifically the head that introduces the EA in its specifier, similar to the Voice head of (Kratzer, 1996). We will adopt this label for this head though we will see that it differs in a number of respects from Kratzer’s original proposal, e.g. in not being responsible for passivization. Our Voice head is perhaps also more like Ramchand (2008)’s Init head, and unlike certain interpretations of Kratzer’s Voice, in that the external arguments it introduces are not restricted to Agents, but may also include Causers, as illustrated below:

- (10) a. Pojal čannal- æ oɖæ- čč- adŭ.
 storm window- ACC break- TR.PST- 3NSG
 ‘The storm broke the window.’
- b. Raman čannal- æ oɖæ- čč- aan.
 Raman window- ACC break- TR.PST- 3MSG

‘Raman broke the window.’

This is in line with the crosslinguistic generalization that the verbs that participate in the transitive-inchoative alternation are those where the EA can be an Agent or the Causer (Alexiadou et al., 2015). At the same time, our Voice head is unlike Ramchand’s Init head in that we are assuming, at least provisionally, that the intransitive, inchoative structures alternating with transitives lack it, which is why they never show the gemination triggered by /C/. This is more in line with e.g. Alexiadou et al. (2015)’s analysis of unmarked anticausatives as lacking Voice.⁴ In fact, we will see that our notion of Voice is essentially the same as that of Alexiadou et al. (2015).

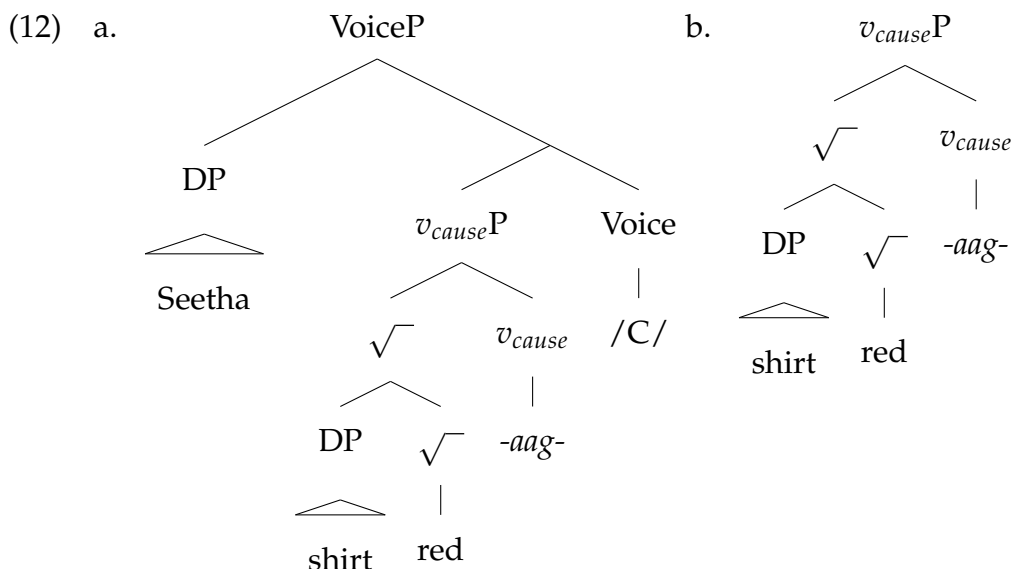
Regarding its structural position, the verbal sequences in (8) and (9) show us that Voice occurs above the root and below T and Agr. Sentences like that in (11), repeated below, where the v_{cause} morpheme is overt, allow us to be even more precise:

- (11) Seetha sa[t̪æ- jæ perid- aakk- in- aa].
Seetha shirt- ACC large- CAUS.TR- PST- 3FSG
‘Seetha made the shirt large.’

(11) shows that the gemination occurs on the right of the v_{cause} head, i.e. it applies to v_{cause} rather than the root below it. By straightforward Mirror Principle reasoning, this in turn means that Voice must be merged above v_{cause} .

⁴The alternative of course would be to assume that Voice is always present, but has no phonological realization when it does not project a specifier.

We thus envision that a sentence like that in (11) would have the structure in (12a). Again, the corresponding inchoative sentence would have the structure in (6a), repeated below as (12b) for comparison:



The unaccusative variant in (12b) is basic, containing less structure and less overt phonological material. The root and following suffix will thus have their ungeminated default forms. In (12a), the presence of the /C/ realizing the Voice head will lead to gemination, either of the root or of the next morpheme that comes above it. In the case of *oɖæ* ‘break’, which ends in a vowel, it will be the latter.⁵

⁵The placeless consonant /C/ is apparently not the only exponent of the Voice head. As in most languages, not all verbs that participate in the causative-inchoative alternation use the same kind of morphological marking (see Alexiadou et al., 2015, and the long history of work cited there). In Tamil, verbs like *tara* ‘open’, don’t explicitly mark either variant, so Voice must simply be null here. Interestingly, the majority of non-alternating transitive verbs do seem to show a reflex of gemination, as would be expected if they also have Voice spelled out as /C/.

3.2 Voice vs. v_{cause}

Our proposal in this section is in line with much recent work on argument structure (see e.g. Pylkkänen, 2002; Alexiadou et al., 2015) which has presented syntactic and semantic evidence that the head introducing causativity is distinct from that introducing the EA. The main motivation for this position is the observation that inchoatives crosslinguistically include the same causative-eventive semantics as their transitive counterparts, despite lacking EAs. As discussed earlier, Harley (2013) has also presented morphosyntactic evidence involving the interaction of applicative and causative material in Hiaki to this effect. The Tamil data presented above constitutes clear morphological evidence of another nature for this view. The sequence showing that the transitivity-encoding gemination follows and is distinct from the overt causative morpheme *-aag-* establishes that they encode two distinct heads.

We have also followed the work just cited in assuming that the v_{cause} head doesn't project a specifier. This means that even a Causer argument such as *pojal* ('storm') in a sentence like (10a), must be externally merged in Spec-VoiceP, just like the Agent Raman in (13b), not in Spec- v_{cause} P.

- (13) a. *Pojal čannal- æ oɖæ- čč- adũ.*
storm window- ACC break- TR.PST- 3NSG
'The storm broke the window.'
- b. *Raman čannal- æ oɖæ- čč- aan.*
Raman window- ACC break- TR.PST- 3MSG
'Raman broke the window.'

One indication that this is correct is the fact that Agents and Causers in transitive change-of-state structures occur in complementary distribution. This makes sense if the two are competing for a single slot in Spec-VoiceP, but would be somewhat surprising if Voice and v_{cause} each had an argument slot.

Still, it's not obvious why it shouldn't be possible to introduce a DP in the Spec- v_{cause} P in the *absence* of an additional Agent. Assume for the moment a model including thematic raising as in Ramchand (2008), where an argument may move from one thematic position to another and pick up multiple θ -roles (requiring the assumption that one half of the classic θ -Criterion is incorrect). We could then imagine that the Causer argument can be externally merged in the specifier of v_{cause} P and thematically raised from here to Spec-VoiceP, ending up as Agent and Causer simultaneously. Having two distinct DPs simultaneously, one an Agent and the other a Causer could independently be ruled out by case concerns or the like.

Here again, Tamil provides morphological evidence from gemination against such a possibility. It really seems that the v_{cause} head cannot project a specifier of its own. First, if arguments could be introduced in Spec- v_{cause} P without further thematic raising, sentences of the following type should be possible — contrary to fact:

- (14) * Pojal čannal- æ oɖæ- nɔ̃- adũ.
 storm.NOM window- ACC break- INTR.PST- 3NSG

'The storm broke the window.'

Pojal would be externally merged in Spec- v_{cause} P but not raise any further, because there is no higher Voice projection, as indicated by the non-geminated intransitive verb form. We could thus have a transitive clause without the gemination associated with Voice, as long as the EA were restricted to a Causer role. However, (14) is completely ungrammatical, and the only way to save it is by using the geminated form of the verb (as in (13a)). In other words, if you want to have an EA, you need the gemination-triggering Voice head to host it. It cannot be the case that the Causer is externally merged in Spec- v_{cause} P and stays there.

Now, we could imagine that the problem with (14) is not that the Causer is introduced in Spec- v_{cause} P, but that it remains there. I.e. we could still analyze the grammatical variant of (14) with gemination in (13a) as involving thematic raising of the Causer from Spec- v_{cause} P to Spec-VoiceP, with this raising being obligatory for some reason. We can show, however, that this alternative is also unviable. If internal Merge to Spec-VoiceP in this manner were possible, we would falsely predict (15) to be grammatical.

- (15) *Raman surukk- in- aan.
Raman.NOM shrink.TR- PST- 3MSG
'Raman shrank.' (Literal)

'Raman_i shrank himself_i.' (Intended)

Under a Ramchand (2008)-style analysis, *Raman* would be merged as the internal argument of ‘shrink’ where it would be assigned the θ -role of Patient, potentially thematically raise to Spec- v_{cause} P where it would receive the θ -role of Causer, and then further thematically raise to Spec-VoiceP where it would be interpreted as the Agent of the shrinking. These movements would yield a reflexive-like interpretation without any overt anaphor or other reflexive-like marking, and the presence of the Voice head would ensure that we get the geminated form *surukk-* of *surung-* (‘shrink’). Again, however, (15) is impossible, and so it seems we must rule out thematic raising to Spec-VoiceP from below.

As such, the correct structure is indeed the one proposed here: v_{cause} doesn’t project a specifier, and both Agents and Causers are externally Merged in Spec-VoiceP. The differences between them may then have to derive from two different flavors of Voice as suggested by Alexiadou et al. (2015), both of which happen to be possible in structures of this type.

4 The middle suffix *kol*

The next morpheme which can occur in the v domain of the Tamil verbal sequence is referred to in the Dravidian literature simply as *kol*, based on its form. We will follow this practice initially for convenience, but will ultimately argue that it is a middle marker and adopt the label ‘Mid’. In this section, we will first discuss its distribution and establish its struc-

tural status, and then say something about its semantic function, based on the detailed discussion in Sundaresan (2012).

4.1 The morphosyntactic basics of *ko*]

Perhaps the most typical environment for *ko*] is with reflexives. Indeed, clauses involving co-argument reflexivity usually require *ko*] to be suffixed to the verb, as shown in (16):

- (16) Sri_i tann- æ_{i,*j} ađi- ččŭ- kko- ŋđ- aan/ *ađi- čč- aan.
 Sri ANAPH- ACC hit- TR- *ko*] PST- 3MSG/ *hit- TR- 3MSG
 ‘Sri_i hit himself_{i,*j}.’

ko] is also frequently found suffixed to unaccusatives, as in (17) below:

- (17) Marakki]æ (sumaj- læ) va]ænđŭ- kko- ŋđ- adŭ.
 Tree branch.NOM weight- LOC bend.INTR- *ko*] PST- 3NSG
 ‘The tree branch bent (under its weight).’

The distribution of *ko*] seems initially reminiscent of the (partial) syncretism between reflexive and unaccusative structures observed in Greek, Slavic, Romanic, and German (Embick, 2004; Sportiche, 1998; Schäfer, 2008; Medová, 2009, , a.o.). Tamil would thus seem to lend additional support to popular analyses according to which reflexives and unaccusatives share a structural subcomponent, and we could take *ko*] be another instantiation of the Voice head (see Lidz, 2001, , and subsequent, for such a proposal for *ko*] in the related language, Kannada).

However, closer inspection reveals that the distribution of *ko|* in Tamil is independent of the valency of the predicate. First, *ko|* is actually optional on unaccusatives: thus, (17) may licitly occur without *ko|* and would retain its inchoative semantics even in its absence:

- (18) Marakki|æ (sumaj- læ) va|æ- nɕ- adũ.
 Tree branch.NOM weight- LOC bend- PST.INTR- 3NSG
 ‘The tree branch bent (under its weight).’

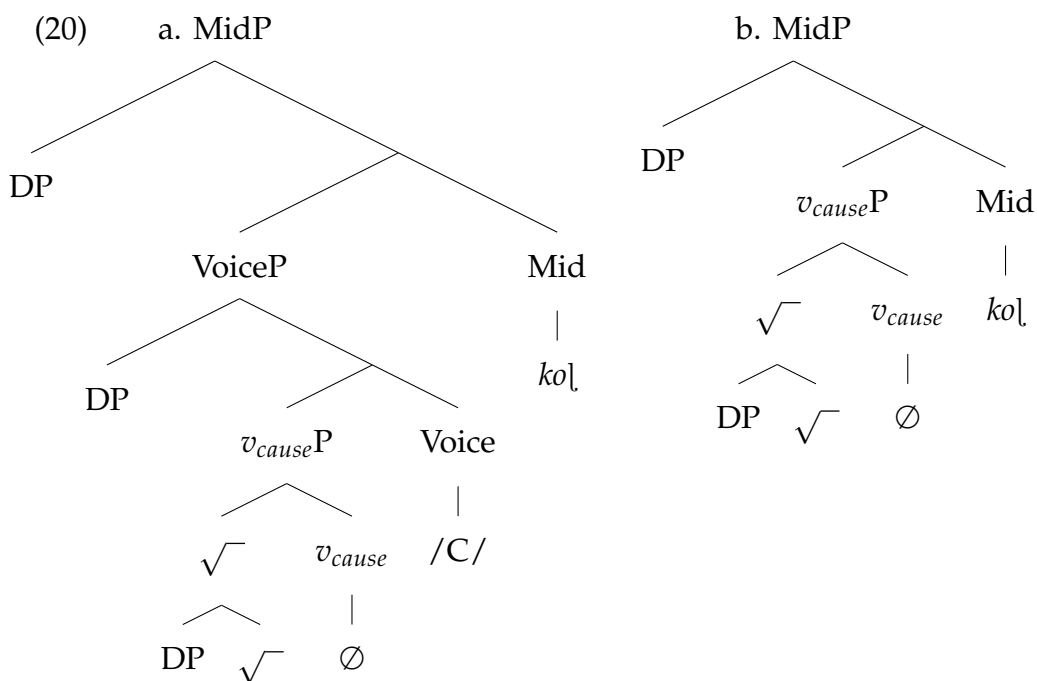
This is very different from the situation in languages like Romance or German, where verbs of the relevant classes can only appear as inchoatives with the reflexive-like marking. Second, *ko|* not only appears on reflexives and unaccusatives but may also be suffixed, again optionally, onto non-reflexive transitives. This is illustrated below in (19), where *ko|* occurs on the transitive counterpart of (17):

- (19) Sudha marakki|æ- jæ va|æ- ččũ- kko- ŋd- aa|. *ko|*-
 Sudha.NOM tree branch- ACC bend- TR- *ko|*- PST- 3FSG
 ‘Sudha bent the tree-branch.’

Finally, there is morphological evidence that *ko|* spells out a head distinct from Voice, coming again from gemination. *va|æ-nɕũ-kko-* in intransitive (17), contrasts with *va|æ-ččũ-kko-* in transitive (19). Crucially for us, *ko|* in these forms is appears *after* the aspect morpheme *-nɕ/čč-* where the gemination alternation is realized. This discussion shows that, regardless of how *ko|* is ultimately analyzed, its distribution is independent of the valency of the predicate it attaches to, and independent of the gemination

alternation that we have analyzed as realizing Voice.

We thus conclude that *ko|* spells out an independent head which we'll call Mid for 'middle', a label we'll motivate below. Syntactically speaking, Mid must be higher than Voice (as per the Mirror Principle) since it linearly succeeds the gemination that realizes Voice. Thus, we can posit the preliminary templatic structure in (20a) for a transitive structure with *ko|* and that in (20b) for an intransitive *ko|* structure:



4.2 On the 'middle-like' nature of *ko|*

The meaning contribution of *ko|* is best understood by comparing minimal pairs of sentences with and without it, as below:

- (21) a. Mansi paal- æ uutt- in- aa|.

Mansi milk- ACC pour.TR- PST- 3FSG

'Mansi poured the milk.'
- b. Mansi paal- æ uutti- kko- ŋd- aa|.

Mansi milk- ACC pour.TR- ko| - PST- 3FSG

'Mansi poured the milk for herself.' READING 1

'Mansi poured the milk on herself.' READING 2

(21a) has the straightforward meaning that Mansi poured milk. The addition of *ko|* to the verb in (21b) adds the sense that Mansi poured the milk *for* herself or, alternatively, that she poured the milk *on* herself (accidentally). I.e. *ko|* contributes a reading of affectedness — that the end result of the pouring event affects the Agent Mansi in some way — a meaning that has often been considered a hallmark of certain types of middles (Kemmer, 2003). Sundaresan (2012) further argues that the difference between Reading 1 and Reading 2 in (21b) has to do with whether the affectedness is interpreted in a mental or physical sense, yielding self-benefactive or “patient-like” readings, respectively.⁶ In unaccusatives, the addition of *ko|* contributes the same kind of affectedness reading, but this applies not to an EA (which is of course lacking), but to the internal argument. In both types of structure, the addition of *ko|* yields what has been described as a kind of ‘rebounding’ effect (again, common with middles, see Kemmer, 2003): the end result of some event comes back to affect one of the

⁶The meaning of *ko|* itself is underspecified as to this: the context and lexical semantics of the verb condition to what extent the affectedness is understood along the mental vs. physical planes.

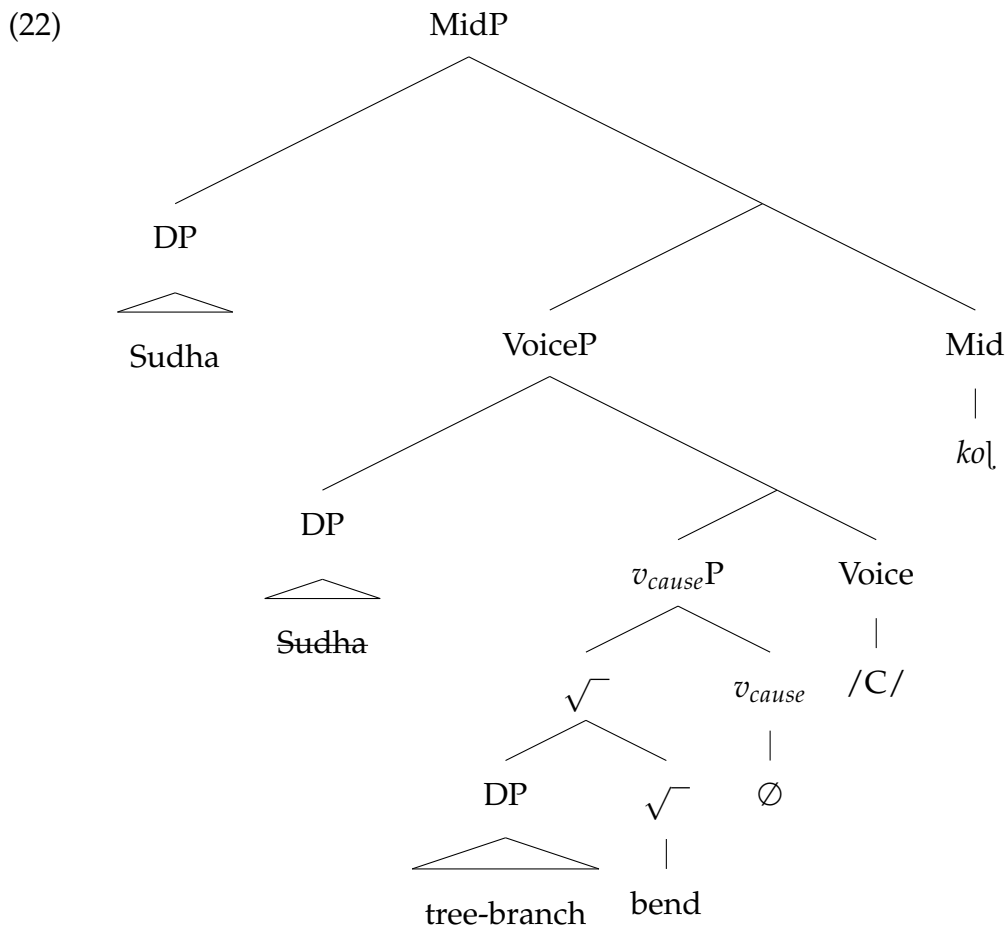
arguments of that same event. If the event is transitive, the argument that this rebounding goes back to is the Agent; if the event is inchoative, this is the Patient.

Bolstered by a survey of a range of *ko*[-sentences among several native speakers of Tamil, and an investigation of the distribution of *ko*[- across the Levin (1993) verb-classes, Sundaresan (2012) models this intuition in two steps. First, she proposes that the affectedness semantics of *ko*[- applies as a θ -role to the argument that is merged in its specifier. Second, this argument must be internally, not externally, merged. This, indeed, is what yields the rebounding effect, ensuring that the meaning of *ko*[- will affect an individual that is already a participant of the main event. Working within the Ramchand (2008) model of thematic raising, Sundaresan thus proposes that the highest argument of the main event in the scope of the Mid head — i.e. the closest DP — is thematically raised to its specifier. In a transitive like (21b), the highest argument is the externally merged DP *Mansi* in Spec-VoiceP. This DP gets an Agent θ -role from Voice and then receives an additional θ -role — namely, a particular type of affectedness role from Mid (see also Wood and Marantz, this volume, for discussion of multiple θ -role assignment with respect to “figure reflexives” in Icelandic). The interpretation of (21b), is that the result state of the event of Mansi pouring milk comes to affect Mansi mentally or physically — and corresponds to the paraphrases given in Readings 1 and 2.⁷ Finally,

⁷As may be deduced from this discussion, *ko*[- attaches to the result state of an eventive verb. The aspectual morpheme that always appears immediately below *ko*[- is involved

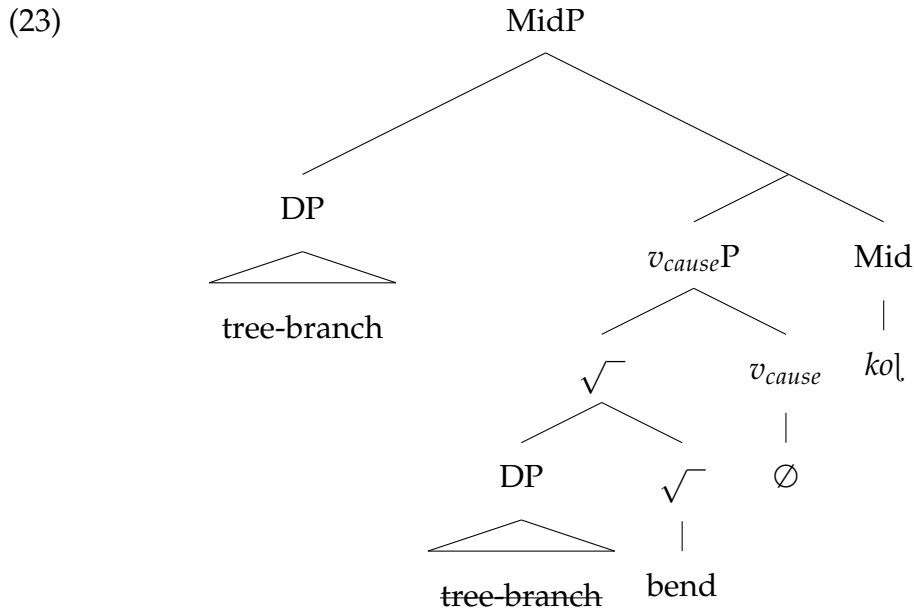
Sundaesan (2012) also argues that this rebounding effect of *ko*l, yielding an affectedness semantics, subsumes the kind of perspective-holding that anaphoric antecedence in Tamil requires, which is why *ko*l is typically required in structures involving co-argument anaphora.

Given this discussion, we can now flesh out the templatic structure for the transitive as follows:



The unaccusative counterpart then looks as follows:

in realizing the relevant resultativity. For further discussion of this and other points and for a formal lexical entry for *ko*l, see Sundaesan (2012).



As described above, the EA in Spec, VoiceP internally merges to Spec, MidP in (22), whereas in (23), it is the internal argument that does so. In both cases, it is the minimally closest DP to Mid that undergoes this movement.⁸

5 A dedicated passive head

As noted at the outset, a number of recent works have proposed that, at least in some languages, there is a dedicated passive head, distinct from and higher in the structure than the head responsible for introducing

⁸Incidentally, Tamil *kol* finds parallels in the middles of languages like Ancient Greek (Elena Anagnostopoulou, p.c.). Anagnostopoulou and Sevdali (2015) report that “[t]he presence of middle morphology... does not signify a change in the argument structure of the verb, but rather the fact that the subject is affected to a greater extent by the action denoted by the predicate” [p. 13] — which seems to closely parallel our own intuitions about *kol*.

the EA (Bruening, 2012; Alexiadou and Doron, 2012; Alexiadou et al., 2015). What Alexiadou et al. (2015) specifically argue is that there are two different ways to construct a passive, exploited crosslinguistically. The passive in Greek simply involves a particular flavor of Voice head, which is agentive but specifierless, thus cannot introduce an EA. The passive of English and German, on the other hand, involves a dedicated Passive head above a specifierless Voice.

Distinguishing two different structures is motivated by a series of empirical differences in passives in these languages. Briefly, the Greek passive is restricted in terms of what verbs it can apply to, the overt realization of the *by*-phrase EA is heavily restricted, and the passive is also morphologically identical to (one class of) inchoatives. The passives of languages like German and English clearly differ on all these points. Alexiadou et al. (2015)'s analysis captures these differences as follows. First, since the Greek 'passive' is localized in Voice, while the English passive is localized further out in Passive, the former is closer to the root and thus can be sensitive to properties of the verb. The English passive, on the other hand, will be sensitive to Voice itself — if a verb can build a transitive with an EA in Spec-VoiceP, it can also form a passive. The inclusion of active Voice internal to the passive structure in English also explains why the passive *by*-phrase seems to be sensitive to the thematic properties of the EA of the corresponding active transitive. As for the morphology, both the Greek passive and the relevant class of inchoatives

simply involve a specifierless Voice head, which is realized as ‘non-active’ morphology. The only difference between them is the agentivity of that head, which itself has no morphological effects. The English passive, on the other hand, has an additional Passive head on top of Voice which is not present in inchoatives, and thus can be expected to have a distinct morphological realization.

Let us consider then, how the Tamil facts fit in against this background. The passive is formed in Tamil by means of an overt suffix *-paɔ-*. Regarding the ability to passivize, there do not seem to be any restrictions like those found in Greek: an initial survey of verbs with meanings like ‘break’, ‘lengthen’, ‘beat’, ‘kick’ and ‘burn’, which resist passivization in Greek, shows that they are all able to passivize in Tamil. There also do not seem to be any parallel restrictions on the θ -role of the Tamil equivalent of *by*-phrases, which is instrumental case marking. Finally, the Tamil passive is clearly distinct morphologically from any class of inchoatives in the language, again having the dedicated marker *paɔ-*. We thus have strong indications that the Tamil passive should be regarded as being of the same type as that in English and German, and distinct from that in Greek.

Even clearer morphological support for the analysis of the Tamil passive in terms of a syntactic head that is distinct from and higher than the head that introduces EAs comes again from the gemination alternation. Consider the passive sentence in (24a):

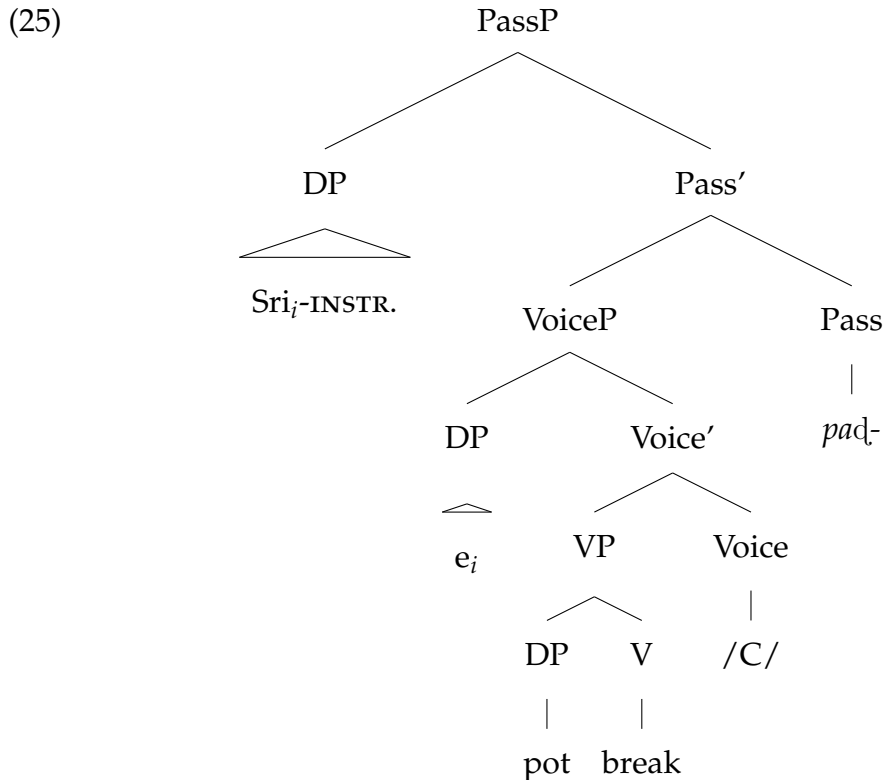
- (24) a. (Sri- aal) paanæ oɖæ- **kkæ-** paɫ- ɫ- adũ.
 (Sri- INSTR.) pot.NOM break- TR.INF- PASS- PST- 3NSG
 ‘The pot was broken (by Sri).’
- b. * (Sri- aal) paanæ oɖæ- **jæ-** paɫ- ɫ- adũ.
 (Sri- INSTR.) pot.NOM break- INTR.INF- PASS- PST- 3NSG

This example is instructive on two points that are relevant for our concerns. First, it shows that the passive suffix has to be added to the specifically transitive alternant of the verb, here *oɖæ-**kkæ-***, while the use of the intransitive stem *oɖæ-**jæ-***, as in (24b) is ungrammatical.⁹ This lends support to the view (espoused by Embick, 2004, , and many others) that passives are more agentive than unaccusatives in a clear sense. The former involve a fundamentally transitive agentive structure, the expression of whose EA is suppressed, while the latter do not have the structure to host an external argument to begin with.

Second, (24a) shows that the passive marker appears *outside* the verbal structure to which the gemination alternation applies, being transparently built on top of the transitive structure, not, so to speak, beneath it. This is most elegantly captured by proposing, in line with the Mirror Principle, that there is a head spelled out by the marker *-paɫ-*, call it ‘Pass’, which is above Voice in the syntactic structure. This results in further articulation in the *v* domain, as illustrated in (25), for the moment setting aside the

⁹Note that the passive additionally involves a suffix (*kkæ-* in 24a) traditionally labelled ‘infinitive’, between *-paɫ-* and the verbal root. As the closest suffix to the root, it happens to be where the gemination alternation is realized with roots like *oɖæ* that can’t host the /C/ themselves. It seems to make at best a limited syntactic and semantic contribution, and may indeed be inserted for purely morphological reasons. We will thus set it aside for the time being, returning to it briefly towards the end of the paper.

Mid head.¹⁰



The evidence adduced by Collins (2005); Bruening (2012); Alexiadou and Doron (2012); Alexiadou et al. (2015) for distinguishing a Pass head from the Voice head was primarily syntactic and semantic, much of it theory internal or based on the need to capture comparative distinctions between languages. The available morphological evidence was at best indirect. What we don't find in the languages they considered is a clear and

¹⁰The correct analysis of where and how the oblique-marked EA is introduced in passives is a matter of debate which we will discuss below, but will not attempt to resolve. For concreteness we are placing it in Spec-PassP here, coindexed with an empty category in Spec-VoiceP to indicate that it corresponds to the DP introduced in Spec-VoiceP in active transitives.

distinct expression for each of the two heads involved, where the lower of the two heads, responsible for introducing EAs, is clearly identifiable in both passive and active transitive sentences. This is precisely what the Tamil data above do provide. We have a suffix *paɖ-* realizing the Pass head, and we have a morpheme /C/ triggering gemination, which we have argued realizes the Voice head that introduces EAs, and appears in both active transitives and passives. The ordering between these morphemes is fixed, showing that the Pass head must occur above the Voice head. These facts make it increasingly difficult to maintain, for languages like Tamil, that a single Voice head is responsible for both the introduction of the EA and passivization.¹¹

6 The full sequence

We have now seen two markers that appear above Voice — middle *koɭ* and passive *paɖ-*, but we have not yet addressed how they interact with each other. One possibility is that they are two competing instantiations of the same structural position. If so, then they should not be able to co-occur. If, instead, they realize distinct positions, then it should be possible to have both *koɭ* and *paɖ* in a single verb form. (26a) demonstrates that the

¹¹An anonymous reviewer sketches a way to analyze the Tamil facts in terms of a single Voice head, by taking the gemination of the transitivity alternation to result from allomorphy of a lower Cause head. We think that this analysis ultimately fails, but considering it in detail turns out to be quite instructive. We will thus return to it below, after presenting the evidence on the interaction of Pass with Mid which is crucial.

latter possibility is the one that obtains:¹²

- (26) a. Taŋŋi Champa- vaal roppi- kko||æ- paɫ- t- adũ.
 water.NOM Champa- INS fill.TR- MID- PASS- PST- 3NSG
 ‘The water was gotten filled by Champa.’ (Roughly)
- b. *Taŋŋi Champa- vaal roppæ- paɫtũ- kko- ŋɖ- adũ.
 water.NOM Champa- INS fill.TR- PASS- MID- PST- 3NSG
 ‘The water was gotten filled by Champa.’ (Intended)

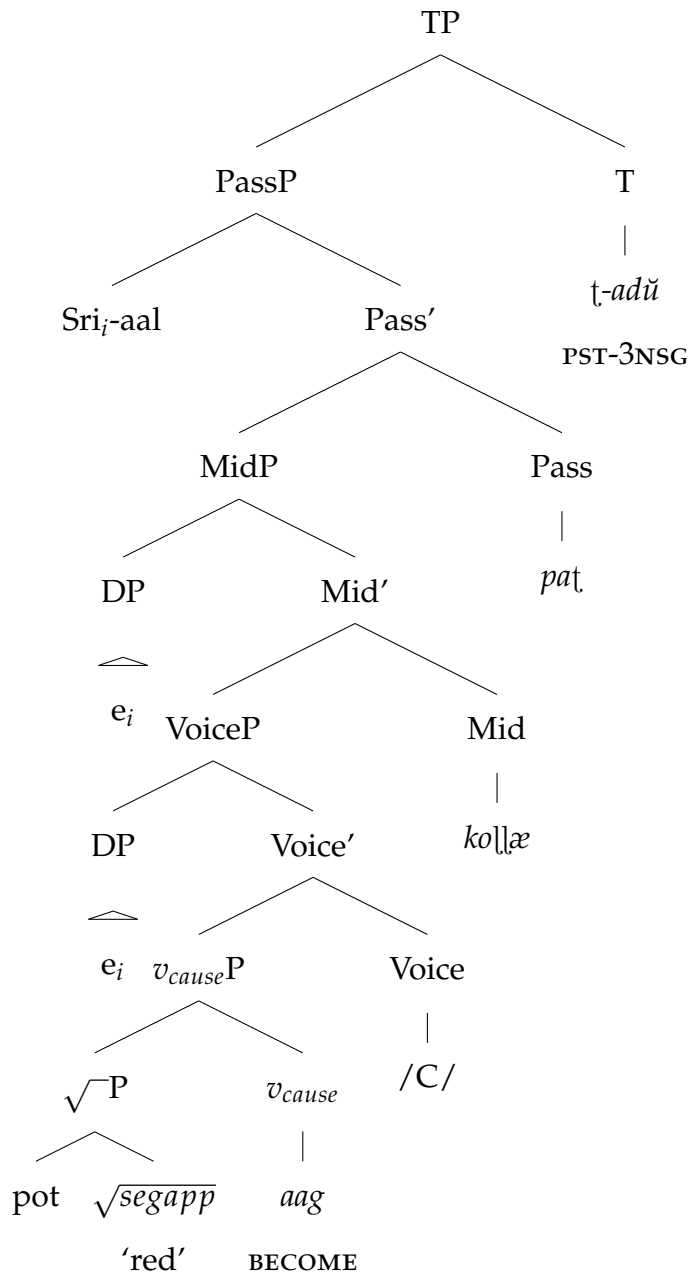
The possibility of (26a) shows clearly that *ko|* and *paɖ* must realize distinct heads in the *v* domain. Furthermore, we see that their relative ordering is fixed: *ko|* must linearly precede *paɖ* as in (26a), never succeed it as in (26b). Again, according to the Mirror Principle this indicates that Pass is higher in the syntactic structure than Mid, which in turn is higher than Voice. We can also build such structures with deadjectival predicates, where we can see the overt realization of the *v_{cause}* head:

- (27) Sri- aal paanæ segapp- aakki- kko||æ- paɫ- t- adũ.
 Sri- INS pot.NOM red- CAUSE.TR- MID- PASS- PST- 3NSG
 ‘The pot was gotten reddened by Sri.’ (rough translation)

We now have a final picture involving the full articulation of the *v* domain, as shown in tree below:

¹²As should be clear from our discussion above, the type of middle formed by *ko|* is not what is sometimes called a ‘dispositional middle’, along the lines of *This butter spreads nicely*. As such, there is no expectation that *ko|* would be incompatible with a *by*-phrase in the passive the way that dispositional middles are, according to Bruening (2012).

(28)



. As we have seen, passives in Tamil obligatorily show the geminated 'transitive' form of the verb, which in our terms means that a Voice head

must be present in the structure. Furthermore, as in most languages, the Agent is typically missing entirely on the surface in the passive, and when it is expressed, it must have oblique, specifically instrumental, case marking. Under theories where a single Voice head is responsible for both passive marking and the introduction of the EA, this pattern presents no special difficulty. But since we are led to posit two distinct heads, we must assume that there is a dependency between them, some property of the Pass head which places requirements on Voice and its specifier, as mentioned briefly above in connection with Alexiadou et al. (2015)'s analysis of the English passive.

There are a number of proposals available for how to deal with this dependency (see e.g. Collins, 2005; Bruening, 2012, , a.o.). At the moment we do not have clear evidence to decide among these and other alternatives (see also Alexiadou et al., 2015, for relevant — and also inconclusive — discussion), so we will restrict ourselves to a few remarks on what the Tamil data can tell us.

Note first that Tamil raises problems for stating the dependency between Pass and Voice as c-selection, as Bruening (2012) essentially does. C-selection obtains under sisterhood, and while VoiceP is often the complement of Pass, we've seen that the MidP of *ko* crucially intervenes when it is present. Nonetheless, the requirement on Voice remains intact, so its implementation must be more indirect, perhaps involving a semantic dependency. An additional fact from Tamil that should ultimately be of

some relevance is that, in the passive, just as in the active transitive, it is the Agent (whether covert or instrumental-marked) that is associated thematically with *ko*], not the Theme. We indicated this in Tree 28 above by putting a second empty category in Spec-MidP which is co-indexed both with the other empty category in Spec-VoiceP and with the overt Agent in Spec-PassP. One way to deal with this would be to say that the EA is introduced in Spec-VoiceP in the passive just as in the active, is then thematically raised to Spec-MidP (when *ko*] is present), and then further to Spec-PassP. However, there is no reason to think that Pass assigns a θ -role of any kind, in particular since Tamil can form passives of unergatives, as in 29.

- (29) Tuuŋg- æ- paɬ- t- adũ.
 sleep- INF- PASS- PST- 3NSG
 'There was sleeping.' (Roughly)

It thus seems unlikely that the properties of the EA in passives can be derived by having it thematically raise to Spec-PassP. Pass thus really seems to be different from the other heads in the sequence, and perhaps plays a more abstract role in manipulating the association of arguments with the event in its scope, along the lines discussed in Bruening (2012).

However exactly the relationship between Pass and EA is to be modelled, the thematic facts relating to *ko*] tell us the following. The argument of Voice and that of Mid are somehow identified with each other before the passive applies. This identified may itself involve thematic raising, as

we have argued, or ‘Delayed Gratification’ as proposed e.g. Wood (2015); Myler (2014). The passive then applies in a sense to *both* Mid and Voice, ensuring that the shared argument of both is realized as an instrumental or not at all.

7 Against two alternative analyses

Now that we have laid out our proposals in full, we can discuss two possible alternatives, one involving fewer functional heads, and the other potential recursion in the functional sequence. The alternatives lead us to consider interesting issues, but we will argue that the analysis we have pursued is ultimately superior to both.

7.1 Against conflating Voice and Pass

As noted briefly above, an anonymous reviewer suggests an alternative analysis which would do without the Voice/Pass split we are proposing here, and maintain a single Voice head.¹³ Abstracting away from the Mid head for the moment, the hierarchy of heads under this alternative would simply be $\text{Voice} > v_{\text{cause}} > \sqrt{\quad}$. Along the lines of Embick (2004), there would be two Voice heads, an active one which introduces a specifier and is itself silent, and a passive one which lacks a specifier and is pronounced

¹³We would like to thank the reviewer for bringing the alternative to our attention and laying out the basics of how it would work.

as *pad*-. Unaccusatives would lack the Voice head altogether. The stem alternation associated with transitivity would be realized on v_{cause} as allomorphy triggered by Voice. Specifically, v_{cause} would be spelled out as the underspecified /C/ when Voice is immediately above, and as /Ø/ otherwise.¹⁴

This alternative gets the basic facts of the transitivity alternation right, as well as its interaction with the passive. Since the passive is realized in the Voice head under this view, and since the transitivity marking in v_{cause} is simply sensitive to the presence of Voice, it correctly models the fact that passives are always based on the ‘transitive’ form of alternating verbs. In this respect, it is on par with the account we have proposed. The apparent advantages it has are two. First, it requires us to posit one functional head fewer, i.e. we need only Voice rather than Pass + Voice, thus it is simpler. Second, since a single head Voice is responsible for both passivization and the appearance of the Agent, the passive variant of Voice need only influence the realization and case-marking of its own specifier.

As such, this alternative is worth considering. We think that the balance of the facts points against it, and in the direction of our analysis, but it will be highly instructive to see why. The first clear disadvantage that the alternative has is the indirectness it is forced to posit for the marking

¹⁴This essentially follows the analysis proposed by Alexiadou et al. (2015) for the alternations in a restricted set of verbs in Germanic like English *rise/raise* and German *versinken/versenken*.

of the transitivity alternation. The gemination of transitives is triggered by the presence of a Voice head, but it is not realized on the Voice head. Rather, it results from allomorphy in the realization of the distinct v_{cause} head, which happens to be sensitive to Voice. We submit that, all other things being equal, an analysis under which the properties of head X affect the realization of X should be preferred over one where the properties of X affect the realization of a distinct head Y. Thus in the absence of good evidence to the contrary, our analysis is preferable, where the syntactic presence of the Voice head is directly visible in the morphology as the gemination triggered by /C/, which is the spell-out of Voice itself.

A second argument comes from the data involving overt causatives formed on non-verbal roots like those in (7a)-(7b), repeated below:

- (30) a. Saṭṭæ segapp- aag- i- ččŭ.
 shirt red- CAUS.INTR- PST- 3NSG
 ‘The shirt became red’
- b. Seetha saṭṭæ- jæ segapp- aakk- in- aa|.
 Seetha shirt- ACC red- CAUS.TR- PST- 1SG
 ‘Seetha made the shirt red.’

According to the reviewer, “[caus.tr] is one morpheme, not two, and since v_{cause} and Voice are adjacent, we cannot decide which of the two realizes the morphology.” The crucial point of our analysis, however, is that *aakk-* in 30b, actually *does* consist of two morphemes — *aag-* plus the gemination-triggering underspecified /C/. If we have two morphemes, then we need two heads. Again, it is natural to take *aag-* to be the re-

alization of v_{cause} , which leads to the conclusion that /C/ cannot be an allomorph of v_{cause} , but rather must be something else. Taking it to be a direct realization of the higher Voice head, as we have been arguing, is only natural then.¹⁵

Potentially even stronger evidence in favor of our analysis comes once we include the Mid head $ko\downarrow$ in our considerations. It is commonly assumed that “Contextual allomorphy is possible only with elements that are concatenated” (Embick, 2010, : 16). It is thus a serious problem for the idea that /C/ is an allomorph of v_{cause} triggered in the presence of Voice, that the Mid head intervenes between the two, and is furthermore overtly realized. Under our analysis, this issue does not arise, since the gemination realizes a dedicated Voice head, independent of the Pass head.

In part to avoid this issue, the reviewer suggests a different analysis of $ko\downarrow$. The starting point is that $ko\downarrow$ is a restructuring verb, and that a clause with $ko\downarrow$ does not constitute a single clausal extended projection or functional sequence, but rather (at least parts of) two: a higher one built on top of $ko\downarrow$, and a lower one which $ko\downarrow$ takes in its complement. This crucially allows for the possibility of two Voice heads showing up in a single clause, with something like the following configuration: Voice > $ko\downarrow$ > Voice > v_{cause} > $\sqrt{\quad}$. The lower Voice is the one responsible for triggering allomorphy of the lower v_{cause} head, and ultimately the geminated

¹⁵It is of course possible to insist that *aag-/aakk-* are two allomorphs of a single morpheme, but this would miss the fact that the alternation is one of gemination — the regular morphophonological alternation that applies to other verbs as well.

form of the verb below. The higher Voice head is the ‘passive’, which is spelled out as *pad-* and is responsible for the suppression of the EA or its realization as an instrumental. This avoids any problems with the locality of allomorphy, since the relevant lower Voice head will be adjacent to the *v_{cause}* head.

However, this move leads to the reviewer’s alternative being distinctly less attractive. Now that the gemination-triggering Voice is separated from the passive Voice, any potential advantages of simplicity are lost. While it is true that the configuration for the triggering of allomorphy can be kept highly local, the need for a further, less local dependency is introduced. The empirical generalization remains that passives require the transitive form of the verb and the suppression or instrumental realization of the EA, even when *ko|* intervenes. In the alternative analysis, this means that the higher passive Voice head has to somehow force the presence of the lower Voice head, and ensure that it has the right properties with respect to its specifier. Note then that this is just the situation that our account finds itself in, due to the separation of Pass from Voice — the Pass head has to require a Voice head below it, and has to prevent the Voice head from introducing a normal DP in its specifier. In the discussion of the simple interactions of passive and transitivity above, we mentioned that it was a potential advantage of the reviewer’s alternative that such a dependency between Pass and the specifier of Voice was unnecessary. We see now, however, that once the full range of data of is

considered, there is no avoiding recognizing a dependency across heads.

In fact, it can be argued that the restructuring alternative not only loses its primary advantage over our analysis, but turns out to be at a disadvantage here. Under our analysis with a single functional sequence, we could state the dependency in terms of the idea that, while certain heads can be left off the top of a functional sequence, ‘truncation from the middle’ is not allowed (e.g. Wurmbrand, 2001). I.e. in the sequence $\text{Pass} > \text{Voice} > v_{\text{cause}}$, it’s possible to leave off Pass, and it’s possible to leave off both Pass and Voice, but it’s not possible to leave off just Voice or just v_{cause} .¹⁶ Such an account is unavailable if we have two distinct functional sequences here.

Thus we can reject the specific proposal that there are two Voice heads to deal with the apparent non-locality of passive and transitivity marking when *kol* intervenes. Nonetheless, the reviewer’s suggestion raises a series of wider questions concerning whether restructuring is involved in the Tamil structures being considered here, and relatedly whether we have recursion of the functional sequence. We turn to a brief discussion of this point below.

¹⁶Of course, something special still needs to be said about the Mid head spelled out as *kol*, which is clearly not subject to this restriction. But this kind of optionality apparently also holds of things like negation and the heads responsible for building perfects and progressives in English. We thus need to distinguish between different kinds of ‘optionality’ of functional heads in the sequence.

7.2 Against restarting the functional sequence

As should be clear from the discussion above, it is highly significant whether the introduction of *kol* (or other morpheme at stake here) ‘restarts’ the functional sequence. We have argued that the *v* layer consists of a series of distinct functional heads in a rigid hierarchy, Pass > Mid > Voice > *v_{cause}*, a claim which can be situated within broadly cartographic notions of clause structure, also including a series of heads for the T and C layers. But of course, if a sentence has two clauses, we do not expect a Pass head of the lower clause to come above a Mid head of the higher clause, because the two clauses involve distinct functional sequences. It thus becomes crucial, if we are considering the possibility that *kol* is a restructuring predicate, whether this means that what comes below it starts a new functional sequence or is simply part of the same one. For these purposes we must distinguish between different types of restructuring predicate.

For concreteness, we adopt Wurmbrand (2001)’s typology and terminology. Wurmbrand makes a major distinction between lexical and functional restructuring predicates. Lexical restructuring predicates (e.g. German *versuchen* ‘try’) are lexical verbs, which take variously reduced clausal structures in their complements. They would thus in our terms involve a restart of the functional sequence, as they constitute instances of things like a V coming above a *vP* or a TP. Functional restructuring predicates, on the other hand, realize functional heads, not lexical heads. Here

there is a further distinction. Purely functional restructuring predicates, e.g. modal verbs, are characterized by not assigning a θ -role, and essentially just amount to functional heads that happen to be realized as separate auxiliaries rather than affixes on the main verb. They thus clearly do not require a restart of the functional sequence, appearing rather in the rigid ordering that that sequence predicts. The final category are the semi-functional restructuring predicates, like certain motion, causative and perception predicates. Wurmbrand argues that these realize functional heads in the v domain (typically pertaining to voice or aspect), but also assign a θ -role to an argument, hence their intermediate status.

As argued by Sundaresan (2012), Tamil *ko* seems to belong in this third category. It looks like a functional head in the v domain, but it assigns a θ -role. Aside from the thematic issue, *ko* doesn't actually display any other properties of being a lexical verb. It appears in a fixed position in the hierarchy of other functional heads in the clause as we have seen, is a closed class item, and is unable to appear as an independent verb.¹⁷ The question then is whether such semi-functional restructuring predicates in general, and *ko* in particular, involve a restart of the functional sequence. In fact, Sundaresan (2012) does suggest that *ko* involves such a restart, but the evidence for this was limited to one observation. Specifically, the

¹⁷Historically, *ko* is the descendant of an independent verb meaning roughly 'hold' in older stages of the language (Krishnamurti, 2003, : 463). It is thus quite likely that *ko* went through an intermediate stage when it could serve as a lexical restructuring verb, on its way to grammaticalizing as a functional head.

same morphophonological ‘past tense’ marker (with a wide array of allomorphs can appear both above and below *ko* in a single clause. However, while the morphosyntax of these markers is notoriously difficult (Amritavalli and Jayaseelan, 2005), there is actually good reason to think that they realize distinct functional heads when they occur twice in a single clause. As Sundaresan (2012) shows, the ‘past’ marker below *ko* instantiates a stative resultative, and thus should be seen as the realization of an aspect head. The outer ‘past’ marker that comes above *ko* behaves more like a true past tense, and thus plausibly occupies T. If this is on the right track, the repeated ‘past’ markers don’t actually constitute evidence for a restart of the functional sequence. Aside from this, we are not aware of any other evidence that would point in that direction. We have no evidence that any other functional elements can be repeated, there is no possibility of multiple clausal negation, and no perceivable syntactic opacity effects.

There is still much left to investigate, in particular the details of the other bits of morphology that often intervene between the heads we have been concerned with here. In addition to the aspectual marking below *ko*, this includes the ‘infinitive’ marking below passive *pa*-. If it turns out that this verbal region at least sometimes involves a restart of the functional sequence, we might expect to find evidence for it here, especially if these bits of morphology can be tied to more substantive syntactic or semantic properties. At least preliminarily, this seems less likely for the

‘infinitive’ suffix, which shows up in a number of distinct contexts involving complex verb forms, with no clearly identifiable semantic or syntactic contribution. Thus it remains an open question whether it is the realization of an actual syntactic head, or is inserted for purely morphological reasons. It is important here again to distinguish between the synchronic status of these elements and their likely historical sources. Pending further work on the subject, we thus maintain the position that the structures we have been considering all involve a single functional sequence and thus give us clear evidence on the make-up of the *v* domain.

A less obvious question is how the sequence we have suggested here for the verbal domain is meant to play out crosslinguistically. The most stringent hypothesis would be to claim that the full functional sequence: Pass(ive) > Mid(dle) > Voice > v_{cause} > $\sqrt{\quad}$ — is represented as such in every language. A less stringent, and potentially more plausible, hypothesis might be that along the lines suggested in Harley (this volume). In some languages (i.e. those that show overt evidence for it, like Tamil), the full sequence of heads might be attested; others might be “bundling” languages (Pylkkänen, 2008), with multiple functions being encoded/spelled out on a single head. The choice between these two alternatives should, ultimately, be an empirical one, and is a matter for future research.

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