Why do some ECM verbs resist passivisation? A phase- based explanation[*]

Michelle Sheehan & Sonia Cyrino

Anglia Ruskin University, University of Campinas

1.   Introduction

In many languages, causative/perception verbs resist passivisation, as shown in (1), for English and (2), for Brazilian Portuguese (henceforth, BP) (see also Higginbotham 1983, Folli and Harley 2007, Hornstein, Nunes and Martins 2010):

(1)   a.   *She was let/had/made/seen/heard leave the room.
        b.   She was seen/heard/made to leave the room.

(2)   Os meninos foram *feitos/*vistos/ mandados/ deixados sair.
        the boys   were   made/ seen/   had   let   leave
        Lit. 'The boys were had/let (to) leave.'

We claim that the problem in (1a)/(2) is that the complement of the matrix verb is a phase, lacking any T-related projection. Adopting the Phase Impenetrability Condition version 2 (PIC2) (Chomsky 2001) and assuming that A-movement cannot proceed through the phase edge, it follows that the arguments of the embedded verb are not visible to matrix T by the time it probes. Where passivisation is possible, however, in (1b)/(2), the complement contains a T-related projection bearing an EPP which provides an escape route from the lower phase: the subject of the embedded verb moves out of the lower phase to spec TP, from which it is visible to matrix T.

       Our paper is organized as follows. Section 1 reviews complementation with causative/perception verbs in English and BP. In section 2, we propose that these complements are of size differences, using evidence from auxiliary verbs and temporal reference. This leads us, in

section 3, to generalisation regarding passivisation. Section 4 provides a phase-base analysis of this generalisation and sketches some broader cross-linguistic implications.

2.   Causatives/perception verbs in English and in BP

Verbs of perception, like some causatives/permissives, permit 'bare verbal complements' in English (see Declerck 1981; Higginbotham 1983; Mittwoch 1990; Felser 1998, 1999 on perception verbs; Ritter and Rosen 1993, 1997, on causatives), as seen below:

(3)   a.   We saw/watched/heard/noticed [the boy fall].
         b.   We had/made/let/helped [the boy fall].

These verbs also permit different kinds of non-finite complements:

(4)   a.   I had/saw/watched/heard/listened to [him singing for ten minutes].
         b.   I had/saw/heard [the national anthem sung by my team].
         c.   I saw/heard [him to be a nice person].

The bare verbal complements in (3) have obligatory subjects (5a), but ban complementisers (5b), high adverbials and modals (5c), require temporal simultaneity and are eventive (5d,e) (see Mittwoch 1990, Felser 1998, 2000, Pires 2006, Ritter and Rosen 1993, Myler 2014):

(5)   a.   *I had/made/saw/heard PRO sing the song.
         b.   *I had/made/saw/heard for him buy some flowers.
         c.   *We had/made/saw/heard regrettably John walk away.
         d.   #Yesterday I had/made/saw/heard him leave this morning.
         e.   #I saw the lamp stand in the corner.

The patterns in (5) suggest that these complements are as big as vP but smaller than TP.
     A slightly different picture is seen in BP. Unlike European Portuguese, BP lacks *faire-infinitif* and *faire- par* causatives and makes greater use of ECM with these verbs (Cyrino 2010a, b; Bonfim and Salles 2016, Sheehan and Cyrino 2016):

(6)   A   Maria fez/   mandou/deixou/viu/ ouviu [os meninos cantar a   música].
         the Maria made/ had/   let/   saw/ heard the boys   sing   the music
         'Maria made/had/let/saw/heard the boys sing the song.'

Where the causee is 1st/2nd person, we can see from the clitics that it receives accusative case, but this is not possible with 3rd person causees, as BP lacks 3rd person clitics. A complication is that inflected infinitives are also allowed in this context, but these behave like full CPs in permitting topicalization (7) and lacking selectional restrictions (8), unlike ECM complements:

(7)   Eu fiz,   a   água, todas as   meninas beber*(em).
         I   made the water all   the girls   drink.INF(.3PL)
         'The water, I made all the girls drink.'

(8) a. Eu mandei as madeiras chegar*(em) cedo.
        I had the logs arrive.INF(.3PL) early

    b. Eu mandei que as madeiras chegassem cedo.
        I had that the logs arrived early
        'I had the logs arrive early.'

Inflected infinitival complements are also incompatible with passivisation, as seen in (9):

(9) Os meninos foram mandados/deixados sair(*em).
     the boys were had/let leave.3PL
     'The boys were ordered to leave.'

Note, finally, that uninflected complements do not involve object control, as shown in (10):

(10) a. O que eu mandei/ deixei foi [os meninos ir embora].
          the that I had/   let   was the boys   go away

     b. *O que eu persuadi/ convenci foi os meninos ir embora.
          the that I persuaded/ convinced was the boys   go away

As a result, we can conclude that inflected infinitival complements are full CPs, whereas bare infinitival complements are smaller and involve ECM.

3.   Size differences

The distribution of auxiliary verbs and temporal modification shows that ECM complements of causatives/perception verbs are of different sizes both within and across languages. Adopting the approach to auxiliaries in Adger (2003); Bjorkman (2011), we can use their distribution to diagnose complement size: the possibility of a given auxiliary implies the possibility of that v-related projection. As seen in (11), passive auxiliaries are possible in all of these bare ECM complements in English and BP, meaning these complements are at least as large as voicePs:

(11) a. I made/had/let/saw/heard the teachers be fired.

     b. Eu fiz/   mandei/ deixei/ vi/ ouvi os professores ser despedidos.
         I   made/ had/   let/   saw/heard the teachers   be fired
         'I made/had/let/saw/heard the teachers be fired.'

Progressive auxiliaries (prog), on the other hand are not possible with verbs of perception, but may occur with all causatives/permissives in both languages:

(12) a. I made/?had/?let/*saw/*heard the kids be reading when the head was due to visit.

     b. Eu fiz/   mandei/ ?deixei/ *vi/ *ouvi as   meninas estar lendo
         I   made/had/   let/   saw/ heard the girls   be   reading

> na   hora em que o   diretor chegasse.
> in.the hour in   that the head   arrived

Only *make* marginally allows the perfective auxiliary *have* (perf) in English:

(13)   I ??made/*had/*let/*saw my students have read that paper before the seminar.

In BP, however, *fazer* 'make', *mandar* 'have' and *deixar* 'let' permit the perfective auxiliary *ter* (perf) more easily:

(14)   Eu fiz/ mandei/ deixei/*vi/ *ouvi as meninas ter   lido aquele livro
        I   made/had/   let/ saw/ heard the girls   have read that   book
        antes de a   gente se encontrar.
        before of the people SE meet
        lit. 'I made/had/let/*saw/*heard the girls have read that book before we met.

Moreover, *mandar* 'haver'/*deixar* 'let' can take complements with independent temporal reference:

(15)   Ontem   o   Pedro deixou/ mandou/ *fez/ *viu [as   crianças viajar amanhã].
        Yesterday the   Pedro let   had   made saw   the children travel tomorrow
        'Yesterday Pedro let/had the children travel tomorrow.'

Independent temporal reference seems to be connected to complement size. Where *fazer* 'make' takes a finite clause (16), independent temporal modification is fully acceptable. The same can be said of English (17):

(16)   Ontem   a   Maria fez [com que   o   marido   viajasse amanhã].
        Yesterday the Maria made with that the   husband   travel   tomorrow
        'Yesterday Maria made it so that her husband would travel tomorrow.'

(17)   Yesterday I heard [that John will leave tomorrow].

In English, ECM complements containing 'to' also often permit independent temporal reference:

(18)   Yesterday, John expected/required [Mary to leave tomorrow].

Following Wurmbrand (2014), we assume that independent temporal reference indicates the presence of a covert future modal *woll*, which is not in the vP extended projection but it is a T-related head: where the complement of a causative/perception verb is smaller than wollP, temporal simultaneity results (see also Higginbotham 1983, Mittwoch 1990, Ramchand 2011) leading to veridicality of the embedded situation/event (Barwise 1981):

(19)   a.   *Yesterday I had/made/saw/heard him leave this morning.   (no wollP)
        b.   John saw/had the director be fired, #but he wasn't.   (no wollP)

This is because two eventive vP projections are both anchored to the same TP. Complements containing wollP behave differently: independent temporal reference is possible, as per (15), and veridicality also fails, as shown by (20):

(20) Eu mandei/ *fiz/ *vi as crianças estudar o   livro mas elas não fizeram isso
      I   had/   made/ saw the kids   study the book but they not did   this
      'I had/let/made/saw the kids study the book, but they didn't do it.'

In sum, we have seen that bare verbal ECM complements can be of differing sizes within and across languages. In the following sections, we argue that these differences can explain differences regarding the availability of passivisation.

3. The connection with passivisation

The following provides a summary bare verbal complementation in English and BP:

(21) a. see/hear/*ver 'see'/ouvir* 'hear'   [$_{voiceP}$ voice [$_{vP}$ vP]]
      b. let/have   [$_{ProgP}$ prog [$_{voiceP}$ voice [$_{vP}$ vP]]]
      c. make/*fazer* 'make'   [$_{PerfP}$ Perf [$_{ProgP}$ prog [$_{voiceP}$ voice [$_{vP}$ vP]]]]
      d. *mandar* 'have'/*deixar* 'let'

                   [$_{wollP}$ woll [$_{PerfP}$ Perf [$_{ProgP}$ prog [$_{voiceP}$ voice [$_{vP}$ vP]]]]]

Of all these complements, only (21d) permits passivisation.

(22) Os meninos foram mandados/deixados comer todo o lanche
      the boys were had/let eat all the snack
      'The boys were made/allowed to eat the whole snack.'

This contrast follows, we propose, from phase theory.
     We adopt the proposal that progP/voiceP is the highest v-related phase in English and BP, based on evidence from 'VP-ellipsis' and 'VP-fronting' (see Harwood 2015, Ramchand and Svenonius 2014, Wurmbrand 2012b, Aelbrecht and Harwood 2015). This entails a dynamic approach to phase-head status (following Bobaljik and Wurmbrand 2005; Bošković 2014), so that voice is a phase head in the absence of prog, but prog becomes the phase head where present. This means that all causative/perception verbs except BP *mandar/deixar* (21d) select a complement which contains a v-related phase but lacks any T-related projection. It is this fact, we claim, which rules out passivisation. Both English and BP have an EPP feature/requirement which forces subjects to raise to spec TP. Where T is lacking, however, the subject requirement also fails to be present and it is this fact that explains the difference between (21d) and (21a-c).
     We adopt the less strict version of phasal transfer labelled PIC2. PIC2 differs from the Phase Impenetrability Condition version 1 (PIC1, Chomsky 2000) in providing a 'window of opportunity' after the construction of the v-related phase during which A-movement can take place (before the next phase head is merged). This window of opportunity means that we don't need to posit A-movement through the phase edge, even if we accept the evidence that progP/voiceP is a phase in passive/unaccusative contexts (Legate 2003). In all such cases, internal/external

arguments can raise directly to spec TP over an intervening **voice** phase head. Under the stricter PIC1, this movement would need to proceed through the phase edge, as the complement of voice would be transferred as soon as voice's edge features have been satisfied. The frequent ban on passivisation of causative/perception verbs provides string evidence against PIC1 and in favour of PIC2.

What is special about (21a-c), in these terms, is that they involve A-movement crossing two **voice** phase heads, without any intervening T-related head:

(23)   *[TP DP$_i$ T [voiceP **voice** [vP v [voiceP **voice** [~~vP~~ ~~t$_i$~~ ~~v~~ [~~vP~~ ~~V DP~~]]]]]]

That this kind of movement is ruled out follows, given the version of phases that we have outlined, if A-movement does not have access to phase-edge escape hatches. In the following section, we give a derivation for active and passive ECM complements of different sizes to show how this effect arises and why other types of complements fail to block passivisation.

4.   Derivation of active/passive ECM contexts

ECM involves raising to object (Postal 1974, Johnson 1991, Lasnik 2001), as shown in (24):

(24)   Mary made John$_i$ out [t$_i$ to be a fool].   (Johnson 1991)

Let us assume that, in active contexts, the highest argument of the non-finite complement raises to matrix spec vP in connection with accusative case assignment in both languages (see (25a)). This derives the correct word order without the need to stipulate an EPP on embedded voice:

(25)   a.   *Tree of active derivation*   b.   *Tree of passive derivation*
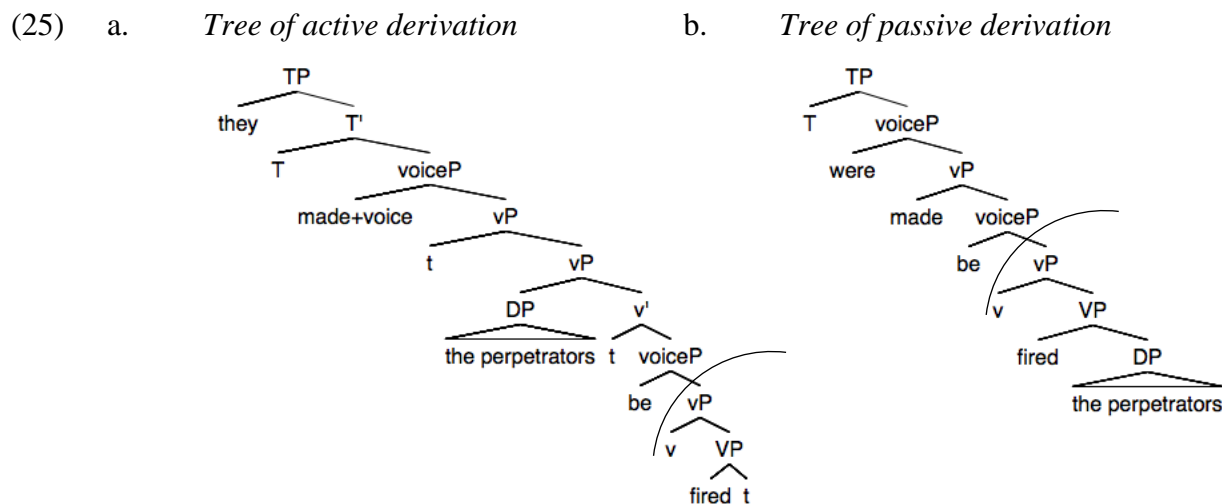
In passive contexts, (25b), however, there is no movement of the embedded subject to spec vP as there is no accusative case. This means that all arguments of the lower verb are spelled out before matrix T probes, ruling out passivisation. The reason why *mandar/deixar* allow passivisation in BP is because they take a larger wollP complement, where woll is a T-related head with an EPP feature. The presence of this EPP feature means that the highest argument of the embedded clause raises to spec wollP, escaping the lower v-related phase:

(26)   *Tree of passive derivation with wollP complement*

The crucial point about (26) is that *os meninos* 'the boys' raises to spec wollP before matrix T probes. This is the reason why larger ECM complements in English also permit passivisation. Experiencer verbs of perception permit to-infinitival complements in cases of indirect perception and these can undergo passivisation, precisely because they are TPs:

(27)   She was made/seen/heard [TP to be the best candidate].

This is also possible as a repair mechanism with *make* but not *let/have* in English. *Make* is exceptional in that it does not allow TP complements in the active. It appears to be a member of the *wager* class, allowing ECM with a TP complement only where the ECM-marked argument is a trace (David Pesetsky, personal communication):

(28)   ?Mary, who I made to leave the room early, didn't make a fuss.

    Note that verbs of perception/causation also permit passivisation where they function as transitive verbs or take non-verbal small clauses or gerunds (in both BP and English):

(29)   a.   *Kim_i was made/had/let seen/heard [t_i sing]
        b.   [Many films]$_i$ have been seen/watched t_i in this cinema.
        c. Sam_i was made [t_i angry] by the news.
        d.   Kim was seen/heard [t_i singing].

This is further evidence that the ungrammaticality of (29a) has a structural explanation. On the current approach, (29b-c) pose no problem as only a single phase head intervenes between T and its goal, taking non-verbal small clauses to be non-phasal as they lack voice and prog. The grammaticality of (29d) and its BP counterpart is, however, more challenging.
    We note that these gerundive complements have two possible structures:

(30)   a.   Kim was heard [t_i singing]   gerund and DP form constituent

b.   Kim$_i$ was heard t$_i$ [PRO singing]   gerund is depictive

These gerundive complements do not behave like ECM complements, unlike their bare verbal counterparts. They can stand alone as answers, and be clefted, for example:

(31)   a.   What did you hear?
        b.   Kim sing*(ing) in the shower.
        c.   Kim sing*(ing) in the shower is what I heard.
        d.   What I heard was Kim sing*(ing) in the shower.

It is therefore doubly unsurprising that unambiguous clausal gerundive complements cannot be passivised (Borgonovo 1996):

(33)   a.   I saw it raining this morning.
        b.   *It was seen raining this morning.   (Borgonovo 1996:8)

(34)   a.   I can see there being several possible solutions.
        b.   *There can be seen being several possible solutions.

Compare this with parallel (uncontroversial) ECM contexts, in which passivisation is possible:

(35)   a.   I expect it to rain.
        b.   It is expected to rain.

(36)   a.   I expect there to be a solution.
        b.   There is expected to be a solution.

The implication is that examples like (29d) (and their BP equivalents) involve passivisation of a simple transitive verb with a gerundive depictive. They are not, therefore, problematic for the analysis put forth here. There are no gerundive ECM complements, and certainly none that are compatible with passivisation.

5.   Conclusions

In this paper we have showed that ECM complements can be passivized only where they include a T-related projection. This has been shown to follow from a version of phase theory if:

        (i) the v-related phase is progP/voiceP
        (ii) we adopt PIC2 and Legate's proposal that passives/unaccusatives are also phasal
        (iii) A-movement does not have access to phase edge escape hatches.

If A-movement could proceed through the phase edge, then it would be able to escape phasal complements in all contexts, contrary to what we observe. Rather, what we see is a trapping effect, wherever a phasal complement is embedded without any T-related projection. The reason that this

effect is observed so often with causative/perception verbs is, we propose, because these verbs (can) often select eventive complements, which are syntactically realized without a T-projection, leading to event simultaneity with the main clause.

Previous analyses of this passivisation ban have attributed it variously to (a) a morphological filter (Williams 1983, Felser 1999); (b) a restriction on the binding of variables at LF (Higginbotham 1983); (c) the functional status of these verbs (Folli and Harley 2007); or (d) a Case-licensing problem (Hornstein, Nunes and Martins 2010). The current proposal has the advantage of providing a principled a non-language-specific account of the effect which can also accommodate variation across languages. In BP, for example, the verbs which permit passivisation have been shown to have subtly different syntax/semantics from their English counterparts resulting in structural differences. Further work is needed to ascertain whether the account extends to other languages, for example the many ECM complements which resist passivisation in other Romance and Germanic languages. In fact, this effect is not limited to ECM environments. *Faire-infinitif* complements also resist passivisation in French Spanish, and Italian (with some complications – see Folli and Harley 2007). Looking further afield, Japanese and Korean also seem to show a similar ban, despite having morphological causatives (Harley 2017). Only an in-depth analysis of these languages will reveal whether a unified phase-based account is possible.

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Michelle Sheehan, Sonia Cyrino
Michelle.sheehan@anglia.ac.uk, cyrino@g.unicamp.br