The interaction of Th/Ex and Locative Inversion

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In English expletive constructions involving passive participles, the (highest) object surfaces in the pre-participial position (1)b, rather than the post-participial one generally expected from the right-branching structure of the language and indicated by active constructions such as (1)a. Following Chomsky 2001, I refer to the pre-participial position as the *Th(ematization)/Ex(traction) position*, and the movement if there is one as *Th/Ex.*¹ The proper analysis of Th/Ex plays a crucial role in recent discussion of phases (Chomsky 2001:19ff., Svenonius 2000, Holmberg 2002), which harks back to its earlier role in the discussion of cyclicity (see Milsark 1974:173ff., 235n6, and references); of the EPP and spec-head agreement (Lasnik 1992, 1999: chapter 4, Holmberg 1994, 2002); and of the analysis of expletive constructions (Milsark 1974, Burzio 1986:154-8, Law 1999, Boeckx 1999, Caponigro and Schütze 2003, among others).

- (1) a. Kate has $\langle *three fish \rangle$ caught $\langle three fish \rangle$ in the lake.
 - b. There were $\langle \underline{\text{three fish}} \rangle$ caught $\langle \text{*three fish} \rangle$ in the lake. Th/Ex

In this squib I draw attention to (2), where both (2)a and (2)b contain a passive participles PRT_{pass}, (2)a in the *passive expletive construction* or PEC and (2)b in *locative inversion* or LI on a passive. Both involve PRT_{pass}, but Th/Ex only occurs in the PEC.

- (2) a. There were $\langle \text{three fish} \rangle$ caught $\langle \text{*three fish} \rangle$ in the lake. Th/Ex
 - b. In the lake were $\langle *three fish \rangle$ caught $\langle three fish \rangle$. *Th/Ex

This paradigm is crucial to understanding Th/Ex, because it requires an analysis where Th/Ex is sensitive to the derivation resulting in LI. It therefore affects three recent approaches. First, it is difficult to capture for analyses which assimilate expletive constructions and LI, whether they treat the expletive as an inverted locative (Hoekstra and Mulder 1990), or by posit a covert expletive in LI; this is section 2. Second, it can be used to show that Th/Ex is not the regular object position which is masked in (1)a by participle raising (Boeckx 1999, Caponigro and Schütze 2003); this is section 3, which also argues that (2) does not have an easy analysis in terms of PRT_{pass} raising higher in (2)b than in (2)a. Finally, section 4 shows that it is difficult to differentiate (2)a from (2)b if Th/Ex is an operation of the phonological component (Chomsky 2001). A successful account of (2) seems rather to require that the Th/Ex position is a derived A-position, as in Lasnik 1999:chapter 4 or Holmberg 1994, 2002, which comes to be occupied by the PP in the derivation of LI in (2)b. I start with such an account in section 1.

Before proceeding, I set out the assumption that the PEC is a verbal (presentational) construction formed on PRT_{pass} as its lexical core, (3)a (omitting irrelevant structure), rather than an ontological (existential) expletive construction of the type *there be DP* where PRT_{pass} heads a reduced relative clause modifying the DP, (3)b. The latter position is taken by Williams (1984), McNally (1992), and Law (1999), and it is certainly clear that it is one possible analysis of (2)a. However, it has been shown that the verbal analysis must exist as well. The arguments are based on contrasts between the PEC and real relative clauses. Milsark (1974:70), Lasnik (1999:90), and Chomsky (2001:25f.) show that that adjunct and PP extraction out of the PECs is fine, (4)a, (4)b.² Chomsky

(2001:25f.) shows the existence of the DP is entailed in the ontological expletive construction but not in the PEC, which also means that idiom chunks are allowed in the latter that cannot head relatives, (4)c. Milsark (1974:77ff.) and Caponigro and Schütze (2003:303) show that only PECs are compatible with an eventive interpretation, (4)d.

- (3) a. Passive expletive construction: [TP there BE_{auxiliary} [DP_i [PrtP PRT t_i]]]
 - b. Ontological expletive construction: [TP there BE_{copula} [DP NP_i [RC OP_i PRT t_i]]]
- (4) a. To whom was there a present (*which was) given t?
 - b. (?)How were there some men (*which were) arrested *t*?
 - c. There were tabs (*which were) (being) kept on Kate.
 - d. There have just been several fish (*which were) caught.

1 Accounting for the contrast

An account (2) presupposes a theory of LI. I assume the analysis of Collins (1997:26ff.) and Culicover and Levine (2001), summarized in (5), ignoring further functional categories such as v between T and V: (i) the base-generated order is DP > PP, and (ii) the PP raises to [Spec, TP] by A-movement over the DP, which is permitted because in their base-generated positions the two are in the same minimal domain (equidistant).

- (5) a. Canonical order: $[TP DP_i [T [VP t_i [V PP]]]]$
 - b. Locative inversion: $[_{TP} PP_i [T [_{VP} DP [V t_i]]]]$

One basis for (5) are A-positions available for quantifier-variable binding, under the assumptions that a quantifier must be in an A-position c-commanding a variable to bind it without weak cross-over (WCO), and that A-positions can be reconstructed into for

binding (cf. note 3). Culicover and Levine (2001:290) use examples like (6)a to show that the PP has an A-position above the DP only under LI, and not if it topicalizes over the DP in [Spec, TP], which results in WCO. As for A-positions then, without LI the PP does not c-command the DP, but it does under LI. Data like (6)b support this: in non-inverted constructions, the subject has no A-position below the PP to reconstruct into.³ These facts are captured by (5). The expletive constructions (6)c let the posited in-situ order surface.

- (6) a. Next to none of the winning $dogs_i \langle *its_i owner \rangle stood \langle its_i owner \rangle$.
 - b. (The daughter of) the/*its_i owner stood next to most/none of the winning dogs.
 - c. [TP there T [ν P [ν stood]+ ν [ν P (someone) [ν P to in the garden (*someone)]]]].

Further, essentially following Bresnan 1994, I assume that the PP must eventually end up in an Ā-position, by default topic if it is not *wh* or Op, since it is not tolerated in *for-to* or ECM infinitives (Bresnan 1994:108, Culicover and Levine 2001:296ff.) and interferes with other Ā-extraction (Bresnan 1994:87f., 105ff.), like an Ā-intervener. Arguably, this comes about because staying in-situ in LI forces the DP to become focus (Bresnan 1994:85ff.), and so ultimately needed for proper interpretation. Since independently the Th/Ex positions is not accessible to Ā-extraction (section 4), if the PP does not stay insitu it must move all the way to [Spec, TP] so it can enter the Ā-system, and cannot have the Th/Ex position as its final A-position.

The account I propose for the paradigm in (2) can now be given:

- (7) a. The Th/Ex position is a derived A-position below [Spec, TP], obligatorily projected in the structure containing the passive participle PRT_{pass}.
 - b. The *there* expletive is base-generated in [Spec, TP].

c. Locality of the A-system ensures that once a derived A-position τ is reached by α , α cannot be crossed by A-movement of a distinct β .

For (7)a I follow Lasnik (1999:chapter 4) and Holmberg (1994, 2002). (7)b is the classical treatment of *there* expletives (Burzio 1986:chapter 2, Chomsky 1981:260ff.). The fact that *there* cannot fill the Th/Ex position is analogous to the fact that in the Scandinavian languages with Object Shift, the expletive(s) cannot fill this position to form expletive-object associate constructions, and in Icelandic with furthermore a low derived subject position, the expletive $pa\delta$ does not fill it to block multiple subject constructions. These issues are addressed and derived in Chomsky (1995:362-7) from interpretability conditions. Here a weaker assumption along those lines suffices: suppose that derived A-positions, except the special [Spec, TP] enforced by the classical EPP, must be filled with something with more than PF content, and *there* has no more. (7)c follows from locality if τ is outside the minimal domain of V. It independently required to keep the accounts of (6): If the PP could first move into τ and the DP cross over it to [Spec, TP], PP in τ could bind into the base-generation position of the DP without LI.

Consider now how these assumptions derive (2). In both cases, PRT_{pass} entails projection of the Th/Ex position. The expletive cannot fill it because it is base-generated in [Spec, TP]. Thus, the DP moves to occupy it, giving (2)a; the PP cannot, because it must reach an \bar{A} -position as discussed above. In the passive LI construction, either the DP or the PP can move through equidistance. However, once Th/Ex is filled by α , it is α that must move to [Spec, TP] by locality. Thus in order for the PP to end up in [Spec, TP] in LI, it must also fill Th/Ex. The DP will stay in the post-participial position, giving (2)b.

In this account, distinguishing (2)a and (2)b relies on the assumptions that the Th/Ex position is not always filled by the object, and that the expletive and a PP argument can be differentiated in their potential to occupy it. These is consonant with such theories of expletive constructions and the Th/Ex position as Lasnik (1999:chapter 4), Chomsky (1995, 2000), and Holmberg (2002), but with others, for which (2) is problematic.

2 Against there as an inverted predicate

Hoekstra and Mulder (1990) present an influential account of various constructions as the fronting of the predicate head of a small-clause SC complement of a verb over the SC's DP subject, (8). It subsumes LI, predicate inversion, and expletive constructions.

- (8) a. Canonical construction: [TP DP_{Subj} T [VP V [SC t_{Subj} [XP there/PP/DP]_{Pred}]]]
 - b. Inversion construction: $[_{TP} [_{XP} there/PP/DP]_{Pred} T [_{VP} V [_{SC} DP_{Subi} t_{Pred}]]]$

In the case of verbal passives, the input to both LI and existential constructions would have the format in (9). Th/Ex needs additional structure. The challenge (2) poses for such approaches is this: since both *there* and the PP in LI stand in the same relationship locally to *caught* and *several fish*, and both undergo A-movement to [Spec, TP], it is difficult find a difference in the derivations so that *several fish* undergoes Th/Ex in expletive "inversion" but not locative inversion. This becomes more acute to the extent that *there* is treated as a PP. For example, in Belvin and Den Dikken's (1997) application of expletive inversion to verbal constructions, (2) looks broadly as (10), modulo Th/Ex.

- (9) $[_{TP} _ [_{T'} \text{ were } [_{VP} \text{ caught } [_{SC} \text{ [several fish}]_{Subj} [_{Pred} \text{ there/in the lake}]]]]]$
- (10) a. $[TP]_{PP}$ there $[T]_{i}$ were $[SC]_{\alpha P}$ caught several fish in the lake $[T]_{i}$

There are independent problems for fully assimilating expletive constructions and LI, such as the compatibility of the former but not the latter with non-finite structures. For different reasons, Moro (1997) in his analysis of expletives inverted predicate DPs rejects treating LI as inversion (p. 289n12). An alternative extrapolated along the lines he suggests is (11)b, where the PP is in higher position and a *pro* pro-predicate, the null analogue of *there*, inverts to fill [Spec, TP]. Regardless of the accuracy of the extrapolation, (11) is independently useful in showing how the problem of accounting for (2) arises for hypotheses where LI involves a null *there* expletive (see Bresnan 1994:96ff. for review); here also it seems that the PEC and LI are not adequately distinguished.

- (11) a. $[TP [DP there_i] [T' were [[\alpha P several fish caught] t_i]]]$
 - b. [[PP] in the lake [PP] [PP] in the lake [PP] [PP] were [PP] several fish caught [PP] [PP] in the lake [PP] [PP] were [PP] [PP] in the lake [PP] [PP] [PP] in the lake [PP] [PP] [PP] in the lake [PP] [

None of the expletive inversion proposals familiar to me are specifically designed to deal with Th/Ex. Their success lies in treating ontological *there be DP* constructions, which differ in other properties: they have existential import and allow \bar{A} -extraction of the associate. (2) raises grave problems for extensions to verbal expletive constructions.

3 Participle raising

Caponigro and Schütze (2003) show that the English active participle PRT_{act} is higher than the passive participle PRT_{pass} from the fact that the PRT_{act} cannot and PRT_{pass} can follow a low adverbs like *poorly*. They deploy this difference to treat Th/Ex as the regular object position in all constructions, which becomes masked in active expletive

constructions by PRT_{act} raising past it. Specifically, in (13)b, the object is always in [Spec, Agr_OP], PRT_{pass} stays in-situ in V, and PRT_{act} raises to Voice. Crucial features of this approach also characterize Boeckx 1999, where [NP-PRT_{pass}] is the base order.⁵

- (12) a. There have (*many typhoons) arisen (many typhoons) in the Pacific this year.
 - b. [IP [VoiceP [Voice [AgrOP [**DP**_i AgrO [VP V t_i]]]]]

Similarly for (2), one could assume that PRT_{pass} raises higher in LI than in the PEC, perhaps to check a [+LOC] feature against the PP (cf. Freeze 1992). However, this is specious, since no adverbs differentiate PRT_{pass} heights here (cf. (13)). If PRT_{pass} is always in the same position, then (2) shows that only in the PEC does the object undergo Th/Ex, independently of the height difference between PRT_{act} and PRT_{pass} .

- (13) a. There had been $\langle *poorly \rangle$ many houses $\langle poorly \rangle$ built in this area.
 - b. In this area had been (*poorly) many houses (poorly) built.

This argument can be supported by one of a quite different type. PECs are compatible with ditransitives, (14)a; however, as Bresnan (1994:79n9) observes, passives of the applicative (double object) construction are incompatible with LI, (14)b.

- (14) a. There were some several students given a badge. (Holmberg 2002:115).
 - b. In the garden were given (*Ath) several books (to Ath).

One possibility is that this is a consequence of the condition that only one DP with structural Case may stay in-situ (Alexiadou and Anagnostopoulou 2001; cf. Chomsky 2001:20, Ormazabal 2000). Th/Ex provides an escape hatch for the higher object of an applicative passive in the PEC, but in LI (14)b the PP fills the Th/Ex position, and the

derivation crashes with the two objects in-situ. This account presupposes that the higher object in (14)b has not moved to the Th/Ex position with PRT_{pass} moving higher still.

I conclude that the contrasts in (2) and (14) show that Th/Ex is not the lowest position of the object and just partially masked by verb raising. Rather, in constructions with PRT_{pass}, Th/Ex occurs if [Spec, TP] is filled by an expletive and not if by a PP under LI.

4 Th/Ex as a phonological operation

Chomsky (2001:19ff.) proposes that Th/Ex is an operation of the phonological component, applying at the passive/unaccusative vP level to repair surface structures of the form [α V-DO] idiosyncratically barred in English. Th/Ex is thus invisible to further computation and to LF. However, since the object is stripped off its phonological features in such spell-out under Th/Ex, and because feature-driven movement, which occurs at the next higher strong phase level, requires these for pied-piping, the narrow-syntactic version of the object can subsequently neither extract nor be subextracted out of:

- (15) a. *How many packages were there placed on the table?
 - b. *What are there [books about t] being sold (in Boston these days)?

Th/Ex freeze the object not only for Ā-movement, but also for re-application of Th/Ex; thus the only analysis of sentences like (16)a is one where XP is a reduced relative clause, correctly barring adjunct extraction and idiom chunks:

- (16) a. There is a building [XP] expected/likely to be demolished e_i].
 - b. *How_i is there [DP a building_i [XP Op_i expected/likely to be demolished $e_i t_i$]]?
 - c. #There is $[DP umbrage_i [XP Op_i expected/likely to be taken at his remarks <math>e_i]]$.

- (cf. Chomsky 2001:25, also Law 1999:90, Milsark 1974:173-9, 235n6)
- (2) is a problem for this approach to Th/Ex as well. Since the $*[_{\alpha} \text{ V-DO}]$ filter forcing Th/Ex is a PF one and idiosyncratic, it could in principle differentiate $*[_{\alpha} \text{ V-DO}]$ in (2)a from $[_{\alpha} \text{ V-DO-PP}]$ in (2)b. However, this is inadequate; the $[_{\alpha} \text{ V-DO-PP}]$ configuration does require Th/Ex in PECs of prepositional ditransitives, (17)b, unlike in LI, (17)a. If the filter is now extended to distinguish $[_{\alpha} \text{ V-DO-}t_{PP}]$ from $*[_{\alpha} \text{ V-DO}(-PP)]$ as required, the PP in LI must have extracted out of α prior to Th/Ex. This violates the explanation of the inaccessibility of the base-position of the object to movement, which turns on Th/Ex applying to it before the derivational stage where feature-triggered movement occurs.
- (17) a. [In this hall]_i will be [α awarded [DP one prize] [PP to linguistics] t_i].
 - b. There will be one prize_i [α awarded t_i [PP to linguistics] [PP in this hall]].

A different issue arises with progressive, based on PRT_{prog} (V-*ing*), which also seem to project Th/Ex with the pattern of (2): (18)a, (18)b.⁷ When PRT_{prog} and PRT_{pass} are combined, there is a single Th/Ex above both: (18)c. This suggests iteration of Th/Ex, (18)d, which is incompatible with construing Th/Ex as a phonological operation.⁸

- (18) a. There were $\langle \text{three ships} \rangle$ waiting $\langle \text{*three ships} \rangle$ in the port.
 - b. In the port were (*three ships) waiting (three ships).
 - c. There are (three ships) being (*three ships) built (*three ships) in the port.
 - d. There are $[\alpha P]$ three ships_i [being $[\alpha P]$ t_i [built t_i in the port]]]].

Iterability, and evidence for Agree driving Th/Ex, also shows up in the Mainland Scandinavian version of Th/Ex (Christensen and Taraldsen 1989, Holmberg 1994, 2002). The relevant pattern is found in Swedish: PRT_{pass} agrees with the object if it moves to the

subject position in a full passive (19)b, or to the Th/Ex position in the PEC, but not if it stays post-participial, (19)a. Holmberg (2002) posits that Th/Ex is always projected, but in the PEC it can be occupied by the Swedish *det* 'it' expletive which unlike English *there* has φ-features. It seems crucial in explaining this pattern that the object move through the Th/Ex position in full passives, because if it moved directly from the post-participial position and yet triggered agreement, Th/Ex should be projected optionally, and the PEC should have a derivation where Th/Ex is not projected and PRT_{pass} still agrees with the in-situ object. Interestingly, Ā-extraction in the PEC disallows PRT_{pass} agreement, (19)c, showing that as in English it cannot be launched from the Th/Ex position.

- (19) a. Det har blivit*tre böcker skrivna // skrivet tre böcker* om detta it have been three books written-PL // written-SG three books about this There have been three books written about this. (Holmberg 2002:86)
 - b. Tre böcker blev *skrivna*.

 three books were written-PL (Holmberg 2002:100)
 - c. Hur många böcker blev det *skrivet/*skrivna*?

 how many books was it written-SG/*PL (Holmberg 2002:107-8)

It remains unclear whether it is displacement of the object to Th/Ex which triggers or spells out agreement (cf. Chomsky 2001:46n39) or whether merging *det* in the Th/Ex position forces PRT_{pass} to agree with it instead (Holmberg 2002:103). However, Th/Ex clearly feeds A-movement in the full passive. The account of (2) proposed in section 1 presupposes this, since in LI the PP must pass through Th/Ex.

It seems then the phonological account of Th/Ex does not dispose of the machinery needed to account for (2), and incorrectly disallows Th/Ex to feed A-movement. It now becomes imperative to explain why Th/Ex cannot iterate, as in (16), and feed Ā-movement, as in (15) and (19)c. However, (16) falls into place if *there* is forced to originate in the infinitival [Spec, TP] (Chomsky 1995:345f., though cf. Bošković 2002:196f.), making it the closest goal for Th/Ex even if this cannot apply to *there* (section 1). Holmberg (2002:108f.) develops the necessary account blocking Ā-movement from the Th/Ex position, where Th/Ex targets the first specifier of a phase P that spells-out with P when the phase-head P+1 is reached, and movement from the first to the higher specifiers of P, its true edge, is disallowed (cf. Murasugi and Saito 1994).

In sum, I have argued that the contrast in (2) bars accounts of Th/Ex that rely on assimilating locative and expletive constructions, identifying Th/Ex with the regular object position, and construing Th/Ex as a phonological operation. The tenor of each argument is similar and underlies my account of (2): without treating Th/Ex as a derived A-position through which an inverting PP in LI but not an expletive can block, the configuration of expletive and LI constructions in (2) is too similar to have Th/Ex surface in the former but not the latter.

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- ³ Contrast raising examples like (i). It might be expected that in LI, the PP can reconstruct below the DP, but this is not the case (ii); see Nevins and Anand 2003 for a general ban on PP A-reconstruction.
 - (i) [Her_i mother's bread]_i seems to every girl_i t_i to taste wonderful.
 - (ii) [Next to the/*its_i cavern]_i could be seen every/no dragon_i t_i .
- ⁴ Although it follows from Chomsky's (op. cit.) reasoning, the formulation is also compatible with alternatives that block *there/pað* from derived A-positions for Case/φ-Agree reasons, leaving open the possibility that expletives with ϕ -features do occur there (Holmberg 2001).
- ⁵ The other focus of Boeckx 1999 and Caponigro and Schütze 2003, Italian PECs, lack Th/Ex on my approach, while *ci be DP PRT*_{pass} constructions are ontological not verbal, both as in Burzio 1986:154-8.
 - 6 Adverbs like *poorly* which intervene between the Th/Ex position and the PRT must be within α .
- ⁷ These constructions show the same verbal properties as the PEC like supporting adjunct extraction and idiom chunks, as in *How regularly are there tabs* (*which are) being kept on the dragon?
- ⁸ Unless the PRT-related α of Th/Ex is projected once per clause, PRTs in active structures moving to ν as in Caponigro and Schütze 2003. This yields the non-iterative account (i), compatible also with section 1.
 - (i) There are $_{[\alpha P}$ three ships $_i$ α [being [built t_i in the port]]].

¹ Unlike Chomsky's terminology, I do not subsume the rightward movement in ? *There were placed on the table several books* under Th/Ex but rather under Heavy NP Shift (perhaps from the Th/Ex position).

² Extraction of locative PP arguments and their DP complements out of verbal expletive constructions is degraded, with a range of judgments reported in Belvin and Den Dikken 1997:161ff., Law 1999:189, Chomsky 2001:47n43, but it still seems to sharply contrast with extraction out of a full relative clause.

⁹ For generally excluding *There is (there) expected (there) to be wine, see Chomsky 2000:149n93.