

Evidence from ellipsis suggests the low origination site of expletives *there* and *it*

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1 Introduction

English expletives *there* and *it*, commonly analyzed as semantically vacuous elements, have been argued by some to exist solely to satisfy the Extended Projection Principle (EPP) requirement of heads like T. Various proposals have been put forward as to where they are initially merged in the structure (for example, Chomsky 2000, Deal 2009 and Kayne 2008 for *there*; Rosenbaum 1967, Stowell 1983 and Kayne 1985 for *it*). Common tools for locating the initial position of contentful elements fail with expletives, such as c-command conditions on anaphora, relative scope and NPI-licensing.

In this paper I present an argument from ellipsis that pinpoints the initial syntactic positions of *there* and *it*. Contrary to common proposals that expletives are directly inserted into Spec, TP in particular to satisfy its EPP requirement (Chomsky 2000), I argue that they are initially merged within vP or lower, which is consistent with Deal (2009) or Kayne (2008). Building on Takahashi and Fox's (2005) proposal concerning MaxElide based on Merchant (2008), and Hartman's (2011) extension of their proposal, I argue that *there* and *it* have not only undergone A-movement from a lower position to Spec, TP, but that their traces are interpreted in the same way as the A-traces of semantically contentful elements.

The paper is organized as follows. I lay the foundation of my diagnostic test with an overview of MaxElide and the parallelism condition as well as Hartman's extended paradigm. Then I apply the test to *there* and *it* sentences, to show that they are base generated in vP or lower. Finally, I discuss the implications of my analysis.

2 VP-ellipsis as a diagnostic tool for movement

To begin, note from the following examples that VP-ellipsis (VPE) is not possible when the object is *wh*-extracted, whereas sluicing, i.e. TP-ellipsis, is always allowed:

- (1) **Embedded question + *wh*-object: ✓Sluicing; *VP-ellipsis**
John will eat something, but I don't know what (*he will).
- (2) **Embedded question + *wh*-adverbial: ✓Sluicing; ✓VP-ellipsis**
John will leave, but I don't know when (he will). (Hartman 2011)

Hartman (2011) has argued that the initial position and subsequent movement of the non-expletive subject are crucial in accounting for the above contrast. If he

is correct, and an identical paradigm is observed for expletives, it may be taken as an indication that their derivational history is identical in relevant respects. Next, I review his argument.

2.1 Parallelism and MaxElide

First, note that movement out of the ellipsis site is crucial to ruling out VPE. If nothing moves out, VPE becomes possible. Example (3) thus contrasts with (1):

- (3) John will eat something, and Mary will too.

Assuming the trace of *wh*-movement is a variable at LF, Takahashi and Fox (2005) captures the effect of this movement with a semantic condition on the licensing of ellipsis, building on Rooth (1992) and Heim (1997) and Merchant (2008):

(4) **Licensing condition for ellipsis**

For ellipsis of elided constituent (EC) to be licensed, there must exist a constituent which dominates EC and satisfies the condition in (5). [Call this constituent the *parallelism domain* (PD).]

(5) **Parallelism**

α is a PD if and only if it is semantically identical to another constituent antecedent constituent (AC), modulo focus-marked constituents.

(6) **Embedded question + *wh*-adverbial: ✓Sluicing; ✓VP-ellipsis**

Elide the biggest deletable constituent dominated by the PD that licenses the ellipsis.

To demonstrate how to select an elided constituent with this theory, I use (1) as an example. As the first part of a two-step process, we should find a parallelism domain. If VP were to be elided, the smallest PD that dominates it would be VP itself. However, it is not a licit PD because the *wh*-trace is not bound within it. Because a free variable cannot be semantically identical to a corresponding element in the AC, all variables must be bound within the PD. So the smallest PD is what immediately dominates the binder of the *wh*-trace, which is the underlined portion below:

- (7) ...but I don't know what [λx he will [_{VP} eat ~~what_x~~]]

After identifying a PD, the next step is to apply MaxElide, the principle that favors ellipsis of the biggest elidable constituent. Since the PD in (7) is large enough to include both TP and VP, MaxElide chooses sluicing and blocks VPE.

2.2 Ellipsis as an argument for the vP-internal subject hypothesis

Consider now the possibility that not only does the last movement step create a binder, but also the successive-cyclic movement steps as well. If the intermediate *wh*-movement creates a binder of the trace, the PD can be as small as the domain of that intermediate binder, underlined below. And since VPE is the only option in this PD, MaxElide has to choose it, contrary to the fact.

(8) ...but I don't know what λy he will y [λx [νP eat what_x]]]

The problem is resolved if we follow Hartman (2011) to treat A-traces as variables that require binding in the PD as well. Assuming the νP -internal origin of the subject, its raising expands the PD to the domain of the subject's lambda binder, λzP in (9). If no other element moves out of λzP , it would be a licit PD, in which VPE satisfies MaxElide. However, because the object \bar{A} -moves, the PD must be expanded to the domain of the binder of its trace, λyP . MaxElide then chooses sluicing over VPE within this PD. In order to isolate the effect of A-movement of the subject, let's compare such an analysis, which assumes a νP -internal position for the subject, with another analysis that assumes the subject starts νP -externally. I call the former analysis *Type I* and the latter *Type II*.

(9) **Type I analysis: νP -internal origin of the subject**

...but I don't know [_{CP} what [λy [_{TP} he [λz will what_y [λx [_{νP} he_z eat what_x]]]]]]]]

(10) **Type II analysis: νP -external origin of the subject**

...but I don't know [_{CP} what [λy [_{TP} he will what_y [λx [_{νP} eat what_x]]]]]]]]

If the subject starts out in Spec, TP, the domain of the intermediate \bar{A} -binder, i.e. λxP , is a possible PD, in which VPE satisfies MaxElide. This contradicts the fact that VPE is not possible. Therefore, with the assumption that intermediate traces are also variables just like the tail of the chain, Hartman's analysis can be taken as evidence that non-expletive subjects originate in or below νP .

2.3 *There and it* are νP -internal

Having examined the effect of the non-expletive subject's A-movement on VPE, I will now apply this test to the expletives to diagnose their base position.

The examples below show that the expletives behave exactly like the non-expletive subject: VPE is ruled out with a *wh*-object, which contrasts with the possibility of sluicing and the non-elliptical construction.

(11) **Embedded question + *wh*-object: ✓Sluicing; *VP-ellipsis**

- a. There will be something in the room, but I don't know what (*there will).¹
 - b. We all know that it will be possible for scientists to achieve something in ten years, but we don't know what (*it will be possible for scientists to achieve).
- (12) **Non-ellipsis is possible**
- a. I don't know what there will be in the room.
 - b. I don't know what it will be possible for scientists to achieve in ten years.

The pattern exhibited by expletive subjects mirrors that of contentful elements in another way as well. According to Takahashi and Fox's definition of Parallelism, adding intervening focus between the variable and the binder saves the otherwise impossible ellipsis option, as (13a) is improved over (1). The expletive sentences behave as predicted, as (13b) and (13c) show.

- (13) **Focus saves VPE**
- a. I know what John will eat, but I don't know what BILL will.
 - b. ?I know what there WILL be in the room, but I don't know what there WON'T.²
 - c. ?While we know what it WAS possible for scientists to achieve in the past, one may wonder what it WILL be in the future.

The badness of VPE when an expletive construction also hosts object \bar{A} -movement can be explained if we adopt a Type I analysis, i.e. the vP-internal origin site of the subject. Only if the expletive A-moves can we expand the PD to the domain of its lambda binder, i.e. λzP in (14). Because λzP "catches" the object's intermediate \bar{A} -trace, the PD must be enlarged again to include its binder λy . Then MaxElide chooses sluicing and blocks VPE.

¹ One might claim that (11a) is bad with VPE because there is an independent requirement to pronounce the copula in VPE. Adding the copula to (11a) will render it non-elliptical: *There will be something in the room, but I don't know exactly what there will be*. If the extracted *what* is further embedded, however, the judgment remains:

- (i) There will be an inventor of something important at the party, but I can't remember what (*there will be).

The starred version can only be VPE in this example. I am grateful to Brian Dillon for suggesting this construction to me.

² Again, further embedding the extracted *what* does not change the judgment. Compare the following sentence with the one in footnote 1:

- (i) I know what there WON'T be an inventor of at the party, but I don't know what there WILL be.

(14) **Type I analysis: vP-internal origin of *there* – correct**

...but I don't know [_{CP} what [_{λy} [_{TP} there [_{λz} will what_y [_{λx} [_{vP} there_z be what_x]]]]]]]

Type II analysis, which assumes a high insertion position of *there*, makes the wrong prediction. Without the A-movement, the PD can be as small as the domain of the intermediate binder of the *wh*-object, and VPE would be chosen as the only option.

(15) **Type II analysis: vP-external origin of *there* – incorrect**

...but I don't know [_{CP} what [_{λy} [_{TP} there will what_y [_{λx} [_{vP} be what_x]]]]]]]

The parallel paradigm for expletive *it* is shown below, suggesting it also originates in vP:

(16) **Type I analysis: vP-internal origin of *it* – correct**

...but I don't know [_{CP} what [_{λy} [_{TP} it [_{λz} will what_y [_{λx} [_{vP} it_z be possible for scientists to achieve what_x in ten years]]]]]]]

(17) **Type II analysis: vP-external origin of *it* – incorrect**

...but I don't know [_{CP} what [_{λy} [_{TP} it will what_y [_{λx} [_{vP} be possible for scientists to achieve what_x in ten years]]]]]]]

It is important to note at this point that while the MaxElide diagnostic test shows the origination site of *there* and *it* to be somewhere in vP or lower, it cannot pinpoint exactly where. For instance, other than Chomsky's (2000) proposal about the initial merge of *there* in TP, Deal (2009) argues that *there* is base generated in vP in order to account for the range of predicates compatible with it. Kayne (2008), on the other hand, proposes an even lower site for *there* in DP within the associate.

The ellipsis test cannot adjudicate between Deal and Kayne. If Kayne is correct that *there* originates low in DP, it will stop in Spec, vP on its way, on the assumption that vP is a phase. From this position upwards, its movements will be the same as in Type I analysis, predicting the same results as Deal's proposal. Below vP, there is no other ellipsis option in English besides VPE, so the expletive's starting position will not matter to the paradigm, and MaxElide will not be able to predict different ellipsis possibilities.

Likewise, this test cannot pinpoint *it*'s origination site. For instance, both Rosenbaum (1967) and Stowell (1983, 1991) argue that *it* merges low along with the clause, but the former claims the whole constituent is a complex NP, whereas the latter proposes a small clause structure. The MaxElide test is inconclusive in determining whether *it* initially merges with the clause or starts higher.

Furthermore, this test does not show whether *there* and *it* are base generated as part of a complement, specifier or adjunct. All that can be determined is they have been in the vP domain in the derivation, lower than the intermediate trace of the *wh*-object.

3 Movement of elements other than the object

3.1 Non-expletive subjects

Recall that what rules out VPE in cases where the subject originates vP-internally and MaxElide prefers sluicing is the additional movement out of the domain of the subject's lambda binder, which forces the PD to expand further.

This predicts that if the moving element starts above the subject's lambda binder, VPE should be allowed, as Hartman exemplifies with examples of adjunct *wh*-movement.

(18) **Embedded question + *wh*-adverbial: ✓Sluicing; ✓VP-ellipsis**

John will leave, but I don't know when (he will).

Assuming that the adverbial may be introduced above the subject, the optionality of sluicing and VPE results from two possible PDs.

(19) ...but I don't know [_{CP} when [_{λy} when_y [_{TP} he [_{λx} will [_{VP} he_x leave]]]]]

- | | | |
|----------------------|--------------|--------------|
| 1. Possible PDs: | λyP | λxP |
| 2. MaxElide chooses: | sluicing | VP-ellipsis |

Conversely, if the moving element starts below the subject's lambda binder, VPE should be ruled out. And it does not matter what element moves or what type of movement it is, for example T-to-C movement is shown to have the same effect.

(20) **Matrix question + *wh*-adverbial: ✓Sluicing; *VP-ellipsis**

Speaker A: Mary will leave.

Speaker B: When (*will she)?

Raising of the vP-internal subject always expands the PD to the domain of its lambda binder, λyP below. Instead of moving the object, it is the head movement that expands the PD further to the domain of the binder of that trace, i.e. λzP . Note that λzP is already sufficiently large for MaxElide to rule out VPE. But the high adverbial *wh*-moves in addition, which again expands the PD to λxP , and MaxElide chooses sluicing over VPE.

(21) **Head movement rules out VPE**

$[_{CP} \text{ When } [_{\lambda X} \text{ will } [_{\lambda Z} [_{TP} \text{ when}_x [_{TP} \text{ she } [_{\lambda Y} \text{ will}_z [_{vP} \text{ she}_v \text{ leave}]]]]]]]]]$

As we have seen, it is the head movement step that expands the PD to the domain of its lambda binder, and consequently VPE is ruled out by MaxElide. It should not matter what the additional *wh*-extracted element is or where it starts from. For example, a matrix question with an *wh*-object disallows VPE:

(22) **Matrix question + *wh*-object: ✓Sluicing; *VP-ellipsis**

Speaker A: Mary will eat something.

Speaker B: What (*will she)?

3.2 Expletives

There and *it* behave exactly the same as non-expletive subjects across the entire ellipsis paradigm. This once again provides evidence for A-movement of the expletive from Spec, *vP* to Spec, *TP*. The binder of its A-trace marks the critical “dividing point” – movement of another element from above it allows VPE, such as adjunct *wh*-movement:

(23) **Embedded question + *wh*-adverbial: ✓Sluicing; ✓VP-ellipsis**

- a. There will be a party, but I don’t know exactly when (there will be).
- b. We all know that it will be possible for scientists to achieve something in ten years, but we don’t know how (it will be).

In contrast, movement of an element from below the expletive’s lambda binder prohibits VPE, such as T-to-C movement. Whether the *wh*-element is object or adverbial, VPE will be ruled out in matrix questions:

(24) **Matrix question + *wh*-adverbial: ✓Sluicing; *VP-ellipsis**

- a. Speaker A: There will be a party sometime.
Speaker B: When (*will there be)?
- b. We all know that it will be possible for all cars to be driverless in ten years, but the question is how (*will it be)?

(25) **Matrix question + *wh*-object: ✓Sluicing; *VP-ellipsis**

- a. Speaker A: There will be something in the room.
Speaker B: What (*will there be)?
- b. We all know that it will be possible for scientists to achieve something in ten years, but the question is what (*will it be ~~possible for scientists to achieve~~)?

Note that what matters is the position of the moved element rather than some kind of object/ adjunct asymmetry. If we force an adjunct to originate below the

expletive's lambda binder, it will be like an object in that its \bar{A} -extraction prohibits VPE. Because the low reading is associated with the adverbial starting below the modal, this means it is also lower than the expletive subject's lambda binder. As is predicted, VPE is not possible:

- (26) There should be a riot for a certain reason.
- a. There is a particular reason for a riot.
(High reading: *why* >> *should*)
 - b. It should be the case that any reason causes a riot.
(Low reading: *should* >> *why*)
- (27) a. There should be a riot for a certain reason, and I wonder why.
Sluicing: ✓High reading; ✓Low reading
- b. There should be a riot for a certain reason, and I wonder why there should be.
VP-ellipsis: ✓High reading; *Low reading

Likewise, *it* behaves just like *there*:

- (28) I don't know how it will be possible for John to repair the car.
- a. A particular reason enables John to repair the car.
(High reading: *how* >> *possible*)
 - b. John can repair the car with a wrench.
(Low/ Embedded reading: *possible* >> *how*)
- (29) a. It will be possible for John to repair the car, I just don't know how.
Sluicing: ✓High reading; ✓Low reading
- b. It will be possible for John to repair the car, I just don't know how it will be.
VP-ellipsis: ✓High reading; *Low reading

4 Successive-cyclic A-movement leads to multiple VP-ellipsis possibilities

Not only does A-movement of an expletive affect ellipsis possibilities, but the intermediate movement step in a successive-cyclic chain does so as well.

- (30) **Raising + high adverbial: ✓High VP-ellipsis; ✓Low VP-ellipsis**
In L.A. there seems to be a plane leaving, and in Boston there does / seems to as well.

This is due to the fact that each intermediate movement step leaves a binder for the trace of the previous step. This gives rise to multiple possible PDs, each one of them being the domain of a lambda binder.

(31) ... in Boston there [λy . does [$_{VP}$ seem [$_{TP}$ $there_y$ [λx . to [$_{VP}$ $there_x$ be a plane leaving]]]]]

- | | | |
|----------------------|------------------|-----------------|
| 1. Possible PDs: | λyP | λxP |
| 2. MaxElide chooses: | High VP-ellipsis | Low VP-ellipsis |

Again, *it* permits both high and low VPE as well, which is evidence for its successive-cyclic A-movement:

(32) **Raising: ✓High VP-ellipsis; ✓Low VP-ellipsis**

Speaker A: It must have been a shock to witness the murder.

Speaker B: Indeed, it must (have been).

Thus, as summarized in table 1, the expletives *there* and *it* behave exactly the same as their non-expletive counterpart in terms of the ellipsis possibilities. The reader may check Hartman (2011) for more examples with a non-expletive subject.

<i>Wh</i> -element	Non-expletive subjects	<i>There</i>	<i>It</i>
Embedded questions			
Object	*	*	*
High Adverbial	✓	✓	✓
Low Adverbial	*	*	*
Matrix questions			
Object	*	*	*
Adverbial	*	*	*
Raising			
High VPE	✓	✓	✓
Low VPE	✓	✓	✓

Table 1: The ellipsis paradigm with expletive subjects is identical to the one with non-expletive subjects.

5 Conclusion

I have argued that if the ellipsis paradigm of non-expletive subjects is explained by their A-movement from a position within vP, the same analysis must be extended to the expletives. This argument crucially relies on Hartman's claim that A-

movement creates variable binding configurations to which the parallelism condition of ellipsis is sensitive.³

As Hartman (2011) observes, vacuous movement of otherwise contentful elements creates relevant variable-binding effects. One such example is T-to-C movement of *do* in matrix questions, which is commonly assumed to be meaningless.

Expletives, on the other hand, are semantically vacuous themselves, but their movement creates binders just like the movement of contentful elements does.

Therefore, observations about head movement and expletive movement together can be taken as evidence that movement always has semantically relevant consequences, and does so mechanically, independent of the semantics with which they may interact.

It is not unprecedented that movement of a semantically vacuous element can have LF effects. For instance, the raising analysis for relative clauses (Kayne 1994, Bianchi 2000 and Bhatt 2002) argues that a null operator moves to their head. Also, Nissenbaum's (1998) analysis of parasitic gaps depends on the movement of a null operator to the edge of the adjunct clause, which creates a binder for the parasitic gap. Various analyses for *tough* constructions converge on a null operator moving from within the embedded clause to its edge (Chomsky 1981 and Hicks 2009). However, the fact that these operators are silent makes it difficult to observe their existence at PF. My analysis completes the picture by showing that expletives, the overt counterpart of a semantically vacuous element, create similar binding configurations via syntactic movement. Below is a summary of various types of movements with their semantically relevant consequences.

Movement type	Moved element	Creates binding configurations affecting ellipsis?	Has other observable semantic effects?
Null Operator Movement	- Semantically vacuous - Phonologically null	N/A	Yes
T-to-C Movement	- Semantically contentful - Phonologically overt	Yes	No
Expletive Movement	- Semantically vacuous - Phonologically overt	Yes	No

Table 2: All movements have semantic consequences regardless of the type of the movement or the moved element.

If the expletives' syntactic movement creates a binder for the trace, questions arise about the nature of this movement, and how it generates semantic effects. Now

³ Messick and Thoms (2016) and Griffiths (forthcoming) have pointed out critical problems of MaxElide and sought to replace it with alternative conditions constraining ellipsis. I am aware of the issues that they point out, but due to the space limit will leave it to further research how to resolve them.

that we can reject the claim that the expletives are base-generated in Spec, TP, assumptions that lead to this conclusion should be revised as well. One of these assumptions is that the T head has EPP, a requirement to fill its specifier. The expletives, as semantically vacuous elements, are good candidates to fill this position. And assuming that external merge is preferable to internal merge (Chomsky 1995), it is preferable to insert the expletives in Spec, TP than to move them to that position.

If the sole purpose of the expletives is to satisfy the EPP requirement, their low origination site suggests that EPP is not unique to the T head, but lower heads may have this feature as well. This invites us to think about what kind of condition EPP is, whether it is a syntactic condition or a PF condition, and why T and certain other heads have it.

Another possibility is that the expletives are more than dummy elements only to satisfy EPP. For instance, Deal (2009) has argued that the expletive *there* agrees with the associate DP, and this agreement relation cannot cross a phase boundary. Assuming that vP is a phase, this requires the highest possible point to merge the expletive to be Spec, vP.

If we follow Deal or Kayne (2008) that *there* is externally or internally merged in Spec, vP, its trace cannot be of type <e>, the common type of a null operator trace. If its trace in Spec, vP is of type <e>, it will have to combine with an unaccusative predicate that is already saturated with an internal argument, which leads to type mismatch. If the trace of *there* can't be <e>, it is then worth reexamining the semantics of the expletives. For example, imagine that instead of being completely vacuous, expletives are in fact identity functions of type <<s,t>,<s,t>>. Their A-movement leaves a trace of the same type, which is why it is difficult to observe their presence at LF by common methods such as scopal interactions. Nonetheless, their movement does create binders for variables that the parallelism condition of ellipsis is sensitive to.

As is mentioned before, rather than originating in Spec, vP, the expletives may be merged in some other position as long as it is below the intermediate binder of the *wh*-trace in Spec, vP. In order to arrive at a semantic definition of the expletives, it is crucial to determine their merger position because from their sister we can deduce their semantic type. I leave this issue to future research. The crucial point of the ellipsis test is that the traces of expletives are interpreted in the same way as those of contentful elements.

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