WH-EXTRACTION (A)SYMMETRIES BETWEEN SLUICING AND VP-ELLIPSIS REVISITED

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Keywords: wh-extraction, sluicing, vP-ellipsis, E-feature, Spell-Out

1. Introduction

Based on Chomsky’s (1986) notion of barrier, Fox and Lasnik (2003) argue that wh-extraction (a)symmetries between sluicing and vP-ellipsis can be accounted for if it is assumed that the elided clause permits one-fell-swoop wh-movement due to the parallelism constraint on ellipsis, unless the antecedent clause involves wh-movement.

The main goal of this paper is to explore an alternative way of explaining Fox and Lasnik’s (2003) wh-extraction (a)symmetries in the minimalist program without recourse to the notion of barrier, while maintaining their insight that the parallelism constraint on ellipsis determines whether wh-movement in the elided clause is successive-cyclic or one-fell-swoop.

The present paper is organized as follows. Section 2 briefly introduces Fox and Lasnik’s (2003) analysis of wh-extraction (a)symmetries between sluicing and vP-ellipsis. Section 3 advances an alternative analysis free of both *-marking and barriers. Section 4 derives the relevant data from the proposed analysis in section 3. Section 5 considers some consequences of the analysis delineated in section 3. Section 6 concludes this paper.

* I am very grateful to two anonymous EL reviewers for their invaluable constructive comments and suggestions on an earlier version of this paper. I would also like to thank Jeff Runner for providing me with relevant judgment on some data. Thanks are also due to Morris Cornell-Morgan for suggesting stylistic improvements. Needless to say, the usual disclaimers apply.

Fox and Lasnik (2003) observe the following paradigms in (1) and (2):¹ ²

(1) a. They want to hire someone who speaks a Balkan language, but I don’t know which (Balkan language) [TP they want to hire someone who speaks].

b. *They want to hire someone who speaks a Balkan language, but I don’t know which (Balkan language) [TP they do [VP want to hire someone who speaks]].

(adapted from Fox and Lasnik (2003: 147–148))

c. I know that John said that Mary read a certain book, but I don’t know which one [TP John said that Mary read].

d. *I know that John said that Mary read a certain book, but I don’t know which one [TP he did [VP say that Mary read]].

(adapted from Fox and Lasnik (2003: 151))

(2) a. I know which book John said that Mary read, but YOU don’t know which one [TP John said that Mary read].

b. *I know which book John said that Mary read, but YOU don’t know which one [TP he did [VP say that Mary read]].

(adapted from Fox and Lasnik (2003: 151))

Noting that the trace in the elided clause occupies a position parallel to that of an indefinite in the antecedent clause in (1a–d), Fox and Lasnik (2003) suppose, following Reinhart (1997), that both the wh-phrase and the indefinite enter into a formal dependency of quantification over choice functions. For instance, they claim that the antecedent clause and the elided clause in (3) can be analyzed as having the final representations for interpretation as depicted in (4a) and (4b), respectively:

(3) Fred said that I talked to a certain girl, but I don’t know which girl [Fred said that I talked to]. (Fox and Lasnik (2003: 149))

(4) a. ∃f λf’ [Fred said that I talked to f'(girl)]

(Fox and Lasnik (2003: 150))

b. which g girl λg’ [Fred said that I talked to g'(girl)]

(Fox and Lasnik (2003: 150))

In (4a), an existential quantifier ∃f binds a choice function f’(girl), while

¹ The judgment of (2d) is cited from Lasnik (2009: 349) to make the point clear in the text.
² See Kimura (2010) for a different approach to sluicing based on a wh-in-situ strategy.
in (4b), a *wh*-operator which binds a choice function in a parallel fashion. Hence, the structures in (4) fully satisfy the parallelism constraint on ellipsis. In order to obtain such parallel representations in (4), they propose that the *wh*-phrase undergoes movement in one fell swoop in (3). Although the one-fell-swoop *wh*-movement in (3) crosses barriers (= maximal projections that require intermediate landing sites), all the offending barriers have been deleted under sluicing. Hence, (3) is acceptable. Basically, the acceptability of (1a, c) follows along the same lines.

By contrast, Fox and Lasnik (2003) attribute the unacceptability of (1b, d) to the fact that unlike sluicing, *vP*-ellipsis leaves behind some offending barrier such as TP, which is among those barriers created as a result of one-fell-swoop *wh*-movement.

In the case of (2), however, the antecedent clause involves regular successive-cyclic *wh*-movement. Thus, the parallelism constraint on ellipsis requires that the elided clause in (2) is also generated via successive-cyclic *wh*-movement. This in turn means that every barrier has been nullified with the *wh*-phrase undergoing movement through its edge. Therefore, whether it is sluicing or *vP*-ellipsis, there should be no barriers at all in the derivations of (2a, b). For these reasons, (2) is acceptable.

One theoretical advantage of Fox and Lasnik’s (2003) analysis is that it avoids Chomsky’s (1972) *-marking in accounting for “island (non-)repair” under sluicing and *vP*-ellipsis, given that *-marking runs afoul of the inclusiveness condition (Chomsky (1995)) in the minimalist program (see also Kitahara (1999) for *-marking). On the other hand, their analysis capitalizes on the notion of barrier (Chomsky (1986)) under the assumption that every maximal projection that requires intermediate landing sites is a barrier for *wh*-extraction (Fox and Lasnik (2003: 152)).

Notice, however, that their analysis begs the questions of how Chomsky’s (1986) notion of barrier is to be formulated in the current minimalist program and why every maximal projection that requires intermediate landing

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3 If (3) involved successive-cyclic *wh*-movement, the final representation for the elided clause would look something like (i) under the copy theory of movement:

(i) which *g* λg’ [Fred [g’ λg” said g” λg” that I talked to g”” (girl)]]

(Fox and Lasnik (2003: 150))

Note that (i) crucially does not meet the parallelism constraint for ellipsis, unlike (4b), due to the presence of intermediate traces/copies represented as variables.

4 Fox and Lasnik (2003) do not explain why such one-fell-swoop *wh*-movement becomes possible only in ellipsis. In section 2, I will suggest a line of analysis which could justify the patterns of *wh*-movement in ellipsis.
sites functions as a barrier in the first place. In consideration of this point, I will seek an alternative analysis in the next section.

3. Alternative Analysis

3.1. Basic Theoretical Assumptions

Before moving to the core of my analysis of wh-extraction (a)symmetries between sluicing and vP-ellipsis, I will set forth some basic assumptions on (overt) wh-movement and wh-extraction from (strong) islands, as they are relevant in accounting for (1) and (2).

First of all, following Bošković (2007), I suppose in this paper that successive-cyclic wh-movement is triggered by a certain uninterpretable formal feature [uF] of the moving wh-phrase and gets started before the final target of movement (= C) enters the structure.

With regard to wh-extraction from (strong) islands (in relation to ellipsis), I adopt Hornstein, Lasnik and Uriagereka’s (2003: 159) theory, which is based on Uriagereka’s (1999) multiple Spell-Out system. According to their theory, at the point where a Spec or adjunct is merged, there is the choice of whether to linearize it by Spell-Out or not. If it is linearized by Spell-Out, nothing can be extracted from it. If it is not, extraction out of it is possible, although the whole structure containing the Spec or adjunct does not survive due to violation of Uriagereka’s (1999) version of Linear Correspondence Axiom (LCA) (see Uriagereka (1999) for details). However, if all the LCA-problematic material is removed by ellipsis, the whole relevant structure could surface as valid.

Thus, the contrast between (5a) and (5b) (= (1a)) below is to be explained as follows under Hornstein, Lasnik and Uriagereka’s (2003) theory.

\((5)\)  
\(\text{a.} \) *They want to hire someone who speaks a Balkan language, but I don’t know which (Balkan language)\(_1\) \([\text{TP} \text{ they want to hire someone who speaks } t_1]\).*

\(\text{b.} \) They want to hire someone who speaks a Balkan language, but I don’t know which (Balkan language)\(_1\) \([\text{TP} \text{ they want to hire someone who speaks } t_1]\).*

In (5a), if the relative clause (= adjunct) [who speaks which (Balkan language)] is linearized by Spell-Out at the point of merger, the wh-phrase which (Balkan language) cannot be extracted. On the other hand, if it is not linearized by Spell-Out as such, the wh-phrase in question itself can be extracted, but the unlinearized relative clause would end up turning the whole sentence in (5a) into an unlinearizable syntactic object in terms of
Uriagereka’s (1999) version of LCA.

By contrast, in (5b), the offending unlinearized relative clause has been eliminated by ellipsis (= sluicing) after the successful extraction of the wh-phrase, so the whole sentence in (5b) turns out to be acceptable. Although the main focus of this paper is not the issue of wh-extraction from (strong) islands (in relation to ellipsis) per se, I assume throughout this paper that Hornstein, Lasnik and Uriagereka’s (2003) approach is basically on the right track.

3.2. Proposal: E-feature as a Trigger for Spell-Out in Narrow Syntax

In this section, I propose that an E-feature (Merchant (2001, 2004, 2008)) plays a syntactic role of obligatorily rendering the complement domain of the head containing it subject to Spell-Out, independently of the usual phase-by-phase cyclic Spell-Out (Chomsky (2000, 2001, 2004, 2008)). This hypothesis can account for the relevant wh-extraction paradigms in (1) and (2) without invoking either *-marking or barriers.

Merchant (2001, 2004, 2008) argues that various kinds of ellipsis phenomena in natural language are generated via the particular feature called E-feature, which has the following properties:

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(6) **Phonological Property of E-feature:**
The complement of the head containing an E-feature is subject to non-parsing for non-pronunciation in the phonological component.

(7) **Semantic Property of E-feature:**
The complement of the head containing an E-feature is subject to e-givenness in the semantic component.⁶

Note that (6) and (7) are concerned with some “instructions” from the head with an E-feature to its complement in the phonological component and in the semantic component, respectively. On the other hand, in spite of the fact that an E-feature is introduced in NS (narrow syntax), it is assumed in Merchant (2001, 2004, 2008) that the E-feature does not affect the comple-

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⁵ See Emoto (2007) for an analysis of sluicing and vP-ellipsis employing inheritance of the [+Silence] feature from the phase-head C.

⁶ See Merchant (2001: 26) for the definition of e-givenness, which basically requires that an elided element be given in information-theoretic terms.
ment domain of the head containing it in NS-derivation per se.\(^7\)

As an alternative, I propose that an E-feature has the following syntactic property in (8) along with the phonological and semantic properties in (6) and (7):

(8) Syntactic Property of E-feature:
The complement of the head containing an E-feature is subject to Spell-Out in NS.

According to (8), when a head \(H\) with an E-feature is merged with \(XP\), \(XP\) has to be spelled out immediately in NS, which renders \(XP\) syntactically opaque at the point of derivation. In what follows, I will abbreviate the E-feature-driven Spell-Out as \(ESO\) and the cyclic Spell-Out as \(CSO\) just for expository purposes.

The proposal that \(ESO\) exists along with \(CSO\) might strike the reader as rather outlandish at first. However, if one considers the very nature of the familiar \(CSO\), the juxtaposition of \(ESO\) with \(CSO\) proves not to be so bizarre. In general, \(CSO\) will apply to the complement domain of a phase head, i.e. \(VP\) in a \(vP\) phase and \(TP\) in a \(CP\) phase. The complement domain of a phase head can be said to be an “NS-complete domain” in that it is no longer subject to any further syntactic operations like Agree or Merge.

Similarly, \(ESO\) in (8) will apply to a kind of NS-complete domain as well, in a sense. Note that the complement domain of \(C\) with an E-feature in sluicing (= \(TP\)) and that of \(T\) with an E-feature in \(vP\)-ellipsis (= \(vP\)) are NS-complete in that no further syntactic operations are at work in such a domain. Accordingly, it seems that \(CSO\) and \(ESO\) come under the heading of Spell-Out in a natural fashion.

Given \(ESO\) along with \(CSO\), an anonymous \textit{EL} reviewer has posed the question of whether Chomsky’s (2000, 2001, 2004, 2008) phase theory would be seriously damaged and weakened. I claim that this is not the case. I maintain the position that \(CSO\) will apply phase-by-phase in regular successive-cyclic \(wh\)-movement, as is standardly assumed in the literature, while making the point that \(ESO\) will preempt \(CSO\) in ellipsis such as sluicing and \(vP\)-ellipsis. To be more specific, I hypothesize that \(ESO\)

\(^7\) Merchant (2001, 2004, 2008) assumes that an E-feature has the following syntax in sluicing:

(i) \(Es [uwh^*, uQ^*]\) (Merchant (2004: 670))

Notice, however, that (i) only specifies what kind of element has to occupy the Spec of the head containing the E-feature in NS, but does not say anything about the whole complement domain of the head in and of itself.
blocks CSO in ellipsis to the extent that the following subset relation holds:

(9) ESO preempts CSO iff ESO domain $\supseteq$ CSO domain.

(9) dictates that ESO blocks application of CSO if and only if the ESO domain (= TP for sluicing and vP for vP-ellipsis) contains the CSO domain (= VP for the vP-phase and TP for the CP-phase). A question arises immediately with respect to (9): How can we rationalize such a claim in the minimalist program?

For the sake of argument, imagine that both CSO and ESO are applied in sluicing and vP-ellipsis, as illustrated in (10) and (11) below (wh-movement is ignored here):

(10) Sluicing: $\llbracket CP \ldots C[E] \{<[TP \ldots T \{vP \ldots v [<vP V \ldots>]\}]\}\rrbracket$

(11) vP-ellipsis: $\llbracket CP \ldots C \{<[TP \ldots T[E] \{[vP \ldots v [<vP V \ldots>]\}]\}]\rrbracket$

[E] indicates an E-feature borne by C or T, and $< >$ and $\{ \}$ represent a CSO domain and an ESO domain, respectively, for expository purposes here and below. In (10), CSO would transfer VP and TP as syntactic objects to be parsed for pronunciation in the phonological component. However, when C with an E-feature is merged, ESO will apply to transfer the whole TP as a syntactic object to be non-parsed for non-pronunciation in the phonological component (cf. (6)). By the same token, in (11), CSO would transfer VP as a syntactic object that is to be parsed for pronunciation in the phonological component. But when T with an E-feature is merged, ESO will apply and transfer the whole vP including VP as a syntactic object that is to be non-parsed for non-pronunciation (cf. (6)).

It seems that this mode of Spell-Out in NS-computation would result in inefficient computation in the phonological component in that it is necessary to reanalyze (a) domain(s) that has/have been already specified for pronunciation as one(s) for non-pronunciation. In contrast, if only ESO applies to TP in (10) and to vP in (11), such a complication would not arise, excluding “unnecessary” application of Spell-Out in NS. If the modus operandi of Spell-Out in NS is also conditioned by principles of efficient computation in Chomsky’s (2005) third factor, it is expected that the generative procedure of human language should be designed in such a way that this kind of inefficient computation is strictly avoided.

Note in passing that whether or not ESO preempts CSO in a certain derivation can be determined when Numeration (N)/Lexical Array (LA) is formed out of the lexicon. If N/LA contains an E-feature, CSO is prohibited until a lexical item containing the E-feature is merged and ESO is applied. Since TP is outside the ESO domain in vP-ellipsis, CSO will apply to TP, as indicated in (11), in accordance with (9).
4. Deriving Wh-extraction (A)symmetries between Sluicing and vP-ellipsis

In this section, I demonstrate that the wh-extraction (a)symmetries between sluicing and vP-ellipsis in (1) and (2) can be naturally derived under the analysis of ellipsis outlined in section 2.

Observe the paradigms in (1) and (2) again, which are reproduced as (12) and (13) below:

(12) a. They want to hire someone who speaks a Balkan language, but I don’t know which (Balkan language) \([TP \text{ they want to hire someone who speaks } t]\).

b. *They want to hire someone who speaks a Balkan language, but I don’t know which (Balkan language) \([TP \text{ they do [VP want to hire someone who speaks } t]}]\).

(c) (adapted from Fox and Lasnik (2003: 147–148))

c. I know that John said that Mary read a certain book, but I don’t know which one \([TP \text{ John said that Mary read } t]\).

d. *I know that John said that Mary read a certain book, but I don’t know which one \([TP \text{ he did [VP say that Mary read } t]}]\).

(adapted from Fox and Lasnik (2003: 151))

(13) a. I know which book John said that Mary read, but YOU don’t know which one \([TP \text{ John said that Mary read } t]\).

b. ?I know which book John said that Mary read, but YOU don’t know which one \([TP \text{ he did [VP say that Mary read } t]}]\).

(13) (adapted from Fox and Lasnik (2003: 151))

First, in the case of sluicing in (12a, c), since the antecedent clause does not involve any wh-movement, the elided clause should involve one-fell-swoop wh-movement according to Fox and Lasnik’s (2003) parallelism constraint. Thus, extraction of the wh-phrase which (Balkan language) out of TP to the Spec of the phase-head C and triggering of ESO of the complement domain TP of the C with an E-feature take place simultaneously, as depicted in (14). Hence, (12a, c) are acceptable.

\[
\text{(14)} \quad \text{sluicing: [CP wh}_i C_{[E]} \{[TP DP_j T [\text{vP DP}_i v [\text{vP V [XP } \ldots \text{wh}_j]]]}\}
\]

\[(\text{TP } \rightarrow \text{ESO})\]

Next, in the case of vP-ellipsis in (12b, d), again, since the antecedent clause does not involve any wh-movement, the elided clause should involve one-fell-swoop wh-movement on a par with (12a, c). On the other hand, since the phase-head C does not contain an E-feature but the lower head T hosts it in (12b, d), extraction of the wh-phrase which (Balkan language) out of TP to the Spec of the phase-head C and triggering of ESO of the
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complement domain vP of the T with the E-feature cannot occur simultaneously, as represented in (15). Once the T head with an E-feature has been merged with the vP which contains the *wh*-phrase *which (Balkan language)*, ESO of the complement domain vP of T is occasioned immediately in accordance with the condition in (8), before merger of C takes place. This would render extraction of the *wh*-phrase out of the vP impossible, as represented in (15). Hence, the unacceptability of (12b, d).

(15) vP-ellipsis: \[ \text{✘} [\text{vP-ellipsis: } \text{✘} \left[ \text{CP C } \left< \text{TP DP_T [E]} \left\{ [\text{vP DP_v V [XP ... wh_i]}] \right\} \right] \right] ] \] 

(\(vP \rightarrow \text{ESO}\))

An anonymous EL reviewer correctly points out that my analysis of vP-ellipsis in (15) predicts that if the *wh*-phrase to be moved is the subject DP, extraction of the *wh*-phrase should be successful, since the subject *wh*-phrase can survive ESO for vP-ellipsis by first moving to the Spec of TP before moving onto the Spec of CP. This prediction is indeed borne out, as illustrated in (16):^8

(16) a. *John bought something, but I don’t know what he did.
   b. (?)Someone bought this book, but I don’t know who did.

Finally, let us consider how the present analysis of sluicing and vP-ellipsis accommodates the paradigm in (13a, b). Since the antecedent clauses in (13a, b) involve successive-cyclic *wh*-movement, Fox and Lasnik’s (2003) parallelism constraint forces the elided clauses to be derived via the same successive-cyclic movement pattern, as represented in (17) and (18), respectively, under Fox and Lasnik’s (2003) assumption that successive-cyclic *wh*-movement targets the Spec of TP on the way (here only the *wh*-phrase and its traces are indicated just for simplicity):

(17) … YOU don’t know [CP which one [C [E] \{[TP t he [T [vP t said [CP t that [TP t Mary T [vP t read t]]]]]]\}]]). (= sluicing: TP \( \rightarrow \) ESO)

(18) … YOU don’t know [CP which one [C [TP t he [T [E] \{[vP t said [CP t that [TP t Mary T [vP t read t]]]]\}]]]. (= vP-ellipsis: vP \( \rightarrow \) ESO)

In (17), since extraction of the *wh*-phrase *which one* from the outer Spec of TP to the Spec of CP and triggering of ESO by C with an E-feature will be performed simultaneously, the successive-cyclic *wh*-movement can escape from ellipsis (= sluicing). Likewise, in (18), extraction of the *wh*-phrase *which one* from the outer Spec of vP to the outer Spec of TP and triggering

^8 I owe the examples in (16) to the anonymous EL reviewer.
of ESO by T with an E-feature will be carried out at the same time, so the successive-cyclic \textit{wh}-movement can survive \textit{vP}-ellipsis. Thus, as the successive-cyclic \textit{wh}-movement can successfully escape from both the ellipsis domains in (17) and (18), the acceptability patterns in (13) fall into place.

Note, incidentally, that although (13b) (= (2b)) (and (16b)) is relatively marginal, the status can be ascribed to Merchant’s (2008) MaxElide effect (see also Lasnik (2009: 347, fn. (i))).

5. Some Consequences

With respect to \textit{do}-insertion and \textit{vP}-ellipsis, Wasow (1972) points out that if \textit{vP}-ellipsis applies after Affix Hopping at PF, there should remain no stranded affix and that \textit{do}-insertion should not be necessitated, contrary to fact, as illustrated in (19b):

(19) a. John will come if Bill comes.
   b. John will come if Bill does. (cited from Lasnik (2009: 343))

It is to be noted that my analysis of \textit{vP}-ellipsis provides a natural account for this problem. Since ESO applies to \textit{vP} in (19b), triggered by an E-feature of T, and the \textit{vP} is immediately non-parsed for non-pronunciation in the phonological component, a stranded affix should still remain at T, calling for an operation of \textit{do}-support, as desired.

Furthermore, Rosen (1976) observes that sluicing can apply in matrix \textit{wh}-questions without involving T-to-C movement, as exemplified in (20):

(20) Speaker A: Mary will see someone.
   Speaker B: Who Mary will see. (cited from Lasnik (2009: 343))

In the matrix sluicing in (20), T-to-C movement of the modal auxiliary \textit{will} does not take place. Note that this lack of T-to-C movement would naturally follow under my analysis of sluicing, coupled with the assumption that T-to-C movement of the modal \textit{will} occurs at PF (see Boeckx and Stjepanovic (2001) and Chomsky (1995, 2000) for the claim that head movement occurs at PF). In my analysis of sluicing, the phase-head C with an E-feature triggers ESO in NS, followed by its immediate non-parsing for non-pronunciation in the phonological component, so there should be no chance for the modal auxiliary \textit{will} at T in (20) to move to C out of the

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9 Merchant (2008: 141) defines the principle of MaxElide as in (i):

(i) Let XP be an elided constituent containing an A$^\prime$-trace. Let YP be a possible target for deletion. YP must not properly contain XP (XP $\not\subset$ YP).
opaque domain TP at PF in the first place.

In this connection, an anonymous EL reviewer correctly points out that if head movement occurs at PF in general, my analysis of vP ellipsis predicts that (21) should be acceptable, contrary to fact:

(21) *John will be at home if Bill does.

(cf. John will be at home if Bill is.)

If V-to-T movement of the copular verb be takes place at PF and ESO of vP for vP-ellipsis is performed in NS, then T as a stranded affix would call for do-insertion at PF, producing the ungrammatical form in (21). On the other hand, if be-raising occurs in NS, the correct form in (21) can be generated. Although I do not have a final solution to this puzzle this time, I would like to tentatively conjecture that head movement is not uniform in UG: Although T-to-C movement at least in English-type languages is a PF phenomenon, V-to-T movement at least in the case of have/be-raising in English-type languages is an NS phenomenon.

6. Conclusion

This paper has proposed an analysis of wh-extraction (a)symmetries between sluicing and vP-ellipsis free from both *-marking and barriers, while maintaining Fox and Lasnik’s (2003) parallelism constraint on ellipsis. More specifically, I have claimed that in addition to the phase-by-phase cyclic Spell-Out, an E-feature (Merchant (2001, 2004, 2008)) plays a syntactic role of triggering Spell-Out of its complement domain in NS. It was demonstrated that the relevant wh-extraction paradigms can be accounted for by the interaction of ESO and the patterns of wh-movement (successive-cyclic vs. one-fell-swoop) determined by Fox and Lasnik’s (2003) parallelism constraint on ellipsis.

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[received May 19 2010, revised and accepted January 16 2011]
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