

Minimizing Application of Movement: Evidence from Echo Questions in English*

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Abstract

This paper argues for a syntactic derivation in which movement does not apply in a successive-cyclic fashion but in a one-fell-swoop fashion. I claim that this type of movement is possible when a moved element bears an uninterpretable feature (uF). If an element has a uF, then an appropriate structural relation for the valuation is established in syntax subject to the guiding principles of Minimal Computation (Chomsky (2013, 2015a)). From this minimalist point of view, the number of applications of movement should be minimized. Minimizing the number of applications diminishes the number of obstructive copies of uFs remaining in a derivation. In this paper, I examine an echo question in English as a case study and show that an echoed *wh*-phrase has uninterpretable Case and ϕ -features, which forces it to move directly from its original position to sentence-initial position without leaving copies of uFs in a derivation.

Keywords: Minimal Computation, Labeling Algorithm, Spell-Out, TRANSFER, echo questions

1. Introduction

Most works in generative grammar have assumed the framework in which

rules such as *wh*-movement apply cyclically though their application seems as though they were applied in a one-fell-swoop fashion. For example, (1a) is derived as in (1b), wherein the *wh*-phrase *what* has moved from its underlying embedded object position to sentence-initial position via the intermediate specifier position of CP₂.

- (1) a. What did John think that Fred liked?
 b. [_{CP1} What_i [_{C'} did John think [_{CP2} ~~what~~_r [_{C'} that [_{TP2} Fred liked ~~what~~_r]]]]]
-

Since the copies except for the sentence-initial one are deleted, it is not clear that *what* actually lands at the embedded specifier position of CP₂. However, the cyclic application of movement is supported by Condition A of the binding theory: an anaphor must be bound by its antecedent in a certain domain.¹ The anaphor *himself* in (2a) cannot co-refer to its potential antecedent *John* since it is not bound by *John* in the same TP. However, such a binding relation is possible in (2b).

- (2) a. John_i thinks that [_{TP} Fred_j likes [these pictures of himself*_{i/j}]]?
 b. [Which pictures of himself_{i/j}] did John_i think that [_{TP} Fred_j liked]?
 (Barss (1986: 25, 33))

In (2b), the binding relation is possible between *himself* and *John* because (*which pictures of*) *himself* has moved to the sentence-initial position through the specifier position of CP₂, as illustrated in (3).

- (3) [_{CP1} Which pictures of himself_i [_{C'} did [_{TP1} John think [_{CP2} ~~which pictures of himself~~_r [_{C'} that [_{TP2} Fred liked ~~which picture of himself~~_r]]]]]]]
-

The copy of *himself* in the specifier position of CP₂ ensures that it is bound by *John* in TP₁ (the underlined part).

The cyclic application of movement is theoretically motivated as well. Within the current framework of the Minimalist Program, it is deduced as a consequence of the Phase-Impenetrability Condition (PIC), which is defined in (4).

- (4) In a phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations. (Chomsky (2000: 108))

Once a phase is constructed, the complement of the phase head is sent to sensorimotor (SM) and conceptual-intentional (CI) interfaces and becomes invisible to further syntactic operations.² Given this background, let us consider the derivation of (1), repeated below.

- (5) a. What did John think that Fred liked?
 b. $[_{CP1} \text{What}_i [_{C'} [_{C1} \text{did}] \text{John think } [_{CP2} \text{what}_F [_{C'} \text{that } [_{TP2} \text{Fred liked } \text{what}_i]]]]]]]$
-

Suppose that the derivation proceeds where the phase CP_2 is constructed. At this stage, TP_2 becomes invisible to further operations due to the PIC. For the *wh*-phrase *what* to be visible to the matrix C_1 , it is necessary to move to the edge position of CP_2 . If it remains in its base position, it is invisible to C_1 and fails to move to the specifier position of CP_1 . In fact, the *wh*-phrase must move to a position visible to C_1 because C_1 has an uninterpretable *wh*-feature. The *wh*-feature must be deleted via an agreement relation with its corresponding interpretable feature of a *wh*-phrase. For this technical reason, linked together with the PIC, the *wh*-phrase is required to move in a successive-cyclic fashion.

One of the advantages in posing the PIC is the reduction of the computational complexity in syntax. The smaller the size of computational workspace is, the lesser is the burden of computation. Once TP_2 is sent to the

interfaces, a subsequent derivation can ignore the domain. If TP_2 is not spelled-out, by contrast, the computation progresses TP_2 in each derivation, which increases the computational complexity. Hence, the reasoning supports the PIC and, by extension, the successive-cyclic application of movement.³

In this paper, I will propose that a certain type of movement applies in a one-fell-swoop fashion. Specifically, I will claim that an echo question is derived by raising an echoed part to sentence-initial position once in a derivation.

The structure of this paper is as follows. In Section 2, I will outline the theoretical assumptions needed to underpin this paper: Labeling Algorithm (Chomsky (2013, 2015a)) and TRANSFER (Chomsky, Gallego and Ott (2017)). Given the assumptions, I will propose in Section 3 that an echo question is derived by applying movement in a one-fell-swoop fashion. In Sections 4 and 5, I will demonstrate that the present proposal is correct. Section 6 concludes this paper.

2. Theoretical Assumptions

2.1. Labeling Algorithm as Minimal Search at the Interfaces

A syntactic object (SO) is constructed in syntax by means of Merge. Merge applies freely as long as SOs are interpretable at the interfaces. The interpretation is achieved by Labeling Algorithm (LA). Chomsky (2013, 2015a) claims that LA is just a minimal search. Under this conception of LA, there is no structure like $[_\alpha X]$, where α is the label of X. LA simply determines a property of X for the interfaces. Specifically, Chomsky (2013, 2015a) assumes the following mechanism of LA.

- (6) a. In the case of $SO = \{H, XP\}$, H a head and XP not a head, LA will select H as the label.
- b. In the case of $SO = \{XP, YP\}$, neither a head,
(A) modify SO so that there is only one visible head, or

- (B) X and Y are identical in a relevant respect, providing the same label, which can be taken as the label of the SO.

(Chomsky (2013, 2015a))

To see how this works in detail, let us consider the derivation of (7).

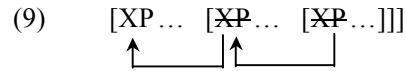
- (7) What did he buy?

The derivation is schematized in (8). First, the category-neutral root element $\sqrt{\text{buy}}$ merges with the direct object *what* to form a set, as in (8a). Next, *what* moves to the specifier position of $\sqrt{\text{buy}}$, as in (8b). After v^* is introduced as in (8c), the $\sqrt{\text{buy}}$ inherits uninterpretable ϕ -features from v^* and establishes an agreement relation between *what* and $\sqrt{\text{buy}}$; and the agreed ϕ -features are interpreted as the label of β , as in (8d), owing to (6b-B). The resulting set merges with the subject *he*, as in (8e). At this stage, the label of γ is undeterminable, since neither SO is a head. To fix the label, *he* moves out to the specifier of T, as in (8g), by using the strategy of (6b-A). This makes possible the label of γ as v^* . Then, the derivation proceeds and reaches the stage of (8h), where C is introduced in the derivation. This C has the feature Q, which forces a *wh*-phrase to move to its specifier position and guarantees that the label of the set is interpreted as the agreed feature of Q, as in (8j).

- (8) a. $\{\alpha \ \sqrt{\text{buy,what}}\}$
 b. $\{\beta \ \text{what}, \{\alpha \ \sqrt{\text{buy,what}}\}\}$
 c. $\{v^* \ v^*, \ \{\beta \ \text{what}, \{\alpha \ \sqrt{\text{buy,what}}\}\}\}$
 d. $\{v^* \ v^*-\sqrt{\text{buy}}, \{\langle\phi, \phi\rangle\text{what}, \{\alpha \ \sqrt{\text{buy,what}}\}\}\}$
 e. $\{\gamma \ \text{he}, \{v^* \ v^*-\sqrt{\text{buy}}, \{\langle\phi, \phi\rangle\text{what}, \{\alpha \ \sqrt{\text{buy,what}}\}\}\}\}$
 f. $\{\delta \ \text{T}, \{\gamma \ \text{he}, \{v^* \ v^*-\sqrt{\text{buy}}, \{\langle\phi, \phi\rangle\text{what}, \{\alpha \ \sqrt{\text{buy,what}}\}\}\}\}\}$
 g. $\{\epsilon \ \text{he}, \{\delta \ \text{T}, \{v^* \ \text{he}, \{v^* \ v^*-\sqrt{\text{buy}}, \{\langle\phi, \phi\rangle\text{what}, \{\alpha \ \sqrt{\text{buy,what}}\}\}\}\}\}\}$

- h. $\{c \ C, \{<\phi, \phi> \ he, \{\delta \ T, \{v^* \ he, \{v^* \ v^*-\sqrt{buy}, \{<\phi, \phi> \ what, \{\alpha \ \sqrt{buy}, \text{what}\}\}\}\}\}\}$
- i. $\{x \ \text{what}, \{c \ C-T, \{<\phi, \phi> \ he, \{\delta \ T, \{v^* \ he, \{v^* \ \text{buy}, \{<\phi, \phi> \ what, \{\alpha \ \sqrt{buy}, \text{what}\}\}\}\}\}\}\}$
- j. $\{<Q, Q> \ \text{what}, \{c \ \text{did}, \{<\phi, \phi> \ he, \{\delta \ T, \{v^* \ he, \{v^* \ \text{buy}, \{<\phi, \phi> \ what, \{\alpha \ \sqrt{buy}, \text{what}\}\}\}\}\}\}\}$

Notice, here, that *what*, *he*, and \sqrt{buy} have moved and left their copies. In general, only the structurally prominent copy is assumed to be pronounced. Chomsky (2013: 41) argues that this assumption follows from the application of a principle of Minimal Computation: pronounce as little as possible, as illustrated in (9).



As a result, the copies in (8j) are deleted, except for the structurally prominent copy as in (10).

- (10) $\{<Q, Q> \ \text{what}, \{c \ \text{did}, \{<\phi, \phi> \ he, \{\delta \ T, \{v^* \ \text{he}, \{v^* \ \text{buy}, \{<\phi, \phi> \ \text{what}, \{\alpha \ \sqrt{buy}, \text{what}\}\}\}\}\}\}\}$

This way, these derivational steps derive the sentence in (7).

The important point is that the motivation for applying syntactic operations is to derive a representation that is interpretable at the interfaces in line with the guiding principles of Minimal Computation, including LA, pronounce as little as possible, and the like.⁴ If the subject *he* in (8) stays at its underlying predicate-internal position, the label of γ is uninterpretable and crashes at the CI interface. If more than one copy of *what* is undeleted, a principle relating to pronunciation at the SM interface is violated, causing the derivation to crash.

2.2. Elimination of Spell-Out

Let us move on to the discussion about Spell-Out/TRANSFER. Chomsky, Gallego, and Ott (2017) critically review a number of variations on the notion of

Spell-Out/TRANSFER and conclude that Spell-Out does not exist; only TRANSFER does. No SOs are eliminated from syntax as a result of sending them to the interfaces. Rather, they remain in syntax and are just inaccessible to subsequent syntactic operations. An argument for this reasoning concerns the derivation of the following examples:

- (11) a. [α the verdict [β that Tom Jones is guilty]]
b. [α the verdict [β that Tom Jones is guilty]] seems to have been reached (α) by the jury (Chomsky, Gallego, and Ott (2017: 14))

Here, α consists of a head noun and its content clause β , a phase. If a phase is eliminated from syntax and sent to a PF side as an effect of Spell-Out, β must be pronounced at the position where it is introduced in syntax. In (11b), the position is the object position of *reached*, which is shown as (α). However, this does not hold. The β is raised as a part of α and is pronounced at the beginning of the sentence. This means that β should be accessible to a raising/passive operation after Spell-Out applies. Given this sort of data, Chomsky, Gallego, and Ott (2017) lead to the conclusion that once a phase is completed and the complement of the phase head is transferred, the transferred part is inaccessible but remains in syntax throughout a derivation.

3. Proposal

I have shown in Section 2.1 that Merge applies freely as long as SOs are interpreted at the interfaces and that this interpretation is calculated by means of LA. When LA interprets the label of a set formed by two SOs, it can utilize a shared feature between them, as given in (6b-B). In its usual case, one of the features is uninterpretable (uF); the other is its corresponding interpretable feature. Between them, a uF triggers Agree. In (12), for example, T has uninterpretable

ϕ -features and the subject *Jones* has its corresponding interpretable ϕ -features. The subject *Jones* moves to the specifier position of TP to establish an agreement relation with T. This relation makes possible the label as the shared feature $\langle\phi,\phi\rangle$.

- (12) a. Jones is guilty.
 b. [$\langle\phi,\phi\rangle$ Jones_{[ϕ]] [T_{[u ϕ]] [VP Jones_[ϕ]] is guilty]]}}
-

The key point is that *Jones* has left its copy in its original position. Similarly, when a *wh*-phrase originally in object position is triggered to move to the specifier position of CP, it leaves its copy in its original position (and, more specifically, in the specifier position of VP. See (8)).

- (13) a. What did John buy?
 b. [$\langle Q, Q\rangle$ What_[Q]] [did_[Q]] [TP John buy ~~what~~_[Q]]]
-

Furthermore, as discussed in Section 1, when a *wh*-phrase in an embedded object position moves across a phase boundary to the matrix specifier of CP, it leaves its copies in its intermediate landing site as well as its base position.

- (14) a. What do you think that John bought?
 b. [$\langle Q, Q\rangle$ What_[Q]] [do_[Q]] [TP you think [~~what~~_[Q]] [CP that John buy ~~what~~_[Q]]]]
-

Note that these copies contain no uF. If a moved element contains a uF, then its copy contains a uF as well. If a moved element with a uF undergoes successive-cyclic movement, it creates more than one copy in a derivation. These are schematically illustrated in (15).

- (15) a. [CP SO_[uF]] [C' C [... SO_[uF] ...]]
-
- b. [CP SO_[uF]] [C' C ... [CP SO_[uF]] [... SO_[uF] ...]]
-

The movements shown in (15) are undesired derivations in terms of Minimal Computation, because a subsequent derivation has to deal with and delete each uF by using an unmotivated mechanism like chain binding (Barss (1986)) or chain composition (Chomsky (1986)) before the derivation reaches the interfaces. This causes a huge computational burden. From this viewpoint, it is preferable for a moved element not to contain a uF.

In this paper, however, I propose a derivation in which a moved element contains a uF and, in this case, movement applies in a one-fell-swoop fashion. The logic of my argument is as follows. Suppose that there is an SO with a uF in a derivation and that there is no SO with its corresponding interpretable feature, as illustrated in (16).

$$(16) \quad [_{CP} C \dots [\dots SO_{[uF]} \dots]]$$

If the uF is not valued in syntax, the derivation crashes. As a last resort, let us assume that the value is assigned by an interaction with other interfaces such as discourse. The interface of syntax with discourse has been taken to be performed at a left periphery of a sentence, i.e., at a matrix CP domain. That is, the SO with a uF needs to move to the specifier position of the matrix CP to get its value. As discussed above, if the SO moves successively cyclically, it leaves more than one copy as in (17).

$$(17) \quad [_{CP} SO_{[uF]} [_{C'} C \dots [\dots SO_{[uF]} [\dots SO_{[uF]} \dots]]]$$

As noted above, this movement to an intermediate position should be avoidable in terms of Minimal Computation. The problem does not arise if the SO moves in a one-fell-swoop fashion to sentence-initial position directly. Only one copy is left in its underlying position as in (18).

$$(18) \quad [{}_{CP} \text{SO}_{[uF]} [{}_{C'} C \dots [\dots [\dots \text{SO}_{[uF]} \dots]]]$$

This derivation is preferable to the manner in (17) in that it enables the number of offending copies containing a uF to be minimized. An immediate question arises as to why an embedded element can move directly to sentence-initial position across a phase boundary without violating the PIC. I claim that such movement is available because, as discussed in Section 2.2, any element remains in syntax even after TRANSFER applies. Given the assumption that all of the SOs can be a target for operations (Chomsky, Gallego, and Ott (2017)), an element can move to sentence-initial position across a phase boundary to get its uF valued.

To summarize the point, a moved element is preferable to not containing a uF and its application of movement obeys a successive-cyclic manner. However, if the element bears a uF, its movement to sentence-initial position must apply in a one-fell-swoop fashion from a minimalist point of view. In the next section, I will demonstrate that the latter derivation is attested by an echo question in English.⁵

4. Echo Questions in English

An echo question is a type of sentence that “display[s] a rising intonation and heavy stress on the *wh*-phrase they contain. Such questions occur in situations where the questioner is requesting a repetition because the previous statement was not completely intelligible” (Authier (1993: 162); see also Postal (1972), Cole (1974)). For example, an echo question is uttered in (19B), where a person requests the missing part by replacing it with a *wh*-phrase. (Here and in what follows, following McCawley (1988) and Inada and Imanishi (2003), I mark echo questions with double question marks “??” and put small capitals on echoed *wh*-parts.)

(19) A: They appointed [mumble, mumble] to the Supreme Court.

B: They appointed WHO to the Supreme Court??

(Authier (1993: 162))

In (19B), the echoed *wh*-phrase *WHO* is pronounced in its original position. As shown in (20b) below, however, it is not the case that the echoed *wh*-phrase must appear in its original position, but it can move optionally to sentence-initial position.

(20) a. They appointed WHO to the Supreme Court??

b. WHO did they appoint to the Supreme Court??

(Authier (1993: 162–163))

In addition, the movement should be regarded as applying in syntax, the reason being that its application triggers subject-auxiliary inversion (SAI), a diagnostic for syntactic movement.

(21) a. WHO did they appoint to the Supreme Court??

b. *WHO they appointed to the Supreme Court??

In this respect, an echo question is similar to a genuine *wh*-question.

However, there is a difference between an echo question and a genuine *wh*-question, which rests with the fact that the former requires much more discourse information to recover the *wh*-part than the latter. The echo question cannot be uttered independently but depends on the previous statement.

In what follows, I will argue that the syntactic derivation of an echo question is also different from that of a genuine *wh*-question. As for the derivation of an echo question, almost all of the previous analyses focus on the property of C, which triggers the echo question. For example, Adger (2003) assumes that the C does not bear the Q-feature of the C in a genuine question. Carnie (2007) puts a

specific [+intonation] feature on the C. Sobin (2010) also speculates a “specific” type of C (C_{EQ}) for an echo question. Chernova (2014) provides the C with Q_E (a feature with an unvalued instance of the echo Q-feature). These just describe the same problem in different words; no solution is provided at all.

In this paper, I focus on the property of an echoed *wh*-phrase, and go on to argue that an echo question involves the one-fell-swoop application of movement. Specifically, the present analysis derives an echo question like (22), as illustrated in (23).

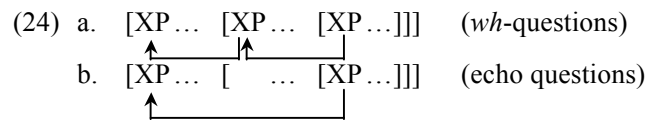
(22) He bought WHAT??

- (23) a. $\{_{\alpha} \sqrt{\text{buy,WHAT}}\}$
 b. $\{_{\alpha} \sqrt{\text{buy,WHAT}}\}$
 c. $\{_{v^*} v^*, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}$
 d. $\{_{v^*} v^*-\sqrt{\text{buy}}, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}$
 e. $\{_{\gamma} \text{he}, \{_{v^*} v^*-\sqrt{\text{buy}}, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}\}$
 f. $\{\delta T, \{_{\gamma} \text{he}, \{_{v^*} v^*-\sqrt{\text{buy}}, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}\}\}$
 g. $\{_{\epsilon} \text{he}, \{\delta T, \{_{v^*} \text{he}, \{_{v^*} v^*-\sqrt{\text{buy}}, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}\}\}\}$
 h. $\{_{\text{C}} \text{C}, \{_{\langle \phi, \phi \rangle} \text{he}, \delta T, \{_{v^*} \text{he}, \{_{v^*} v^*-\sqrt{\text{buy}}, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}\}\}\}$
 i. $\{_{\chi} \text{WHAT}, \{_{\text{C}} \text{C-T}, \{_{\langle \phi, \phi \rangle} \text{he}, \{\delta T, \{_{v^*} \text{he}, \{_{v^*} \text{bought}}, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}\}\}\}\}$
 j. $\{_{\langle \text{Q}, \text{Q} \rangle} \text{WHAT}, \{_{\text{C}} \text{C-T}, \{_{\langle \phi, \phi \rangle} \text{he}, \{\delta T, \{_{v^*} \text{he}, \{_{v^*} \text{bought}}, \{_{\alpha} \sqrt{\text{buy,WHAT}}\}\}\}\}\}\}$

The crucial point is that the echoed *wh*-phrase *WHAT* stays in its underlying position until the derivation proceeds at the stage of (23h), where the C is introduced. Then, *WHAT* directly moves to sentence-initial position without leaving any copy at an intermediate position. Then, some pronunciation strategy applies only to the lower copy of *WHAT*, and (22) is derived.⁶

This analysis has at least two theoretical advantages. One of them is that the interfaces easily detect a difference between an echo question and a genuine *wh*-question based on their representations provided by syntax. Recall that SOs must be interpretable at the interfaces. In other words, the interfaces must identify

which type of sentence it is on the basis of the representation made in syntax. If the genuine *wh*-question is derived in a successive-cyclic fashion, as in (24a), and the echo question is derived in a one-fell-swoop fashion, as in (24b), the interfaces easily identify them.



The second advantage is that it is not necessary to posit any *ad hoc* feature or syntactic operation to account for an echo question as previous researchers did. The present analysis hypothesizes that an echo question involves an echoed *wh*-phrase having uninterpretable features. Any other apparently peculiar properties arise as an interaction with the guiding principles of Minimal Computation. In this sense, we need to discuss whether or not uFs are actually involved in echo questions.

4.1. Lacking Values of Case and ϕ -features

To begin with, let us examine whether an echoed *wh*-phrase has an uninterpretable Case feature. It has been argued that a genuine *wh*-phrase has a value of a Case feature. Let us look at (25). In (25a), the *wh*-phrase occurs in sentence-initial position. Its realization can be either *who* or *whom*. As shown in (25b), where it moves along with the preposition *to*, the accusative form *whom* must appear. In the case of covert movement, as shown in (25c), there exist two types of dialects. One of them is (25c-i), where either *who* or *whom* can be used even after the preposition *to*. The other dialect is (25c-ii), where only the accusative form *whom* is used. In short, when a *wh*-phrase appears after a preposition, as in (25b) and (25c-ii), it needs to be an accusative form at least in the “conservative” dialect. This indicates that a *wh*-phrase has a value of a Case

feature.

- (25) a. Who(m) did you see?
b. To whom/*who did you speak?
c. i. Who gave what to who(m)? (= “liberal” dialect)
ii. Who gave what to whom/*who? (= “conservative” dialect)
(Janda (1985: 182))

Let us concentrate on those who use the “conservative” dialect and look at a *wh*-form in an echo question. Crucially, they accept and use the nominative form *WHO* as well as the accusative form *WHOM*, even after the preposition *to*.

- (26) A: I just spoke to Amelia Erhart.
B: You just spoke to WHO/WHOM?? (Janda (1985: 182))

This illustrates clearly that an echoed *wh*-phrase has an uninterpretable Case feature that remains uninterpretable to syntactic operations and its value is assigned through the interface with discourse.

Furthermore, the following examples in (27) provide another piece of evidence that an echoed *wh*-phrase bears an uninterpretable Case feature. Given that D is the locus of an uninterpretable Case feature, the overt realization of D in such examples indicates that the echoed *wh*-phrase receives its value.

- (27) a. John bought a WHAT??
b. You saw Bill’s WHAT??
c. She found that WHAT of Bill’s??
d. You ate all the WHAT?? (Bowers (1987: 47))

Hence, we can say that an echoed *wh*-phrase is different from a genuine *wh*-phrase and has an uninterpretable Case feature.

Next, let us move on to consider whether an echoed *wh*-phrase bears uninterpretable ϕ -features. An echoed *wh*-phrase actually receives its ϕ -features, which is supported by the example in (28).

- (28) A: There's two goobers in each shell.
B: There's two WHAT-s in each shell?
(vs., for this speaker, **There's two goobers in each shell.*)
(Janda (1985: 182))

The utterance of the questioner in (28B) includes both the echoed *wh*-phrase *WHAT* and the overt realization of the plural feature *-s*. This overt number feature shows that uninterpretable ϕ -features are inherent in an echoed *wh*-phrase.

Therefore, it is clear from these examples that an echo question has uninterpretable features (Case and ϕ -features).

4.2. Evidence for Movement: Licensing of Parasitic Gaps

In this section, I show that an echo question is derived by applying syntactic movement, even if the echoed *wh*-phrase is pronounced in its base position (see note 6). It has been acknowledged that a parasitic gap is licensed by syntactic movement but not by LF movement. In (29a), *which paper* moves from the object position of *file* to sentence-initial position in syntax, so that the parasitic gap in the object position of *reading* is licensed. In (29b), on the other hand, the parasitic gap fails to be licensed, since *which paper* moves in LF.⁷

- (29) a. Which paper did you file without reading? (*wh*-questions)
b. *Who filed which paper without reading? (multiple *wh*-questions)
(Kato (2009: 170–171))

If an echo question applies in syntax, a parasitic gap should be licensed. (30)

indicates that the echo question licenses the parasitic gap.⁸

- (30) ?You filed WHICH PAPER without reading?? (Kato (2009: 171))

This example strongly supports the view that an echo question applies in syntax.⁹

4.3. Not Using Intermediate Landing Sites

I have shown in Section 4.1 that an echo question contains a *wh*-phrase that has uninterpretable Case and ϕ -features and in Section 4.2 that an echo question is derived by the application of syntactic movement. These properties are necessary and sufficient conditions for confirming the present proposal that there is a derivation where syntactic movement applies in a one-fell-swoop fashion. I will demonstrate that the present proposal is supported by an echo question.

Evidence for a successive-cyclic application of a genuine *wh*-movement has been provided with respect to a scope property at an intermediate position. For example, the embedded direct object *what* in (31) can take a scope of the embedded clause as in (31a) or a scope of the matrix clause as in (31b).

- (31) Who knows where Mary bought what?
a. $\text{Wx (x knows (Wy (where Mary bought y)))}$
b. $\text{Wx, y (x knows (where Mary bought y))}$
(Hendrick and Rochemont (1988: 84))

The crucial point to the present discussion is the interpretation of (31a). This interpretation indicates that *what* moves to sentence-initial position through the embedded specifier position of CP.

If an echo question is derived by the application of movement directly to a sentence-initial position, an embedded scope like (31a) should not be available. This prediction is verified by the following example.

- (32) John remembers who ate WHAT.
a. *John remembers (W_x, y (x ate y))
b. W_y (John remembers (W_x (x ate y)))
(Hendrick and Rochemont (1988: 88))

Here, the echoed *wh*-phrase can take only a scope of the matrix clause, as in (32b), but cannot take a scope of the embedded scope, as in (32a). Given the assumption that the scope relation is interpreted at the CI interface by using the structural relation, the scope relation of (32) suggests that the echoed *wh*-phrase does not move through the specifier position of the embedded CP but moves directly to the specifier of the matrix CP.¹⁰

Therefore, we conclude that if a moved element bears a uF, its movement to sentence-initial position must apply in a one-fell-swoop fashion.

5. Interpretation at the Interfaces

In this section, I will discuss the effect an echo question has on the interfaces. If an echo question is derived by the application of syntactic movement, a certain derivational effect is reflected on both the SM interface (Section 5.1) and the CI interface (Section 5.2), respectively.

5.1. Interpretation at the SM Interface: Intonation Patterns

To begin with, let us consider the interpretation at the PF interface. An echo question displays a characteristic property of intonation patterns: the echoed *wh*-phrase manifests a rising pitch accent (L+H*) and a high-rising boundary (HH%) appears at the end of the sentence. This intonation pattern is assigned when the echoed *wh*-phrase stays in its original position as in (33B) and when it moves to sentence-initial position as in (34B).

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- (36) a. I believe that John saw Mary.
 b. *I believe that John saw who.
 c. *I believe who John saw.
 d. Who do you think that John saw? (Lasnik and Saito (1984, 1992))


On the other hand, the verb *wonder* selects a *wh*-element as its complement, as shown in (37).

- (37) a. *I wonder that John saw Mary.
 b. *I wonder John saw who.
 c. I wonder who John saw.
 d. *Who do you wonder John saw? (Lasnik and Saito (1984, 1992))

An echo question displays a property different from the one that the genuine *wh*-question does. The echoed *wh*-phrase can appear in the complement of the verb *believe*, as in (38), but cannot appear in the complement of the verb *wonder*, as in (39).

- (38) John thinks that Bill saw WHO??
 (39) a. *John wondered Bill saw WHO??
 b. *John wondered WHO Bill saw??
 (Hendrick and Rochemont (1988: 95, fn. 9))

That is, the echo question shows a peculiar selectional relation at the CI interface. This can also be possible since the CI interface easily identifies the echo question on the basis of its representation provided by syntax, which involves no intermediate movement.

- (40) [XP ... [... [XP ...]]] (echo questions) (=24b)


6. Conclusion

In this paper, I have argued for a syntactic derivation in which movement applies in a one-fell-swoop fashion on the basis of the derivation of an echo question. I have claimed that this type of movement is possible when a moved element bears a uF. If a moved element has a uF, obstructive copies of the uF are left in a derivation. Minimizing the number of applications diminishes the number of uFs, which is desirable in terms of Minimal Computation. In this paper, I have shown that an echoed *wh*-phrase actually has uninterpretable Case and ϕ -features, which forces it to move at one time from its original position to sentence-initial position.

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Notes

- 1) For the ease of exposition, I assume the domain to be a TP.
- 2) Abstracting away from details that are irrelevant here, this paper focuses on a CP phase and ignores a phase status of v^*P .

parasitic gap in a certain syntactic environment.

8) Michael S. Rochemont (personal communication) judges example (30) to be unacceptable (see also Engdahl (1983)), but he has said that the example becomes acceptable once the echoed part overtly moves to sentence-initial position as in (i).

- (i) WHICH PAPER did you file without reading??

I will leave this variation for further research.

9) An anonymous reviewer asks me how the present analysis differentiates the derivation of (29b) from that of (30) if (29b) is derived by the application of overt movement from its original position to [Spec, CP] and the deletion of the copy of [Spec, CP] (see note 6). The crucial difference is that the *wh*-phrase in (29b) moves to [Spec, CP] through [Spec, VP] to enter into an agreement relation with V, while that in (30) moves directly to [Spec, CP] without landing at [Spec, VP]. See the derivation of (8) for (29b) and that of (23) for (30).

10) An anonymous reviewer raises the question of whether or not an echoed *wh*-phrase can appear in an island. It is said that the *wh*-phrase can appear in an island when it stays at its original position, as in (iB), but it cannot when it occurs in the matrix [Spec, CP] position, as in (iC).

- (i) A: I was surprised at the rumor that he bought [mumble, mumble].
B: You were surprised at the rumor that he bought WHAT??
C:* WHAT were you surprised at the rumor that he bought??

(Inada and Imanishi (2003: 233–234))

I will leave this for further research.

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