On the Criterial Position
Mayumi Hosono, Leiden University
(m.hosono@umail.leidenuniv.nl)

Abstract

I argue that the Criterial Position (Rizzi 2013) is the position in which a category completes the valuation of its own unvalued features. I show that the Halting Problem (ibid.), (the violation of) the Empty Category Principle and the Extended Projection Principle are provided a unified account in terms of valuation. I argue that the violation of the Empty Category Principle is not idiosyncratic any longer, and that the *that*-trace effect, which represents the Empty Category Principle, is derived from some phonological constraints, not from syntactic ones. This unified account is derived from a theoretical consequence of the derivational system based on Labeling Algorithm (Chomsky 2013, 2014): labeling presupposes valuation.

1.   Introduction

Chomsky (2014) discusses the Halting Problem HP (Rizzi 2013), (the violation of) the Empty Category Principle ECP and the Extended Projection Principle EPP in the derivational system based on Labeling Algorithm LA (Chomsky 2013, 2014). In the HP, a category cannot move up further from a certain structural position. In (1), the *wh*-object *which dog* moves from its original position to [Spec,(lower)CP]. It must stop there and cannot move up to [Spec,(higher)CP]. Such positions as [Spec,(lower)CP] are called the Criterial Position CriP.

(1)   *[which dog do you wonder [~~which dog~~ [C John likes ~~which dog~~]]]?

In the ECP illustrated in (2a), the *wh*-subject *who* cannot move up across the overt complementizer *that*, which has been referred to as the *that*-trace effect (Chomsky 1981, 1986). When the complementizer disappears as in (2b), the *wh*-subject can move up to sentence-initial position.

(2)   a. *Who do you think that [~~who~~ read the book]?
         b.   Who do you think Ø [~~who~~ read the book]?

The EPP is typically illustrated by the requirement of an overt subject in [Spec,TP] in languages such as English:

(3)   *(John) kissed Mary.

Chomsky (2014) claims that the problem arising from the HP (1) differs from that arising from (the violation of) the ECP (2a-b) and the EPP (3), associating the latter two. English has the EPP and obeys the ECP, whereas Italian neither has the EPP nor obeys the ECP. The ECP violation in English illustrated in (2b) is idiosyncratic.

In this paper, I discuss the properties of the CriP in detail. I argue that the CriP is the position in which a category completes the valuation of its own unvalued features. I show that the HP, (the violation of) the ECP and the EPP are provided a unified account in terms of valuation. I argue that the ECP violation is not idiosyncratic any longer, and that the *that*-trace effect, which represents the ECP, is derived from some phonological constraints, not from syntactic ones. This unified account is derived from a theoretical consequence of the LA-based derivational system: labeling presupposes valuation.[1]

This paper is organized as follows. Section 2 introduces the LA procedures proposed by Chomsky (2013, 2014). Section 3 introduces the accounts of the HP, the ECP (violation) and the EPP presented by Chomsky (2014). Section 4 discusses the properties of the CriP in detail. I show that the HP, (the violation of) the ECP and the EPP are provided a unified account in terms of valuation. Section 5 makes a brief conclusion. Throughout this paper, I assume the knowledge on the theoretical basis since Chomsky (2000) for the readers' side.

2.   The Procedures of Labeling Algorithm

Chomsky (2013, 2014) proposes the following LA procedures:

(4)   a.   In the configuration [H, XP], with H being a phasal head, LA takes H as the label;
        b.   In the configuration [XP, YP], either procedure 1 or 2 is chosen:
             1.   Either XP or YP moves out; LA takes the head of the phrasal object that does not move out as the label;
             2.   XP and YP agree in some feature; LA takes that shared feature as the label;
        c.   In the configuration [H, XP] with H being a non-phasal head, i.e. V/R(oot) or T,
             i)   The subject in [Spec,XP] moves to [Spec, H] and strengthens the non-phasal head;
             ii) That raised subject and the non-phasal head agree in some feature; LA takes that shared feature as the label.

Following Borer (2005a,b, 2013), Chomsky (2013, 2014) assumes that any category, noun, verb, etc, is created by merge of a root and a functional head. For instance, V/R(oot) in (4c) merges to v* to be a verbal category. I assume this claim in this paper. It is argued that the non-phasal heads, V/R(oot) and T, are weak and cannot be labels by themselves (Chomsky 2014:5-6). They must be strengthened by the movement of the subject in the Spec of their complement, as described in (4ci). This requirement of the subject movement is referred to as the EPP. The

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[1] Throughout this paper, I use the term *Labeling Algorithm* LA for an abstract syntactic mechanism, and the term *labeling* for a specific syntactic operation.

procedures of (4b2) and (4cii) describe the syntactic operation called *Agree*, i.e valuation (Chomsky 2000, 2001, 2004, 2008): unvalued features of one are valued by the other so that the former can be interpreted at the interface with the other grammatical components. When a label is determined by Agree, LA seeks the feature shared by XP and YP in (4b2) and the feature shared by a non-phasal head and a subject raised to its Spec in (4cii). Conventionally, LA takes, as the label, the verbal/functional head, either X or Y, in (4b2) and the non-phasal head in (4cii).[2]

On the basis of the procedures above, the derivations of v*P and CP phases are described in (5i-viii). (5a-b) illustrates the final representations of the derivations. I follow the procedure described in Chomsky (2014:11,(8)), which is carried out more in a successive-cyclic manner than the procedure described in Chomsky (2014:8,(5)).

(5)   a.   R+~~v*~~[$_\alpha$ DP [~~R~~ [$_\beta$ ~~DP~~ …]]]   (= v*P phase)
       b.   ~~C~~   [$_\alpha$ DP [T [$_\beta$ ~~DP~~ …]]]   (= CP phase)

i)   DP in [Spec,β] moves to [Spec,R] in (5a) and to [Spec,T] in (5b) to strengthen the non-phasal heads;
ii)   v* and C merge to its complement, α, in (5a) and (5b) respectively;
iii) Phasehood is inherited from v* to R in (5a) and from C to T in (5b);
iv)   DP Obj(ect)-agrees with R in (5a); DP Subj(ect)-agrees with T in (5b);
v) α is labeled RP in (5a) and TP in (5b);
vi)   R moves to v*, and v*, the verbal affix, is deleted in (5a); C is simply deleted in (5b);
vii) Phasehood is activated in the original position of R in (5a) and in that of T in (5b);
viii) β, the complement of R in (5a) and that of T in (5b), is transferred.

A theoretical consequence of the LA-based derivational system is that labeling presupposes valuation; thus, Agree is not an independent syntactic operation. In (5iv), φ-features of R/T are valued by DP, and the Case of DP is also valued by the head; DP is assigned the Acc(usative) Case in (5a) and the Nom(inative) Case in (5b). LA labels α RP in (5a) and TP in (5b); see (5v). In the probe-goal system (Chomsky 2000), Agree was an independent syntactic operation that proceeds along with its own needs: a head searched a goal to value its uninterpretable features. Contrary to the probe-goal system, Agree is part of labeling in the LA-based derivational system.

3.   The HP on one hand, and (the violation of) the ECP and the EPP on the other

According to Chomsky (2014:10), the HP illustrated in (1), which is repeated in (6), arises since labeling cannot be done. It is argued that C has valued features and a *wh*-phrase has unvalued features (Chomsky 2014:10,ft.16). To label α, *which dog* and C must agree. After *which dog* moves to the Spec of the higher CP, it is invisible in [Spec,β] and cannot agree with C. α cannot be labeled, and the sentence is ungrammatical.

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[2] In both configurations, [H,XP] and [XP,YP], Agree occurs between two heads, H and X in the former and X and Y in the latter. See a series of Chomsky's papers given above.

(6)   *[which dog do you wonder [α ~~which dog~~ [β C John likes ~~which dog~~]]]?

The ECP illustrated in (2) is associated with the EPP, on the other hand. It is claimed that they both concern the requirement of an overt subject in [Spec,TP]. Italian allows [Spec,TP] to be empty as in (7a). The *wh*-subject *chi* can move to the Spec of the higher CP across the overt complementizer *che* 'that' in the lower CP; see (7b). In English, [Spec,TP] must be overtly filled as in (8a). The *wh*-subject *who* cannot move to the Spec of the higher CP across the overt complementizer *that* in the lower CP; see (8b). Italian does not have the EPP requirement and can violate the ECP, whereas English has the EPP requirement and obeys the ECP. The *wh*-subject can exceptionally move, when the complementizer in the lower CP disappears; see (8c). The violation of the ECP in English is 'idiosyncratic', according to Chomsky (2014:8).

(7)   a.   (Gianni) vincerà.   [Ita.]
             Gianni win-FUT-3sg
             'Gianni will win.'

       b.   Chi   credi   che ~~chi~~ vincerà?
             who think-PRES-2sg that   win-FUT-3sg
             'Who do you think that will win?'

(8)   a.   *(John) read a book.
       b.   *Who do you think [CP that [α ~~who~~ T [β(=v*P) ~~who~~ read the book]]]?
       c.   [CP Who do you think Ø [α ~~who~~ T [β(=v*P) ~~who~~ read the book]]]?

Chomsky (2014:6-8) accounts for the differences between Italian and English in terms of the strength of T. Italian has quite a rich inflectional system; see the verbal form *vincerà*, which inflects for future tense and the third person singular. Italian has a strong T, which can label itself. It does not need an overt subject in its Spec to strengthen it, as illustrated in (7a). In the same way, when the *wh*-subject *chi* moves out as in (7b), T, being strong, can label itself (, regardless of whether the lower CP has the overt complementizer *che* or not).[3]

        English, on the other hand, has a poor inflectional system; see the verbal form *read*, which inflects neither for tense nor for person.[4] English has a weak T, which cannot label itself. It needs an overt subject in its Spec to strengthen it; see (8a). When the *wh*-subject *who* moves to the Spec of the higher CP across the overt complementizer *that*, the copy in [Spec,α] is invisible. It cannot agree with T. Since α cannot be labeled, (8b) is ungrammatical.[5] In the idiosyncratic case (8c), it is claimed that when the complementizer in the lower CP disappears, the entire clause is one CP phase (, though the lower clause maintains the label of CP). Since the *wh*-subject in its original position, i.e. in [Spec,β(=v*P)], can directly access the syntactic operations carried out in the matrix phase, it can move up to sentence-initial position.

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[3] Chomsky does not describe the detailed derivational process of the ECP cases (7-8b), but the derivation of them proceeds in the way described here based on his argument.
[4] The pronunciation differs between the present tense and the past tense, which is irrelevant here.
[5] See footnote 3.

4.   The properties of the Criterial Position

Let us consider the properties of the CriP in detail. (9a-b) illustrates the derivation of typical declarative sentences. After R(*kissed*) moves to v*, the subject *John* merges.[6] After the subject moves out, γ is labeled v*P. The Case feature of the subject is unvalued in [Spec,γ(=v*P)], since it cannot be valued by v*. In [Spec,β], the subject agrees with T and is assigned the Nom Case. β is labeled TP. The subject stops there.[7]

(9)   a.   John kissed Mary.
        b.   [$_{α(=CP)}$ C [$_{β(=TP)}$ John [T [$_{γ(=v*P)}$ ~~John~~ [R(kissed)+v* [$_δ$ ~~R(kissed)~~ Mary]]]]]]]

In [Spec,β(=TP)], i.e. in the CriP, valuation of all the unvalued features of the subject is completed. The subject is frozen there. That is, the CriP is the position in which a category completes the valuation of its own unvalued features.

In the halting case (6), which is repeated in (10a-b), the *wh*-object *which dog* moves to [Spec,γ] and further to [Spec,α]. Since the verb *wonder* subcategorizes a *wh*-clause, the lower C has Q. The *wh*-object in [Spec,γ] agrees with C$_Q$. γ is labeled QP. In [Spec,γ], i.e. in the CriP, the *wh*-object completes the valuation of its own unvalued features.[8] It cannot move up further.

(10)   a.   *Which dog do you wonder John likes?
        b.   *[$_α$ which dog do [$_{β(=TP)}$ you wonder [$_{γ(=QP)}$ ~~which dog~~ C$_Q$ [John likes ~~which dog~~]]]]?

Consider the ECP violation (7c), which is repeated in (11a-b). Since Chomsky (2008), it has been assumed that a *wh*-subject moves from [Spec,v*P] to [Spec,TP] on one hand, and from [Spec,v*P] to [Spec,CP] on the other, in a parallel manner. According to this analysis, the *wh*-subject *who* moves from [Spec,ε] to [Spec,δ] on one hand, and from [Spec,ε] to [Spec,γ] on the other. It is assigned the Nom Case in [Spec,δ] in Agree with T, but still has unvalued Q/*wh*-features. Since the verb *think* subcategorizes a *that*-clause, the lower C does not have any features such as Q that can be shared by the *wh*-subject. Agree does not occur between the lower C and *who* in [Spec,γ]. The *wh*-subject with unvalued features continues to move up.[9] In [Spec,α], it agrees with C$_Q$ and its unvalued features are valued. Completing the valuation of all of its own unvalued features, the *wh*-subject stops there.

(11)   a.   Who do you think loves Mary?
        b.   [$_{α(=QP)}$ who do+C$_Q$ [$_{β(=TP)}$ you think [$_{γ(=CP)}$ ~~who~~ C [$_{δ(=T*P)}$ ~~who~~ [T [$_{ε(=v*P)}$ ~~who~~ loves Mary]]]]]]?

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[6] v* should have been already deleted when the subject merges; see (5vi). Here, I notate as *R(kissed)+v* without a deleting line for convenience' sake.
[7] α is labeled CP based on (4a). To label δ VP, the object *Mary* would have to move to [Spec,R(kissed)], which issue I leave aside here.
[8] Its Case feature has been already valued by the lower v*, which detailed procedures I leave aside here.
[9] After the *wh*-subject moves out from [Spec,γ], γ is labeled CP based on (4b1).

The ECP violation is thus no longer idiosyncratic. It is provided a unified account under the LA-based derivational system. That is, in the halting case (10), the *wh*-object cannot move up further since it completes the valuation of its own unvalued features in [Spec,γ(=QP)]. In the ECP violation (11), the *wh*-subject can move up further, since some of its unvalued features are still not valued in [Spec,γ(=CP)]. It stops in [Spec,α(=QP)], since it completes the valuation of all of its own unvalued features. The same argument applies to Italian; see (7b). Since the complementizer *che* 'that' does not have any features shared by the *wh*-subject *chi* 'who', Agree does not occur between them. The *wh*-subject with unvalued features continues to move up. In the highest Spec, it agrees with C_Q and completes the valuation of all of its unvalued features. The *wh*-subject stops there.[10]

Recall that (11) is ungrammatical when it has the overt complementizer *that*, i.e. the *that*-trace effect illustrated in (8b), which is repeated in (12a). When the *wh*-phrase is extracted from the object position, the complementizer can appear; see (12b). As we have seen, the presence of an overt complementizer is not a problem in Italian; see (7b). Hence, it is plausible that the *that*-trace effect, which represents the ECP, is derived not from constraints in syntax, but from some constraints in the phonological component that prevent the occurrence of an overt complementizer in a lower position.

(12)   a.   *Who do you think [$_{CP}$ that [$_\alpha$ ~~who~~ [$_{\beta(=TP)}$ read the book]]]?
         b.   Who do you think [$_{CP}$ that [$_\alpha$ John [$_{\beta(=TP)}$ loves ~~who~~]]]?

Let us finally consider the EPP. It is argued that a non-phasal head requires a subject to move to its Spec to strengthen it; see (4ci). On the basis of the argument here, the subject moves, not due to the EPP requirement, but to value its own unvalued features. In (9), which is repeated in (13a-b), the external subject moves out from [Spec,γ(=v*P)], since its Case feature cannot be valued by v*. In [Spec,β(=TP)], it is assigned the Nom Case. It completes the valuation of all of its unvalued features and stops there.[11]

(13)   a.   John kissed Mary.
         b.   [$_{\alpha(=CP)}$ C [$_{\beta(=TP)}$ John [T [$_{\gamma(=v*P)}$ ~~John~~ [R(kissed)+v* [$_\delta$ ~~R(kissed)~~ Mary]]]]]]

Chomsky (2013:36,ft.36) addresses the question why it is always the subject, not v*P, that moves out. The answer is clear: v*P does not move, since it does not have unvalued features. The argument here answers to a more global question: why does a category move out from a position and stop in another position? The answer is: a category moves out since it has unvalued features; it stops where it completes the valuation of all of its unvalued features. Thus

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[10] The same argument also applies to the v*P phase (Chomsky 2014:7,(3')):
i)   [who do you [$_\delta$ v* [$_\alpha$ ~~who~~ expect [$_\beta$ to win]]]]
Since unvalued Q/*wh*-features of *who* are not valued in [Spec,α], it continues to move up. In the highest Spec, they are valued and *who* stops there.
[11] In the argument here, morphological richness is irrelevant to the presence or absence of the EPP and the ECP. It is plausible that actual morphological realization is a matter of the phonological component, as claimed by Sigurðsson (2004) and Bobaljik (2006).

in (5a-b), DP in [Spec,β] moves to the Spec of R/T, since it has an unvalued Case feature. It stops in [Spec,α], where its Case feature is valued. In (11), the *wh*-subject moves out from [Spec,γ], since it still has unvalued Q/*wh*-features. It stops in [Spec,α], where they are valued.[12] Labeling is then the result of the completion of valuation.

4.   Conclusion

I have argued that the CriP is the position in which a category completes the valuation of its own unvalued features. I have shown that the HP, (the violation of) the ECP and the EPP are provided a unified account in terms of valuation. In the HP (10), the *wh*-object cannot move up further, since all of its unvalued features are valued in the Spec of the lower CP. In the ECP violation (11), the *wh*-subject continues to move up since some of its unvalued features are still not valued in the Spec of the lower CP. It stops in the Spec of the higher CP, where it completes the valuation of all of its unvalued features. The ECP violation is not idiosyncratic any longer. The *that*-trace effect (12a), which represents the ECP, is derived from some phonological constraints, not from syntactic ones. In the EPP (13), the subject can move up from the Spec of v*P, where its Case feature is unvalued. It stops in the Spec of TP, where it is assigned the Nom Case and completes the valuation of all of its unvalued features. The unified account here is derived from a theoretical consequence of the LA-based derivational system: labeling presupposes valuation.

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[12] This argument applies to all intermediate positions such as [Spec,v*P], from which, e.g. a *wh*-object with unvalued Q/*wh*-features moves out.

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