ON PHASE HEAD IN SPLIT CP HYPOTHESIS

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1. Introduction

In Minimalism (Chomsky (1995, 2000, 2001, 2004, 2007, 2008)), syntactic objects (SOs) are built from bottom to top, by iterative application of the operation Merge, which combines two SOs. SOs built by Merge are mapped onto the semantic interface of the Conceptual-Intentional system (C-I) and the phonological interface of the Sensorimotor system (SM). The operation which maps SOs onto these two interfaces is called Transfer (in particular, mapping SOs onto the phonological side is called Spell-Out). Chomsky (2004, 2007, 2008) assumes that Transfer applies in syntactic derivational chunks which are called phases. In this phase theory, syntactic computations are derivationally determined by application of iterating Merge and Transfer phase by phase. Phases are assumed to be CP and vP, whose head triggers Transfer.

While Minimalism focuses on elementary syntactic operations, Rizzi’s (1997, 2004) Cartographic approach focuses on the fine details of syntactic structures. It is an attempt to draw maps as precisely as possible by relating syntactic configurations with information structure. This research

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topic assumes that CP is split into a number of different functional projections. This approach offers an interesting question when it meets phase theory: if CP has a number of functional projections, which head is a phase head and triggers Transfer?

In this paper, addressing this issue, I propose that Top and Force in the Cartographic approach are phase heads whereas Foc and Fin are not. My proposal gives a unified account of three asymmetries between Topicalization and Focalization in English. First, Topicalization induces a syntactic island from which extraction of elements is banned, while Focalization does not form a syntactic island. Second, Focalization can cause Subject-Aux Inversion (SAI) in embedded clauses, whereas Topicalization cannot. Third, Topicalization shows a comma pause, while Negative Inversion as Focalization does not.

This paper is organized as follows. In section 2, based on Rizzi's (1997) Cartographic approach, I propose that Top and Force are phase heads. Section 3 shows that my proposal gives a unified account of the three asymmetries. Section 4 concludes this paper.

2. Proposal

Following the Cartographic approach (Rizzi (1997)), I adopt the Split CP hypothesis, where CP is not a single projection, but layered projections. In particular, I assume that CP has the following structure.¹

(1) CP = [ForceP [TopP [FocP [FinP [TP …

(1) assumes that each projection has a single projection and cannot be recursive in English.²

Rizzi (1997) supposes that the left periphery in a clause is a kind of interface with TP and the clausal domain higher than CP, or discourse. ForceP gives to discourse the information of clausal type, for example, a question, a declarative, an exclamative, a relative, a comparative, an adver-

¹ Note that Rizzi (2004) revises the structure of the left periphery as in (i).

(i) CP = [ForceP [TopP* [IntP [TopP* [FocusP [ModP* [TopP* [FinP [TP …

In this structure, * means that the projection can be recursive. IntP is the position in which wh-elements such as “why” can occur. ModP is the position of some types of adverbs. He derives this structure from the principle of locality, Relativized Minimality (RM), but I will not adopt this in this paper.

² In languages like Italian, TopP can be recursive. It is important to argue about this difference between English and Italian based on parametric variation across languages, but I will focus on English in this paper and will not argue about this point.
bial of a certain kind, etc. On the other hand, Fin(iteness)P gives to TP the information of the verbal system of the clause. For example, if a complementizer is that, an embedded TP clause must be a finite clause in English, or if a complementizer is for, an embedded TP clause must be a non-finite clause in English. CP should be divided into ForceP and FinP.

Top and Foc also have one and only one head in each projection because multiple specifiers cannot be linearized under the Kayne’s (1994) Linear Correspondence Axiom (LCA). A topialized or focalized element moves to a specifier position of each phrase to satisfy the Topic or Focus feature. Thus, the specifier of TopP is occupied by one topialized element. On the other hand, the specifier of FocP is occupied by one focalized element, one wh-element, or one element of Neg-Preposing. Each complement plays a distinctive role in the information structure. The complement of TopP is comment, which is new information in the discourse, while the topIALIZED phrase is old information in the discourse. In contrast, the complement of FocP is presupposed in the discourse, while the focalized phrase is new information in the discourse. Note that as Kiss (1998) points out, Focus is divided into two types of Focus: Identificational Focus (ID Focus) and Informational Focus (Info Focus). Semantically, ID Focus represents exhaustiveness implicature, whereas Info Focus does not express this. Kiss (1998) argues that the former moves into the specifier of FocP, while the latter does not. Following her argument, I will concentrate on ID Focus as follows.

Under the split CP structure, I propose that two functional heads Top and Force are phase heads, trigger Transfer, and form Spell-Out domains.

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3 An anonymous EL reviewer points out that a topic element is base-generated in the sentence-initial position.

(i) Nihon-wa dansei-ga tanmei desu
    Japan-Top male-Nom short-lived polite
    ‘In Japan, the male is short-lived.’ (Endo (2007: 106))
Endo (2007) argues that this type of topic element functions as scene-setting and the element Nihon ‘Japan’ has no grammatical relation with the predicate tanmei ‘short-lived’ in (i). Not all topialized elements are associated with movement operations. Therefore, there are some parametric differences that affect properties of topic elements across languages.

4 Thanks to an anonymous EL reviewer for reminding me of this point.

5 Belletti (1999) argues that the postverbal subject as Info Focus moves into the specifier of FocP in VP in order to check the Focus feature. It is interesting to examine the difference between Kiss’s (1998) argument about Info Focus and Belletti’s (1999), but I will not address this issue because I focus on ID Focus in this paper.
Force is the highest head of C-domain and has the same function of standard C as a phase head. Therefore, it is a phase head. For Top, the topic-comment relation is a sort of predication and its predication is established when a topicalized element and the rest of sentence are Transferred separately. Therefore, Top is a phase head, Transfers its complement TP, and forms distinct phase domains (see Kuroda (1972)). On the other hand, the focus-presupposition relation is a sort of quantification such as operator-variable binding (see Rizzi (1997)). This relation is established when an operator and its variable are in the same domain, so Foc is not a phase head.

First, let us consider the case where Top is introduced into derivations. In this case, Spell-Out occurs when Top probes a topic element in its complement and then attracts it to its specifier, transferring its complement FocP or FinP to PF (or SM interface), as shown in (2).

\[
\text{(2a)} \quad \text{[TopP Top (} [\text{FocP Foc}] [\text{FinP Fin} [\text{TP} ... \text{Transfer]}
\]

And then, Force merges with TopP and then Transfers it.

\[
\text{(2b)} \quad \text{[ForceP Force [TopP Top ... Transfer]}
\]

On the other hand, when Top does not occur in derivations, Force merges with FocP (or other phrases) and Transfers it as shown in (3).

\[
\text{(3)} \quad \text{[ForceP Force (} [\text{FocP Foc}] [\text{FinP Fin} [\text{TP} ... \text{Transfer]}
\]

In the next section, I will discuss empirical consequences of my proposal.

3. Deriving Asymmetries between Topicalization and Focalization

I will argue that my proposal provides a unified account of the three asymmetries between Topicalization and Focalization in English: island effects, head movements, and phonological boundaries.

3.1. Island Effects

When a topicalized element precedes a focalized element, Topicalization and Focalization can cooccur in the same embedded clause as shown in (4).

\[6\] In this paper, italic font means topicalized elements and bold font focalized elements.
(4) a. Becky said that *these books, only with great difficulty* can she carry.
   b. He said that *beans, never in his life* had he been able to stand.  
   (Koizumi (1999: 141))

In (4), *these books* and *beans* are topicalized elements, so these occupy the specifier of TopP. On the other hand, *only with great difficulty* and *never in his life* are focalized elements since the former has the focus operator, *only*, and the latter the negative adverb, *never*, so these occupy the specifier of FocP.

However, when these word orders are reversed, these sentences will be ungrammatical, as shown in (5).

(5) a. *Becky said that only with great difficulty can *these books* she carry.
   b. *Becky said that only with great difficulty *these books* can she carry.  
   (Koizumi (1999: 141))

Rizzi’s (1997, 2004) Cartographic approach can explain this order restriction because the split CP structure requires a topicalized phrase to precede a focalized phrase.

This approach, however, cannot account for one of the differences between Topicalization and Focalization. The former induces a syntactic island from which extraction of elements is banned, while the latter does not. This is illustrated in the following examples:

(6) a. *On which table did Lee say that *these books* she will put?
   b. On which table did Lee say that *only these books* would she put?

(7) a. Which books did Becky say that *to Aaron* she will give?
   b. Which books did Becky say that *only to Aaron* will she give?

(8) a. *This is the book that John said that *Mary₁* he would inform *tᵢ* that I had read.
   b. This is the book that John said that *only Mary₁* would he inform *tᵢ* that I had read.  
   (Koizumi (1999: 141))

In Rizzi (2004), this intervention effect is analyzed by *Relativized Minimal-

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7 An anonymous reviewers point out that Rizzi (2004) argues that topicalized elements do not always induce syntactic islands in Italian. As Bianchi and Frascarelli (2010) show, topic elements are divided into three types: Aboutness-shift Topic, Contrastive Topic, and Given Topic. Inducing syntactic islands may depend on the type of topic. I leave this issue for future research.
ity (RM), but he wrongly predicts that while (6a), (7a), and (8a) are grammatical, (6b), (7b), and (8b) are not, because wh-elements and focalized elements are the same class of the intervention effect on RM.\(^8\) Therefore, Rizzi’s (2004) Cartographic approach cannot account for the problem of how Topicalization induces an island and Focalization (Neg-Preposing) does not.

This obvious problem with the Cartographic approach is solved by my proposal. When Topicalization occurs in an embedded clause, Top triggers Transfer and then sends its complement to two interfaces. Then, the complement will be inaccessible to further syntactic operations due to the following Phase Impenetrability Condition (PIC) proposed by Chomsky (2000):

(9) Phase Impenetrability Condition (Chomsky (2000: 108))

In phase P with head H, the domain of H is not accessible to operations outside P and only H and its edge are accessible to such operations.

Given PIC, let us consider the derivation of (6a). The proposed analysis gives this sentence the following structure.

(10) [On which table\(_j\) did Lee say [Force\(_P\) that [Top\(_P\) these books\(_i\)]]?

First, in Step 1, Top attracts these books to the specifier of Top\(_P\). Second, in Step 2, the head Transfers TP. Finally, in Step 3, on which table tries to move to the specifier of Force\(_P\), but this movement violates PIC. Accordingly, this sentence is ungrammatical.

On the other hand, when Focalization occurs in an embedded clause, Foc does not trigger Transfer of its complement, which will be accessible to further syntactic operations. Therefore, on which table can be extracted from the embedded clause. For example, the proposed analysis gives (6b) the following structure.

\(^8\) An anonymous reviewer asks whether ID Focus or Info Focus is involved in the argument about island effects. In this paper, I focus on ID Focus as shown above and it does not induce an island effect.
In Step 1, Foc attracts **only these books** to the specifier of FocP. Then, in Step 2, *on which table* moves into the specifier of ForceP, which serves as an escape hatch. Finally, in Step 3, Force Transfers FocP. The *wh*-element at the specifier of ForceP is accessible to the attraction of Foc in the matrix clause. Thus, this sentence becomes grammatical.

Note that I can account for the classic cases of *wh*-island violations such as (12).

(12) a. *What did John wonder [who would win t]?*  
    b. *What did John wonder [ForceP who, Force [TP t would win t]]?*

(12) shows that, in the embedded clause, the subject *wh*-phrase *who* occupies the specifier of ForceP because the verb *wonder* selects the *wh*-clause as its complement and this requirement is satisfied by movement of the *wh*-phrase into the specifier of ForceP. In this case, the object *wh*-phrase *what* cannot move into the landing site of matrix clause because the specifier of ForceP as escape hatch is occupied by *who* and *what* cannot be extracted by PIC.

3.2. Head Movement

Let us turn to the second asymmetry between Topicalization and Focalization. Focalization can cause Subject-Aux Inversion (SAI) in embedded clauses, whereas Topicalization cannot. Consider (13).

(13) a. *Jobs admitted [that this course will they only rarely enjoy]*  
    b. Jobs admitted [that only rarely will they enjoy this course]

We can explain this asymmetry under the assumption that head movement (HM) is applied at PF after all syntactic operations have applied (see Chomsky (1995, 2001), Platzack (2010)). To apply HM at PF, a moved element and its landing site must be in the same Spell-Out domain. Given this assumption, let us consider (13a).
Step 3 Head Movement

(13a) \[ \text{TopP } this \text{ course}\text{, Top } [\text{TP } they \text{ will only rarely enjoy t}] \]

Step 2 Transfer

Step 1 Topicalization

First, Topicalization occurs (Step 1), and then, Top triggers Transfer and sends its complement TP to PF (Step 2). After Top triggers Transfer, the moved element will and the landing site Top are not in the same Spell-Out domain. Hence, the auxiliary verb will in TP cannot move into Top in the next Spell-Out domain (Step 3).

On the other hand, (13b) has the derivation as follows.

Step 3 Head Movement

(13b) \[ \text{ForceP } [\text{FocP only rarely, Foc } [\text{TP they will t, enjoy this course}] ] \]

Step 2 Transfer

Step 1 Focalization

First, Focalization occurs (Step 1) and, then Force merges with FocP and Transfers it into PF (Step 2). In this case, the auxiliary verb will in TP can move into Foc (Step 3) because the moved element will and the landing site Foc are in the same Spell-Out domain.\(^9\), \(^10\), \(^11\)

\(^9\) An anonymous reviewer asks whether this HM is optional or not. My speaker presents me with the following data.

(i) ?Jobs admitted [that only rarely they will enjoy this course]

Its acceptability is slightly worse than (13b), but fully better than (13a). It shows that this HM can be optional, and when it occurs, it affects some PF properties such as linear ordering.

\(^10\) Consider the case of V-to-v movement in English. Richards (2010) assumes that VP has the structure shown in (i).

(i) \([FP F [vP Subj \, v \, [VP V \, Ob] ...]\]

He names the functional head \(v_C\) and considers it to be a phase head, and therefore standard \(v\) is not a phase head. Adopting his assumption, I can analyse V-to-v movement in English with my proposal. In this case, a phase head is F, not v, and the phase head Transfers its complement vP so that V and v are in the same Spell-Out domain at PF. Then, V-to-v movement occurs in the same way as the above case.

\(^11\) An anonymous reviewer points out that there is verb raising in French, which is commonly described in the literature as the movement of V to T. Consider the sentence
3.3. Phonological Boundaries

There is a phonological difference between Topicalization and Negative Inversion, which is a type of Focalization, as shown in (14) and (15).

(14)  a. *In some cases, such a course can be justified merely by success. (comma pause)  
b. *In some cases such a course can be justified merely by success. (no comma pause)

(15)  a. In no case can such a course be justified merely by success.  
b. *In no case, can such a course be justified merely by success. (comma pause)  

(Büring (2005: 2–3))

Topicalization in (14) must show a comma pause, while Negative Inversion in (15) must not.

This difference can be accounted for by my proposal about a phase head Top and Nespor and Vogel’s (1986) Prosodic Hierarchy. The latter derives prosodic domains from syntactic structures by mapping rules. For the sentence level, the rules map CP onto the Intonational Phrase (IntP) of Prosodic Hierarchy. According to Nespor and Vogel (1986), IntP also determines if there are pauses in sentences. Based on these assumptions, I predict that in the phonological interface, when Topicalization occurs, the topicalized element and the rest of the TPs form each IntP, whereas, in the case of Focalization, the whole sentence forms IntP. It is because when Topicalization occurs, a phase head Top merges with TP and Transfers its complement TP into PF. So, a topicalized element and the following sentence are not in the same Spell-Out domain, and each forms separate domains as in (16).12

from French in (i).

(i) Je mange souvent des pommes.  
I eat often of the apples  
‘I often eat apples.’ (Carnie (2007: 246))

Verb *mange ‘eat’ appears to the left of adverb *souvent ‘often’ in French. In the contrast to English, I assume that French has a strong feature of T, which triggers V-to-T movement in syntax. It is important to examine this parametric difference across languages. I leave this issue for future research.

12 An anonymous reviewer asks whether a comma (pause) must be applied or can be optional whenever Transfer occurs and forms separate Spell-Out domains. As mentioned above, it must be applied in the case of Topicalization at the level of IntP. But I don’t understand other phenomena that involve in the interaction between comma pause and IntP, so I leave this for future research.
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(16)  a. $[\text{TopP } \text{In some cases Top} \overset{\text{[TP such a course can be justified merely by success]]}}{\longrightarrow} \text{Transfer}]

b. $(\text{In some cases}), (\text{such a course can be justified merely by success}.)$

c. $(\text{IntP In some cases}), (\text{IntP such a course can be justified merely by success}.)$

On the other hand, when Negative Inversion occurs, a non-phase head Foc merges with TP and does not Transfer. Then, Force merges with FocP and Transfer its complement FocP into PF as in (17).

(17)  a. $[\text{ForceP Force} \overset{\text{[FocP In no case can such a course be justified merely by success]]}}{\longrightarrow} \text{Transfer}]

b. $(\text{In no case can such a course be justified merely by success}.)$

c. $(\text{IntP In no case can such a course be justified merely by success}.)$

Therefore, a focalized element and the following sentence are in the same Spell-Out domain and the whole sentence forms a single phonological domain. A phase head Top Transfers its complement so that topicalized sentences contain two separate IntPs. In contrast, a non-phase head Foc does not trigger Transfer so that focalized sentences have a single IntP. Consequently, Topicalization allows a comma pause between two IntPs, whereas Focalization does not.13

When my proposal extends the vP domain, a phase head v Transfers its complement VP so that subject DP is separated from the complement VP at PF. According to Nespor and Vogel (1986), I assume that these domains correspond to Phonological Phrase (PhP) of Prosodic Hierarchy and PhP is the domain of determining nuclear stress, not pauses in sentences.

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13 An anonymous reviewer points out that Rizzi (2009) shows that Top and Foc determine the intonational contour of sentences: Top assigns downward intonational contour to sentences, whereas Foc assigns flat intonational contour to sentences. I agree with this point. In my proposal, Top and Foc, as Rizzi (2009) points out, determine each intonational contour because IntP is the domain of determining intonational contour and pauses of sentences. When Transfer occurs, Top signals that downward intonational contour is assigned to IntP which is not involved in Top. In the case of Foc, the whole sentence becomes IntP and so flat intonational contour is assigned in the domain. Therefore, the intonational contours of sentences depend on functional heads in IntPs.
As shown in (18), there are some parallelisms between CP phase and vP phase, but each transfer domain forms different phrases at PF (or SM interface), that is IntP and PhP. Therefore these domains work distinct roles at PF (or SM interface).

4. Conclusion

In this paper, I proposed that Top is a phase head by providing a unified account of the three asymmetries between Topicalization and Focalization in English: island phenomena, head movement, and phonological boundaries.

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