A Preliminary Study on Phase and Convergence

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1. Introduction
To reveal the system of language has been one of the hard problems of mind/brain. Various attempts to solve this puzzle have been made in the generative tradition. We should now note that many difficult phenomena have remained unsolved. Since Chomsky (1993), the minimalist approach to language is adopted and certain achievement has been made. In Chomsky (2000, 2001a,b), the latest minimalist framework is explored, where a derivational approach is seriously employed. In that framework, the idea of "phase" is first suggested, and Chomsky claims that the derivation of language proceeds phase by phase.

In this paper, I focus on the nature of phase. According to Chomsky (2000, 2001a,b), the phase is determined in terms of "proposition". That is, vP and CP are phases. However, there are some problems to be closely considered, as pointed out in Epstein and Seely (2002). In order to overcome the problems, I propose that phase is identified with other means. First, by considering some data on wh-movement observed in McClosky (2000), I argue that only CP is empirically motivated as a potential phase. In addition, I argue that "convergence", not "proposition", relatively determines phase and Spell-Out. In this paper, these assumptions are confirmed with the data of Japanese wh-questions. I show that this system successfully accounts for empirical facts. The proposed system will also make it possible to eliminate the theory of covert movement.¹

This paper is organized as follows. In section 2, we critically review the phase system of Chomsky (2000, 2001a,b). In section 3, analyzing Japanese wh-questions,

¹ One might think that covert movement approach leaves no room for considerations. Actually, it is one of the pervasive analyses since Huang (1982a,b). In this point, Chomsky (2002) replies to Belletti and Rizzi's question - what are "established results" in generative grammar that you consider? "My own view is that almost everything is subject to question, especially if you look at it from a minimalist perspective, the question is: why is it there?" So, if you had asked me ten years ago, I would have said government is a unifying concept, X-bar theory is a unifying concept..., but now none of these looks obvious... (Chomsky 2002: 151). That is, it tells us that there is still room for consideration in many results.
the phase identified with "convergence" is empirically investigated. In section 4, covert movement analyses are reconsidered and it is argued that covert movement should be eliminated following the suggestion in this work. Finally, section 5 concludes the study.

2. On the Status of Phase
Since Chomsky (2000), the derivational approach has been seriously investigated. The problem of phase has been one of the important topics in that approach. In this section, the discussion on the phase by Chomsky (2000, 2001a,b) is briefly outlined and critically reviewed.

2.1 Chomsky (2000, 2001a,b): Phase is "Propositional"
Chomsky (2000, 2001a,b) proposes that derivation proceeds phase by phase. The notion of phase, in a general sense, means a cycle of derivation. If the derivation crashes, it occurs at the phase level. According to Chomsky (2000, 2001a,b), the phase is identified in terms of "proposition", because a natural syntactic object forms a proposition. To regard proposition as a syntactic unit is supported from the meaning side. Also, vP and CP are identified with the relevant propositional units: a verb phrase in which all θ-roles are assigned and a full clause including tense and force. Moreover, the fact that vP and CP constitute syntactic units is supported from the sound side: they can be targets of fronting, extraposition and so on. Therefore, Chomsky determines in a strict sense that the phases are vP and CP. Also, Spell-Out (S-O) applies to each phase, and every vP and CP is regarded as a S-O point.

Given Chomsky's position, for example, (1) will be derived as in the following manner.

(1) Who did you see?
   a. [v you [ν see who]
   b. [who [v you see who]
   c. [CP did who [you see who]]
       *[Q] [wh]
   d. [CP who [did who [you see who]]]

In (1a), the object who is merged by the verb see, and the subject you is merged by ν to the position of external argument (the edge of vP). The accusative case of who is checked with ν. The interrogative who has to move to [Spec, CP], to another phase.
Therefore, *who* needs to move to the edge of \( \nu P \) by EPP, because the "Phase-Impenetrability Condition (PIC)" should be obeyed: "in phase \( a \) with head \( H \), the domain of \( H \) is not accessible to operations outside \( a \), only \( H \) and its edge are accessible to such operations (Chomsky 2000: 108)." In (b), *who* is fronted to the edge of \( \nu P \), an accessible position of the higher phase. After that, the underlined phase is spelled-out. In (c), \([+Q]\)C\( ^0 \) enters into the derivation. \([+Q]\) agrees with an uninterpretable \([+wh]\), and then *who* is moved with EPP in (d). Finally, the last phase, CP, is spelled-out. This is a system of derivation in Chomsky (2000, 2001a,b).

2.2 Problems with Chomsky's Phase

In the previous section, the system of phase proposed in Chomsky (2000, 2001a,b) has been outlined, where certain propositional units, \( \nu P \) and CP, operate as phase, in a strict sense. On the other hand, the above discussion has some problems to be considered. Especially, Epstein and Seely (2002) critically discusses Chomsky's idea about phase and suggest that the specification of particular categories as phase runs the risk of stipulation.\(^2\) For example, the propositional units are not only \( \nu P \) or CP. Proposition exists also in the small clause:

(2) a. I consider [John smart].

b. John believes [Mary proud of herself].

Epstein and Seely (2002: 78)

These small clauses are neither \( \nu P \) nor CP. Nevertheless, they are propositional. If phase is determined in terms of proposition as argued in Chomsky (2000, 2001a,b), it is vague why these small clauses are not qualified as the phase.

Moreover, the concept of proposition is based on the semantic side. If each propositional unit is spelled-out, there will be no way for finding that unit in PF because PF cannot care about whether or not it is propositional or not. In addition, phases cannot be determined independently within syntax. If syntax is autonomous, phases should be motivated by some syntactic factor. That is, we should note that the evidence for phase identification offered in Chomsky (2000, 2001a,b) does not seem to be well-grounded in syntax.

As mentioned, it seems to be still controversial that \( \nu P \) and CP are specified as

\(^2\) Epstein et al. (1993) develops the discussion on the basis of the fact that the S\( ^0 \) is applied after every operation. This seems to be one potential position and should be further pursued. However, some fuzzy proposals also exist in this proposal. In this paper, therefore, this proposal is not considered anymore, although their arguments against Chomsky are briefly outlined.
phases as in Chomsky (2000, 2001a,b). Given these problems, another possible way of identifying the phase needs to be investigated, and we will do it through considering some empirical data.

2.3 Phase: An Empirical Exploration

In this section, I investigate what phase is, based on empirical data. As mentioned earlier, phase is a cycle of derivation in a general sense. That is, it is a unit for applying syntactic operations. In some natural languages, the footprints of successive cyclic movement are visibly observed (e.g. Lanik, 1997). These data will tell us what constitutes a cycle of movement.

McCloskey (2000) cites a notable phenomenon from West Ulster English (WUE): the relation between wh-words and the quantifier all implies a possibility of successive cyclic movement. For instance, most varieties of English have the distribution of (3). In WUE, however, the patterns in (4) are also allowed in addition to (3), where both (3a-c) and (4a-c) have the same meanings correspondingly.

(3) a. What all did you get for Christmas?
   b. Who all did you meet when you were in Derry?
   c. Where all did they go for their holidays?

(4) a. What did you get all for Christmas?
   b. Who did you meet all when you were in Derry?
   c. Where did they go all for their holidays?

McCloskey (2000: 58)

The quantifiers occurring post-verbally are construed with the fronted wh-phrases. McCloskey (2000) follows Sportiche's (1988) suggestion and analyzes this phenomenon: (4) are derived from a representation in which the wh-phrase and all form a constituent. That is, these elements first form one constituent, and then quantifier-floating occurs.

In the case of long wh-movement, WUE also allows phenomena similar to (4). Although (5a) is more preferable than (5b), all of these sentences are clearly grammatical according to McCloskey (2000). In longer wh-movement as in (6) as well, quantifier floating is possible.

(5) a. What all did he say (that) he wanted ε?
   b. What did he say (that) he wanted all?
   c. What did he say all (that) he wanted ε?
a. What all do you think (that) he’ll say (that) we should buy it?
b. What do you think all (that) he’ll say (that) we should buy it?
c. What do you think (that) he’ll say all (that) we should buy it?
d. What do you think (that) he’ll say (that) we should buy all?

McCloskey (2000: 61-62)

A close look at (5) and (6) shows that all can appear in the original position or C-domain. All cannot be stranded in other positions as in (7c-e).

(7)

a. What all did he tell him (that) he wanted it?
b. What did he tell him all (that) he wanted it?
c. *What did he tell all him (that) he wanted it?
d. *What did he tell his friends/Mickey all (that) he wanted it?
e. *What did he tell all his friends/Mickey (that) he wanted it?

McCloskey (2000: 63)

In sum, these phenomena of quantifier floating can be construed as follows: the single constituent of wh-phrase and all is separated in the original position or the intermediate landing sites of wh-movement (the left of C). Therefore, only potential landing sites for wh-phrases are allowed as the potential stranding sites for the quantifier all. From this argument, CP seems to get an empirical motivation as a cycle of wh-movement. On the other hand, vP is not a potential site for the stranded all, so it cannot be empirically justified as a cycle.

From the above empirical evidence, the following working hypothesis is tentatively assumed:

(8) Phase is only CP.

Along that working hypothesis, Japanese wh-questions are mainly analyzed in section 3, and it is inspected whether this hypothesis can account for empirical facts.

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3 For the space limitation, only the data of WUE is introduced here. However, many other data also support the implication from WUE: only CP is empirically defended as a cycle, but not vP. For example, the form of COMP in Irish, discussed in McCloskey (2002), V-preposing in Spanish, discussed in Torrego (1984), partial wh-movement in German and Romanian, discussed in McDaniel (1986) and so on.

4 Simpson and Wu (2002) draws the same conclusion from considering a phonological problem in Taiwanese, "tone sandhi".
2.4 Convergence and Spell-Out

As discussed above, several empirical data seem to imply that CP is a cycle of movement, while vP is not. From that evidence, the working hypothesis was assumed in the previous section. In addition, I propose that the phase is a relatively specified cycle of derivation in terms of “convergence” and the S-O is operative only in that phase.\footnote{Although the latest framework of Chomsky adopts the concept of “proposition” for phase, Chomsky (2001b) implies the possibility of “convergence” in his footnotes.} If some uninterpretable features cannot be checked and deleted within the relevant cycle (CP), it cannot become a phase and the S-O is postponed until that CP becomes convergent. That is, the proposal made in this paper is different from Chomsky’s one in that the phase is “relatively” determined on the basis of convergence. If the phase CP can be identified with “convergence”, not "proposition", the phase has more syntactic status. In the following discussion, it is elucidated that those assumptions account for the phenomena of wh-in-situ at least in Japanese.

3. Evidence from Japanese: No Movement/Overt Strategy

In this section, with main focus put on Japanese data, I discuss in-situ-wh-questions. In conclusion, it is revealed that the previous discussion on the phase can be empirically maintained.

3.1 Some Basics

To begin with, some fundamental facts observed in Japanese wh-question are introduced here. In Japanese, wh-phrases do not undergo overt movement to [Spec, CP], unlike English.

(9) Taro-ga nani-o tabe-ta no?
    Taro-NOM what-ACC eat-PAST Q
    “What did Taro eat ___?”

Moreover, unique behavior is observed concerning the island effects. The Complex NP Constraint (CNPC) and the wh-island appear differently in Japanese. First, wh-phrases within a complex NP can take matrix scope. At a first glance, any sensitivity to the CNPC is not observed.
(10) Taro-wa [Hanako-ga nani-o kat-ta] mise-o
Taro-TOP [Hanako-NOM what-ACC buy-PAST] shop-ACC
shiru-tagat-teiru no?
want to know Q
“What does Taro want to know the store which Hanako bought__?”

In (10), *nani ‘what’* occurs within the complex NP. However, the wh-interrogative takes the matrix scope. In English, the sentence corresponding to (10) is ungrammatical, because of the violation of the CNPC. Second, in the case of the wh-island, it is different from the CNPC.

(11) Taro-wa [Hanako-ga doko-de nani-o kat-ta ka]
Taro-TOP [Hanako-NOM where what-ACC buy-PAST Q]
Tazune-ta no?
ask -PAST Q
“Does Taro want to know where Hanako bought what?”

In (11), the wh-phrases occur within the wh-islands. As illustrated in English data, these wh-phrases do not take the matrix readings but are construed as embedded questions. This is a crucial difference from the case of the CNPC.

3.2 An Alternative Treatment
To give an account of the behavior mentioned above, we discuss the derivation of Japanese wh-questions. First of all, we have to note an important point distinguishing English-type and Japanese-type languages. English wh-questions obligatorily involve overt movement with the attraction of EPP. On the other hand, Japanese does not have such overt movement of wh-phrase. Instead of overt fronting, Japanese and some other languages have Q-morphemes. In this relation, the following parameter is assumed:

(12) The EPP alternates with Q-morphemes.

In other words, wh-questions are divided into two types according to which strategy is chosen, the EPP or Q-morphemes. Languages with the EPP property have overt

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* Ishimori (to appear) also arrives at the same conclusion. However, the detailed analysis in this paper is different from his.
wh-movement, while at least some languages without overt wh-movement have certain Q-morphemes. And the following licensing condition of wh-interrogatives is assumed:

(13) If [+Q]C⁰ unselectively binds wh-phrases, they are licensed in their original positions. (cf. Pesetsky 1987)

Following (13), (9) is derived as in (14).

(14) Taro-ga nani-o tabe-ta no?
    a. C [Taro-ga nani-o tabe-ta]  
       [+Q]   [+wh]  
    b. [C [Taro-ga nani-o tabe-ta] no]  
       (Merge of Q-morpheme no)

In (a), [+Q]C⁰ unselectively binds the wh-phrase nani, hence uninterpretable [+wh] is checked and deleted, following (13). Moreover, Q-morpheme no is merged to [+Q]C⁰, in (b). Every item is exhausted, the phase is convergent and spelled out.

The supposed procedure of derivation correctly explains other types of data as well. First, the case of the CNPC in Japanese is considered. As observed in (10), wh-phrases within complex NPs can take matrix scope in Japanese.

(15) Taro-wa [[Hanako-ga nani-o kat-ta] mise-o] shiri-tagat-teiru no?
    a. C [Hanako-ga nani-o kat-ta]  
       [-Q]   [+wh]  
    b. [C [Hanako-ga nani-o kat-ta] mise-o]  
    c. [C [Taro wa [[Hanako-ga nani-o kat-ta] mise-o] shiri-tagat-teiru] no]  
       [+Q]   [+wh]  

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7 As far as I know, languages without overt wh-fronting have some other means for expressing their scopes. (e.g. Q-morpheme, phonology or overt scope marker)
8 In an approach based on covert movement, in situ wh-phrases are covertly fronted in order to check and delete the uninterpretable [+wh]. Since Chomsky (2000), however, the Spec-Head relation for feature-checking is abandoned and the probe-goal system is pervasively adopted. In other words, uninterpretable [+wh] can be checked and deleted in the in situ position. Also in this respect, the condition (13) is plausible.
9 Japanese Q-morphemes can be used for both wh-question and yes/no question. Possibly, these Q-morphemes are specified with wh-interrogatives as wh-questions, as discussed in Cheng and Rooryck (2000). In terms of this paper, if [+Q]C⁰ binds wh-phrases, Q-morphemes might be specified as wh-questions.
In (a), since the embedded C^o is [\-Q], [+wh] in \textit{nani 'what' cannot} be checked and deleted in this phase. Thus, an uninterpretable feature [+wh] still remains undeleted in that CP. Since this CP is not convergent, it cannot become a phase. Therefore, also the S-O is not applied. The derivation proceeds to the next CP. In (c), the matrix [+Q] is introduced into the derivation. Subsequently, it can check and delete [+wh] in the lower clause. In this step, CP gets convergent. That is, the matrix CP is identified as a phase, and the S-O can be applied. In addition, the matrix reading of the wh-phrase \textit{nani} is correctly guaranteed because the wh-phrase is licensed by the matrix [+Q]. Moreover, since there is no movement, it is natural that any violation of CNPC is not observed.

A similar procedure is assumed for the wh-island case:

(16) \textit{Taro\-wa [Hanako\-ga sono mise\-de nani\-o kat\-ta ka] tazuneta\-na no?}
\begin{itemize}
  \item[a.] \textit{[C[Hanako\-ga sono mise\-de nani\-o kat\-ta ka] [+Q] [+wh]}
  \item[b.] \textit{[C [Taro\-wa [Hanako\-ga sono mise\-de nani\-o kat\-ta ka] [+Q] tazuneta\-na] no?}
\end{itemize}

In (a), [+wh] in \textit{nani} is checked and deleted by [+Q] in the embedded clause. Accordingly, the wh-phrase \textit{nani} takes an embedded reading, not a matrix reading. This embedded CP becomes convergent, hence it is a phase and spelled-out. On this point, the case of wh-island is different from the case of complex NP. In (b), the matrix [+Q]C^o is introduced. This [+Q], Q-morpheme \textit{ka}, expresses a yes/no question. According to Cheng and Rooryck (2000), this kind of Q-morpheme is under-specified as wh-question, and hence it expresses a yes/no question. For example, if additional wh-phrases occur in the matrix clause, the Q-morpheme is specified as a wh-question:

(17) \textit{[Hanako\-ga sono mise\-de nani\-o kat\-ta ka] dare\-ga}
\textit{[Hanako\-Nom the shop in what\-ACC buy\-PAST Q] who\-NOM shiri\-taga\-teiru no? want to know Q}

"Who wants to know what Hanako bought?"

(17) is a sentence with a wh-phrase added to (16). In this sentence, the matrix wh-phrase \textit{dare 'who'} specifies Q-morpheme \textit{no} as a wh-question. Although the
wh-phrase in the embedded clause still expresses indirect questions, the sentence becomes a wh-question because of an additional wh-phrase.

In this way, the phase system in this paper can successfully account for wh-questions in Japanese.\textsuperscript{10} Moreover, if our view is on the right track, covert movement can be eliminated from the design of Faculty of Language (FL). In the following section, we introduce a serious problem with covert movement, and as a result, I argue that the system suggested here is supported from a model with no covert movement.

4. Covert Movement Reconsidered

The phase system based on “convergence” has been so far developed. There are some important differences between Chomsky’s system and the present system: the point is whether or not covert movement is involved. According to Chomsky (2000, 2001a,b), the PIC stipulates that operations in higher phases cannot access to the domain of lower phases except the head and its edge. In other words, if an element moves to higher phase, that element must be positioned in the edge. If that movement is before S-O, it is overt. On the other hand, if after S-O, it is covert. Therefore, wh-interrogatives like Japanese must be covertly fronted to the edge of vP because the matrix [+Q]C\textsuperscript{0} can agree with it. Conclusively, Chomsky’s phase system necessarily involves covert movement. On the other hand, our system does not need those operations, as illustrated in the previous sections.

Now, turning to covert movement, we should note that it holds some empirical difficulties. Various analyses have been proposed concerning a covert movement strategy (e.g. May 1985, etc.). Especially, the topic on in-situ-wh-questions has been studied (Huang 1982a,b, Nishigauchi 1986, 1990, Lasnik and Saito 1992, Watanabe 1992 etc.).\textsuperscript{11} If this type of discussion is on the right track, it is concluded that natural language has a uniform configuration at “LF”. That is, we can capture uniformity between English-type language and Japanese-type language at the level of interpretation.\textsuperscript{12} This is a large contribution of theory of covert movement toward

\textsuperscript{10} For the limit of space, we consider only Japanese wh-questions here. However, the same discussion can be applied to English. If same phonological factor is added to this analysis, Chinese and French data might be also explained straightforwardly.

\textsuperscript{11} Each analysis of these references might be different in detail. However, they are similar in terms of covert movement analysis.

\textsuperscript{12} Hornstein (1995) provides an important implication in that he argues that it is not clear whether the representations at LF are really identical cross-linguistically. In other words, it remains unclear how powerful the poverty of stimulus argument really is (Hornstein 1995: 9). Generally speaking, it can be believed that there are no data accessible to the child in terms of which he/she could directly fix different LF parameter values (Hornstein 1995: 7). However, this is only one possibility out of many. In fact, Fisher et al. (1994) shows another idea: the argument structure is available from data to which children are accessible. Of course, this is also one possibility. For example, an operation like QR can
linguistic theory. However, Stroik (1992) argues that readings of the following sentence should have 120-ways ambiguous, if every operator undergoes covert movement according to May (1985) or Aoun and Li (1993b).

(18) Who did everyone convince that he should expect which woman to do what for whom?

Stroik (1992: 145)

However, this theoretical prediction does not correspond to empirical facts. According to Stroik (1992), this sentence will only have two-ways ambiguous. The assumed covert movement in (18) does not violate any constraints on movement (e.g. Subjacency or ECP). In other words, we do not have any means for eliminating extra readings in the theory of covert movement. This seems to be a crucial difficulty with covert movement, because it leads to "over-generation". That is, many syntactic representations are incorrectly generated. Do children use that operation, which over-generates linguistic expressions, in the process of language development? They are unlikely to do so, because children can acquire their languages correctly without any exception. If so, are children endowed with such unused component in the FL? It can be more reasonable that children have only a single movement operation, overt movement.  

As mentioned earlier, the present phase system can eliminate covert movement from the design of FL. In conclusion, the argument presented in this paper can be supported in this point.

5. Concluding Remarks

In this paper, the system of phase has been mainly discussed. First, we have critically reviewed the phase identification in Chomsky (2000, 2001a,b). As a result, we hypothesized that the phase is only CP as a working hypothesis, and it is relatively determined in terms of "convergence". Finally, these assumptions can successfully treat wh-questions in Japanese. Moreover, if the present system is on the right track, be pervasively accepted as a procedure for generating uniform representations. However, the question is not whether this can be done but if it should be (Hornstein 1995: 6). Consequently, Hornstein tries to treat some phenomena like quantifier scope interaction, ACD and others by means of A-movement in overt syntax to the maximum, not by covert operations at LF.

\textsuperscript{13} In Stroik (1992), two-ways readings are not showed concretely. However, each wide scope between who and everyone seems to correspond to that two readings.

\textsuperscript{14} Many empirical data against covert movement are also presented in Aoun and Li (1993a), Cole and Hermon (1994), Ouhalla (1995) and Simpson (2000).
it can eliminate covert movement at least partly.\footnote{One might think that some pieces of empirical evidence support covert movement approaches. However, this paper emphasizes that many empirical data against covert movement approaches also exist. This line of research can provide a prospective analysis (e.g. Simpson and Bhattacharya 2003). In order to open up a new vista of language study, I propose that the overt/no movement strategy should be pursued.} Although further empirical investigation is required to understand the nature of the derivation, this framework may be plausible on some empirical domains.

References


