CONTROL INFINITIVES
AND TWO TYPES OF CP PHASES

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Although control infinitives have been assumed to be uniformly CP as strong phases, I argue within the framework of the Minimalist Program in Chomsky (2001a) that control infinitives are divided into two types of CP phases. Specifically, it is proposed that irrealis infinitives are weak CP phases while realis infinitives are strong CP phases. This proposal not only explains the applicability of Heavy DP Shift out of control infinitives and other empirical facts including Double Passive Constructions in English and Scrambling out of finite clauses in Japanese, but also provides a conceptual advantage in that the strong/weak distinction is relevant for CP phases as well as vP phases, thereby making possible a unified treatment of CP and vP.*

Keywords: control infinitive, strong CP phase, weak CP phase, irrealis, realis

1. Introduction

Since the Government and Binding Theory, the categorial status of control infinitives as in (1) has been standardly analyzed as CP. However, this analysis seems problematic, given that the possibility of HDPS (Heavy DP Shift) out of control infinitives is influenced by the choice of the matrix verbs, as shown in (2).

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In the current framework of the Minimalist Program advocated by Chomsky (2001a), both control infinitives in (2) are considered to be CP as a strong phase. Therefore, the standard analysis in (1) does not seem to be adequate enough to account for the facts in (2).

In this paper, I argue that there are two types of CP phases: a strong CP phase and a weak CP phase, and the difference in (2) is closely related to this strong/weak distinction. Especially, by assuming two types of CP phases and the PIC (Phase-Impenetrability Condition) defined on strong phases (Chomsky (2001a)), the (im)possibility of HDPS out of control infinitives in (2) is shown to be explained straightforwardly. In addition, I claim that the distinction between two types of CP phases is determined by the semantic properties of control infinitives: a control infinitive interpreted as irrealis is a weak CP phase whereas a control infinitive interpreted as realis is a strong CP phase.\(^1\)

This analysis has a conceptual advantage. In Chomsky (2001a), only vP is divided into a strong vP phase (v*P) and a weak vP phase (which I call vwP), but no distinction is made with respect to CP although both vP and CP are taken to be phases.\(^2\) By assuming that CP is instantiated as two types of phases, it follows that the strong/weak distinction is equally applied to vP and CP.

This paper is organized as follows. In section 2, I examine the category of control infinitives, arguing that the category of control infinitives is CP. In section 3, I provide further empirical evidence from the (im)possibility of HDPS out of control infinitives, and point out that the

\(^1\) In this paper, I discuss subject control infinitives, and object control infinitives are left open for further study.

\(^2\) In what follows, a weak vP phase is represented as v^wP, and vP is used as a cover term for weak and strong vP phases.
data cannot be explained by the uniform analysis of control infinitives as strong CP phases. In section 4, I propose that there are two types of CP phases and the (im)possibility of HDPS can be accounted for in terms of the PIC. I also argue that the present analysis incorporating the strong/weak distinction of CP phases can be extended to explain other empirical facts.

2. The Category of Control Infinitives

Let us begin with a brief review of the categorial status of control infinitives. Since the Government and Binding Theory, it has been assumed that the category of control infinitives is uniformly CP. This is still assumed by Chomsky in his recent work (Chomsky (2000, 2001a)). Direct evidence that control infinitives are CP comes from coordination facts. As Koster and May (1982), Matsuyama and Kuwabara (2001), and Radford (2004) point out, control infinitives can be coordinated with infinitives with the overt complementizer for.

(3) a. [To write a novel] and [for the world to give it critical acclaim] is John’s dream. (Koster and May (1982: 133))
   b. John asked [to be here] and [for Bill to be there].
      (Matsuyama and Kuwabara (2001: 80))
   c. I will arrange [to see a specialist] and [for my wife to see one at the same time]. (Radford (2004: 130))

Similarly, control infinitives can be coordinated with finite clauses with the overt complementizer that.

(4) a. John expected [to write a novel] but [that it would be a critical disaster]. (Koster and May (1982: 133))
   b. John hoped [to see Mary] and [that it would be happy].
      (Matsuyama and Kuwabara (2001: 80))

Given the standard assumption that only constituents of the same category can be coordinated, the facts in (3) and (4) show that control infinitives must be CP.

Another piece of evidence comes from pseudo-clefts. As shown in the sentences below, constituents whose category is CP with an overt complementizer can be focus elements of pseudo-clefts, while constituents that are considered to be TP cannot.

(5) a. What he suspected was that Bill saw Monument Valley.
   b. What he wanted was for Bill to see Monument Valley.
   c. *What he suspected that was Bill saw Monument Valley.
d. *What he wanted for was Bill to see Monument Valley.3
   (cf. Koster and May (1982: 133))
Control infinitives pattern with the sentences in (5a, b) in this respect.
(6) a. What he wanted was [to visit Monument Valley].
   (Koster and May (1982: 133))
b. What I’ll try and arrange is [to see a specialist].
   (Radford (2004: 130))
c. What John hated was [to play football early in the morning].
   (Bošković (1997: 22))
d. What John managed was [to leave as soon as they arrived].
   (Bošković (1997: 22))
If only categories of CP can be focus elements of pseudo-clefts, the
grammaticality of (6) suggests that control infinitives must have the cat-
egorical status of CP. Therefore, control infinitives are CP even if they
have no overt complementizer in C.4
Chomsky (2000) argues that unlike TP, CP and vP are phases. Building on this idea, Chomsky (2001a) claims that CP and v*P with
full argument structures are strong phases, forming a derivational unit.
Given this, a problem will arise immediately with respect to the phase
status of control infinitives in view of examples such as (2). In the
following section, I claim that it is problematic to conclude that control
infinitives are always the same type of CP by further investigating the
applicability of HDPS out of control infinitives.

3 The ungrammaticality of (5d) might be due to the failure of Case checking of
the infinitival subject. However, given that (5c) cannot be ruled out for Case theo-
retic reasons, it is still necessary to assume that TP cannot be a focus element of a
pseudo-cleft, which would therefore be responsible for the ungrammaticality of both
sentences.
4 Bošković (1997) argues, against the standard analysis, that control infinitives
must be uniformly TP. Following Law (1991), he claims that if two representations
serve the same function, then the representation with fewer projections must be
selected as the syntactic representation serving that function, which means that TP is
preferable to CP. However, it is unclear how the facts given above in favor of the
CP analysis of control infinitives are explained under Bošković’s analysis.
Moreover, even if the category of control infinitives is assumed to be TP, the prob-
lems that we will discuss in the following sections cannot be solved.
3. HDPS out of Control Infinitives

Besides the examples in (2), further evidence of HDPS out of control infinitives is provided by Matsuyama (1998) and others. We can again find that the applicability of HDPS differs depending on the matrix verbs, as shown in (7) and (8).

(7) a. I have attempted/hoped/sought [to answer ti] for many years [the most difficult questions that Chomsky presented].

b. I have demanded [to know ti] for many years [exactly what happened to Rosa Luxemburg].

c. I have desired [to know ti] for many years [exactly what happened to Rosa Luxemburg].  (Nakajima (1986: 15))

d. I have expected [to find ti] since 1986 [the treasure said to have been buried on that island].  (Postal (1974: 93))

e. I intended/planned [to read ti] last night [a harshly critical review of Chomsky’s exciting book].

f. The editor has wanted [to publish ti] for many years [a harshly critical review of Chomsky’s exciting book].

   (Matsuyama (1998: 102))

g. I have wished [to find ti] since 1986 [the treasure said to have been buried on that island].

(8) a. *John bothered [to meet ti] last night [the president of IBM’s Texas Branch].

b. *The editor has claimed [to hate ti] for many years [a harshly critical review of Chomsky’s exciting book].

   (Matsuyama (1998: 10))

c. *George has declined [to accept ti] for many years [the most famous award of country music in America].

d. *The editor has hated/loved [to publish ti] for many years [a harshly critical review of Chomsky’s exciting book].

e. *John has loathed [to ride ti] for many years [the black horse named “Speed” from Texas].

In each sentence above, the heavy object in the embedded control infinitive is shifted to the end of the sentence across the adverbial modifying the matrix clause. However, this shift is possible only with control infinitives selected by the matrix verbs in (7), but not with those selected by the matrix verbs in (8).

These facts are problematic for the uniform analysis of control infini-
tives we discussed above. If the category of control infinitives is always the same type of CP (a strong phase), it will be hard to account for the difference between (7) and (8) without additional assumptions or rules. However, construction-specific rules are unwanted, so that it is necessary to pursue a principled explanation of the difference between (7) and (8).

Matsuyama (1998) proposes an analysis in terms of Relativized Minimality (Rizzi (1990)), attributing the difference between (7) and (8) to whether or not the embedded verb raises to the matrix verb. Following Nakajima (1984), he assumes that the heavy object of the embedded control infinitive undergoes HDPS, which is taken to be an instance of A-movement. In order to see how the relevant sentences are derived under his analysis, first consider (8b) with the matrix verb claim, whose structure is represented in (9).

(9) *The editor has [VP [VP claimed [TP PRO to [vP [vP v* 
[VP read ti]] ti] for many years] [a harshly critical review of Chomsky’s exciting book]].

As shown in (9), the heavy object in the embedded control infinitive is first adjoined to the embedded vP and then to the matrix VP. However, the second movement is blocked. In moving to the matrix VP, the embedded object is shifted over the infinitival subject PRO which occupies Spec-TP as an A-position. Given that HDPS is an instance of A-movement to the matrix VP, this movement is ruled out by Relativized Minimality.

Now, let us turn to (7f) with the matrix verb want. Matsuyama assumes that unlike (8), the verbs in the control infinitives selected by the matrix verbs in (7) can raise to the matrix verbs as in (10).

(10) The editor has [VP [VP wanted-to-publish [TP PRO to-tpublish 
[vP [vP v [VP ttpublish ti]] ti] for many years] [a harshly critical review of Chomsky’s exciting book]].

If the embedded verb moves to the matrix verb through the intermediate head positions, the minimal domain of the former is extended to include the matrix VP. As a result, the VP-adjoined position of the matrix clause and the embedded Spec-TP occupied by PRO become equidistant.

5 Matsuyama also assumes that the final landing site of the embedded object is the vP-adjoined position of the matrix clause after excorporation of the matrix verb to the matrix v, which is ignored here for the sake of simplicity.
from the embedded object. Consequently, the embedded object can raise across PRO without violating Relativized Minimality, hence the grammaticality of (7).

However, Matsuyama's analysis is problematic within the current minimalist framework. One of the problems concerns the proposed process of verb raising which is widely known as restructuring, where the embedded verb moves overtly to the matrix verb. However, overt raising of the embedded verb is not attested in English control infinitives. Specifically, there is no difference between (7) and (8) with respect to the word order of the relevant elements. In addition, as Wurmbrand (1998) points out, restructuring is an instance of construction-specific rules, which are not desirable in the current minimalist framework. In the following section, I argue that the difference between (7) and (8) is attributed to the difference in the strength of CP phases.

4. Two Types of CP Phases

4.1. HDPS to vP

Before discussing (7) and (8) in terms of the strength of CP phases, let us consider how the embedded heavy object is shifted. I assume, following Matsuyama (1998), that the embedded heavy object is shifted to a position in the matrix clause, because it moves over the adverbial modifying the matrix clause. This is closely related to the fact that elements which undergo HDPS are semantically and/or phonetically focused, and focused elements move to the end position of a sentence (see Rochemont (1978) and Ross (1986)).

As noted by Chomsky (2000, 2001a), surface semantic effects like topic, focus, specificity, presupposition, and so on, are only yielded by operations in narrow syntax. If this is correct, HDPS, where shifted elements are assigned a focus interpretation, must be a feature-driven operation in narrow syntax. Chomsky (2001a) argues that movement driven by checking of ɸ-features and the EPP feature yields some sort of interpretive complex. v* is assumed to be assigned these uninterpretable features, which therefore means that if v* agrees with DP in their ɸ-features, the DP moves to the domain of v* to satisfy the EPP feature of v*. According to Chomsky, this is the derivation of Object Shift in Icelandic. Object Shift applies to move objects to the domain of v*, where the interpretive complex consisting of specificity and/or topicality is assigned, while non-specific objects remain in situ. As just
discussed, since elements which undergo HDPS are focused, it is plausible to assume that they move to the domain of v*, and are assigned the interpretive complex consisting at least of focus. Given these assumptions, a typical instance of HDPS is represented as in (11).

\[(11)\] John \([v^*P [v_P v^* [v_P [v_P \text{sang t}i] \text{ last night}]] [\text{all the songs that George Strait had sung at the Country Music Award}]]\].

In (11), the heavy object enters into a \(\neq\)-feature agreement relation with \(v^*\) and it moves to the \(v^*P\)-adjoined position to satisfy the EPP feature of \(v^*\).6

Then, one might ask whether it is possible that this type of movement occurs across a clause boundary, that is, whether a matrix \(v^*\) can agree with an embedded object. Support for this comes from Object Agreeing Climbing in Hungarian. In Hungarian, verbs in infinitives assign accusative Case to their objects but do not carry object agreement morphology. However, the matrix verb agrees with the embedded object in the subject control constructions.

6 Following Ross (1986), I assume that HDPS is an instance of rightward movement, and DP is adjoined to the relevant category (\(v^*P\) in the present analysis). This might be problematic within Kayne’s (1994) framework, where no rightward movement is allowed, but the other elements move leftward with a heavy object left in situ. However, as the following examples show, Kayne’s analysis is quite doubtful.

(i)

\[\begin{array}{ll}
\text{a.} & \text{I want everybody who is in the front row to come early.} \\
\text{b.} & \text{?I want to come early everybody who is in the front row.} \\
\text{c.} & \text{*I wanna come early everybody who is in the front row.} \\
\end{array}\]

(Rochemont (1992: 382))

If a heavy object is moved, its trace must be left in the original position. Therefore, the ungrammaticality of (ic) is attributed to the existence of the trace of the shifted DP between want and to, which blocks wanna-contraction. Kayne’s (1994) analysis cannot rule out (ic), because a trace would not be left between want and to. Therefore, it follows that HDPS as rightward movement is more plausible than Kayne’s analysis. If this is the case, however, a conceptual problem would arise: why is HDPS rightward movement to a \(v^*P\)-adjoined position, not leftward movement to Spec-\(v^*P\) like Object Shift? This problem could be solved by considering the difference in the semantic effects induced by HDPS and Object Shift: focus vs. specificity/topicality. Namely, in languages like English, a focus interpretation is induced in the domain of \(v^*\) only by rightward movement of the relevant elements (or heavy stress on them), meaning that HDPS as a focalization process cannot target Spec-\(v^*P\) that is the left edge of \(v^*\), but a \(v^*P\) adjoined position at the right edge of \(v^*\). Also related to this is the fact that Object Shift is impossible in English except as part of successive cyclic movement to the domain of C. See Chomsky (2001a) for a possible explanation of this fact.
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(12) Mari látni akarta ezt.
Mari see-Inf. wanted-3SG+def. this-Acc.
‘Mari wanted to see this.’

(Koopman and Szabolcsi (2000: 121))

This means that a matrix v* can enter into a $\phi$-feature agreement relation with an embedded object, which is not morphologically realized in English.

Given the discussion above and the fact that in (7) and (8) the embedded object is shifted across the adverbial modifying the matrix clause, it is plausible to assume that HDPS of the embedded object is to the domain of the matrix v*. Following this assumption, let us see how the difference between (7) and (8) is explained.

4.2. Two Types of CP Phases

First, let us consider the notion of phase recently proposed within the minimalist framework. Chomsky (2000) suggests that both CP and vP are phases. Extending this suggestion, Chomsky (2001a) argues that with respect to vP, there is an important distinction between verbal phrases with full argument structures and those without external arguments, namely passives and unaccusatives, and he calls the former a strong phase, represented as v*P, and the latter a weak phase, represented as v^wP (vP in his notation). He further claims that derivations must proceed by each strong phase under (13).

(13) A strong phase_1 is interpreted/evaluated at the next higher strong phase_2.

One of the consequences of adopting (13) is the PIC (Phase-Impenetrability Condition) in (14) that requires strict cyclicity.

(14) a. \[ ZP \ Z \ ... \ [HP \ \alpha \ [H \ YP]] \] (HP and ZP are strong phases.)

b. The domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

The PIC requires that an element Z (Probe) that seeks to agree with a relevant element (Goal) can have access only to the edge of HP, $\alpha$ and the head H, not to elements in YP.

Now let us consider the difference between (7) and (8), repeated below as (15) and (16), respectively. If the PIC is correct and the category of control infinitives is uniformly CP, which is assumed to be a strong phase in Chomsky (2001a), no distinction can be drawn with respect to the grammaticality in (15) and (16). To solve this problem,
I argue that CP is divided into two types in terms of phase strength just like vP.

(15) a. I have attempted/hope/sought [to answer ti] for many years [the most difficult questions that Chomsky presented].
   b. I have demanded [to know ti] for many years [exactly what happened to Rosa Luxemburg].
   c. I have desired [to know ti] for many years [exactly what happened to Rosa Luxemburg].
   d. I have expected [to find ti] since 1986 [the treasure said to have been buried on that island].
   e. ?I intended/planned [to read ti] last night [a harshly critical review of Chomsky’s exciting book].
   f. The editor has wanted [to publish ti] for many years [a harshly critical review of Chomsky’s exciting book].
      (Matsuyama (1998: 102))
   g. I have wished [to find ti] since 1986 [the treasure said to have been buried on that island].

(16) a. *John bothered [to meet ti] last night [the president of IBM’s Texas Branch].
   b. *The editor has claimed [to hate ti] for many years [a harshly critical review of Chomsky’s exciting book].
      (Matsuyama (1998: 102))
   c. *George has declined [to accept ti] for many years [the most famous award of country music in America].
   d. *The editor has hated/love [to publish ti] for many years [a harshly critical review of Chomsky’s exciting book].
   e. *John has loathed [to ride ti] for many years [the black horse named “Speed” from Texas].

Recall that in each example, the embedded object moves out of the control infinitive across the adverbial modifying the matrix clause. To explain the difference above, let us assume that the control infinitives in (15) are weak CP phases, and those in (16) are strong CP phases, represented as CwP and C*P, respectively.7

7 The difference between (15) and (16) might be explained by assuming that the control infinitives in the former are TP whereas those in the latter are CP. However, as we saw in section 2, there seems to be good reason to assume that the
Once again, let us examine (15f) and (16b) for expository purposes. First, consider the ungrammatical example (16b), where the control infinitive is assumed to be C*P. As discussed in section 4.1, v* is assigned uninterpretable φ-features and the EPP feature, and if the embedded heavy object could move to the matrix v*P, it would be assigned a focus interpretation. In light of the PIC in (14), the matrix v* cannot have access within the embedded v*P because the control infinitive is C*P. Thus, the embedded object cannot undergo movement to the matrix v*P. That is, it can move to adjoin to the embedded v*P, but the position is still lower than the edge of C*. This is shown in (17).

(17) a. *The editor has [v*P [v*P v* [VP claimed [C*P C* [TP PRO to [v*P [v*P v* [VP hate ti]] t1]] ]] for many years]] [DP a harshly critical review of Chomsky’s exciting book].

b. *[v*P [v*P v* [VP V [C*P C* [TP PRO T [v*P [v*P v* [VP V t1]] t1]]] Adv.]] DP]

Notice that movement of the embedded object to the edge of the embedded C*P is impossible for independent reasons. If it were to be allowed, the embedded object could move to the matrix v*P without violating the PIC. However, this is prohibited, because there are no uninterpretable φ-features in the embedded C* that agree with the embedded object. Consequently, the PIC rules out the examples in (16) as we have just discussed.

Now let us turn to (15), where HDPS of the embedded objects out of the control infinitives is allowed. Assume that the category of the control infinitives in (15) is C*P unlike (16). If this is the case, no strong category of control infinitives is CP regardless of the kinds of matrix verbs (see (3), (4), and (6)). This is also true of the difference in Double Passives Constructions that I will discuss in section 5.1.

As CP is now divided into two types, henceforth, CP is used as a cover term for strong and weak CP phases (see footnote 2).

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8 Even if the embedded object could land on the embedded Spec-CP, movement to the v*P-joined position of the matrix clause would be still problematic. Given that Spec-CP is an A'-position while the v*P-joined position is an A-position, A-movement to the v*P-joined position through the embedded Spec-CP will lead to improper movement. See also Jayaseelan (1990), Nakajima (1984, 1986), and Nishikawa (1990) for arguments for this. The remaining problem is that it is still not clear why φ-features cannot be assigned to C, which is a residue of the A/A' distinction under the current minimalist framework (see footnote 11).
phase intervenes between the matrix \( v^*P \) and the embedded \( v^*P \). Given the PIC in (14), the edge of a strong phase is visible from the head of the next higher strong phase. This enables the matrix \( v^* \) to have access to the edge of the embedded \( v^* \), with the result that the embedded object moves through the embedded \( v^*P \) to the \( v^*P \)-adjoined position of the matrix clause, where a focus interpretation is assigned. This is shown in (18), which represents the derivation of (15f).\(^9\)

(18)  
\[
\begin{align*}
\text{a. } & \text{The editor } [v^*P [v^*P v^* [VP \text{ wanted } [C^wP C^w [TP PRO to } t_i] t_i] [DP \text{ a harshly critical review of Chomsky's exciting book}]]. \\
\text{b. } & [v^*P [v^*P v^* [VP V [C^wP C^w [TP PRO T [v^*P [v^*P v^* [VP V } t_i] t_i]] \text{ Adv.}]] DP_i]
\end{align*}
\]

By assuming that there are two types of CP phases, we can thus capture the difference between (15) and (16) under the PIC, while at the same time maintaining the traditional insight that the category of control infinitives is CP. The next task that we should do is to see what determines the strength of control infinitives. Taking a closer look at the examples above gives us an answer to this question. All the verbs out of whose complements a heavy object is extracted as in (15) are categorized as those which take irrealis complements. On the other hand, all the verbs which do not allow a heavy object to move out of their complements as in (16) are categorized as those taking realis (factive, implicative, or propositional) complements. According to Pesetsky (1992), verbs such as desire, attempt, need, hope, intend, want, wish, seek, and so on can take irrealis complements, while verbs such as hate, love, dislike, bother, decline, manage, claim, and so on can take realis complements. Consider (19) and (20).

(19)  
\[
\begin{align*}
\text{a. } & \text{Bill attempted/hoped/sought/wanted to write a play.} \\
\text{b. } & \text{Bill didn't succeed in writing a play when Bill wanted to do so.}
\end{align*}
\]

\(^9\) One might object that the embedded object becomes inactive at the edge of the embedded \( v^* \) after establishing an agreement relation with the embedded \( v^* \). However, it is still visible from the matrix \( v^* \), because even after Case feature which serves to render it active has been marked for deletion, it does not disappear from narrow syntax until the completion of the matrix \( v^*P \) where the edge of the embedded \( v^* \) is spelled out. See Chomsky (2001a) and Pesetsky and Torrego (2001) for related discussion.
c. Bill wanted to write a play, but he couldn’t.

(20) a. Bill didn’t hate/love/loathe to leave early. (=Bill did leave early.)
b. Bill didn’t bother to leave early. (=Bill didn’t leave early.)
c. Bill managed to leave early. (=Bill left early.)

(adapted from Pesetsky (1992: 31))

(19) show that the matrix verbs in (15), where HDPS of the embedded object to the matrix clause is allowed, select a complement which expresses an irrealis event or an event that happens after the event denoted by the matrix verb. As shown in (20), on the other hand, the matrix verbs in (16), where HDPS of the embedded object to the matrix clause is impossible, select factive or implicative complements. As (20a) shows, since the truth of factive complements is presupposed (Kiparsky and Kiparsky (1970)), even if the matrix clause is negated, the truth of the embedded clause is not affected.\(^{10}\) The truth/falsity of implicative complements is dependent on the matrix clause, as shown in (20b, c).

Given this and the above analysis of HDPS, the following generalization is obtained.

(21) a. If CP interpreted as irrealis is selected, it is a weak phase (C\(^{w}\)P).
b. If CP interpreted as realis is selected, it is a strong phase (C\(^{s}\)P).

This means that the meaning of control infinitives determines the strength of CP phases.

It still remains to be determined in what respects realis CP can be a strong phase. As for vP, Chomsky (2001a) claims that the availability of external arguments distinguishes between strong and weak vP phases.

\(^{10}\) As Pesetsky (1992) claims, verbs like hate, loathe, and love can select irrealis as well as factive complements, as shown in the well-formedness of (i), whose complements are interpreted as irrealis.

(i) a. Bill hated/loathed to leave early, and he didn’t leave early.
b. Bill loved to leave early, but he didn’t leave early.

Nevertheless, there are cases like (20a) where these verbs function as factive verbs, which is also supported by the fact that (iia) can be paraphrased as (iib).

(ii) a. I hated to publish these books.
b. I hated the fact that I published these books.
A strong vP phase (v*P) provides a full argument structure including an external argument in its specifier position, while a weak one (vwP) lacks an external argument. One might expect a similar distinction in CP phases. Specifically, given Melvold's (1991) analysis of finite complements to factive verbs, it might be plausible that realis CP is strong in that it has an operator in Spec-CP that binds the event argument of the verbal head (V or v). He argues that finite complements to factive verbs are referential and involve a [+definite] feature in C, which licenses a factive operator ("iota operator" in his term) in Spec-CP that serves to bind the event argument of the verbal head. According to her, the presence of this operator blocks adjunct extraction out of finite complements to factive verbs, in contrast to those to non-factive verbs which allow adjunct extraction due to the absence of a factive operator. This contrast is illustrated in (22).

(22) a. *How did Bill reveal [OP [that Anne solved the problem t]]? (Melvold (1991: 102))
   b. How do you wish [that Bill would solve the problem t]?

A similar contrast is found between realis and irrealis control infinitives, although the contrast is weak in infinitival complements to verbs as in (23). Furthermore, adjunct extraction is completely impossible out of realis infinitives selected by adjectives as in (24a).

(23) a. ?How did Mary hate [to learn the election results t]?
   b. How do you want [to play the game t]?

(24) a. *How was he happy [to behave t]?
   b. How was he eager [to behave t]?

This similarity will lead us to assume that an event-binding operator also exists in realis infinitives to block adjunct extraction. Therefore, it would be suggested that the strength of CP phases is determined by the presence of their specifiers, as in the case of vP phases. That is, realis CP can be strong in that it has an event-binding operator in Spec-CP.

11 Although HDPS out of realis infinitives is impossible, argument extraction is possible from them under topicalization and wh-movement, as illustrated in (ia, b) respectively.

(i) a. These kinds of books, the editor has hated t to publish for many years.
   b. ?What did you hate to learn t from the internet?

Together with (23a) and (24a), these facts might exhibit the well-known "argument/adjunct asymmetry" under A'-movement from weak islands (see Cinque
5. Consequences

This section argues that the generalization in (21) is supported by two pieces of independent evidence.

5.1. Double Passive Constructions

First, let us examine DPCs (Double Passive Constructions) as in (25), where a DP base-generated in the embedded object position is moved to the matrix subject position, undergoing passivization in both the embedded and matrix clauses. However, the grammaticality of DPCs depends on the matrix verbs, just like the applicability of HDPS that we saw above.

(25) a. [New and useless offices] were sought [to be created].
   b. If [a distinction] is attempted [to be drawn] (Gen’ey (1999: 31))
   c. ?*[A play] is claimed [to be loved].
   d. ?*[The election results] were hated [to be learned].

The difference between (25a, b) and (25c, d) is also accounted for under (21) and the PIC. Before analyzing it, let us consider movement of the embedded object to the matrix subject position in the relevant examples.

Note that the matrix verbs in (25) can select control infinitives with PRO in the subject position.

(26) a. I sought [PRO to convince them].
   b. She attempts [PRO to reach the box].
   c. John’s students claimed [PRO to love a play].
   d. Bill hated [PRO to learn the election results].

However, Gen’ey (1999) suggests that DPCs with control infinitives are derived in the same way as DPCs with ECM infinitives like (27).

(27) John, is believed [tᵢ to be jailed tᵢ].

(1990) and Rizzi (1990) among others). No matter how this asymmetry is accounted for under the current minimalist framework, the possibility of argument extraction from realsis infinitives (perhaps weak islands in general) under A’-movement would be due to the fact that A’-movement is triggered by features other than $\phi$-features that can be assigned to C. See the discussion below (17) and footnote 8 for HDPS as a kind of movement that is triggered by $\phi$-feature agreement and hence cannot proceed through CP. I would like to leave this problem for further study.
In (27), the embedded object first moves to the embedded Spec-TP to satisfy the EPP feature of the embedded T, and then it moves to the matrix subject position to satisfy the EPP feature of the matrix T.

Under analyses such as Chomsky and Lasnik’s (1993) and Martin’s (1992, 1996), T in control infinitives has the ability to check Null Case that only PRO bears. Then, the embedded object in examples like (25) cannot be raised to the embedded Spec-TP because the embedded T is non-defective and checks Null Case, inducing Case mismatch with the embedded object. However, Gen’ey suggests that in examples like (25), T in control infinitives is shifted to a defective T and loses the ability to check Null Case. Because T in control infinitives is now defective like T in ECM infinitives, the embedded object can move to the embedded Spec-TP without Case mismatch. Then, it moves to the matrix subject position, as in DPCs with ECM infinitives like (27). I assume that this analysis by Gen’ey is on the right track, and see how (21) works for DPCs with control infinitives.

Although DPCs with control infinitives might be taken to be incorrect usage of English, there are many examples cited in the literature. Other examples of DPCs with control infinitives than (25) are given below. The examples in (28) are taken from Visser (1963–1973), those in (29) from Fowler (1965), those in (30) from the COBUILD Direct, and those in (31) are provided by my informants.

(28)  

a. I let him know what was intended to be done. (1912 E. Phillpotts, The Three Knaves, 191; as cited in Visser (1963–1973: 2449))

b. It is stated that a reconciliation is hoped to be effected through the good offices of an exalted Italian personage. (1927 Manchester Guardian, 4 Febr., 81b; as cited in Visser (1963–1973: 2449))

c. Each station was planned to be worked by a small band of B.B.C. engineers. (1945 Sunday Times, 8 July 5/3; as cited in Visser (1963–1973: 2449))

d. A sensational atmosphere is being attempted to be created. (1950 Daily Telegraph, 17 March 7/6; as cited in

12 It is unclear what triggers the shift to the defective T without the ability to check Null Case. This question is left open here for further study (for details, see Gen’ey (1999) and references cited there).

(29) a. Now that the whole is attempted to be systematized.
b. The mystery was assiduously, though vainly, endeavoured to be discovered.
c. A process whereby a tangle of longlasting problems is striven to be made gradually better.
e. A new definition of a drunkard was sought to be inserted into the Bill. (Fowler (1965: 138–139))

(30) a. where air power was attempted to be used in a decisive fashion and failed miserably.
   (US National Public Radio Broadcasts: S2000930428)
b. They were planned to be held every four years.
   (UK books: B90000000391)
c. Additional wells at Doherty and Hughes prospects were planned to be drilled after Macverry.
   (Australian newspaper: N5000950112)
d. Contribution may be pledged to be paid later, or charged to Visa or Mastercard.
   (UK ephemera: E9000000671)

(31) a. A distinction is attempted to be drawn.
b. The right answer was demanded to be given.
c. New and useful offices were desired/wished to be created by that new president.

The matrix verbs which allow DPCs in (25a, b) and (28)–(31) can also take control infinitives. It should be noticed that these grammatical examples of DPCs involve the matrix verbs that can take irrealis infinitival complements in the sense we discussed in section 4.2. What about verbs taking realis infinitival complements? In fact, no examples of DPCs are found for these verbs in the COBUILD Direct. Furthermore, my informants point out that the examples in (32), where the matrix verbs select realis infinitival complements, are unacceptable or marginal at best.

(32) a. *The president of IBM’s Texas Branch was bothered to be met last night.
b. ?*A play is claimed to be loved.
c. *The most famous award was declined to be accepted.
d. ?*The book was disliked/loved to be read.
e. *That game was hated to be lost by Lions.
f. *The questions were managed to be answered.

This contrast in DPCs is explained under (21) and the PIC. Given
(21), the control infinitives in (25a, b) and (28)-(31) are weak CP phases (CwP), while those in (25c, d) and (32) are strong CP phases (C*P) (see footnote 7). Then, the derivation of the ungrammatical example (25c), for example, is shown in (33).

\[
(33) \quad {}^*[^{TP} \left[ \text{A play} \right]_{i} \text{is} \quad ^{vP} \left[ \text{vP claimed} \quad ^{C*P} \left[ \text{C*} \left[ \text{TP} \quad \text{t}_{i} \text{to be} \quad ^{vP} \left[ \text{vP} \text{loved} \quad \text{t}_{i} \right]\right]\right]\right]\right].
\]

Assume that like DPCs with ECM infinitives, movement to the matrix subject position is induced by checking of the ñ-features and the EPP feature of the matrix T. Note that movement through the embedded Spec-CP is impossible because that movement would result in improper movement (see footnote 8). If this is correct, the embedded object first moves to the embedded Spec-TP to satisfy the EPP feature of the embedded T. However, it is important to note that this position, which is in the domain of the strong C*P phase, undergoes Spell-Out before the matrix TP is completed. Therefore, the matrix T cannot attract the object in the embedded Spec-TP, with the result that DPCs like (33) are ruled out.

On the other hand, the grammatical examples in (25a, b) and (28)-(31) are derived straightforwardly under (21) and the PIC. Following the discussion above, the derivation of (25a), for example, is as follows, where the control infinitive is CwP.

\[
(34) \quad \left[ ^{TP} \left[ \text{New and useless offices} \right]_{i} \text{were} \quad ^{vP} \left[ \text{vP sought} \quad ^{CwP} \left[ \text{Cw} \left[ \text{TP} \quad \text{t}_{i} \text{to be} \quad ^{vP} \left[ \text{vP created} \quad \text{t}_{i} \right]\right]\right]\right]\right].
\]

Since no strong phase intervenes between the matrix TP and the embedded TP, the matrix T can agree with the object in the embedded Spec-TP and it moves to the matrix subject position to satisfy the EPP feature of the matrix T. Thus, the proposal in (21) correctly explains the grammaticality of DPCs like (34) under the PIC.

\(^{13}\) Strictly speaking, agreement between the matrix T and the object in the embedded Spec-TP may hold, but overt movement is impossible, because the embedded TP is transmitted to the phonological component when the embedded C*P is completed. Consider (i).

\[
(i) \quad ^{*} \text{T be believed [that John is intelligent].}
\]

Chomsky (2001a) notes that in (i), agreement between the higher T and John in the embedded Spec-TP is possible, but overt movement of John to the higher Spec-TP is impossible (for further details, see Chomsky (2001a: 18)). Moreover, Chomsky (2001b) claims that the domain of a strong phase is spelled out when it is completed.
5.2. Scrambling out of Japanese Finite Clauses

Finally, let us see how (21) is supported by another piece of evidence from Scrambling out of Japanese finite clauses. In Japanese, Scrambling of embedded objects out of finite clauses is possible as in (35).

(35) a. \[[[Karera]-wo \ [TP \ Taro-ga, \ [CP \ [Hanako-ga \ t_i \ They-Acc \ Taro \ Nom \ Hanako-Nom \ t_i \ suisenshi-ta] \ to] \ omot-ta]].\]
    recommend-Past Comp think-Past
    ‘*Them, Taro thought that Hanako recommended t_i.’

b. \[[[Karera]-wo \ [TP \ Taro-ga, \ [CP \ [Hanako-ga \ t_i \ They-Acc \ Taro \ Nom \ Hanako-Nom \ t_i \ suisenshi-ro] \ to] \ nenji/inot/setsuboushi-ta]].\]
    recommend-Subj. Comp wish/pray/desire-Past
    ‘*Them, Taro wished/prayed/desired that Hanako would recommend t_i.’

However, in sentences such as (36) where binding of anaphors is involved and Scrambling must therefore be A-movement, the applicability of Scrambling of embedded objects out of finite clauses depends on the matrix verbs, as Uchibori (1997) points out.

(36) a. *[[Karera]-wo \ [TP \ [otagaii-no \ sensei]-ga, \ They-Acc \ each other-Gen teacher-Nom \ [CP \ Hanako-ga \ t_i \ suisenshi-ta] \ to] \ omot-ta]].\]
    Hanako-Nom recommend-Past Comp think-Past
    ‘*Them, each other’s teachers thought that Hanako recommended t_i.’ (Uchibori (1997: 401))

b. \[[[Karera]-wo \ [TP \ [otagaii-no \ sensei]-ga, \ They-Acc \ each other-Gen teacher-Nom \ [CP \ kouchou-ga \ t_i \ suisenshi-ro] \ to] \ nenji/inot/setsuboushi-ta]].\]
    principal-Nom recommend-Subj Comp wish/pray/desire-Past
    ‘*Them, each other’s teachers wished/prayed/desired that the principal recommended t_i.’ (Uchibori (1997: 410))

In (36), the embedded object karera ‘they’ moves to the matrix clause, undergoing long distance Scrambling.\(^{14}\) The anaphor otagai ‘each

\(^{14}\) Following Uchibori (1997) and Nemoto (1993), I assume that the complements
other’ contained in the matrix subject is bound by the scrambled embedded object in (36b), which is impossible in (36a). This contrast is attributed to the applicability of Scrambling as A-movement. It should be noticed that the facts in (36) are parallel to those of HDPS and DPCs discussed above. Specifically in (36a), where the matrix verb selects a realis complement denoting a past event, Scrambling as A-movement is ruled out. On the other hand, Scrambling as A-movement is possible in (36b), where the matrix verb selects an irrealis complement.

Before analyzing the contrast between (36a) and (36b), let us first consider the movement of karera and its interaction with binding of otagai. Nemoto (1993) argues that otagai must be A-bound.

(37) a. *[Otagai]-no sensei]-ga, [karera]-wo each other-Gen teacher-Nom, they-Acc
    hinanshi-ta.
    criticized-Past
    ‘Each other’s teacher criticized them.’

b. ?[Karera], wo [[otagai], no sensei] ga, t1 hinanshi-ta.
    (Nemoto (1993: 126))

She argues that (37a) is ungrammatical because the anaphor otagai is not bound by the antecedent karera, violating Condition A of the Binding Theory. If karera is scrambled to a position higher than the subject, it can bind otagai contained in the subject as in (37b). Given that Scrambling feeds binding, we can assume that Scrambling of this kind is an instance of A-movement. Therefore, let us assume that Scrambling in (37b) is driven by φ-feature checking and karera moves to Spec-TP, binding otagai. Although it is still controversial what motivates Scrambling of A-movement in Japanese, I assume that the φ-features of T attract the relevant DP, which moves to the final landing site through the intermediate v*P.15

in (35) and (36) are finite clauses. Assuming that Japanese to is a complementizer corresponding to English that, there is no doubt that the complements are finite CPs. Note that irrealis complements like (35b) and (36b) allow the deletion of to ‘that’ in informal situations in Osaka dialects of Japanese. This fact may be another argument that irrealis CP is weak.

15 According to Chomsky (2000), the distinction between A- and A’-positions is reduced to the features of the relevant probes, φ-features and Q-features, respectively.
With these assumptions, we can easily explain the contrast between (36a) and (36b) in terms of (21) and the PIC. Given (21), the complement in (36a) is C*P. Then, the matrix ν* cannot have access to karera in the embedded Spec-ν*P under the PIC, just as we saw with respect to the impossibility of HDPS out of realis control infinitives (see also footnote 8). Since in (36a), Scrambling to the matrix clause is ruled out by the PIC, the anaphor otagai contained in the matrix subject is not bound, violating Condition A of the Binding Theory.

On the other hand, the complement in (36b) is C*wP under (21). In this case, no problem arises with respect to Scrambling to the matrix clause. The PIC allows karera to move to the matrix ν*P, because no strong phase intervenes between the matrix ν*P and the embedded ν*P. Then, karera is accessed from the matrix T and scrambled to the matrix Spec-TP. Therefore, Condition A of the Binding Theory is satisfied because karera can now bind the anaphor otagai like (37b).

As discussed in this section, the proposal in (21) is supported by two pieces of empirical evidence. This shows that the assumption that there are two types of CP phases is plausible, and the difference in the applicability of HDPS is related to the strong/weak distinction of control infinitives.

6. Conclusion

In this paper, I have pointed out from the difference in the applicability of HDPS out of control infinitives that it is problematic to assume that the category of control infinitives is always the same type of CP, arguing that there are two types of CP phases with respect to phase strength: C*wP and C*P. Then, I have suggested that the strength of control infinitives is determined by their interpretations. Specifically, control infinitives with irrealis interpretations are C*P, while those with realis interpretations are C*P. With this assumption, I have shown that the difference in the applicability of HDPS is explained in terms of the PIC. This analysis is also applied to other empirical facts.

This conclusion also provides a conceptual advantage. In Chomsky

Since binding relations must be established between A-positions, the driving features in question are the $\phi$-features of T.
(2001a), only vP is divided into $v^*P$ and $vwP$ while CP is not, although vP and CP are both taken to be phases. If there are two types of CP phases, no special assumption is needed for vP. Thus, the present analysis seems to be adequate and superior to previous ones from a conceptual point of view as well.

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