THE THEORY OF ELLIPSIS IN A SINGLE-CYCLE SYSTEM

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We propose that Ellipsis is a phase-based operation, and demonstrate how this hypothesis can account for ellipsis phenomena. Particularly, we argue that vP-ellipsis (VP-deletion) is triggered by the silence feature of C, "inherited" by T (Chomsky (2005)). This proposal, together with the Phase Impenetrability Condition (Chomsky (2001)), can account for a number of properties of vP-ellipsis. Furthermore, we will show that noun phrases and sentences are parallel concerning Ellipsis. This provides some support for the hypothesis of the parallelism between noun phrases and sentences. Finally, it will be shown that our proposal and the single-cycle system in Chomsky (2004) can account for the interaction between Ellipsis and interpretation.*

Keywords: Ellipsis, phase, parallelism between noun phrases and sentences, single cycle hypothesis, vehicle change

1. Introduction

In this paper, we address four related issues. First, we propose that Ellipsis is a phase-based operation, building on the following two...
hypotheses in the Minimalist Program: (i) phases are the minimal units of derivations (Chomsky (2000, 2001, 2004, 2005)); (ii) some of the properties that appear to be inherent to T are in fact properties of the phase head C, “inherited” by T from C (Chomsky (2005)).

The phenomena we will concentrate on here are Sluicing and vP-ellipsis (which has been traditionally called “VP-deletion”). We propose that Sluicing and vP-ellipsis are driven by a silence feature of the phase head C. We argue that vP-ellipsis is triggered by the silence feature “inherited” by T from C. Our claim makes the correct predictions concerning the possible environments for the application of vP-ellipsis. As far as I know, we are the first to point out that vP-ellipsis in ECM infinitivals is only possible in passivised ECM constructions, and we will provide an account for this fact. This fact is problematic for Lobeck’s (1991) analysis, in which vP-ellipsis is licensed by T under Spec-head agreement. To the extent that this analysis is on the right track, it supports Chomsky’s (2005) claim that some of the properties that appear to be inherent to T are “inherited” from the phase head C.

Second, we investigate the parallelism between noun phrases and sentences with respect to Ellipsis. For concreteness, following Chomsky (1970) and others, we assume that DP structure and CP structure are parallel. We demonstrate that DP and CP are parallel with respect to Ellipsis. To the extent that this analysis is tenable, we offer some support for the parallel analysis of noun phrases and sentences. Furthermore, our analysis provides a new piece of evidence for the claim that DP is a phase.

Third, we explore the interaction between Ellipsis and interpretation. Chomsky (2004) proposes that phases function as the basic units for semantic interpretation and phonological operations. Let us call this hypothesis the Single-Cycle Hypothesis. If this hypothesis is correct, when deletion is applied at the CP phase, the interpretation of the deleted elements should also be determined at that stage. We show that our proposal, coupled with the Single-Cycle Hypothesis, provides solutions to the following three puzzles: (i) why vP-ellipsis allows sloppy readings while Sluicing does not, (ii) why locality is observed in sloppy readings only in vP-ellipsis environments, and (iii) why the lack of Condition C effects is observed if the referential expression is more deeply embedded in elliptical contexts. Furthermore, we demonstrate that the same is true of Ellipsis in DP.
Finally, we propose a stress-assigning system in elliptical situations, and we show that Sluicing and vP-ellipsis can be regarded as parallel phenomena.

2. A Basic Mechanism of Ellipsis

In this section we present our analysis of Ellipsis. First, we presuppose the PF deletion approach to Ellipsis proposed in Chomsky and Lasnik (1993) and Merchant (2001). On this approach, Ellipsis is the result of the phonological deletion of elements introduced into the narrow syntax. Second, we assume that the identity relation between an elided element and its antecedent is required by the UG Principle of Recoverability of Deletion proposed in Chomsky (1965) and Chomsky and Lasnik (1993).

Based on these assumptions, we propose the following hypothesis.

1) The C-as-Ellipsis-Trigger Hypothesis
   The silence feature of the phase head C triggers Sluicing and vP-ellipsis.

(1) means that both Sluicing and vP-ellipsis are triggered by the silence feature of the phase head C. The properties of this feature are described in (2).

2) The Silence Feature
   The silence feature is borne by the phase head C; the feature triggers Ellipsis of the complement of the head which bears it. In addition, stress is assigned to the head which bears it. Further, we assume, following Chomsky (2005), that features of C can be inherited by T. This means that the silence feature on C can be inherited by T.

In this system, Sluicing and vP-ellipsis are applied as in (3) and (4).

\[ [\text{CP} \ C \ [+\text{Silence}] \ [\text{TP} \ \emptyset]] \uparrow \hfill \text{Ellipsis} \]

\[ [\text{CP} \ C \ [+\text{Silence}] \ [\text{TP} \ T \ [+\text{vP} \ \emptyset]]] \uparrow \hfill \text{inheritance Ellipsis} \]

If the silence feature stays on the phase head C, it triggers Ellipsis of the TP complement, and stress is assigned to C, as in (3) (Sluicing). If the silence feature is inherited by T, it triggers Ellipsis of the com-
plement of T, and stress is assigned to T, as in (4) (vP-ellipsis). (We
discuss in detail in section 5 how stress is assigned in Sluicing and vP-
ellipsis.)

We also assume that all operations are subject to the PIC (Phase
Impenetrability Condition.) The condition is formulated as follows.

(5) PIC (Chomsky (2001: 13))
The domain of H (a phase head) is not accessible to opera-
tions outside HP; only H and its edge are accessible to such
operations.

The PIC states that operations cannot apply to a phase except for its
head and its edge (the Spec of the head of the phase), when the deriva-
tion proceeds to the next higher phase. Given this assumption, inheri-
tance of features from C by T is inevitably subject to this condition.

In the Minimalist Program, it is assumed that CP and vP are phases,
and that there is a strong/weak distinction between phases. Chomsky
(2001, 2004) claims that C and transitive v are strong phase heads,
while passive and unaccusative v are weak phase heads. The relevant
phases in (5) (HP) are only the strong phases.1

1 An anonymous EL reviewer points out that the relation between our statement
that Ellipsis is the phonological deletion of elements introduced into the narrow syn-
tax and the PIC is not clear. Ellipsis of elements which have been spelled-out at
an earlier phase is impossible, since elements spelled-out at an earlier phase cannot
be spelled-out at the next higher phase due to the PIC. Take (i) as an example.

(i) [CP C [+Silence] [TP Subject T [vP t subject [v+V] [VP tv Object]]]]
The reviewer points out that in (i), VP is spelled-out at the vP-phase, and it is inac-
cessible at the next CP phase due to the PIC. Thus, the object has been spelled-out
(=phonologically realized), and it cannot be elided. If so, the phase-based approach
of Ellipsis cannot be maintained.

However, we claim that the PIC regulates whether the inheritance of the silence
feature is possible in the syntactic component. We also claim that Spell-out does
not mean phonological realization, but the transfer of phonological information to the
phonological component. The phonetic string which is transferred is interpreted in
the phonological component phase by phase. Ellipsis occurs when the silence fea-
ture de-phoneticalizes all phonological information which has been interpreted so far.
For example, on our analysis, (i) is analyzed as follows: VP along with the object is
spelled-out at the vP-phase, the silence feature of C is transmitted to T, and the
silence feature of T de-phoneticalizes vP including VP which has been spelled-out at
phonological component.

In any case, the phase-based approach of Ellipsis is still maintained, since PIC
determines whether the inheritance of the silence feature is possible or not, and this
can account for several properties of vP-Ellipsis.
When is the inheritance of features from C by T possible? There are three scenarios: (i) no phase intervenes between C and T; (ii) a strong phase intervenes between C and T; (iii) a weak phase intervenes between C and T. In what follows, we show that our system can correctly account for the properties of vP-ellipsis in each of these three scenarios. We point out that vP-ellipsis is possible when the matrix verb in an ECM construction is passivized, while it is not possible in ECM infinitivals, and show how this contrast can be accounted for.

The scenario (i), in which no phase intervenes between C and T, is schematized in (6).

(6) \[
[CP C [+Silence] [TP T [vP Ø]]]
\]

In (6), no strong phase intervenes between C and T, hence inheritance of the features of C by T is allowed, because there is nothing to prevent the transmission of features from C to T. The silence feature inherited by T from C triggers deletion of the vP. Thus, in the case of (6) vP-ellipsis should be possible. This prediction is borne out by the examples in (7)–(10). These are examples of finite clauses, for-to constructions, control constructions, and want-type infinitivals, respectively.

(7) John loves Mary, and \([CP C [TP Peter T does [vP Ø]]]]\), too.
   (Sag (1976: 10))

(8) Mary wants to get a raise, and her boss arranged \([CP C [TP her T to [vP Ø]]]]\).
   (Lobeck (1995: 173))

(9) Kim isn’t sure she can solve the problem, but she will try \([CP C [TP PRO T to [vP Ø]]]]\).
   (Martin (2001: 154))

(10) John wants to win but Jill doesn’t want \([CP C [TP PRO T to [vP Ø]]]]\).
   (Martin (2001: 155))

In (7)–(10), the silence feature of C can be inherited by T, and can trigger Ellipsis of the complements of T (vP-ellipsis).

The scenario (ii), in which a strong phase intervenes between C and T, is schematized in (11).

(11) \[
[CP C [+Silence [TP1 T1 [vP1=strong V [VP V [TP2 T2 [vP2 Ø]]]]]]]
\]

What is important for our analysis is the relation between C and T₂. In (11), there is a strong phase (vP₁) intervening between C and T₂.
At the point where C is introduced, feature inheritance by T2 is impossible, due to the PIC. Thus, we predict that deletion of vP2 should not be allowed, because the silence feature of C cannot be inherited by T2. That this prediction is correct is shown by ECM infinitivals and small clauses, as exemplified in (12)–(14).

(12) *I consider Pam to like soccer, and [CP C [TP1 I T1 [vP1=strong believe Rebecca [TP2 T2 to [vP2 Ø]]]]] as well.  
(Martin (2001: 154))

(13) *Although we saw John dance, [CP C [TP1 we T1 couldn’t [vP1=strong watch [Small Clause Mary [vP2 Ø]]]].
(Lobeck (1995: 148))

(14) *?Mary will have Max stay, but I don’t think [CP C [TP1 she’ll [vP1=strong have [Small Clause Sue [vP2 Ø]]]].
(Cornilescu (2004))

Let us take (12) as an example. In this example, the vP headed by the transitive verb believe is a strong phase, which intervenes between C and T2. Thus, the PIC blocks inheritance of the silence feature of C by T2. Consequently, vP-ellipsis is impossible.2,3

The scenario (iii), in which there is a weak phase intervening between C and T, is schematized in (15).

(15) [CP C [+Silence] [TP1 T1 [vP1=weak v [VP V [TP2 T2 [vP2 Ø]]]]]].

What is crucial for our purpose is the relation between C and T2. In (15), the weak phase vP1 intervenes between C and T2. In this case, we predict that it should be possible for T2 to inherit the silence feature of C, and therefore deletion of vP2 should be possible. The structure in (15) is exemplified by (16a–g), which are examples of vP-ellipsis in

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2 An anonymous EL reviewer points out that Akmajian, Steele, and Wasow (1979) judge the sentences similar to (13) as grammatical. Our informant too judges the same type of sentences as grammatical. We leave open for further research to clarify why such a variation should exist.

3 An anonymous EL reviewer states that Zwicky (1982) points out that whether there is a negative element, or a pronoun, or a name in front of to is one of the factors governing the possibility of ellipsis following to, and that with respect to the acceptability of this type of Ellipsis, there is variation among speakers. We agree that, as Zwicky (1982) points out, to some extent phonological factors may be involved in the variation regarding this acceptability. We leave this problem open for further research.
raising-to-subject infinitivals.\(^4\)

(16) a. They say that Mary doesn’t know French, but \([\text{CP } \text{C } [\text{TP}_1 \text{ she T}_1 [\text{vP}_1=\text{weak} \text{ seems } [\text{TP}_2 \text{ T}_2 \text{ to } [\text{vP}_2 \emptyset]]]]]\).

\((\text{Wurmbrand (2005: 14)})\)

b. John isn’t likely to win, but \([\text{CP } \text{C } [\text{TP}_1 \text{ Sally T}_1 \text{ is } [\text{vP}_1=\text{weak} \text{ likely } [\text{TP}_2 \text{ T}_2 \text{ to } [\text{vP}_2 \emptyset]]]]]\).

\((\text{Baltin and Barrett (2002: 19)})\)

c. We don’t think that John will win, but \([\text{CP } \text{C } [\text{TP}_1 \text{ Sally T}_1 \text{ is } [\text{vP}_1=\text{weak} \text{ certain } [\text{TP}_2 \text{ T}_2 \text{ to } [\text{vP}_2 \emptyset]]]]]\).

\((\text{Baltin and Barrett (2002: 19)})\)

d. Although she hasn’t spoken to the President yet, \([\text{CP } \text{C } [\text{TP}_1 \text{ she T}_1 \text{ is } [\text{vP}_1=\text{weak} \text{ supposed } [\text{TP}_2 \text{ T}_2 \text{ to } [\text{vP}_2 \emptyset]]]]]\).

\((\text{Baltin and Barrett (2002: 19)})\)

e. Although he doesn’t want to speak to the President, \([\text{CP } \text{C } [\text{TP}_1 \text{ he T}_1 \text{ has } [\text{TP}_2 \text{ T}_2 \text{ to } [\text{vP}_2 \emptyset]]]]]\).

\((\text{Baltin and Barrett (2002: 19)})\)

f. “John Paul II” really focused on the teens, and I think \([\text{CP } \text{C } [\text{TP}_1 \text{ Benedict XVI T}_1 \text{ is } [\text{vP}_1=\text{weak} \text{ going } [\text{TP}_2 \text{ T}_2 \text{ to } [\text{vP}_2 \emptyset]]]]]\), too.

\((\text{http://www.usatoday.com/news/religion/2005-08-17-youth-pope_x.htm})\)

g. I used to do drugs. I still do, but \([\text{CP } \text{C } [\text{TP}_1 \text{ I T}_1 \text{ used } [\text{TP}_2 \text{ T}_2 \text{ to } [\text{vP}_2 \emptyset]]]]]\) too.

\((\text{http://www.cbc.ca/cgi-bin/quiz/quiz.cgi?quiz=arts_comedy})\)

Let us take (16a) as an example. In (16a), the vP phase headed by the raising predicate *seem* intervenes between C and T\(_2\), but this phase is weak, not strong. Therefore, it is possible for T\(_2\) to inherit C’s silence feature and vP\(_2\) can be elided.

Next, let us look at cases in which the matrix verb in an ECM construction is passivized. Given that passive \(v\) projects a weak vP phase, such ECM constructions should fall under the scenario (iii), in which no strong phase intervenes between the matrix C and the head T\(_2\) of the infinitival complement. Thus, our analysis predicts that vP-ellipsis should be possible in passive ECM infinitivals, unlike in active ECM

\(^4\) The claim that *be certain to*, *be supposed to*, *have to*, and *be going to* are raising-to-subject predicates is supported by the fact that these predicates can take the expletive *there* as subject. See Baltin and Barrett (2002).
infinitivals. This prediction is borne out, as shown by the contrast between (17) and (18).

(17) *I consider Pam to like soccer, and [CP C [TP1 I T1 [vP1=strong believe Rebecca [TP2 T2 to [vP2 Ø]]]]] as well.

(Martin (2001: 154))

(18) Familiars behaved in ways [CP C that [TP1 no natural pet T1 was [vP1=weak believed [TP2 T2 to [vP2 Ø]]]].

(http://witches.monstrous.com/familiars.htm)

In (18) the matrix verb of the ECM construction is passivized. This verb projects a weak vP phase so that it is possible for T2 to inherit the silence feature from C and therefore vP-ellipsis is licensed.

Summarizing, we have shown that our proposals in (1) and (2), together with the PIC, provide a principled account for the possibility/impossibility of vP-ellipsis in a variety of constructions.5, 6

3. The Parallelism between DP and CP with Respect to Ellipsis

The possibility that noun phrases and sentences are parallel has often been pointed out since Chomsky (1970). In this section, we will show that noun phrases and sentences are parallel with respect to Ellipsis. For concreteness, we assume that C, T, v, and V projections within CP

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5 Jun Abe (p.c.) points out that our analysis predicts that (i) should be unacceptable.

(i) *I consider Pam to seem to know Brian and I consider Bill to seem to.

Our informant judges this sentence to be ungrammatical.6 Our analysis can account for the following contrast:

(i) Mary {expected/believed/imagined/reported/considered} Bill to be obnoxious, but I don’t think she {expected/believed/imagined/reported/considered} Sam.

(Jacobson (1990: 442))

(ii) Mary {persuaded/convinced/asked/told/ordered} Sam to leave, but I don’t think that she has yet {persuaded/convinced/asked/?told/?ordered} Bill.

(Jacobson (1990: 441))

In ECM constructions, infinitival clauses containing to cannot be elided, as shown in (i), whereas in control constructions they can be.

However, Lobeck (1995) points out that the complement containing to in raising-to-subject infinitivals and want-type infinitivals cannot be elided as shown in (iii) and (iv).

(iii) *John appears to be smart, and Mary also seems. (Lobeck (1995: 56))

(iv) *Mary doesn’t expect Bill to win, but she wants. (Lobeck (1995: 56))

We leave this problem for further research.
correspond to D, Num(ber), n, and N projections within DP, respectively. We will show that the operations of NumP-ellipsis and nP-ellipsis in DP correspond to Sluicing and vP-ellipsis in CP, respectively. To the extent that this analysis is on the right track, our analysis gives support for the existence of parallelism between noun phrases and sentences. In addition, this supports the claim that DP is a phase, made by Chomsky (2000, 2001, 2004, 2005), and developed by Ochi (2000) and Svenonius (2003).

According to our assumption, the structure of noun phrase is (19).

\[ (19) \quad [\text{DP} \, D \, [\text{NumP} \, \text{Num} \, [\text{nP} \, n \, [\text{NP} \, N]]]] \]

In (19), noun phrase is composed of four categories, D, Num, n and N. D is the locus of the possessors, the determiners the and a, the demonstratives these, those, that, this, and every. Num is the locus of the numerals and quantifiers many, more, much, most, some, few, none, both, several, any, etc. In addition, we assume that possessors have the feature [+Poss] and the demonstratives these and those have the feature [+Plu(ral)].

Given these assumptions, we can capture the parallelism between DP structure and CP structure as in (20):

\[ (20) \quad \begin{align*}
\text{a. } & C-T \quad -v-V \\
\text{b. } & D-\text{Num}-n-N
\end{align*} \]

In (20) C, T, v and V correspond to D, Num, n and N, respectively.

In section 2, we have shown that both Sluicing and vP-ellipsis are triggered by the silence feature of the phase head C. Given that Num and n correspond to T and v respectively, it is predicted that operations of NumP-ellipsis and nP-ellipsis corresponding to Sluicing and vP-ellipsis respectively are possible in DP. With this in mind, we slightly modify the definition of the silence feature, as in (21).

\[ (21) \quad \text{The Silence Feature (Modified Version)} \]

\[ \text{The silence feature is borne by the phase heads C and D; the feature triggers Ellipsis of the complement of the head which bears it. In addition, stress is assigned to the head which bears it.} \]

(21) means that not only C but also D can bear the silence feature. Consider the case where D bears the silence feature. The mechanism of Ellipsis in DP is illustrated in (22) and (23).

\[ (22) \quad [\text{DP} \, D \, [+\text{Silence}] \, [\text{NumP} \, \emptyset]] \quad \text{(NumP-ellipsis)} \]

Ellipsis
If the silence feature stays on the phase head D, it triggers Ellipsis of its complement NumP (NumP-ellipsis), as in (22). If the silence feature of D is inherited by Num, the feature triggers Ellipsis of the complement of Num (nP-ellipsis), as in (23).\(^7\)

In addition, we assume that NumP-ellipsis applies only if D has the feature [+Poss] or [+Plu].\(^8\)

Putting these assumptions together, we make the following predictions: (i) when the silence feature stays on D, and D bears [+Poss] or [+Plu], the complement of D, that is, NumP can be elided; (ii) when...

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\(^7\) An anonymous EL reviewer asks why only C and D can bear the silence feature, and states that (21) merely describes a fact. However, phase heads are the locus of operations (Chomsky (2005)), and this is why the phase heads C and D can bear the silence features. In this sense, (21) has some conceptual motivation.

Another anonymous EL reviewer asks whether (21) is a principle of UG, or an English-specific stipulation. The silence feature of C belongs to UG, because Sluicing is possible in a lot of languages. However, we leave this problem for further research.

The reviewer also points out that in Romance languages vP-ellipsis is impossible while nP-ellipsis of the form [D + Adj + Ø] is possible. Impossibility of vP-ellipsis in Romance languages may be related to some properties of T of Romance languages. For example, do-support does not exist in many Romance languages. Anyway we leave this problem for further research.

Furthermore, the reviewer and Yoshiki Ogawa (p.c.) suggest that if the phase heads C and D can bear the silence feature, v also should bear this feature, since vP is also a phase in the Minimalist Program. However, that C and D bears the silence feature does not entail that v must bear the silence feature, since there is no reason to believe that all the features of C or D are the same as those of v.

Suppose that v can bear the silence feature. As the reviewer points out, if the silence feature stays on v, Ellipsis of the complement of v, (VP-ellipsis) should be possible, and, if the silence feature of v is transmitted to V, V's complements could be elided. We suggest that VP-ellipsis corresponds to Pseudogapping, in which DP raises to the spec of vP, and VP is elided, and Ellipsis of the complement of V corresponds to Argument Ellipsis, which is often seen in Japanese, and the Null Complement Anaphora. However, we need further research as to whether these elliptical phenomena can be subsumed under the proposed mechanism.

\(^8\) This constraint imposed on NumP-ellipsis is parallel with the constraint on Sluicing that requires the set of [+wh] and [+Q] features in C (Merchant (2001)). However, as we discuss in detail in Section 5, such an assumption is not needed for Sluicing.
the silence feature of D is inherited by Num, nP can be deleted. In what follows, we will give examples to confirm these predictions.

First, let us consider NumP-ellipsis. Our analysis predicts that NumP-ellipsis is possible when D has [+Poss].

(24) The fact that \([DP \text{John's [NumP } \emptyset]\)] was poorly presented made the committee adopt Mary's analysis instead.

(Lobeck (1991: 85))

In (24), D is filled with the possessor John's, and the possessor bears [+Poss]. Therefore, Ellipsis of NumP is possible.

Let us look at the case where D has [+Plu]. In this case, NumP-ellipsis should be possible. The relevant examples are given in (25).

(25) a. Although she might order \([DP \text{these [NumP } \emptyset]\)], Mary won't buy those books on art history. (Lobeck (1991: 85))

b. These pictures of Sally are quite good, but I am not crazy about \([DP \text{those [NumP } \emptyset]\)].

(Baltin and Barrett (2002: 23))

c. John calls on these students because he is irritated with \([DP \text{those [NumP } \emptyset]\)]. (Netelitheos (2004: 30))

In (25a–c) the demonstratives these and those occur in D, and they have [+Plu]. This is why NumP-ellipsis is possible.

Let us look at the cases where D has neither [+Poss] nor [+Plu]. The following examples illustrate that NumP-ellipsis is impossible in these cases.

(26) a. *A student should choose a major before \([DP \text{the [NumP } \emptyset]\)] reaches the fourth year. (Lobeck (1991: 85))

b. *Sue toyed with the idea of buying the windsurfer, then decided she didn’t want \([DP \text{a [NumP } \emptyset]\)] after all. (Lobeck (1991: 85))

c. *I’d like a horse, but I won’t buy \([DP \text{a [NumP } \emptyset]\)] you recommend. (Johnson (2005: 6))

d. *Many citizens attended the rally, but \([DP \text{every [NumP } \emptyset]\)] went home disappointed. (Lobeck (1991: 86))

(26a–d) show that the complements of the determiners the and a, the demonstratives this and that, and the quantifier every cannot be elided because these D heads have neither [+Plu] nor [+Poss]. Thus NumP-ellipsis is impossible in these cases.9

9 An anonymous EL reviewer points out that NumP-ellipsis is impossible when D
Second, let us consider \( nP \)-ellipsis, which corresponds to \( vP \)-ellipsis. Let us look at the cases where the numerals occur in \( \text{Num} \). As shown in (27a–c), \( nP \)-ellipsis is possible in these cases.

(27)  
\begin{align*}
\text{a.} & \quad \text{The students attended the play but } [\text{DP } D \ [\text{NumP two } \ [nP \ \emptyset]] \ ] \text{ went home disappointed.} & \text{(Lobeck (1991: 85))}
\text{b.} & \quad \text{Because } [\text{DP } \text{her } \ [\text{NumP two } \ [nP \ \emptyset]] \ ] \text{ were sick, Melissa didn’t take the children to swimming lessons that week.} & \text{(Lobeck (1995: 91))}
\text{c.} & \quad \text{Mary bought some new books, and I like } [\text{DP } \text{these } \ [\text{NumP six } \ [nP \ \emptyset]] \ ] \text{ the best.} & \text{(Lobeck (1995: 87))}
\end{align*}

The silence feature of \( D \) is inherited by \( \text{Num} \), and \( nP \)-ellipsis is possible.

Let us consider the case where a quantifier occurs in \( \text{Num} \). Examples where \( \text{Num} \) is filled with \textit{many}, \textit{some}, \textit{each}, \textit{few}, \textit{none}, and \textit{both} are shown in (28).

(28)  
\begin{align*}
\text{a.} & \quad \text{The students attended the play but } [\text{DP } D \ [\text{NumP many } \ [nP \ \emptyset]] \ ] \text{ left disappointed.} & \text{(Lobeck (1995: 91))}
\text{b.} & \quad \text{The students attended the play but } [\text{DP } D \ [\text{NumP some } \ [nP \ \emptyset]] \ ] \text{ went home disappointed.} & \text{(Lobeck (1991: 85))}
\text{c.} & \quad \text{The students attended the play but } [\text{DP } D \ [\text{NumP each } \ [nP \ \emptyset]] \ ] \text{ went home disappointed.} & \text{(Lobeck (1991: 85))}
\text{d.} & \quad \text{The students attended the play but } [\text{DP } D \ [\text{NumP few } \ [nP \ \emptyset]] \ ] \text{ left disappointed.} & \text{(Lobeck (1995: 91))}
\text{e.} & \quad \text{Maybe I can only get a few facts, but it’s better than } [\text{DP } D \ [\text{NumP none } \ [nP \ \emptyset]] \ ]] & \text{(Johnson (2005: 6))}
\text{f.} & \quad \text{Because } [\text{DP } D \ [\text{NumP both } \ [nP \ \emptyset]] \ ] \text{ are so popular, these wines will probably be very expensive.} & \text{(Lobeck (1995: 74))}
\end{align*}

bears \([+\text{Poss}]\) and a possessive determiner occurs in the spec of \( D \) (*\textit{my } + \emptyset, \ ?\textit{mine})*. Similar examples are also pointed out by Lobeck (1995).

(i) Mary likes your book but Bill likes their/her/our \{book(s)/ *\emptyset\}.

(ii) Mary likes your book but Bill likes theirs/hers/ours \{*book(s)/ \emptyset\}.

\text{(Lobeck (1995: 90))}

Lobeck (1995) assumes that only possessive determiner+-s and \textit{mine} have \([+\text{Poss}]\). This accounts for the contrast between (i) and (ii), and the ungrammaticality of the form [\textit{my } + \emptyset]. We also adopt this assumption. However, we really do not know whether (ii) is relevant to ellipsis. As the reviewer points out, this may be due to morphological factors. We leave this problem for further research.
In these cases, the silence feature of D can be inherited by Num. Therefore, nP-ellipsis is possible.

Even if the D head does not license NumP-ellipsis, nP can be deleted when numerals and quantifiers occur in Num. Examples are given in (29).

\[(29)\]

  a. Many students enrolled in the class, but \([_{DP} \text{the} [_{NumP} \text{few} [_{nP} \emptyset]]] \text{who dropped it later}\) said it was too difficult. \((\text{Lobeck (1995: 72)})\)

  b. I can’t look at all the problems, but I can look at \([_{DP} \text{a} [_{NumP} \text{few} [_{nP} \emptyset]]]\) \((\text{Johnson (2005: 6)})\)

  c. Every two months we get a utility bill, and \([_{DP} \text{every} [_{NumP} \text{four} [_{nP} \emptyset]]]\) we get a bill from the recycling company. \((\text{Lobeck (1995: 95)})\)

In (29a), in which the occurs in D, the complement of few can be elided. In (29b), in which a occurs in D, the complement of few can be omitted. In (29c), in which D is filled with every, and Num is filled with the numeral four, nP-ellipsis is possible.

These phenomena indicate that an overt Num in nP-ellipsis works in parallel with an overt auxiliary in vP-ellipsis. The overt complementizer that does not license Sluicing, but vP-ellipsis is possible in the presence of an overt auxiliary in T.\(^{10}\)

In summary, we have shown that noun phrases and sentences are parallel with respect to Ellipsis. This supports the claim that noun phrases and sentences are parallel. In addition, this offers further evidence for the claim that DP is a phase.\(^{11}\)

4. Ellipsis and Interpretation

The purpose of this section is to account for the interaction between Ellipsis and interpretation. Chomsky (2004) proposes that phases constitute a single cycle for syntactic derivation, semantic interpretation and

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\(^{10}\) We discuss in detail in Section 5 why such a phenomenon arises in Sluicing.

\(^{11}\) We have omitted Ellipsis of elements following all, due to disagreement on how they are judged, as illustrated in (i) and (ii) below.

(i) *I’ll take the classes if you’ll take [all [\emptyset]] too. \((\text{Johnson (2005: 6)})\)

(ii) The students attended the play but [all [\emptyset]] went home disappointed. \((\text{Lobeck (1991: 85)})\)
phonetic interpretation. Let us call this the Single-Cycle Hypothesis. According to this hypothesis, semantic interpretation should be assigned at the same cycle where Ellipsis applies. This means that the interpretation of reference should be determined at the CP in which Ellipsis occurs. In what follows we show that this analysis can account for three semantic phenomena which are relevant to the interaction between Ellipsis and interpretation. In addition, we show that this analysis is adequate for Ellipsis in DP as well.\textsuperscript{12, 13}

First of all, it has been a big problem why vP-ellipsis allows sloppy readings while Sluicing does not. The relevant examples are given in (30a, b).

(30) a. Abby told us when she'd stop smoking, but Bethi didn't \[vP \text{tell us when she'd stop smoking}]. \hspace{1cm} (vP-ellipsis)
b. *Abby said she'd stop smoking tomorrow, but Bethi wouldn't say \[TP \text{she'd stop smoking}]. \hspace{1cm} (Sluicing)

\textsuperscript{12} An anonymous EL reviewer states that application of Ellipsis requires not only the silence feature but also identity with the antecedent, and this kind of information is derived from the entire derivation. However, if the phase-based approach of Ellipsis is correct, Ellipsis should apply before we can gain information on the antecedent. We suggest that the identity between an elided element and its antecedent cannot be checked at the stage of linguistic computation, and hence it is a problem which belongs to Discourse Grammar in the sense of Williams (1977).

\textsuperscript{13} In this paper we limit the discussion to cases in which pronouns take elements within the sentence as antecedents and do not discuss cases in which the interpretation of pronouns (including strict readings) is determined in the discourse.

The structures of (30a) and (30b) are illustrated in (31a) and (31b).

(31) a. \[CP1 \text{Bethi didn't } [vP \text{tell us when she'd stop smoking}], \text{too.}

b. \[CP1 \text{Bethi wouldn't say } [CP2 \text{when } [TP \text{she'd stop smoking}]]\]

In (31a), vP-ellipsis applies at CP\textsubscript{1}. If the Single-Cycle Hypothesis is correct, reference should be determined at this stage. At this cycle, \textit{she} can refer to \textit{Beth}. In (31b), since Sluicing applies at CP\textsubscript{2}, reference should be determined at this cycle. However, at CP\textsubscript{2} \textit{Beth} has not been introduced in the derivation yet, so that \textit{she} has no possibility to refer to \textit{Beth}. This is why a sloppy reading is not possible in Sluicing contexts.
The second problem to consider is why sloppy readings in Ellipsis contexts are subject to locality effects. The relevant example is given in (32).

(32) Max saw his mother, and Oscari said that Harry did [vP see his mother] too.  
    (Fiengo and May (1994: 105))
In (32), though it can refer to Harry, his cannot refer to Oscari. This phenomenon is generally known as the locality effect in sloppy readings. The relevant part of the structure of (32) is shown in (33).

(33) [CP1 Oscari said [CP2 that Harry did [vP see his mother]].]
In (33) vP-ellipsis applies at the stage CP2. Interpretation is also determined at CP2. Thus his can refer to Harry. On the other hand, at the stage CP2 Oscari has not been introduced in the derivation yet, and his has no possibility to refer to Oscari. This is how our analysis accounts for the locality effect observed in sloppy readings.14, 15

The third crucial question is why the lack of Condition C effects is observed if the referential expression is more deeply embedded in vP-ellipsis contexts. Consider the contrast between (34a) and (34b).

(34) a. *Amy introduced Jack to everyone and he did [vP introduce Jack], too.  
    (Safir (1999: 605))
    b. Mary loves John, and he thinks that Sally does [vP love John], too.  
    (Fiengo and May (1994: 220))
In (34a), he and the referential expression cannot be coreferential. However, they can be coreferential if the referential expression is more deeply embedded in vP-ellipsis contexts, as in (34b). Let us consider why such a contrast arises. The relevant parts of the structures of (34a) and (34b) are given in (35a) and (35b), respectively.

(35) a. [CP1 he did [vP introduce Jack]]
    b. [CP1 he thinks [CP2 that Sally does [vP love John]]].
In (35a), vP-ellipsis applies at the CP1 stage. Interpretation is also

14 An anonymous EL reviewer points out that we must discuss the problem of sloppy and strict readings in terms of referential dependency by binding. That is, it is not adequate to say that pronoun such as his can refer to Harry in (33).
However, we do not adopt conventional approaches in which the elided pronoun turns into a variable. Thus, we treat the dependency between his and Harry in (33) as coreferentiality.
15 Satoshi Oku (p.c.) points out to me the possibility that his and Oscari could be coreferential by accident. We regard this as a case in which the pronoun is interpreted as deictic, so the case is outside the scope of our discussion.
determined at this stage. Since Jack is bound by he at this stage, (34a) is ungrammatical. On the other hand, in (35b), vP-ellipsis applies at the CP₂ stage. At this stage, he has not been introduced in the derivation yet, and hence there is no element that binds John and (34b) is grammatical. Why do John and the pronoun end up coreferential in (34b)? John in the first and second conjunct refers to the same person and the pronoun he happens to be coreferential with John in the first conjunct; in this way, the pronoun and John in the elided part can be coreferential.

The contrast between (34a) and (34b) has been accounted for by "vehicle change," proposed in Fiengo and May (1994). Our analysis can account for the contrast without recourse to such an additional mechanism.

The same analysis applies in the case of Sluicing. The Condition C effects are lacking in Sluicing contexts as well, as illustrated in (36).

(36) They arrested Alex, though he didn't know why [TP they arrested Alex] (Merchant (2005))

(37) *He didn't know why they arrested Alex. (Merchant (2005))

In (36), which is an example of Sluicing, the Condition C effects are lacking. The relevant part of the structure of (36) is given in (38).

(38) They arrested Alex, though [CP₁ he didn't know [CP₂ why [TP they arrested Alex]]].

In (38), Sluicing applies at the CP₂ stage. At this stage, he has not yet been introduced in the derivation. Hence, there is no element that binds Alex and (36) is grammatical. Why do Alex and the pronoun end up coreferential in (36)? Alex in the main and subordinate clause refers to the same person and the pronoun he happens to be coreferential with Alex in the main clause; in this way, the pronoun and Alex in the elided segment end up coreferential.

Here, consider the parallelism between DP and CP again. In section 3, we have shown that the Ellipsis phenomena in CP phases exist in DP phases as well. If this claim is tenable, when Ellipsis occurs at the stage of DP, interpretation should also be determined at the DP phase. This prediction is borne out, as shown in (39a) and (40).

(39) a. I saw Janet's picture of her hamster and Mary saw [DP Julie's [NumP picture of her hamster]]
b. Mary saw [DP Julie's picture of her hamster].

(40) a. *I saw Julie's picture of Mary and Nancy saw [DP her [NumP picture of Mary]].
b. I saw Mary's picture of John, and he saw [DP Mary's [NumP picture of John]].

Let us consider (39a). In (39a), NumP-ellipsis occurs in DP, and the pronoun her cannot refer to Mary, although it can refer to Julie. This fact can be accounted for as follows: since NumP-ellipsis occurs at the DP phase, the interpretation is also determined at this stage. At this stage, Mary has not been introduced in the derivation. Thus, her has no possibility to refer to Mary.

Consider next (40). (40a) is a case of a violation of Condition C. But, as shown in (40b), the Condition C violation effects disappear if the referential expression is more deeply embedded. In (40a), NumP-ellipsis applies at the DP-phase. Thus, interpretation is also determined at this phase. Since the referential expression Mary is bound by her at this stage, (40a) is ungrammatical. On the other hand, in (40b), NumP-ellipsis applies at the DP stage. At this stage, he has not been introduced in the derivation yet, hence there is no element that binds John and (40b) is grammatical. Why do John and the pronoun end up coreferential in (40b)? John in the first and second conjunct refers to the same person and the pronoun he happens to be coreferential with John in the first conjunct; this is how the pronoun and John in the elided part can be coreferential.16

To summarize, we have shown that the proposed analysis of Ellipsis, together with the Single-Cycle Hypothesis, can account for three interpretational phenomena pertaining to the interaction between Ellipsis and interpretation.

5. Stress and Ellipsis

In this section, we propose the stress-assigning system in Ellipsis. For concreteness, we propose that stress is assigned as a reflex of deletion triggered by the silence feature, when Sluicing and vP-ellipsis

16 As Satoshi Oku (p.c.) and an anonymous EL reviewer point out, if Chomsky's (2004) single-cycle hypothesis is correct, interpretation should be determined cyclically, regardless whether ellipsis applies or not. However, we do not know how interpretation proceeds cyclically when ellipsis does not apply (such as in (37) and (39b)), and leave this problem for further research. On the other hand, reference must be determined when Ellipsis applies. This is because Ellipsis is subject to Full Interpretation.
apply. We show that our stress-assigning system can account for properties of Sluicing, without recourse to the additional assumption that Sluicing requires the set of [+wh] and [+Q] feature of C (Merchant (2001)). If the argument here is correct, Sluicing and vP-ellipsis can be regarded as parallel phenomena.

We propose that the stress-assigning system in Sluicing and vP-ellipsis is as follows:

(41) When the silence feature triggers Sluicing and vP-ellipsis, stress is assigned to the head which bears the feature as a reflex of the de-phoneticalization of TP and vP.

Let us examine how (41) operates. First, let us consider vP-ellipsis. The stress-assigning system in vP-ellipsis is schematized in (42).

(42) The stress-assigning system in vP-ellipsis

\[
\begin{array}{c}
\text{CP} \\
\text{Inheritance} \\
\text{of silence} \\
\text{features} \\
\text{stress-assignment} \\
\text{T} \\
\text{Ellipsis} \\
\text{vP(=Ø)} \\
\end{array}
\]

In (42), vP-ellipsis is triggered by the silence feature inherited by T from C. As a reflex of the de-phoneticalization of vP, T receives stress. Thus, vP-ellipsis requires an overt auxiliary in T, due to the overt realization of stress.

Second, let us consider the stress-assigning system in Sluicing.

(43) The stress-assigning system in Sluicing

\[
\begin{array}{c}
\text{CP} \\
\text{wh} \\
\text{stress} \\
\text{silence} \\
\text{Ellipsis} \\
\text{feature} \\
\text{stress-assignment} \\
\end{array}
\]

In (43), Sluicing is triggered by the silence feature of C. In this case, as a reflex of the de-phoneticalization of TP, the wh-phrase in the Spec
of CP can receive stress, when C is null. We claim that stress may be assigned to a *wh*-phrase in the Spec of CP in place of C, when elements which can receive stress are not overtly realized. This is because there is some agreement relation between C and the *wh*-phrase in the Spec of CP.

Next, let us look at the cases where the complementizer that, the question markers whether and if, and relative pronouns occur in C. We assume that these elements cannot inherently receive stress. Given this, we predict that Sluicing should be impossible when these occur in C or the Spec of CP. This prediction is borne out. As shown in (44a–c), Sluicing is impossible when the complementizer that, the questions markers whether and if occur in C, and relative pronouns occur in the Spec of CP.

(44) a. *It was painted, but it wasn’t obvious [CP that [TP it was painted]]. (Merchant (2001: 56))

b. *The Pentagon leaked that it would close the Presidio, but no-one knew for sure whether/if [TP it would close the Presidio]. (Merchant (2001: 56))

c. *Somebody stole the car, but they couldn’t find the person who. (Merchant (2001: 59))

Let us remark, in passing, that our analysis incorrectly predicts that Sluicing should be possible if both the complementizer that and a *wh*-phrase co-occur in C and the Spec of CP, because the *wh*-phrase can receive stress in place of that. However, this possibility is excluded independently by the doubly-filled comp filter, which is a well-known constraint in English.17

In this section, we have argued that stress is assigned as a reflex of deletion triggered by the silence feature. Our analysis can account for the properties of Sluicing without recourse to the additional assumption.

17 An anonymous EL reviewer argues that the following example appears to be a counterexample to (41).

(i) Mary selected Bill, and I think that SUZAN *(did) too.

In (i), even if SUZAN is focused, did must be overtly realized. The reviewer states that if this focus is assigned to SUZAN by some agreement between T and the Spec of TP, did may not be overtly realized.

However, we argue that, in this case as well, did receives stress, and SUZAN is focused due to some other mechanism. Thus, the parallel treatment of Sluicing and vP-ellipsis is still possible.
that Sluicing requires the set of [+wh] and [+Q] features of C. This indicates that a parallel treatment of Sluicing and vP-ellipsis is possible.18, 19

6. Conclusion

We have claimed that Sluicing and vP-ellipsis are triggered by the silence feature borne by the phase head C. Our analysis accounts for the distributional properties of vP-ellipsis in a principled fashion. We have accounted for why vP-ellipsis is possible in passive ECM infinitivals, but not in active ECM infinitivals. In addition, we have shown that noun phrases and sentences are parallel with respect to Ellipsis. We have also argued that semantic interpretation and Ellipsis occur at the same cycle. This correctly accounts for the interaction between Ellipsis and interpretation.

Our analysis offers support for Chomsky’s (2005) claim that some of the properties that appear to be inherent to T are inherited from the

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18 An anonymous EL reviewer states that T receives stress not only in Ellipsis but also wh-movement and vP-preposing, and hence we must consider whether (41) can capture the properties of stress in such a cases as well. Under the copy theory of movement, the copy in wh-movement and vP-preposing is de-phoneticalized. We require further research for unification of the mechanisms of de-phoneticalization in Ellipsis and movement.

19 We have shown that Sluicing and vP-ellipsis can be regarded as parallel phenomena. However, Fox and Lasnik (2003) point out that there is an asymmetry between Sluicing and vP-ellipsis concerning wh-extraction out of Ellipsis sites, exemplified by (i)–(iii).

(i) They heard a lecture about a Balkan language, but I don’t know which Balkan language they heard a lecture about. (Fox and Lasnik (2003: 148))

(ii) They heard a lecture about a Balkan language, but I don’t know which Balkan language. (Fox and Lasnik (2003: 148))

(iii) *They heard a lecture about a Balkan language, but I don’t know which Balkan language they did. (Fox and Lasnik (2003: 148))

In (i), the verb phrase within the embedded question contains an A'-variable bound by which Balkan language. When we apply vP-ellipsis to the embedded question, the resultant sentence (iii) is unacceptable, while (ii), in which the embedded question undergoes Sluicing, is acceptable.

However, there are also cases in which wh-extraction out of vP-ellipsis sites is possible, as exemplified by (iv).


We leave the explanation of the ungrammaticality of (iii) for further research.
phase head C by T. In addition, it offers support for the hypothesis of the parallelism between noun phrases and sentences, and it provides a new piece of evidence for the claim that DP is a phase. Furthermore, insofar as the analysis is correct, it provides support for the proposal in Chomsky (2004) that a phase constitutes a single cycle of syntactic derivation, semantic interpretation and phonological interpretation.

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