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

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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 ν P-ellipsis (which has been traditionally called “VP-deletion”). We propose that Sluicing and ν P-ellipsis are driven by a silence feature of the phase head C. We argue that ν P-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 ν P-ellipsis. As far as I know, we are the first to point out that ν P-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 ν P-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 ν P-ellipsis allows sloppy readings while Sluicing does not, (ii) why locality is observed in sloppy readings only in ν P-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 ν P-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 ν P-ellipsis.

(1) means that both Sluicing and ν P-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 ν P-ellipsis are applied as in (3) and (4).

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) (ν P-ellipsis). (We discuss in detail in section 5 how stress is assigned in Sluicing and ν P-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 operations 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 derivation proceeds to the next higher phase. Given this assumption, inheritance of features from C by T is inevitably subject to this condition.

In the Minimalist Program, it is assumed that CP and ν P are phases, and that there is a strong/weak distinction between phases. Chomsky (2001, 2004) claims that C and transitive ν are strong phase heads, while passive and unaccusative ν 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 syntax 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 [_{ν P} *t*_{subject} [_{V+V}] [_{VP} *t*_v Object]]]]

The reviewer points out that in (i), VP is spelled-out at the ν P-phase, and it is inaccessible 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 feature de-phonetizes 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 ν P-phase, the silence feature of C is transmitted to T, and the silence feature of T de-phonetizes ν P 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 ν P-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 ν P-ellipsis in each of these three scenarios. We point out that ν P-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) $[_{CP} C [+Silence] [_{TP} T [_{\nu P} \emptyset]]]$

 inheritance Ellipsis

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 ν P. Thus, in the case of (6) ν P-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 $[_{CP} C [_{TP} \text{Peter } T \text{ does } [_{\nu P} \emptyset]]]$, too.
 (Sag (1976: 10))
 (8) Mary wants to get a raise, and her boss arranged $[_{CP} C \text{ for } [_{TP} \text{her } T \text{ to } [_{\nu P} \emptyset]]]$.
 (Lobeck (1995: 173))
 (9) Kim isn't sure she can solve the problem, but she will try $[_{CP} C [_{TP} \text{PRO } T \text{ to } [_{\nu P} \emptyset]]]$.
 (Martin (2001: 154))
 (10) John wants to win but Jill doesn't want $[_{CP} C [_{TP} \text{PRO } T \text{ to } [_{\nu P} \emptyset]]]$.
 (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 (ν P-ellipsis).

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

- (11) $[_{CP} C [+Silence] [_{TP1} T1 [_{\nu P1=strong} \nu \left([_{VP} V [_{TP2} T2 [_{\nu P2} \emptyset]]] \right)]]$

 inheritance

What is important for our analysis is the relation between C and T_2 . In (11), there is a strong phase (νP_1) intervening between C and T_2 .

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 [_{CP} C [_{TP1} she T₁ [_{vP1=weak} seems [_{TP2} T₂ to [_{vP2} Ø]]]]].
(Wurmbrand (2005: 14))
- b. John isn't likely to win, but [_{CP} C [_{TP1} Sally T₁ is [_{vP1=weak} likely [_{TP2} T₂ to [_{vP2} Ø]]]]].
(Baltin and Barrett (2002: 19))
- c. We don't think that John will win, but [_{CP} C [_{TP1} Sally T₁ is [_{vP1=weak} certain [_{TP2} T₂ to [_{vP2} Ø]]]]].
(Baltin and Barrett (2002: 19))
- d. Although she hasn't spoken to the President yet, [_{CP} C [_{TP1} she T₁ is [_{vP1=weak} supposed [_{TP2} T₂ to [_{vP2} Ø]]]]].
(Baltin and Barrett (2002: 19))
- e. Although he doesn't want to speak to the President, [_{CP} C [_{TP1} he T₁ [_{vP1=weak} has [_{TP2} T₂ to [_{vP2} Ø]]]]].
(Baltin and Barrett (2002: 19))
- f. "John Paul II" really focused on the teens, and I think [_{CP} C [_{TP1} Benedict XVI T₁ is [_{vP1=weak} going [_{TP2} T₂ to [_{vP2} Ø]]]]], too.
(http://www.usatoday.com/news/religion/2005-08-17-youth-pope_x.htm)
- g. I used to do drugs. I still do, but [_{CP} C [_{TP1} I T₁ [_{vP1=weak} used [_{TP2} T₂ to [_{vP2} Ø]]]]] too.
(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

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/convicted/asked/told/ordered} Sam to leave, but I don't think that she has yet {persuaded/convicted/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 *n*P-ellipsis in DP correspond to Sluicing and *v*P-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) [DP D [NumP Num [_{NP} *n* [_{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) a. C-T -*v*-V
b. D-Num-*n*-N

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 *v*P-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 *n*P-ellipsis corresponding to Sluicing and *v*P-ellipsis respectively are possible in DP. With this in mind, we slightly modify the definition of the silence feature, as in (21).

- (21) The Silence Feature (Modified Version)

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) [DP **D** [+Silence] [NumP Ø]] (NumP-ellipsis)
- └──────────┘
↑
Ellipsis

- (23) $[_{DP} \mathbf{D} [+Silence] [_{NumP} \mathbf{Num} [_{nP} \emptyset]]]$ (nP-ellipsis)
- $\underbrace{\hspace{1.5cm}} \quad \uparrow \quad \uparrow$
 inheritance 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

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 + $\emptyset$] 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} John's [_{NumP} Ø]] 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} these [_{NumP} Ø]], 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} those [_{NumP} Ø]].

(Baltin and Barrett (2002: 23))

- c. John calls on these students because he is irritated with [_{DP} those [_{NumP} Ø]]. (Ntelitheos (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} the [_{NumP} Ø]] reaches the fourth year. (Lobeck (1991: 85))

- b. *Sue toyed with the idea of buying the windsurfer, then decided she didn't want [_{DP} a [_{NumP} Ø]] after all.

(Lobeck (1991: 85))

- c. *I'd like a horse, but I won't buy [_{DP} a [_{NumP} Ø]] you recommend]. (Johnson (2005: 6))

- d. *Many citizens attended the rally, but [_{DP} every [_{NumP} Ø]] 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 Num. As shown in (27a–c), *nP*-ellipsis is possible in these cases.

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

The silence feature of D is inherited by Num, and *nP*-ellipsis is possible.

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

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

bears [+Poss] and a possessive determiner occurs in the spec of DP (**my* + Ø, *?mine*). Similar examples are also pointed out by Lobeck (1995).

- (i) Mary likes your book but Bill likes their/her/our {book(s)/ *Ø}.
 (ii) Mary likes your book but Bill likes theirs/hers/ours {*book(s)/ Ø}. (Lobeck (1995: 90))

Lobeck (1995) assumes that only possessive determiner+*s* and *mine* have [+Poss]. This accounts for the contrast between (i) and (ii), and the ungrammaticality of the form [*my* + Ø]. 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} the [_{NumP} few [_{nP} Ø]] who dropped it later] said it was too difficult. (Lobeck (1995: 72))
 b. I can't look at all the problems, but I can look at [_{DP} a [_{NumP} few [_{nP} Ø]]] (Johnson (2005: 6))
 c. Every two months we get a utility bill, and [_{DP} every [_{NumP} four [_{nP} Ø]]] we get a bill from the recycling company. (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

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 [Ø]] too. (Johnson (2005: 6))

(ii) The students attended the play but [all [Ø]] went home disappointed. (Lobeck (1991: 85))

First of all, it has been a big problem why *v*P-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 Beth_i didn't
[_{vP} tell us when she_i'd stop smoking]. (vP-ellipsis)
b. *Abby said she'd stop smoking tomorrow, but Beth_i
wouldn't say when [_{TP} she_i'd stop smoking]. (Sluicing)
(Merchant (2001: 8, fn. 2))

(31) a. [C_{PI} Beth_i didn't [_{VP} ~~tell us when she_i'd stop smoking~~]],
too.

- b. [_{CP1} Beth_i wouldn't say [_{CP2} when [_{TP} she_i'd stop smoking]]]

In (31a), vP-ellipsis applies at CP₁. If the Single-Cycle Hypothesis is correct, reference should be determined at this stage. At this cycle, *she* can refer to *Beth*. In (31b), since Sluicing applies at CP₂, reference should be determined at this cycle. However, at CP₂ *Beth* has not been introduced in the derivation yet, so that *she* has no possibility to refer to *Beth*. This is why a sloppy reading is not possible in Sluicing contexts.

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).

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 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 Oscar_i said that Harry_j did [_{VP} see his_{*i/j} mother] too. (Fiengo and May (1994: 105))

In (32), though it can refer to *Harry*, *his* cannot refer to *Oscar*. 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} Oscar_i said [_{CP2} that Harry_j did [_{VP} see ~~his_{*i/j}~~ mother]]].

In (33) *vP*-ellipsis applies at the stage *CP*₂. Interpretation is also determined at *CP*₂. Thus *his* can refer to *Harry*. On the other hand, at the stage *CP*₂ *Oscar* has not been introduced in the derivation yet, and *his* has no possibility to refer to *Oscar*. 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_i to everyone and he_i did [_{VP} ~~introduce Jack_i~~], too. (Safir (1999: 605))
 b. Mary loves John_i, and he_i thinks that Sally does [_{VP} ~~love John_i~~], 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_i did [_{VP} ~~introduce Jack_i~~]]
 b. [_{CP1} he_i thinks [_{CP2} that Sally does [_{VP} ~~love John_i~~]]].

In (35a), *vP*-ellipsis applies at the *CP*₁ 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 *Oscar* 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 *CP*₂ 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_i, though he_i didn't know why [_{TP} ~~they arrested Alex_i~~] (Merchant (2005))

- (37) *He_i didn't know why they arrested Alex_i. (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_i, though [_{CP1} he_i didn't know [_{CP2} why [_{TP} ~~they arrested Alex_i~~]]].

In (38), Sluicing applies at the *CP*₂ 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_i saw [_{DP} Julie_j's [_{NumP} ~~picture of her_{*i/j} hamster~~]]
 b. Mary_i saw [_{DP} Julie_j's picture of her_{i/j} hamster].
 (40) a. *I saw Julie's picture of Mary and Nancy saw [_{DP} her_i [_{NumP} ~~picture of Mary_i~~]].

- b. I saw Mary's picture of John_i and he_i saw [_{DP} Mary's
[_{NumP} ~~picture of John_i~~]].

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 ν P-ellipsis can be regarded as parallel phenomena.

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

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

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

- (42) The stress-assigning system in ν P-ellipsis

In (42), ν P-ellipsis is triggered by the silence feature inherited by T from C. As a reflex of the de-phonetization of ν P, T receives stress. Thus, ν P-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

In (43), Sluicing is triggered by the silence feature of C. In this case, as a reflex of the de-phonetization 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 ν P-ellipsis is possible.^{18, 19}

6. Conclusion

We have claimed that Sluicing and ν P-ellipsis are triggered by the silence feature borne by the phase head C. Our analysis accounts for the distributional properties of ν P-ellipsis in a principled fashion. We have accounted for why ν P-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

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

¹⁹ We have shown that Sluicing and ν P-ellipsis can be regarded as parallel phenomena. However, Fox and Lasnik (2003) point out that there is an asymmetry between Sluicing and ν P-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 ν P-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 ν P-ellipsis sites is possible, as exemplified by (iv).

- (iv) What VP-ellipsis CAN do, and what it CAN'T. (Johnson (2001: 439))

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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