Abstract
The present article is concerned with two important observations about argument ellipsis. One is that it may apply to arguments that do not enter into agreement relationship with functional categories but not to those that do; the other is that extraction out of elided arguments is possible in Japanese. In order to account for them, I adopt the theory of derivational ellipsis, according to which elliptic constituents are marked as such as early as in the syntactic component, and the hypothesis that v, V, and an internal argument can be combined in different ways in different languages. The proposed analysis does not only account for the relevant facts about argument ellipsis in Japanese, but also extends to other languages that exhibit slightly different behaviors with regard to null arguments.

Keywords
argument ellipsis, anti-agreement, extraction from ellipsis, derivational ellipsis,
1 Introduction

Since the late 1990s, evidence has been mounting in favor of the view that null arguments arise through ellipsis in Japanese (see Oku 1998, Saito 2004, Takahashi 2008a, Takita 2011, and Sakamoto 2015, among others). Assuming that to be correct, this article proposes a new analysis of elided arguments in terms of derivational ellipsis in the sense of Aelbrecht (2009). It is shown to account for two particularly important observations about argument ellipsis in a way that is faithful in spirit to the minimalist approach to language.

Considering the presence and absence of argument ellipsis in a number of languages, Saito (2007) argues that its availability correlates with the absence of agreement. This anti-agreement hypothesis, which is explicated in 2.1, is empirically supported by Takahashi (2014), who examines Turkish and Chinese in addition to Japanese and Spanish. While it is not exempt from counterarguments (Duguine 2014 and Simpson et al. 2013), I assume that it is still a viable assumption that has the potential to explain the cross-linguistic distribution of elided arguments. A question that immediately arises then is why argument ellipsis is sensitive to agreement. I show in Section 3 that the analysis in terms of derivational ellipsis provides a straightforward answer for the question.

In 2.2, we consider the fact that extraction out of elided arguments is possible in Japanese. As far as I can see, this constitutes the most compelling evidence for the involvement of ellipsis in null arguments, because it unequivocally indicates that they do possess internal syntactic structure. I explicate in Section 4 how the fact can be accommodated under the derivational view of argument ellipsis.

2 Key observations

This section briefly illustrates two key observations made about argument ellipsis, setting the stage for the discussion in Sections 3 and 4.

2.1 Anti-agreement

The presence of argument ellipsis in Japanese has been motivated in the literature by

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* Acknowledgments will come here.
considerations of examples like the following (see Takahashi 2008b and the references therein):

(1) a. *Harry-wa zibun-no hahaoya-o sonkeisiteiru.*
    Harry-TOP self-GEN mother-ACC respect
    ‘Harry respects his mother.’

b. *Ron-wa e keibetusiteiru.*
    Ron-TOP despise
    ‘lit. Ron despises.’

c. *Ron-wa kanozyo-o keibetusiteiru.*
    Ron-TOP her-ACC despise
    ‘Ron despises her.’

The examples in (1) have to do with the possibility of sloppy interpretation. Anteceded by (1a), the null object construction in (1b) is ambiguous between the strict interpretation that Ron despises Harry’s mother and the sloppy reading that Ron despises his own mother. (1b) should be contrasted with (1c), where the pronoun *kanozyo* ‘her’ occurs in the object position. Crucially, (1c) is not ambiguous and is limited to the strict interpretation. It was standard to regard null arguments in Japanese as phonetically empty pronouns (see Kuroda 1965). If the null object in (1b) were an empty pronoun, the sentence should be like (1c) and be confined to the strict construal. If, on the other hand, null arguments are derived through ellipsis, (1b) is analyzed as follows:

(2) a. *Ron-wa zibun-no hahaoya-o keibetusiteiru*
    Ron-TOP self-GEN mother-ACC despise
    ‘Ron despises self’s mother’

b. *Ron-wa kare-no hahaoya-o keibetusiteiru*
    Ron-TOP his-GEN mother-ACC despise
    ‘Ron despises his mother’

When (1b) has the sloppy reading, it is analyzed as in (2a), where the object position is occupied by the same noun phrase as the object in (1a). Since the reflexive pronoun *zibun* ‘self’ occurs as part of the object, it yields the sloppy interpretation that Ron despises his own mother. Under the identity with the object in (1a), the object in (2a) may be elided (ellipsis is indicated with strikethrough). The strict reading of (1b) can also be accounted for by ellipsis. We may analyze (1b) as indicated in (2b), where the object position is occupied by the full-fledged noun phrase that contains the pronoun *kare* ‘he’ referring to the subject of the antecedent sentence (1a) as the possessor. The objects in (1a) and (2b) only differ in that while the former has the reflexive *zibun*, the latter has the pronominal *kare*. As they refer to the same entity, that is, *Harry*, they
can be deemed non-distinct for the purpose of ellipsis.¹

The hypothesis that null arguments arise through ellipsis in Japanese receives further support from cases like the following:

(3)  
   a. *Harry-wa tosioita mahootukai-o mikaketa.*  
       Harry-TOP old wizard-ACC saw  
       ‘Harry saw an old wizard.’
   
   b. *Ron-wa e mikakenakatta.*  
       Ron-TOP not.saw  
       ‘lit. Ron did not see.’
   
   c. *Ron-wa soitu-o mikakenakatta.*  
       Ron-TOP him-ACC not.saw  
       ‘Ron did not see him.’

The example in (3b) is a null object construction, and it is intended to be anteceded by (3a). In this context, (3b) is ambiguous between what we may call the “same entity” reading that Ron did not see the old wizard Harry saw and what we may call the “indefinite” interpretation that Ron did not see an old wizard. Again, if the null object were an empty pronoun, (3b) should behave like (3c), where the overt pronoun *soitu* occurs in the object position. The fact is that (3c) is limited to the same entity reading. Argument ellipsis can easily account for the indefinite reading, as shown below:

(4)  
   *Ron-wa tosioita mahootukai-o mikakenakatta*  
       Ron-TOP old wizard-ACC not.saw  
       ‘Ron did not see an old wizard’

In this representation of (3b), the object position is occupied by an indefinite noun phrase, which is elided under the identity with the object in the antecedent sentence in (3a). It is clear that (3b) with the structure in (4) has the indefinite reading. The “same entity” construal can also be accommodated under argument ellipsis. Compare (3a) and (3c). The object in (3a) is an indefinite phrase, which is classified as an R-expression along with names, quantifiers, and *wh*-phrases; the object in (3c) is a pronoun referring to the old wizard Harry saw. Hence, the latter should in principle be able to be elided under the identity with the former.²

As Oku (1998) observes, subjects can be elliptic in Japanese as well. Consider the following

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¹ Thus, this can be an instance of what Fiengo and May (1994) call vehicle change. Consider *Harry hates himself, but Ron doesn’t hate him.* The antecedent VP contains a reflexive while the elided VP has a pronoun; the difference does not interfere with ellipsis.

² Again, this is an instance of vehicle change. cf. *Ginny loves Harry, and he, thinks Hermione does love him, too.*
examples:

(5)  
   a.  *Harry-wa [zibun-no hahaoya-ga nihongo-o hanasu to] omotteiru.*  
      Harry-TOP self-GEN mother-NOM Japanese-ACC speak that think  
      ‘Harry thinks that his mother speaks Japanese.’  
   b.  *Ron-wa [e supeingo-o hanasu to] omotteiru.*  
      Ron-TOP Spanish-ACC speak that think  
      ‘lit. Ron thinks that e speaks Spanish.’

(6)  
      old wizard-NOM Harry-DAT see-to came  
      ‘An old wizard came to see Harry.’  
   b.  *e Ron-ni-mo ai-ni kita.*  
      Ron-DAT also see-to came  
      ‘lit. e came to see Ron, too.’

The examples in (5b) and (6b) are intended to be antecedced by (5a) and (6a), respectively. (5b) has the sloppy reading that Ron thinks that his own mother speaks Spanish, whereas (6b) has the indefinite interpretation that an old wizard came to see Ron, too. Those are indicative of ellipsis.

It is observed by Oku (1998) that null subjects in Spanish differ from null arguments in Japanese and exhibit properties of pronouns. Compare the following examples with (5) and (6):

(7)  
   a.  *María cree que su propuesta será aceptada.*  
      Maria believes that her proposal will be accepted  
      ‘Maria believes that her proposal will be accepted.’  
   b.  *Juan también cree que e será aceptada.*  
      Juan also believes that will be accepted  
      ‘lit. Juan also believes that e will be accepted.’  
      (Oku 1998)

(8)  
   *Un vendedor fue a la casa de María y también e fue*  
   a salesman went to the house of Maria and also went  
   *a la casa de Juan.*  
   to the house of Juan  
   ‘A salesman went to Maria’s house and also e went to Juan’s house’  
   (Oku 1998)

The embedded clause in (7b) has a null subject. When we take (7b) to be antecedced by (7a), it only means that Juan also believes that María’s proposal will be accepted: that is, the null
subject does not yield sloppy interpretation. Likewise, the second clause in (8) contains a null subject, which is limited to the “same entity” reading.

These observations are compatible with the traditional assumption that null subjects in Spanish are empty pronouns (or pro). As we saw with (1c) and (3c), pronouns do not give rise to sloppy interpretation or indefinite construal. The interpretations obtained in (7) and (8) are expected if the null subjects in question are pronouns.

Then it should be asked what makes some (but not all) null arguments elliptic. One solution is proposed by Saito (2007), who bases his analysis on the copying theory of ellipsis and Chomsky’s (2000) theory of feature checking. Let us consider the following schematic representations:

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3 Duguine (2014) points out that the following data in Spanish permit sloppy interpretation:

(i) a. **María cree [que su trabajo le exigirá mucho tiempo]**.

   ‘Maria believes that her work will require her a lot of time.’

   b. **Y Ana espera [que [e] le dejará los nes de semana libre]**.

   ‘lit. And Ana hopes [e] will leave her the weekends available.’

Based on this and other data, Duguine claims that null subjects in Spanish can arise through ellipsis. It seems to me to be a somewhat hasty conclusion. Duguine agrees that (7) does not allow sloppy construal. To distinguish (i) and (7), she assumes that the following generalization is responsible:

(ii) **Generalization on the sloppy reading in Spanish**

   Possessive pronouns embedded within elided DPs fail to give rise to a sloppy reading when they do not have a local binder.

In (7b), the possessive pronoun assumed to be in the elided subject is bound in a non-local way by the matrix subject, whereas in (ib), that is bound by the clitic pronoun within the embedded clause. This contrast reminds us of the possibility of analyzing the null subject in (ib) as a so-called paycheck pronoun.

(iii) a. The man who gave his paycheck to his wife was wiser than the man who gave **it** to his mistress.

   b. The man who thinks that his paycheck will please his wife is happier than the man who thinks that **it** will please his mistress.

The pronoun **it** is used here as a paycheck pronoun. Compared with (iii), which is a typical example illustrating paycheck pronominalization, (iiib) does not readily yield the sloppy reading. This suggests that the null subject in (ib) is an empty pronoun used as a paycheck pronoun.
The representations in (9a-a’) illustrate the derivation of the antecedent part. Suppose that DP serves as the antecedent for an elided DP argument in the subsequent clause, the derivation of which is indicated in (9b-b’). In (9a-a’), DP, either a subject or an object, enters into checking relation with a functional head (T or v). According to Chomsky (2000), DP contains interpretable φ-features and an uninterpretable Case-feature, which makes DP “active” for the purpose of checking. A functional head F₁ has uninterpretable φ-features, which must be checked and erased by the corresponding features of DP. When checking takes place between F₁ and DP, the φ-features of F₁ and the Case-feature of DP are erased, as shown in (9a’). Saito (2007) assumes that this DP with its Case-feature erased can be copied onto the structure of the elliptic sentence. It is reused to fill a DP position (again, either the subject or the object position) in the subsequent clause, which has its own functional head F₂ with uninterpretable φ-features, as indicated in (9b). When DP is copied as in (9b’), its Case-feature has already been erased in the derivation of the antecedent clause and hence it is “inert” for checking. The result is that the uninterpretable φ-features of F₂ cannot be checked or erased, making the sentence crash.

Saito’s (2007) analysis accounts for why null subjects in Spanish cannot be elliptic. As is well known, the language has rich agreement between subjects and T, which precludes the subject DP of an antecedent clause from being copied onto the elliptic clause. Then, null subjects in Spanish can arguably be deemed as empty pronouns, as the literature puts it. Saito’s analysis makes a broader prediction about the possibility of argument ellipsis in a variety of languages. Whenever an argument DP needs to be in φ-feature checking relation with a functional head in a language, that argument should not be able to be elliptic. This explains why argument ellipsis is impossible in English, which is not a null argument language, if combined with the standard assumption that subjects and objects enter into checking relation with T and v, respectively, in English though the effects are not very visible morphologically. As for Japanese, Saito (2007) basically follows Kuroda (1988) in assuming that the relevant functional heads lack φ-features in Japanese: If a DP is copied from an antecedent clause into an elliptic clause, it does not have to, or simply does not, enter into checking relation with a functional head in the latter clause, causing no crash.
This analysis restricts argument ellipsis to those arguments that are not in agreement relationship to functional categories. We call it the anti-agreement hypothesis. It has received empirical support from investigations of a number of languages. Şener and Takahashi (2010) observe that objects, but not subjects, can be elliptic in Turkish, which is compatible with the absence of object agreement and the presence of subject agreement in the language. Huang (1991) and Li (2014), among others, show that object ellipsis is possible in Chinese, which, just like Japanese, does not have agreement at all. 4 Otaki et al. (2013) examine Kaqchikel, a Mayan language where both subjects and objects agree with verbs (or with T and v in generative terms). They observe that the language allows neither subjects nor objects to arise through ellipsis. Sato (2015) and Sato and Karimi (2016) consider null arguments in Javanese and Persian, respectively, showing that their behavior supports the anti-agreement hypothesis.

I add an example from Slovenian to the list.5

(10) a. Vid misli, da njegov učitelj govori japonsko.
   Vid thinks that his teacher speaks Japanese
   ‘Vid thinks that his teacher speaks Japanese.’

b. Peter pa misli, da e govori slovensko.
   Peter PART thinks that speaks Slovenian
   ‘lit. Peter thinks that e speaks Slovenian.’

Slovenian is a pro-drop language with rich subject-verb agreement. We expect its null subjects not to arise through ellipsis. Indeed, this is borne out by (10b), which, if anteeceded by (10a), means that Peter thinks that Vid’s teacher speaks Slovenian (the strict reading), but not that Peter thinks that Peter’s teacher speaks Slovenian (the sloppy reading).

2.2 Extraction

While the availability of sloppy interpretation and indefinite construal is often used to diagnose null arguments as elliptic, the possibility of extraction out of them constitutes evidence of the strongest sort for the involvement of ellipsis. For it clearly shows whether relevant empty elements have internal syntactic structure.

To see whether extraction out of elided arguments is possible in Japanese, let us consider the cleft construction in Japanese, which involves movement of foci according to Hoji (1989) and

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4 A complication arises as to null subjects in Chinese. Although no morphological agreement is observed between subjects and verbs (or T), null subjects do not seem to arise through ellipsis in Chinese (see Miyagawa 2010, Li 2014, and Takahashi 2014). We will return to this issue in Section 3.

5 (10) is provided by Franc Lanko Marušič and Rok Žaucer (personal communication).
Hiraiwa and Ishihara (2012).

    Harry-NOM Ron-DAT met
    ‘Harry met Ron.’

b. [Harry-ga e atta no]-wa Ron-ni da.
    Harry-NOM met that-TOP Ron-DAT be
    ‘It was Ron that Harry met.’

Example (11a) is an ordinary sentence with the SOV word order. (11b) is its cleft counterpart, where the object is focused and separated from the presuppositional clause. Following Hiraiwa and Ishihara (2012), we assume that the construction is derived in the following way (for convenience, I show the Japanese words with their English glosses):

(12) a. [FocP [CP [TP Harry Ron met] that] be]

b. [FocP Ron1 [Foc’ [CP t’1 [C’ [TP Harry t1 met] that]] be]]
   ↑  ________ ↑  _________

c. [TopP [FocP Ron1 [Foc’ [CP t’1 [C’ [TP Harry t1 met] that]] be]] Topic]

d. [TopP [CP t’1 [C’ [TP Harry t1 met] that]]2-TOP [TopP [FocP Ron1 [Foc’ t2 be]] Topic]]
   ↑  _____________________________________________

(12a) is the pre-movement representation, where the copula verb is taken to be a focus head selecting CP. In (12b), the focus Ron undergoes successive-cyclic movement to the specifier position of FocusP. Then in (12c), the entire structure is combined with the Topic head, which is phonetically empty. In (12d), CP, understood as indicating the presupposition, moves to the specifier position of TopicP, with the Topic marker affixed to it. What is important to us is that the construction involves movement of foci as shown in (12b).

Bearing that in mind, consider the following data:

(13) a. [Harry-ga [Ginny-ga tpp detekuru no]-o mokugekisita no]-wa
    Harry-NOM Ginny-NOM come.out that-ACC witnessed that-TOP
    [tpp kono biru kara] da.
    this building from be
    ‘It was from this building that Harry witnessed Ginny coming out.’

b. [Ron-ga e mokugekisita no]-wa [tpp ano biru kara] da.

6 The verb in Japanese corresponding to meet is a transitive verb taking a dative object.

7 Similar data are pointed out by Nishigauchi and Fujii (2006).
Ron-NOM witnessed that-TOP that building from be ‘lit. It was from that building that Ron witnessed e.’

Example (13a) is intended as the antecedent for (13b). The higher verb in the presuppositional clause in (13a), mokugekisita ‘witnessed,’” takes a clausal complement, and the PP associated with the lower verb detekuru ‘come out’ is focused and moved. In (13b), the complement of mokugekisita is not overtly expressed; still, the focused PP can be understood to be associated with the verb detekuru. In other words, (13b) can mean that it was from that building that Ron witnessed Ginny coming out, with the PP associated with coming out. This is straightforwardly accounted for if (13b) is analyzed as follows:

(14) [Ron-ga [Ginny-ga t detekuru no]-o mokugekisita no]-wa [pp ano biru kara] da ‘it was from that building that Ron witnessed [Ginny coming out too]’

Here the complement clause selected by mokugekista, which is ultimately elided, has full-fledged structure and the focused PP is extracted from it.

Another pair of examples can be adduced to show the same point.

(15) a. [Ron-ga [Harry-ga t atta to] syoogensita no]-wa Ginny-ni da. Ron-NOM Harry-NOM met that testified that-TOP Ginny-DAT be ‘It was Ginny that Ron testified that Harry met.’

b. [Hermione-ga e syoogensita no]-wa Cho Chang-ni da. Hermione-NOM testified that-TOP Cho Chang-DAT be ‘lit. It was Cho Chang that Hermione testified e.’

The complement clause selected by syoogensita ‘testified’ is not overtly expressed in (15b). If anteceded by (15a), the sentence can mean that it was Cho Chang that Hermione testified that Harry met, with Cho Chang understood as the object of atta ‘met,’ which is supposed to be included in the elided complement clause.

The considerations above clearly indicate that extraction is possible out of null arguments in Japanese, lending credence to the hypothesis that they involve ellipsis. Let us now consider how the phenomenon in question can be accounted for by the analysis in terms of copying. The examples in (15) are schematically shown below with the English wording and word order:

8 Sakamoto (to appear) argues that covert extraction is possible out of elided arguments in Japanese.
(16)  a. it was Ginny that Ron testified [\textit{CP} that Harry met \textit{t}]  
\hspace{1cm} <\textit{movement}>  
\hspace{1cm} \downarrow  
\hspace{1cm} <\textit{copying}>  
\hspace{1cm} \uparrow  
\hspace{1cm} <\textit{non-movement linking}>  

b. it was Cho Chang that Hermione testified  
\hspace{1cm} \uparrow  
\hspace{1cm} <\textit{CP deleted}>  

(16a-b) correspond to (15a-b), respectively. On the copying analysis, the elided part is empty in overt syntax, as shown in (16b), where the complement position of \textit{testified} is vacant. Later in the derivation, the antecedent is copied onto the empty part, giving rise to the LF representation in (16b'), where the copied complement clause is indicated in bold type. Only after copying is the focused element linked with the trace in the object position in the “restored” CP.

Under the copying analysis, therefore, there are two ways to link dislocated elements to their traces: one is movement, as in (16a), where \textit{Ginny} is moved from the position of \textit{t}; the other is what we may call a non-movement linking, whereby elements in dislocated positions such as \textit{Cho Chang} in (16b-b') are related to traces in copied constituents such as \textit{t} in (16b'). This must be subjected to minimalist scrutiny, because we have two different ways to establish one structural relationship (the operator-variable relationship in this case).

In contrast, if we assume a deletion analysis of ellipsis, the case in question can be dealt with in the following way:

(17)  a. it was Ginny that Ron testified [\textit{CP} that Harry met \textit{t}]  
\hspace{1cm} <\textit{movement}>  
\hspace{1cm} \uparrow  

b. it was Cho Chang that Hermione testified [\textit{CP} that Harry met \textit{t}]  
\hspace{1cm} <\textit{movement}>  
\hspace{1cm} \uparrow  
\hspace{1cm} <\textit{CP deleted}>  

(17a) represents (15a), and (17b-b') indicate the derivation of (15b). In both sentences, the foci are linked with their traces by movement. In (17b-b'), the lowest CP complement subsequently undergoes deletion to yield the surface form. What should be noted here is that movement is responsible for linking the focused element and its trace in (17b): it can do without recourse to any other operation such as non-movement linking. We have a very good reason, therefore, to pursue an analysis of argument ellipsis in terms of deletion; then, our challenge is to explain the anti-agreement property of argument ellipsis with such an analysis.

Before leaving this section, let us note that the copying analysis might be modified so as to
avoid the non-movement linking. One way is to assume that copying can copy elements in the antecedent constituent bit by bit into the elliptic constituent, as shown below:

(18) a. <the antecedent sentence: the embedded CP is subject to copying>
   it was Ginny that Ron testified that \textbf{Harry met t}

b. <Merge \textit{Cho Chang} with the copied verb \textit{met}>
   \[\textit{met} \textit{Cho Chang}\]

c. <Subsequently the other “recycled” elements are merged>
   \[\textbf{that Harry met} \textit{Cho Chang}\]

d. <the other lexical items are introduced by Merge and the focused element moves>
   it was \textit{Cho Chang} that Hermione testified [\textbf{that Harry met t}]

(18a) is the representation of (15a), where the bold-face CP serves as the antecedent of the ellipsis in the following sentence. The elements in the antecedent CP are transferred to LF, deprived of their phonetic features; each of them is “recycled” by copying. First, the V \textit{met} is merged with the focus of the second sentence, \textit{Cho Chang}, as in (18b); subsequently, the other elements of the antecedent CP are recycled to form the most embedded CP in the elliptic sentence, as shown in (18c); the other elements are introduced to form the entire structure, and the focus undergoes usual movement, as indicated in (18d), where the relationship between \textit{Cho Chang} and its trace is established by movement. In (18d), the lowest CP, indicated in bold-face italics, is not pronounced because it consists of the trace and the recycled elements. The gist of this analysis is that copying targets transferred elements bit by bit and recycles them to form another sentence. Though this could technically avoid the problem with copying noted above, it faces a serious over-generation drawback: it would allow ellipsis of the following sort:

(19) a. \textit{Ron-wa} [\textit{Harry-ga Ginny-ni atta to} syoogensita].
   \textit{Ron-TOP} \textit{Harry-NOM Ginny-DAT} met that testified
   ‘Ron testified that Harry met Ginny.’

   \textit{Hermione-TOP} \textit{Cho Chang-DAT} testified
   ‘lit. Hermione testified \textit{Cho Chang}.’
   (intended to mean that Hermione testified that Harry met \textit{Cho Chang})

c. \textit{Hermione-wa} [\textit{Harry-ga Cho Chang-ni atta to} syoogensita]
   \textit{Hermione-TOP} \textit{Harry-NOM Cho Chang-DAT} met that testified

(19b) is intended to have the embedded CP elided with the object \textit{Cho Chang} left as a remnant. According the analysis mentioned above, (19b) could be analyzed as shown in (19c), where all the elements in the embedded CP except the focused object are recycled from the antecedent
sentence in (19a) and hence are deprived of the phonetic features. Because the sentence in (19b) is completely impossible, the way out noted here does not seem to be tenable.

3 An analysis in terms of derivational ellipsis

In order to account for the anti-agreement property of argument ellipsis, I adopt the theory of derivational ellipsis proposed by Aelbrecht (2009). It is illustrated below:

Aelbrecht (2009) follows the standard assumption that ellipsis needs a head that licenses it (Lobeck 1995, Saito and Murasugi 1990, Merchant 2001, etc.). In (20), X is intended as the head that licenses the ellipsis of YP. While Aelbrecht embraces the idea that ellipsis involves deletion in the PF component, she claims that marking a constituent as elliptic takes place in syntax at the very stage where both the constituent to be elided and the head licensing it are introduced into the structure. Thus, in (20a), when X is merged with YP, YP is marked elliptic. Aelbrecht further assumes that constituents marked elliptic become inert or frozen, disallowing extraction out of themselves. In (20a), α tries to move out of YP to a place beyond XP but it is prohibited because YP has become frozen.

When another head, Z, intervenes between X and YP as in (20b), the picture gets different. As Aelbrecht assumes that the relationship between X and YP is one of Agree, they do not have to be in a head-complement configuration. In (20b), X is the head that licenses the ellipsis of YP. An element α inside YP tries to move out. In this case, it can first move to the edge of ZP just after Z and YP are merged, when X is not yet introduced into the structure and hence YP does not become inert yet. Then, X is merged with ZP and marks YP elliptic. At that stage, α is outside YP in the edge of ZP, so that it can move further.

Aelbrecht (2009) argues that derivational ellipsis is successful in accounting for a subject-object asymmetry with respect to extraction out of modal complement ellipsis (MCE) in Dutch
and an asymmetry between Dutch MCE and English VP-ellipsis in terms of object extraction, which are illustrated below:

(21) a. *Erik is al langsgekomen, maar Jenneke moet nog.*
Erik is already by.passed but Jenneke must still
‘Erik has already passed by, but Jenneke still has to.’

b. **Ik weet niet wie Kaat wou uitnodigen, maar ik weet wel**
I know not who Kaat wanted invite but I know AFF
**wie ze moest.**
who she must.PST
‘I don’t know who Kaat wanted to invite, but I know who she had to.’

c. *I know which puppy you should take home, but I don’t know which one she should.*
(Aelbrecht 2009)

Example (21a) shows that extraction of the subject *Jenneke* of the unaccusative verb corresponding to *pass by* is allowed out of the elliptic site, which is the complement of the modal *moet*. On the other hand, (21b) indicates that *wh*-movement of the object is impossible from the elliptic site, which is the complement of the modal *moest*. As is well-known, object extraction is permissible out of an elliptic site in the English VP-ellipsis construction, which is exemplified by (21c). For the Dutch MCE, Aelbrecht assumes the following structure:

(22) a.  
\[\text{[TP Jenneke}_1 \text{[ModP moet [TP t'}_1 \text{T [vP ... [VP t}_1 \text{langsgekomen]]]]]}\]

b.  
\[\text{[CP wie}_2 \text{[TP ze}_1 \text{[ModP moest [TP t'}_1 \text{T [vP t}_1 \text{... [VP t}_2 \text{uitnodigen]]]]]}\]

The structure of the elliptic clause in (21a) is represented in (22a), where the projection headed by the modal is sandwiched between two projections of TP. In Dutch MCE, the modal is the licensor of ellipsis of the complement of the lower TP, which is vP in (22a). When vP is merged with the lower T, the subject can move from inside VP to the specifier position of the lower TP because vP is not frozen yet. Then, the lower TP is merged with the modal, which marks vP elliptic, making it inert. But at that point, the subject has already been outside vP, so that it can subsequently move to the specifier position of the higher TP. Consider next (22b), which is the structure of the elliptic sentence in (21b). When the *wh*-phrase *wie* moves from the object position in VP to the specifier position of CP, the modal is already present in the structure, making vP elliptic and hence frozen. This blocks the *wh*-phrase from moving out of vP.\(^9\) Finally, (23) represents the structure of the subordinate clause in the second sentence in (21c).

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\(^9\) An auxiliary assumption is that *wh*-movement, which is A’-movement, cannot use the edge (or specifier position) of the lower TP as an escape hatch in (22b).
Slightly departing from Aelbrecht (2009), we may assume English VP-ellipsis to involve ellipsis of VP licensed by T. When vP is constructed, T is not yet introduced, and hence the wh-phrase can move from inside VP to the edge of vP; then, vP is merged with T, which makes VP frozen. But at that stage, the wh-phrase has escaped from VP and hence can move further to the specifier position of CP.

We adopt the theory of derivational ellipsis because it has the potential to explain apparently intricate patterns of behavior exhibited by a variety of ellipsis constructions with respect to extraction and other phenomena if combined with the structural arrangement of elided constituents and the heads licensing them, as well as because it can do without copying. Let us then return to argument ellipsis.

First of all, let us ask what constituents are subject to ellipsis and what licenses their ellipsis in argument ellipsis. As the name indicates, what is elided is an argument selected by a θ-marker like V and v; its category is mainly DP or CP, and sometimes PP (see Takahashi (2008b)). It is plausible to assume that the licensor of argument ellipsis is the head that makes a constituent argumental: namely, the head that θ-marked it. Then, object ellipsis is analyzed in the following way:

\[(24) \quad \text{a.} \quad \begin{array}{c}
\text{vP} \\
\text{V} \\
\text{DP}
\end{array} \\
\{\phi, \text{Case}\} \quad \text{b.} \quad \begin{array}{c}
\text{vP} \\
\text{v} \\
\text{V} \\
\text{DP}
\end{array} \\
\{\phi\} \quad \{\phi, \text{Case}\}
\]

In (24a), V and DP are merged, whereby V θ-marks DP, making it an argument. Derivational ellipsis dictates that at this point, V marks DP elliptic, making it frozen. At the next step in the derivation, v is merged with VP as shown in (24b). If v has uninterpretable φ-features, it cannot locate the φ-features of the object DP, because the object has already been frozen so that nothing inside cannot be seen from outside. This immediately explains why object ellipsis is disallowed in languages like English where v has uninterpretable φ-features. Why is object ellipsis possible in Japanese? We may follow Saito (2007) in assuming that v lacks uninterpretable φ-features in Japanese.

Basically the same analysis applies to subject ellipsis. Let us consider the schematic

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10 This is mainly for the purpose of exposition. Aelbrecht (2009) assumes a bit more complex structure and derivation. Interested readers are referred to her work.

11 See Oku 1998 for an observation that adjuncts cannot undergo ellipsis.
representation below:

\[(25) \quad \begin{array}{ll}
\text{a.} & \nu P \\
& \text{DP} \\
& \{\phi, \text{Case}\} \\
& \nu' \quad \text{VP} \\

\text{b.} & \text{TP} \\
& T \quad \nu P \\
& \nu' \quad \text{VP} \\
& \{\phi, \text{Case}\} \\
\end{array} \]

In (25a), DP is merged with \(\nu'\), so that it is \(\theta\)-marked by \(\nu\) and becomes an argument. If DP undergoes ellipsis, it must be marked as such at this point, becoming inert. Subsequently, T is merged with \(\nu P\), as shown in (25b). If T has uninterpretable \(\phi\)-features, it cannot locate the \(\phi\)-features of the subject DP as the latter has already been frozen. This accounts for the absence of subject ellipsis in languages such as English, Spanish, Slovenian, Turkish, and so on where T agrees with subjects. On the other hand, Kuroda (1988) and Saito (2007) argue that T in Japanese lacks \(\phi\)-features. It is then predicted correctly that ellipsis of subjects is permissible in Japanese.

Our analysis can account for the absence of subject ellipsis in Chinese noted by Li (2014), Miyagawa (2010), and Takahashi (2014), among others, which is illustrated below:

\[(26) \quad \begin{array}{ll}
\text{a.} & \text{Zhangsan shuo ziji de haizi xihuan Xiaohong.} \\
& \text{Zhangsan say self of child like Xiaohong} \\
& \text{‘Zhangsan said his child liked Xiaohong.’} \\

\text{b.} & \text{Lisi shuo e xihuan Xiaoli.} \\
& \text{Lisi say like Xiaoli} \\
& \text{‘lit. Lisi said \(e\) liked Xiaoli.’} \\
& \text{(Takahashi 2014)} \\
\end{array} \]

Anteceded by (26a), (26b) contains a null subject in the embedded clause. It is limited to the strict reading that Lisi said Zhangsan’s child liked Xiaoli; it cannot have the sloppy reading that Lisi said his own child liked Xiaoli. This means that the null subject does not arise through ellipsis.\(^{12}\) As is well-known, Chinese lacks subject-verb agreement just like Japanese, and the observation about (26) poses a puzzle to the anti-agreement hypothesis.

A clue to approaching the question is obtained if we consider another well-known property of subjects in the language: the definiteness effect (see Huang 1987). Consider the following

\(^{12}\) A question arises as to what Chinese null subjects are. We may follow Huang (1984) in assuming that they are either empty pronouns or variables bound by empty topics.
data:

(27) a. Zhangsan / Ta / Nei-ge ren lai-le. 
    Zhangsan / he / that-CL man come-ASP 
    ‘Zhangsan / He / That man came.’

b. * San-ge ren lai-le. 
    three-CL man come-ASP 
    ‘Three men came.’

The subjects in (27a) are definite expressions and the sentence is acceptable. In contrast, (27b) has an indefinite subject and is degraded. To account for the definiteness effect in question, let us assume that T has an uninterpretable [+definite] feature that must be checked and erased by the corresponding feature of the nearest DP. The relevant configuration is indicated below:

(28) a. \[ \begin{array}{c} vP \\ \text{DP} \quad v' \\ \{+\text{Def}\} \\ v \\ \text{VP} \end{array} \]

b. \[ \begin{array}{c} TP \\ T \quad vP \\ \{+\text{Def}\} \\ v' \\ \text{DP} \quad v \\ \text{VP} \end{array} \]

In the case where ellipsis does not take place, a definite subject is introduced in the specifier position of vP as in (28a). Later in the derivation, T with a [+definite] feature is merged with vP, as shown in (28b). T locates the subject DP, so that their [+definite] features enter into checking. On the other hand, when the subject DP undergoes ellipsis, it is marked as such and becomes frozen at the stage in (28a). Consequently, when T is introduced into the structure in (28b), it cannot locate the relevant feature of the subject DP.\(^\text{13}\) This analysis enables us to dispense with the assumption made by Miyagawa (2010) and Takahashi (2014) that φ-feature agreement, albeit abstract, is present between T and subjects in Chinese, which is criticized by Li (2014).

4 Derivational argument ellipsis and extraction

Let us move on to consider how the theory of argument ellipsis in terms of derivational

\(^{13}\) Sato (2015) observes that null subjects in Javanese cannot be elliptic. Given that the language imposes the definiteness effect on subjects, we may apply the same analysis to Javanese.
ellipsis deals with extraction out of elided arguments. The relevant configuration is given below:

\[(29) \quad \text{a.}\quad \begin{array}{c}
\text{VP} \\
\text{V} \\
\ldots \alpha \ldots \\
\end{array} \\
\begin{array}{c}
\text{CP} \\
\end{array}
\begin{array}{c}
\text{b.}\quad \begin{array}{c}
\text{vP} \\
\text{v} \\
\ldots \alpha \ldots \\
\end{array} \\
\begin{array}{c}
\text{VP} \\
\text{V} \\
\ldots \alpha \ldots \\
\end{array}
\end{array}\]

In (29a), CP is merged with V and becomes an internal argument of V: at this point, CP is marked elliptic and becomes frozen. Suppose that an element, indicated as \(\alpha\), inside CP needs to undergo A'-movement to a higher position. When VP is merged with \(v\) as shown in (29b), \(\alpha\) needs to move to the edge position of \(v\)P, which is a position used as an intermediate landing site for A'-movement. However, movement of \(\alpha\) to the edge of \(v\)P should not be allowed because CP has already been rendered frozen.

This appears to pose something of a problem to the observation made in 2.2 that focus movement, a species of A'-movement, out of elided arguments is possible in Japanese. Putting Japanese aside for a moment, however, we can note that the prediction made just above is actually borne out in Chinese. Let us consider the following data:

\[(30) \quad \text{a.} \quad \text{Zhangsan bu xihuan guanyu ziji de yaoyan.} \\
\text{Zhangsan not like about self of rumor} \\
\text{‘Zhangsan does not like rumors about himself.’} \\
\text{b.} \quad \text{Lisi ye bu xihuan e.} \\
\text{Lisi also not like} \\
\text{‘lit. Lisi does not like e, either.’} \\
\text{(Otani and Whitman 1991)}\]

\[(31) \quad \text{Wo zhaodao-le liang-ben shu; ta ye zhaodao-le e.} \\
\text{I find-ASP two-CL book he also find-ASP} \\
\text{‘I found two books; he also found e.’} \\
\text{(Li 2008)}\]

\[(32) \quad \text{a.} \quad \text{Wo renwei [CP Zhangsan hen congming].} \\
\text{I think Zhangsan very smart} \]
‘I think Zhangsan is very smart.’

b.  
\[ \text{Tamen que bu renwei [CP e].} \]
they whereas not think
‘lit. On the other hand, they do not think e.’

(Cheng 2009)

The examples in (30) and (31) indicate that objects or more generally, internal arguments can be elided in Chinese.\(^{14}\) Preceded by (30a), (30b) is ambiguous between the strict reading that Lisi does not like rumors about Zhangsan and the sloppy interpretation that Lisi does not like rumors about Lisi himself. The possibility of the latter in particular is an indication of ellipsis.

The example in (31) has to do with the interpretation of the indefinite expression corresponding to \emph{two books}. The second clause can mean that he also found two books, with the object understood as indefinite. This also evidences the involvement of ellipsis. Finally, (32) shows that CP complements can be subject to ellipsis: following (32a), (32b) has the reading that they do not think that Zhangsan is very smart, though the embedded clause is not overtly expressed.

Bearing these in mind, let us consider the following examples cite from Li (2014):

\begin{enumerate}[\itemsep=0pt,\topsep=0pt,\partopsep=0pt]
\item \(\text{Na-ben shu Lisi shuo-guo [Zhangsan mai-le t].} \)
\text{that-cl book Lisi say-ASP Zhangsan buy-ASP}
\‘That book, Lisi said Zhangsan bought.’
\item \(\text{Zhe-ben shu Wangwu shuo-guo [e].} \)
\text{this-cl book Wangwu say-ASP}
\‘lit. That book, Wangwu also said.’
\end{enumerate}

Anteceded by (33a), (33b) is intended to have the embedded clause elided: that is, it is intended to mean that “That book, Wangwu also said that Zhangsan bought.” In both cases, topicalization applies to the embedded object \emph{na-ben shu ‘that book’}. According to Li (2014), (33b) is degraded, which shows that extraction out of elided CP complements is not allowed in Chinese. Similar data are given below:

\begin{enumerate}[\itemsep=0pt,\topsep=0pt,\partopsep=0pt]
\item \(\text{Na-ben shu Lisi shuo-guo [Zhangsan mai-le t].} \)
\text{that-cl book Lisi say-ASP Zhangsan buy-ASP}
\‘That book, Lisi said Zhangsan bought.’
\item \(\text{Zhe-ben shu Wangwu shuo-guo [e].} \)
\text{this-cl book Wangwu say-ASP}
\‘lit. This book, Wangwu said.’
\end{enumerate}

\(^{14}\) Thus, Chinese exhibits a subject-object asymmetry in terms of argument ellipsis.
These examples are different from (33) in that the topicalized phrase in (34b) is *zhe-ben shu* ‘this book’ rather than *na-ben shu* ‘that book.’ This modification is made so that a contrast may be easier to obtain between the antecedent sentence and the elliptic sentence. According to my informants, (34b) is still degraded. It seems to be safe, therefore, to conclude that Chinese disallows extraction out of elided arguments. This is exactly what the theory of derivational argument ellipsis predicts, as illustrated in (29).

The considerations above bring us back to the question of why extraction out of elided arguments is permitted in Japanese. The solution I propose here is to assume with Saito (2012) that $v$ and $V$ are not introduced into the structure separately but as a unit in Japanese. This is illustrated below:

(35)  
\begin{enumerate}[a.]
\item $v, V, \text{Obj}$
\item $\{V, \text{Obj}\}$
\item $\{v, \{V, \text{Obj}\}\}$
\end{enumerate}

(36)  
\begin{enumerate}[a.]
\item $v, V, \text{Obj}$
\item $\{V, v\}$
\item $\{\text{Obj}, \{V, v\}\}$
\end{enumerate}

Suppose that we have three elements, $v$, $V$, and an object DP, to form a syntactic structure. The standard way to combine them is shown in (35), where $V$ and $\text{Obj}$ are merged first in (35b) and $v$ is subsequently merged with the constituent consisting of $V$ and $\text{Obj}$ in (35c). Saito (2012) argues that they are combined in a different fashion in Japanese, as indicated in (36), where $v$ and $V$ are merged first in (36b) and then $\text{Obj}$ is merged with the complex in (36c). This idea opens up the possibility of deriving the head-final structure in Japanese. Consider the trees of (35c) and (36c) below:

(37)  
\begin{enumerate}[a.]
\item (35c)
\item (36c)
\end{enumerate}

Suppose the Linear Correspondence Axiom of Kayne (1994), according to which asymmetrical c-command relationship determines word order. In (37a), which represents the structure of

\[15\] My explication here is somewhat simplified. I refer the readers to Saito 2012 for a detailed account.
(35c), \(v\) asymmetrically c-commands \(V\) and \(\text{Obj}\), and if \(\text{Obj}\) consists of some subparts, \(V\) asymmetrically c-commands them. Thus, \(v\), \(V\), and \(\text{Obj}\) (or the subparts of \(\text{Obj}\)) are aligned in this order (namely, the VO order). In contrast, in (37b), which is the tree diagram of (36c), \(\text{Obj}\) asymmetrically c-commands \(V\) and \(v\), and hence the former precedes the latter (the OV order). Though the order of \(V\) and \(v\) is not determined (because they c-command each other), morphology may be responsible: for example, if \(v\) is a suffix, it follows \(V\).

Keeping the structure in (37b) in mind, let us consider the following tree, which schematically represents the relevant structure of A'-extraction out of elliptic CP in Japanese:

\[
\begin{array}{c}
\text{\(V\)-\(v\)P} \\
\text{\(V\)-\(v'\)} \\
\text{\(\text{CP}\)} \\
\text{\(\ldots \alpha \ldots\)} \\
\text{\(V\)-\(v\)} \\
\text{\(v\)}
\end{array}
\]

The CP complement is directly merged with the \(V\)-\(v\) complex, when it is marked as elliptic. At the same timing, however, an element \(\alpha\) inside CP can move to the edge of \(V\)-\(v\)P, because multiple operations can take place simultaneously as long as they occur in the domain of one and the same phase head (see Chomsky 2008). I assume that in (38), the complex head \(V\)-\(v\) functions as a phase head. Because marking CP as elliptic and moving \(\alpha\) to the edge can take place at the same time, extraction of \(\alpha\) can be deemed to happen before CP becomes frozen.

If the analysis above is correct, the possibility of extraction out of elided arguments is closely tied to word order. This can be supported in two ways. First, Korean, a head-final language, behaves like Japanese, allowing extraction out of elided arguments. Let us consider the following data:

(39)  
\begin{align*}
&\text{a. Chelswu-ka caki-uy phyenci-ul peliessta.} \\
&\quad \text{Chelswu-NOM self-GEN letter-ACC discarded} \\
&\quad \text{‘Chelswu threw out his letter.’}
\end{align*}
\begin{align*}
&\text{b. Yengmi-to [e] peliessta.} \\
&\quad \text{Yengmi-also discarded} \\
&\quad \text{‘lit. Yengmi threw out e, too.’}
\end{align*}
(40)  
\begin{align*}
&\text{a. [Yuna-ka [totwuk-i nawassta-ko] cungenhan kos]-un} \\
&\quad \text{Yuna-NOM thief-NOM came.out-that testified place-TOP}
\end{align*}
The examples in (39) show that the null object construction in Korean allows sloppy interpretation. Anteceded by (39a), (39b) can mean either that Yengmi threw out Chelswu’s letter (the strict reading) or that Yengmi threw out Yengmi’s letter (the sloppy reading). Thus, it is safe to say that Korean allows argument ellipsis (see Kim 1999). What is noteworthy is (40), which involves a kind of cleft construction. In the context where (40b) follows (40a), it can mean that it was from that building that Mao testified that a thief came out. The acceptability of (40b) indicates that focus movement is permitted to take place out of an elided CP argument in Korean.

Let us next consider Vietnamese, a SVO and pro-drop language (see, for example, Dryer and Haspelmath 2013).

(41) a. Tâm yêu chính mẹ của cô ấy.
Tam love self mother of her
‘Tam loves her own mother.’

b. Hiền cũng yêu [e].
Hien also love
‘lit. Hien also loves [e].’

Anteceded by (41a), (41b) has either the strict reading that Hiền loves Tâm’s mother or the sloppy interpretation that Hiền loves Hiền’s mother. The existence of the latter suggests that object ellipsis is available in the language. We can then examine whether extraction out of elided arguments is possible or not in Vietnamese. The following is a case in point:

(42) a. Nhật Bản, Tâm biết rằng Hiền đã thăm.
Japan Tam know that Hien past visit
‘Japan, Tam knows that Hien visited.’

b. * Pháp, Tien biết [e].
France Tien know
‘lit. France, Tien knows [e].’

Example (42a) is intended to serve as the antecedent sentence for (42b). Note that in (42a),
topicalization takes place out of the embedded clause. (42b) is assumed to involve topicalization in an analogous way, but out of an elliptic subordinate clause: thus, it is intended to mean that “France, Tien knows that Hien visited.” The fact here is that (42b) is unacceptable with the intended reading. Because Vietnamese is an SVO language like Chinese, we expect it to behave similarly, disallowing extraction out of elided arguments, which is actually borne out.

5 Conclusion

In this article, I have been concerned with two outstanding issues about argument ellipsis. One is the anti-agreement hypothesis, according to which arguments that are in agreement relationship to functional heads resist ellipsis. Noting that the previous analysis in terms of copying faces conceptual and empirical problems, I have pursued an alternative that takes ellipsis to involve deletion. Specifically, I have adopted Aelbrecht’s (2009) theory of derivational ellipsis, applying it to argument ellipsis. It has been shown that the new analysis straightforwardly accounts for the anti-agreement hypothesis.

The second issue has to do with the possibility of extraction out of elided arguments in Japanese. I have first pointed out that the theory of derivational argument ellipsis should actually predict that it should be impossible. To solve this problem, I have assumed Saito’s (2012) idea that v and V are merged before the object is introduced. This makes it possible for an element contained in an argument to be elided to escape from that argument before ellipsis applies. This leads to the expectation that extraction out of elided arguments should be possible in SOV languages but not in SVO languages. I have shown that it is actually borne out by examining Chinese, Korean, and Vietnamese.

To the extent that the entire picture depicted in this article is on the right track, it provides novel empirical support for the theory of derivational ellipsis and the view of structure building according to which v, V and objects can be merged in different ways in different languages. Syntactic structure, agreement, and word order are connected in an intimate and subtle way to give rise to an apparently complicated array of facts concerning argument ellipsis across languages.
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