Phasehood of DPs

A study of Japanese noun-verb incorporation

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Noun-Verb Incorporation (NVI) is optional with some nominals but obligatory with others in Japanese. In this paper, I argue that the obligatory or optional nature of NVI comes from a structural difference between nominals. I claim that one type of nominal can be realized either as a DP or an *n*P, and that the other type of nominal can only be realized as an *n*P, assuming that the structural realization is closely tied to the argument structure of the nominals. Based on this, I provide an explanation where an *n*P option yields an incorporated form via the operation *MOVE*, while a DP option provides an unincorporated form via the operation *AGREE*.

1. Introduction

What constitutes a phase has been controversial since the notion of phases was introduced by Chomsky (2000) years ago. In particular, which constituents constitute phases is still under debate. While the phasehood of CP and *v*P seems to be relatively established (Chomsky 2000, 2001), the phasal status of other categories (TP, VP, and so on) is still up in the air (Nissenbaum 2000).

In this paper, I examine the phasal status of DPs (Svenonius 2004). More precisely, by investigating two types of Japanese nominals with respect to Noun-Verb Incorporation (henceforth, NVI), I will show that the DP-as-a-phase approach provides a comprehensive analysis.

Cases to be examined are the following:

(1) √benkyoo (*study*):

a. Moti-ga benkyoo-sita. (N + V incorporated form)
   Moti-$_{NOM}$ study-did

b. Moti-ga [$_{DP}$benkyoo]-o sita. (unincorporated form)
   Moti-$_{NOM}$ study-$_{ACC}$ did
   'Moti studied.'

In (1), the *sino*-Japanese nominal *benkyoo* 'study' appears with a light verb *sita* (*su* + past tense *ta*) in either an incorporated form (1a), or unincorporated form (1b). Thus, incorporation

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seems quite optional, and other nominals such as *ryokoo* 'travel', *kekkon* 'marriage', *kaiwa* 'conversation' pattern the same way.

Although NVI seems optional with this first group of verbs, this is not always the case, as shown below:

(2) √syoosin (*promotion*):

a. John-ga butyoo-ni syoosin-sita. (N + V incorporated form)
John-$_{NOM}$ section chief-to promotion-did.

b. *? John-ga butyoo-ni [$_{DP}$ syoosin]-o sita. (unincorporated form)
John-$_{NOM}$ section chief-to promotion-$_{ACC}$ did.
'John obtained a promotion to section chief.'

(Tsujimura 1990)

Notice that while the noun *syoosin* appears as an incorporated form (2a), it cannot appear as an unincorporated form (2b): in other words, NVI is obligatory here. Other nominals that pattern with *syoosin* are: *toochaku* 'arrival' *tanjoo* 'birth' *kaitoo* 'thaw' *joohatsu* 'evaporation' *ryuukoo* 'popularity' to name a few (Miyagawa 1989).

Note also that the Japanese light verb *su* 'do' is quite different from English 'do' in a sense that it is 'void' of meaning, while English 'do' has semantic content. Thus, in Japanese, what provides the semantic content of the predicate (i.e. theta-role bearing category) in sentences like (1) is the noun, *benkyoo*, and *su* merely functions as a category-changing suffix (1a), or as an expletive verb (1b). Following Grimshaw & Mester (1988), I call constructions like (1a) 'VN-*su* constructions', and the ones like (1b) 'light verb constructions.'

Thus, there are roughly two types of nouns with respect to the optionality of NVI, which is summarized in the table in (3):

(3)

	INCORPORATION	NON-INCORPORATION
√benkyoo (*study*)	Possible (1a)	Possible (1b)
√syoosin(*promotion*)	Possible (2a)	**Not Possible** (2b)

For the rest of the paper, I will call nouns where NVI is optional *study*-type nouns, and nouns where NVI is obligatory *promotion*-type nouns.

Throughout the discussions that follow, I will set aside (but will address it in the conclusion) the case with meaningful '*su*', the heavy verb, as in (4):

(4) Émile-ga shukudai-o sita.
Émile-$_{NOM}$ homework-$_{ACC}$ did
'Émile did homework.'

The organization of this paper is as follows: Section 2 is a brief introduction to Miyagawa (1989) and Tsujimura (1990)'s analyses of the grammaticality contrast between (1) and (2), which rely on noun classifications and Grimshaw & Mester's (1988) Argument Transfer Theory. I will then point out theory-internal disadvantages with adopting the Argument Transfer Theory, suggesting that we should alternatively seek a syntactic analysis. Abandoning yet maintaining Miyagawa and Tsujimura's insight into the unaccusativity of the noun, I will then propose an alternative analysis in terms of phases in section 3. The analysis is based on the claim that two nominals have a different derivation in terms of their structural

realization, one of which is affected by a phase-sensitive constraint. I will then turn to section 4, discussing what implications my analysis brings about. Section 5 concludes this paper.

2. Previous analyses: Miyagawa (1989) and Tsujimura (1990)

Previous attempts of capturing the contrast in (1) and (2) have been made by Miyagawa (1989) and Tsujimura (1990). First, they attribute the optionality of NVI to the noun classification. According to Miyagawa and Tsujimura, *study*-type nouns are either transitive or unergative, whereas *promotion*-type nouns are necessarily classified as unaccusative. The diagnosis for unaccusativity to be used here is the Numeral Quantifier (NQ) test in (5):

(5) *Numeral Quantifier (NQ) Test*
NQ and its associated NP or its trace must be in a local relationship.
(Miyagawa 1989)

Putting aside the technical definition of 'local relationship', what (5) requires is that an NQ and its associated NP, or its trace, are next to each other. Thus, sentence (6a) is ungrammatical where the NQ *5-nin* 'five' and its associated NP *gakusei* 'student' are not in a local relationship, while (6b) is grammatical where they are next to each other:

Unergative Nominals

(6) a. *Gakusei ga zibun-no kane-de *5-nin* denwa-sita.
Students-$_{NOM}$ self-$_{GEN}$ money-by 5-$_{CL}$ telephone-did.
b. Gakusei ga *5-nin* zibun-no kane-de denwa-sita.
Students-$_{NOM}$ 5-$_{CL}$ self-$_{GEN}$ money-by telephone-did.
'Five students telephoned using their own money.'
(Miyagawa 1989)

Now, consider (7) and (8):

Unaccusative Nominals

(7) Syain-ga$_1$ (butyoo-ni) t_1 *5-nin* syoosin-sita.
employee-$_{NOM}$ (section chief-to) 5-$_{CL}$ promotion-did.
'Five employees obtained a promotion to section chief'

(8) Tokyuu-ga$_1$ Uenoeki ni t_1 *5-dai* tootyaku-sita.
limited express trains-$_{NOM}$ Ueno station to 5-$_{CL}$ arrival-did
'Five limited express trains arrived at Ueno station.'
(Miyagawa 1989)

In both of the examples above, the NQ and its associated NP (*5-nin* and *syain* in (7), *5-dai* and *tokyuu* in (8), respectively) are apart from each other on a par with (6a). Nonetheless, the sentences are grammatical. What this suggests is that the surface subject originates in the *v*P/VP-internal position, so that its trace could be in a local relationship with the NQ: in other words, the incorporated nouns *syoosin* 'promotion' in (7) and *tootyaku* 'arrival' in (8) are unaccusative, providing *v*P-internal positions for the surface subjects.

Once Miyagawa and Tsujimura established the fact that *promotion*-type nouns are unaccusative, they argue for the fact that they cannot occur in the light verb constructions such as (2b) follows from Burzio's (1986) generalization:

(9) *Burzio's generalization*
A verb assigns an external thematic role iff it can assign Case.

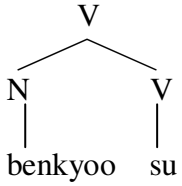
According to Miyagawa and Tsujimura, since *syoosin* 'promotion' is an unaccusative noun in (2b), the light verb that takes it as an object *somehow* has obtained the unaccusativity from the noun. This makes the verb unable to assign accusative Case due to (9), rendering the sentence ungrammatical. But how does the light verb inherit the unaccusativity from the noun?

Here, Grimshaw & Mester's (1988) Argument Transfer Theory comes into play:

(10) *Argument Transfer*
In the light verb constructions, a nominal must transfer at least one or possibly all of its theta-roles to the light verb *su*.

According to Grimshaw & Mester (1988), in both light verb constructions such as (1b) and VN-*su* constructions such as (1a) and (2a), a noun transfers its theta-roles to the verb *su*, and then the verb assigns those theta-roles to the clausal arguments. Recall that *su* is void of meaning, and therefore has an empty argument structure in its lexical entry. In other words, the function of *su* is merely to assign accusative Case. Thus, the noun, bearing an argument structure, transfers its theta-roles to the light verb, whereby the verb obtains a theta-role assigning ability. This operation is what Grimshaw & Mester call Argument Transfer. Of particular importance is that Grimshaw & Mester assume that for light verb constructions, the transfer operation happens in the syntax, while for VN-*su* constructions, it happens in the lexicon. In other words, VN-*su* forms are created by morphological compounding, where the noun yields all its theta-assigning capacities to *su*. Miyagawa (1987, 1989) in fact take up this position, positing the structure in (11):

(11)



In (11), *su* is a head of the word, and its verbal feature percolates up to the upper node, creating a single verb. The argument structure of this complex predicate then projects the argument structure of the noun, just in the same way as *su* in the light verb constructions reflects it.

Now we can explain the ungrammaticality of (2b). Since the noun *syoosin* is unaccusative, it has no external theta-role to transfer when Argument Transfer happens. Consequently, the light verb inherits the inability of assigning an external theta-role to its argument. Given Burzio's generalization in (9), which states that a verb can assign accusative Case iff it assigns an external theta-role, it follows that the light verb in (2b) cannot assign accusative Case to the noun. By contrast, the V-N complex in (2a) does not need to assign accusative Case; thus, the sentence becomes grammatical. The grammaticality of (1) also follows in a

straightforward manner: since the noun has an external theta-role, the verb can assign accusative Case to the noun in (1b) after argument transfer occurs.

The crucial aspect of Miyagawa and Tsujimura's analyses is that they attribute obligatory incorporation for *promotion*-type nouns to their unaccusativity. To do so, they adopt Grimshaw and Mester's (1988) Argument Transfer Theory, assuming the lexical analysis of incorporation for VN-*su* constructions (cf. Kageyama 1982).[1] However, since Argument Transfer only works through having all theta-roles assigned at D-structure due to the Projection Principle, the idea goes against the current Minimalist framework. In the Minimalist framework, only the interface levels PF and LF are postulated, thereby both D-structure and S-structure are no longer levels of syntactic component. Consequently, there is no motivation for having the Projection Principle as part of our grammar. Thus, we can no longer argue that all theta-roles must be assigned at D-structure since neither the Projection Principle or D-structure are theoretically motivated anymore. To state it differently, in the current Minimalist framework, theta-roles should be able to be assigned at LF (Saito & Hoshi 2000). Furthermore, the lexical incorporation analysis is only essential when we adopt Argument Transfer Theory. Thus, all these theory-internal disadvantages suggest that we should seek an alternative analysis that is up to date with the Minimalist framework, and one that adopts the syntactic analysis of incorporation.

In the following section, abandoning Argument Transfer Theory, yet maintaining Miyagawa and Tsujimura's unaccusativity account, I will propose an alternative analysis of optional or obligatory nature of NVI.

3. Noun-Verb incorporation by phase

In this section, I propose that the optionality or obligatoriness of incorporation comes from the structural difference between *study*-type nouns (1) and *promotion*-type nouns (2). Along the line of Distributed Morphology framework (Halle & Marantz 1993), I assume that all the words start off as category-neutral elements called *roots* √, that they are assigned categories

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[1] In fact, Miyagawa and Tsujimura need to assume the lexical incorporation. Consider the following examples:

(i) a. Mary-ga John-ni [$_{DP}$ toti-no zyooto]-o sita.
Mary-$_{NOM}$ John-to land-$_{GEN}$ giving-$_{ACC}$ did
b. Mary-ga John-ni toti-o zyooto-sita
Mary-$_{NOM}$ John-to land-$_{ACC}$ giving-did
c. *Mary-ga John-ni [$_{DP}$ toti-no t_1] zyooto$_1$-sita.
Mary-$_{NOM}$ John-to land-$_{GEN}$ giving-did
'Mary gave a piece of land to John.'

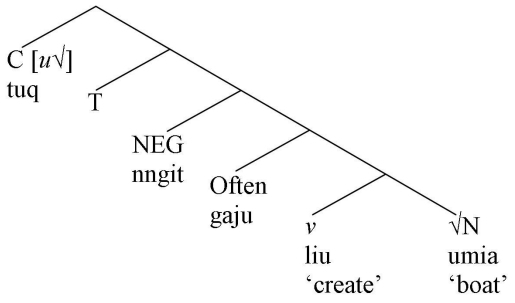
As shown in (ia) and (ib), a ditransitive noun *zyooto* 'giving' is a *study*-type noun, and can be realized in one of the two ways: that is, either *zyooto-o sita* 'giving-Acc did', or *zyooto-sita* 'giving-did' is grammatical. Given this, the ungrammaticality of (ic) cannot be explained if the complex predicate is formed in the syntax. Since the noun has transferred its theta-roles to *su*, whereby the external argument *Mary* and the internal argument *John* appears outside of the DP, the sentence meets the conditions for Argument Transfer. As a result, the syntactic incorporation analysis cannot prevent noun-incorporation from happening in (ic). However, the lexical incorporation analysis makes a correct prediction. Since the noun *zyooto* is already part of the complex verb *zyooto-sita* when it appears in the syntax, the internal argument of this complex predicate always appears as an object of it, with an accusative Case marker *o* being assigned. Given this, the ungrammaticality of (ic) follows from the fact that *toti* 'land' is assigned a wrong Case. Therefore, as long as Miyagawa and Tsujimura adopt Argument Transfer Theory, they consequently need to adopt the lexical incorporation.

by category-defining elements like *n*, *a*, *v*. Assuming along with Marantz (1997), that D can put roots into a nominal context, I argue that *benkyoo* 'study' can be realized either as a DP or an *n*P, while *syoosin* 'promotion' can only be realized as an *n*P. I assume that whether the DP structure is available or not is determined by the nature of D, which causes D to be unable to merge directly with a root without an external argument (i.e. unaccusative roots).

Furthermore, I assume that NVI is triggered by an uninterpretable root feature *u*√ (Johns 2007). According to Johns, in Inuktitut, a language that has noun incorporation, what triggers incorporation is this *u*√ feature on C. This is attributed to the fact that in Inuktitut, a root element must appear on the leftmost edge (i.e. the highest C position in the tree), which is illustrated in the following example in (12a) and its structure in (12b):

(12) a. umia-liu-gaju-nngit-tuq
boat-create-often-NEG.-PART.3s
He doesn't often make boats.

b.



(Johns 2007)

Assuming Chomsky's (2000, 2001) probe-goal feature checking system, in (12b) the *u*√ feature on C probes down to the closest root nominal *umia* 'boat', which triggers noun incorporation all the way up to C, with the noun picking up all the elements on its way. [2] Note that the *u*√ feature is analogous to the EPP feature, which requires movement of an element with phonological content: in our present case, movement of a nominal root. This in turn suggests that any root can be a target of movement since the probe *u*√ feature on C attracts the closest root as a goal. This is in fact the case, as illustrated in the following examples:

(13) a. qakuqtaq-taaq-tunga
white-get/buy- PART.1s
'I bought something white.'
b. miqsu-gaju-nngit-tuq kamiing-nit
sew-often-NEG.- PART.3s boot-MIK. PL.
'She hardly ever sews boots.'

(Johns 2007)

In (13a), the adjectival root √*qakuqtaq* 'white' undergoes movement to the left edge of the clause, while in (13b) the verbal root √*miqsu* 'sew' does so.

[2] Johns (2007) analyzes all the incorporating verbs (i.e. *liu* 'create' in (12a)) as functional verbs, namely, light verbs. Therefore, those verbs have no lexical content, and thereby they are not roots.

In Japanese, however, only nominals can undergo incorporation, and what attracts nominals is the light verb *su*. For this reason, I assume that the *u*√ feature is placed on *v* together with the uninterpretable nominal feature [*un*] so that *v* bearing a feature bundle of [*u*√, *un*] can only target nominal roots. Furthermore, I posit the interpretable nominal feature [+*n*] on both *n* and D. The assumption here is based on the fact that both heads only appear with nominals: in other words, both *n* and D heads can put roots into a nominal context (Marantz 1997, 2001). Additionally, I assume that *n* also has a *u*√ feature but D does not. This assumption is motivated by the fact that *n* always and only takes bare roots, while D can either take bare roots or phrasal constituents.

Finally, my analysis relies on the following assumptions:

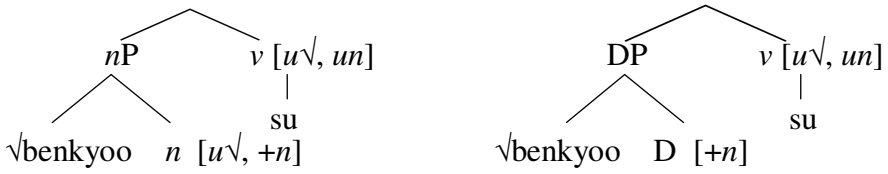
(14) (a) DP is a phase (Svenonius 2004)
(b) Only *MOVE*, not *AGREE* (Chomsky 2000, 2001), is subject to Chomsky's Phase Impenetrability Condition (PIC) (Bošković 2007)

The definition of PIC is roughly as follows:

(15) *Phase-Impenetrability Condition* (PIC)
[$_{XP}$ X [$_{ZP}$ [Z Y
In a configuration like above, where ZP is a phase, Y cannot be accessed from X.

Bearing these assumptions in mind, let us first look at the following configurations for *study*-type nouns:

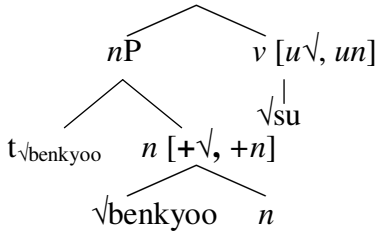
(16) Configurations for √benkyoo 'study':
a. Option 1 b. Option 2



In (16), √*benkyoo* has two options in its structural realization. On the one hand, in (16a) the root is merged with *n* bearing both an interpretable [+*n*] feature and an uninterpretable feature [*u*√]. The root then gets selected by a light verb *su* containing a *u*√ feature and an uninterpretable nominal feature [*un*]. On the other hand, in (16b) the root is merged with D bearing only an interpretable [+*n*] feature. In both cases, the feature bundle of [*u*√, *un*] on *v* needs to be checked, but how it gets checked is different in each case. Departing from Johns (2007), I claim that a √ feature is different from an EPP feature in a sense that the former can be checked via either *MOVE* or *AGREE*, whereas the latter can only be checked by *MOVE*. Yet, the √ feature is very similar to the EPP feature in that *MOVE* is the default option for both.

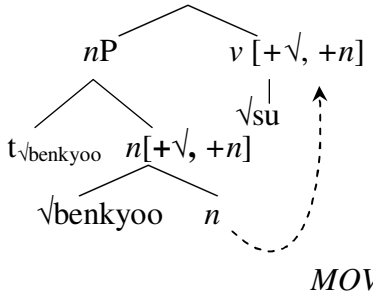
Accordingly, the root √*benkyoo* in (16a) first moves to *n* to check its *u*√ feature. This operation creates the root-*n* complex structure bearing the feature bundle of [+√, +*n*], as shown in (17):

(17) Incorporated Version: root movement to *n*:



As a next step, the entire root-*n* complex moves up to *v* to check both [*u*√] and [*un*] features on *v*. This operation is *MOVE*, and it provides an NVI form:

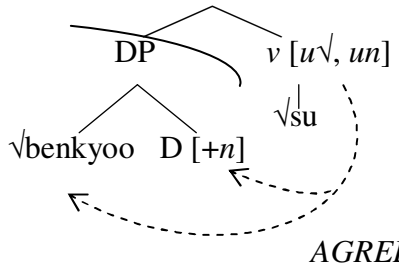
(18) Incorporated Version: root-*n* movement to *v*:



→ *benkyoo-sita* 'study-did'

In the case of (16b), √*benkyoo* is inside the DP domain and the DP is a phase (14a).[3] Consequently, it cannot move to check the feature because it would have to cross a phase boundary, and *MOVE* is constrained by PIC (14b). Thus, *v* establishes *AGREE* with the root, getting its [*u*√, *un*] features to be checked. Since *AGREE* is not constrained by PIC (14b), it successfully yields an unincorporated form:

(19) Unincorporated Version:

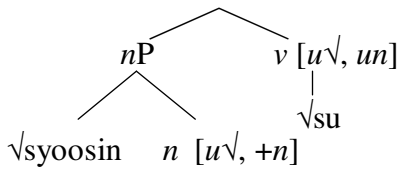


→ *benkyoo o sita* 'study-Acc did'

While √*benkyoo* has two options in its structural realization, √*syoosin* 'promotion' has only one option: it can only be realized as an *n*P:

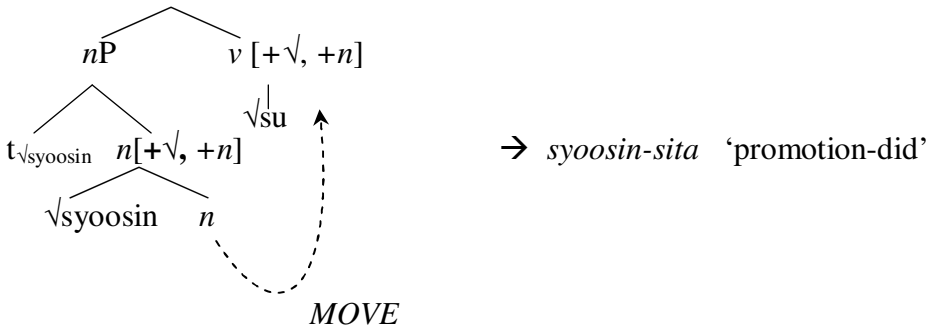
[3] While the phasal status of DP is generally accepted, whether *n*P is a phase or not is controversial (see Marantz (2001), Marvin (2002) for the claim that *n*P is also a phase). In this paper, I take up a position that *n*P is not a phase.

(20) Configurations for √syoosin 'promotion':



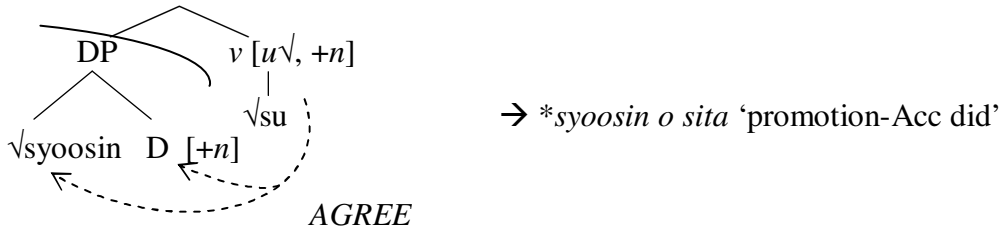
As a result, the structure for √*syoosin* only allows an incorporated form on a par with (18):

(21) Incorporated Version: root-*n* movement to *v*



Since it cannot be realized as a DP due to the nature of D being incompatible with roots without an external argument, the unincorporated form cannot be obtained: [4]

(22) Illegitimate Configuration:



In summary, I claim that the (un)availability of DP structure makes the correct predictions for both *study*- and *promotion*-type nouns. I attributed the lack of choice for a root to be selected by D to the nature of the D: it can only select certain types of roots that take an external argument. Pushing this claim forward, I argue, contrary to Embick & Noyer (2005), that roots contain *some* grammatical features: that is, in our current system, roots must bear at least √ features so that they could enter into a feature-checking relation with *v*. Moreover, roots must contain grammatical information about their argument structure in order for them to be selected by a right head, namely, D or *n* (see Dobler (2007) for a similar claim with respect to roots and their selectors from independent evidence).

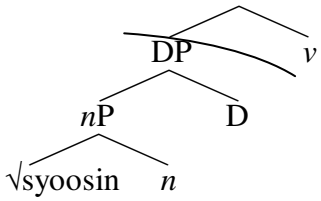
In the following section, I will discuss what implications and consequences the current analysis brings about.

[4] The validity of the assumption that D is incompatible with external argument-less roots is to be discussed later in the following section.

4. Implications

The immediate question to be raised about the optionality in structural realizations is how we deal with the option of √*syoosin* 'promotion' being eventually realized as a DP, but merged with an *n* first. Since our restriction on D is that it cannot *directly* select roots without external arguments, the configuration where D *eventually* combines with the *promotion*-type roots should be possible in principle:

(23) Theoretically Possible Configuration for √syoosin 'promotion':



Note that none of our constraints are violated in (23): what D merges with is an *n*P, not the root itself. If this is the case, then the prediction is that √*syoosin* 'promotion' should be able to enter into an *AGREE* relation with *v* under the assumption that *AGREE* is not constrained by PIC, yielding an unincorporated version **syoosin-o sita* 'promotion-Acc did', contrary to fact. How do we then exclude this possibility?

The discussion above suggests that a locality constraint on *AGREE* is different from that on *MOVE*: namely, we need to state that while *MOVE* is strictly local, *AGREE* is *less but relatively* local. But what does this 'less but relatively local' mean?

In fact, the tolerance of long distance *AGREE* varies cross-linguistically. Consider the following cases of French wh-questions from Bošković (1998):

(24) Marie a vu qui?
Marie has seen whom
'Who did Marie see?'

(25) *Jean et Pierre croient que Marie a vu qui?
Jean and Pierre believe that Marie has seen whom?
'Whom do Jean and Pierre believe that Marie saw?'

(26) Qui Jean et Pierre croient-ils que Marie a vu?
Whom Jean and Pierre believe that Marie saw?
'Whom do Jean and Pierre believe that Marie saw?'

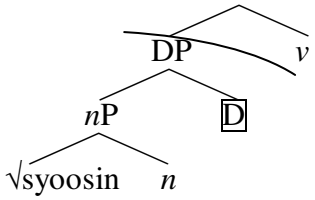
As shown in (24), French normally allows wh-in-situ in matrix questions. However, (25) shows that long-distance wh-in-situ is not allowed. By contrast, (26) shows that overt wh-movement in long-distant question is allowed. In a system where *AGREE* is less local than *MOVE*, how could we interpret this contrast between (25) and (26)?

Bošković (2007) analyzes this as a relativized minimality type of intervention effect. In (25) and (26), the matrix C, the embedded C, and the wh-phrase should all be specified for the

wh-feature. The specification of this feature may be different: suppose that the matrix C is specified for [+wh], and the embedded C for [–wh]. Suppose also that no matter what the feature specification is (i.e., + or -), either feature is qualified for causing the relativized minimality effect. Given that *AGREE* must be established with the closest element (i.e. *AGREE* closest), the matrix C cannot establish an *AGREE* relationship with the embedded clause wh-phrase, due to the intervening embedded C bearing [–wh] feature. This is why (25) is ungrammatical. Unlike (25), the intervention effect does not arise in (26) since the wh-phrase can cyclically move out of the embedded CP domain, obeying PIC. From this, we can conclude that *AGREE* is not subject to PIC as long as there are no other intervening factors.

From this observation, I assume that the same reasoning applies to our case in (23), repeated here as (27): namely, D acts as an intervener, causing the intervention effect:

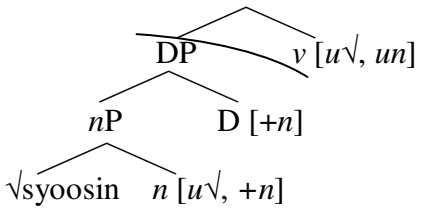
(27) D as an intervener:



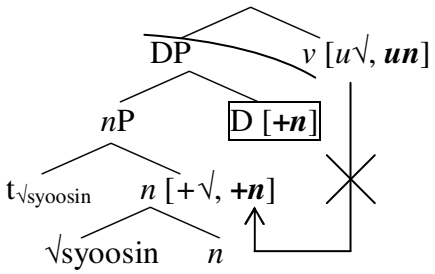
Now, the question to be asked is what makes D act as an intervener? Notice that once the relevant features are specified as shown in (28a) and (28b) below, the exact same type of intervention effect as the French wh-interrogative cases above can be obtained:

(28) Illegitimate configurations due to the intervention effect:

(a) Pre-movement of the root to *n*



(b) Post-movement of the root to *n*

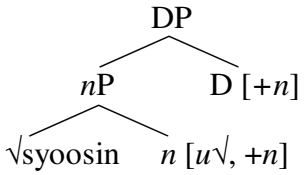


The configuration in (28a) shows the feature specification on each head. As has been assumed so far, *n* has both an uninterpretable root feature [*u*√] and an interpretable nominal feature [+*n*], whereas *v* has the same set of features but with a different value of the nominal feature (i.e., [*un*]). As for the feature specification on D, recall that unlike *n*, D only has an interpretable nominal feature [+*n*]. Since the *u*√ feature on *n* needs to be checked, a root √*syoosin* first moves to *n*, as shown in (28b). Now, in this very configuration, since the *u*√ feature on *n* gets checked by the root movement, the complex root-*n* constituent now has a feature bundle of [+√, +*n*]. In a later stage of the derivations, when *v* is about to establish an *AGREE* relationship with the root, D also bearing a [+*n*] feature causes the intervention effect. Note that the operation like the following is unavailable: *v* first targets D for having its [*un*] feature checked, and then searches for another goal *n* to get its *u*√ feature checked. This is due to the fact that feature-checking must be done in a "one fell swoop" fashion (Chomsky 2000).

Thus, *v* probes for the closest goal with the exact feature matching, namely, the root-*n* constituent with the [+√, +*n*] feature bundle.[5] However, since *AGREE* does not hold due to the intervening D bearing [+*n*], the derivation crashes. Note that the exact feature specification for the nominal feature does not matter. As we have seen in the French examples above, as long as the intervening head bears the same feature as the probe, it still acts as an intervener. Hence, the configuration in (28b) successfully excludes an unincorporated form for *promotion*-type nouns (i.e. **syoosin-o sita* 'promotion-did'), the form we could only obtain via *AGREE* between the root and *v*.

The current system immediately brings about the following implication: the structure in (29) where there is no *v* bearing the *u*√ feature above the complex DP structure should be legitimate since there is no checking requirement between the root and the *v* which causes the intervention effect:

(29) Legitimate configuration:



In fact, the prediction is borne out: the structure in (29) is allowed in the subject position, as shown in (30):[6]

(30) [$_{DP}$ John-no [$_{nP}$ syoosin]]-ga Mary-to-no kekkon-e tunagatta.
John-GEN promotion-NOM Mary-with-GEN marriage-to led
'John's promotion led to his marriage to Mary'

In (30), since the structure of the whole DP, [$_{DP}$ John-no [$_{nP}$ syoosin]], 'John's promotion', is in the subject position, there is no *v* carrying its *u*√ feature above it. Thus, the root does not need to *MOVE* nor *AGREE* to check off the *u*√ feature on *v*, rendering the sentence grammatical.

I now turn to the second implication of my analysis of the nature of D in the current system. If the assumption that D cannot be directly merged with a root without an external argument is on the right track, one possible extension of the analysis is nominalization in English.

[5] Another way of saying this is that the [*u*√] feature on *v* is dependent on the [*un*] feature: i.e. there is a hierarchical relationship between those two features like the following:

(i) [*un*]
|
[*u*√]

As Tobin Skinner (personal communication) has pointed out, this hierarchical organization is analogous to that of phonological features (e.g. [+anterior] is dependent on [CORONAL]). On this view, only the topmost feature functions as a probe, but whatever it targets will also have to satisfy the dependent [*u*√] feature. Given this, if *v* were to target D bearing [+*n*] feature, D cannot also check the dependent [*u*√] feature, causing the derivation to crash. Consequently, *v* can only probe for the [+√, +*n*] feature complex on *n*, where [+√] is dependent on [+*n*]. However, *AGREE* between the *v* and *n* does not hold since the intervening D with [+*n*] causes the intervention effect in the similar manner as (28b).

[6] The subject [$_{DP}$ John-no [$_{nP}$ syoosin]] must be realized as a DP in (30) since the genitive Case is assigned to the subject of *syoosin*, *John* (see Miyagawa 1993 and Ochi 2001, 2005 for the argument that genitive Case in Japanese is licensed by D head).

Consider the following nominalization examples:

(31) a. John destroyed the city
b. *The city destroyed
c. John's destruction of the city.
d. The city's destruction

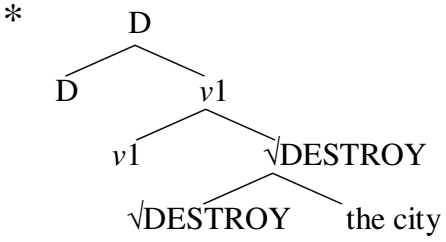
(32) a. John grows tomatoes
b. The tomatoes grow
c. *John's growth of tomatoes
d. the tomatoes' growth

(Marantz 1997)

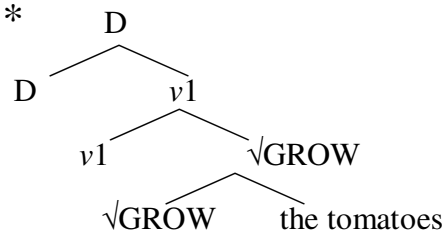
As you can see from the ungrammaticality of (31b) and (32c), it is obvious that deriving nominalizations from sentences (i.e. (31c) from (31a), (32d) from (32b)) is not what is happening here. If nominalized verbs are in fact carrying verbal features in the categorical component, then, they should share their distribution, and hence we would expect (31b) and (32c) to be grammatical.

Marantz's (1997) answer to this is that nominalizations like *destruction* and *growth* are never "verbs" at any stage in the derivation, and thus DPs (31c, 32d) are not transformationally related to sentences like (31a, or 32a,b). Thus, neither √DESTROY nor √GROW have the following configurations, where the roots are first merged with *v*:

(33) the city's destruction, John's destruction of the city



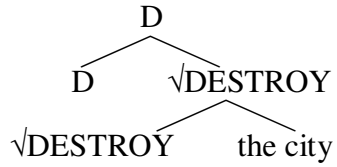
(34) the tomatoes' growth



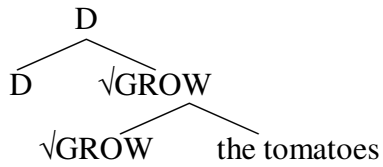
Note that the ban on these structures means that we cannot rely on *v* to introduce the agentive reading of the nominals. If the verbal head were involved in the agentive interpretation of '*John's destruction of the city*', then it automatically allows the possibility for the illegitimate configuration for √GROW in (34), wrongly predicting that *'*John's growth of tomatoes*' is grammatical. Thus, the trick here is to allow the agentive reading while both roots above only

have the D head, which puts them into a nominal context. The relevant configurations are as follows:

(35) the city's destruction, John's destruction of the city



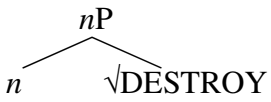
(36) the tomatoes' growth



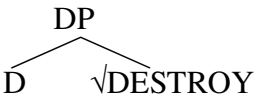
Now, the paradox here is that *destroy*, which is obligatorily transitive in its verbal domain, can be alternatively transitive or intransitive in its nominal counterpart *destruction*, while *grow*, which is optionally intransitive or transitive in its verbal domain, must be intransitive in *growth*. As Marantz notes, the only solution to this paradox is to say that this information is *somehow* implied by the root. In other words, the agentive reading is allowed for '*destroy*' in the nominal context while it is restricted in the verbal environment for *grow*. However, the obvious question for this argument is how we are able to distinguish the √GROW-type of nominals from the √DESTROY-type of nominals when they have the exact same structures?

This dilemma can be solved if we apply our current analysis of root-dependent structural realization to the nominalization cases at hand. Recall that our system only allows D to select √DESTROY, since √GROW lacks an external argument. Thus, while √DESTROY has two options in its structural realization on a par with our *study*-type roots, √GROW only has an *n*P option like our *promotion*-type roots:

(37) Structures for √DESTROY:

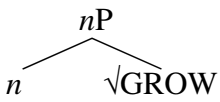
a. 

'the city's destruction'

b. 

'John's destruction of the city'

(38) Structure for √GROW:

a. 

'the tomatoes' growth'

b. * 

'*John's growth of tomatoes'

The different structural realizations now allow us to differentiate the agentive reading from non-agentive reading in a more straightforward manner. In (37) when √DESTROY is realized

as an *n*P, it does not yield the agentive reading: therefore, this is the case of '*the city's destruction*'. When it is realized as a DP, then, it yields an agentive interpretation, the case of '*John's destruction of the city*'. In contrast to √DESTROY, √GROW has only one option in its structural relation: that is, the *n*P structure in (38a). Therefore, it is incompatible with the agentive reading, disallowing nominalizations such as '**John's growth of tomatoes*'.

Now, if merging with D yields the agentive interpretation as shown in (38a), then how do we derive the agentive interpretation for *study*-type nouns when they are realized as *n*Ps? I claim that in both light verb and VN-*su* constructions in Japanese, it is the light verb *v* that plays the role of assigning theta-roles of the nominal. Notice that the gist of this claim is essentially the same as Grimshaw and Mester's Argument Transfer Theory, where the noun asks the light verb for 'help' with assigning theta-roles. In our present analysis, this implies that roots have theta-grids but do not have the ability to assign theta-roles. Thus, the roots need the light verb as a 'helper' for distributing their theta-roles.

Another possible extension of the analysis is to the third type of Japanese nominal that Miyagawa (1989) discovered. Miyagawa reported that there is a type of nominal, *nyuukai* 'membership', that is ambiguous between *study*-type nominals and *promotion*-type nominals. As shown in (39), this type of nominal usually allows both the incorporated and unincorporated version:

(39) a. Taroo-ga (tenisubu-ni) nyuukai-sita.
Taroo-$_{NOM}$ tennis club-to membership-did
b. Taroo-ga (tenisubu-ni) nyuukai-o sita.
Taroo-$_{NOM}$ tennis club-to membership-$_{ACC}$ did
'Taroo joined the tennis club.'

(Miyagawa 1989)

Thus, at first sight, it appears that *nyuukai* 'membership' in (39) patterns with *study*-type nouns. However, these two types of nouns diverge when the NQ test is applied to, as shown in (40) and (41):

(40) *Gakusei-ga suugaku-o 2-ri benkyoo-sita.
students-$_{NOM}$ math-$_{ACC}$ 2-$_{CL}$ study-did.
'Two students studied math'

(41) Tomodati-ga tenisubu-ni 2-ri nyuukai-sita.
Friends-$_{NOM}$ tennisbu-to 2-$_{CL}$ membership-did.
'Two friends joined the tennis club.'

(Miyagawa 1989)

From this observation, Miyagawa concludes that *membership*-type nouns are ambiguous as to whether they are unaccusative or unergative. According to him, when the relevant noun appears in an incorporated version like (39a), it is interpreted as unaccusative (i.e. *promotion*-type nouns). But if it appears in an incorporated version as in (39b), it is interpreted as unergative (i.e. *study*-type nouns). The unergativity of the incorporated version in (39b) is confirmed with the unacceptability of the stranded NQ, as shown in (42):

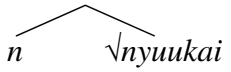
(42) *Tomodati-ga tenisubu-ni 2-ri nyuukai-o sita.
Friends-$_{NOM}$ tennisbu-to 2-$_{CL}$ membership-$_{ACC}$ did.
'Two friends joined the tennis club.'

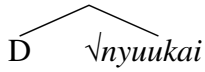
(Miyagawa 1989)

The problem of Miyagawa's analysis is that it is not clear that the same noun appears as unaccusative in one case and as unergative in the other when there is no other noticeable difference between (39a) and (39b). If there is such an unambiguous categorical noun classification, we should be able to see the structural difference between unaccusative *nyuukai* 'membership' and unergative *nyuukai*. Moreover, we need to differentiate the *membership*-type of nominals from the *study*-type nominals and *promotion*-type nominals.

Under our analysis, however, the structural differentiation of this nominal becomes possible. When √*nyuukai* is selected by D, it becomes unergative, and when it is selected by *n*, it becomes unaccusative, as shown in (43a) and (43b), respectively:

(43) Structures for √nyuukai 'membership':
Unaccusative 'nyuukai' Unergative 'nyuukai'

a. 

b. 

Although we still need to clarify what the exact nature of such a *membership*-type noun is, the difference from the other two types of nouns *benkyoo* 'study' and *syoosin* 'promotion' is at least obtained. Although √*nyuukai* 'membership' has two choices in its structural realization, and √*benkyoo* 'study' does not, each structure corresponds to a different categorization. Likewise, although √*nyuukai* can be realized as an *n*P unlike √*syoosin* 'promotion', the structure as an unaccusative noun itself is exactly the same as √*syoosin*.

Summarizing this section, by applying our root-dependent categorization analysis, we provided a clear structural differentiation for paradoxical cases of nominalizations in English, and the categorical neutral nominals such as *nyuukai* 'membership'.

Moreover, I showed that allowing the possibility of DP merging *n*P (i.e. [$_{DP}$ D [$_{nP}$ *n* √]]) when there is no *v* above the structure indeed makes a correct prediction about the distribution of this DP phrase. When the relevant DP structure appears in the object position, it causes a crash of derivations, whereas if it occurs in the subject position, the derivations converge.

5. Conclusions

Turning attention to Miyagawa and Tsujimura's finding about the unaccusative nouns' behavior in the light verb and VN-*su* constructions, I have claimed that two types of nominals, *benkyoo* 'study' and *syoosin* 'promotion' are structurally different: a nominal structure of the former can either project to a DP or an *n*P, while the latter only projects to an *n*P. Together with this assumption, I argued that the obligatory or optional nature of incorporation comes from this structural difference: that is, an *n*P option yields an incorporated form via *MOVE*, and a DP option provides an unincorporated form via *AGREE*.

Although the focus of the investigation has been placed on the light verb and not on the heavy verb *su*, we can further push our analysis forward, and extend it to the heavy verb

constructions. I argue that what makes *su* 'light' or 'heavy' depends solely on the presence of the [*u*√] feature. That is, if *su* is realized as a [*u*√] feature-less *v*, then it functions as a heavy verb. In this case, *su* behaves as a semantically-content full verb, having its own theta-grid. This is why there is no NVI for sentences like (4), repeated here as (44) below:

(44) a. Émile-ga shukudai-o sita.
Émile-$_{NOM}$ homework-$_{ACC}$ did
b. * Émile-ga shukudai-sita.
Émile-$_{NOM}$ homework-did
'Émile did homework.'

The most significant implication of my analysis is that roots do contribute a computation to the grammar by containing a root feature [+√] and being associated with theta-grids. Bearing theta-grids enables them to be selected by a right head, namely, D or *n*, according to the presence or absence of the external arguments of the root.

Thus, to the extent that my analysis is correct, what has been assumed about roots not containing any grammatical features (Embick & Noyer 2005) should be adjusted to that effect.

Acknowledgements

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