VOICE SPECIFICATION IN PHRASE STRUCTURE

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This study attempts to show that voice specification must be encoded in phrase structure as a voice feature in \( v \), and consequently passives/unaccusatives, as well as actives, must involve \( v \) for voice specification. The fact that passives/unaccusatives and actives share some syntactic behaviors that result from the properties of \( vP \) confirms the proposal. Although \( v \) is necessarily involved for voice specification, the \( v \) in actives and that in passives/unaccusatives differ in their feature compositions. While the \( v \) in actives has a Case feature and a semantic feature for an external argument, the \( v \) in passives/unaccusatives contains the EPP-feature instead. Furthermore, the \( v \) in raising constructions lacks even the EPP-feature.*

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1. Introduction

This paper claims that voice specification must be encoded in a functional head \( v \) for both active and passive/unaccusative sentences. This study provides support for the recent view that voice is syntactically represented as suggested by Kratzer (1994, 1996), Lasnik (1995), and Harley (1995), among others. Moreover, it is proposed that the functional verb \( v \) in passives/unaccusatives and that in transitives differ in their feature compositions in the way that the former is not as complete as the latter. The claim lends support to Chomsky's (2000, 2001) proposal that a transitive verbal head forms a strong phase while a
passive/unaccusative verbal head forms a weak one.

Under the feature checking/deletion theory in the minimalist framework (Chomsky (1993, 1994, 1995, 2000)), the Case-driven analysis for movement assumed in the GB theory is no longer maintained, since what motivates overt movement is the EPP-feature rather than Case-features. The theoretical shift in the cause of movement poses a question for the traditional analysis of passives. We will examine English passives in the minimalist framework (Chomsky (2000) in particular) to show that movement in passives is driven by the EPP-feature of $v$ headed by the passive morpheme -en, in addition to that of Tense, as illustrated in (1).

$$\text{(1)} \quad \left[ TP \text{ John } i \text{ was } [ vP \ t_i \text{ arrest-ed } [ VP \ t_{\text{verb}} \ t_i ] ] \right]$$

Extending the feature composition analysis of $v$ (Arad (1999)), it is proposed that voice is another feature to be contained in $v$, as stated in (2).

$$\text{(2) Voice Specification in } v$$

A clause with voice specification involves a functional head $v$ with the relevant voice feature.

To motivate the hypothesis in (2), we will argue that actives and passives/unaccusatives exhibit the same behavior attributable to the property of $vP$.

After reviewing theoretical assumptions in section 2, we claim in section 3 that English passives involve a certain functional head with the EPP-feature. Extending the feature composition analysis of $v$ proposed by Arad (1999), we propose the voice specification hypothesis in (2) in section 4. Section 5 argues that actives and passives/unaccusatives share certain syntactic phenomena that result from $vP$, based on the observation of the secondary agentivity effect that comes from structural $\theta$-assignment to Spec $vP$. In section 6 we further discuss a syntactic difference between passive and raising constructions, which is unexpected under the traditional analysis, and propose that the EPP-feature plays an important role in differentiating the two constructions. Some theoretical implications are briefly addressed in section 7 and section 8 gives conclusions.

2. Theoretical Assumptions

Throughout this paper I assume the minimalist program put forward by Chomsky (1993, 1995, 2000), particularly Chomsky's (2000) feature
deletion mechanism. In this theory, lexical items are assumed to be a set of features, some of which are interpretable and others are uninterpretable. Uninterpretable features must be eliminated in the course of computation since the interfaces, i.e. LF and PF, must consist of only interpretable features; otherwise, Full Interpretation will be violated. The EPP-feature of T, among other uninterpretable features, requires overt movement for feature deletion, while other uninterpretable features such as Case-features of DP can be deleted in situ through the mechanism of Agree (Chomsky (2000)). Consider (3).\(^1\)

\[
(3) \quad \begin{align*}
(a) & \text{ There is [a man in the field]} \\
(b) & \text{ A man is [ti in the field]}
\end{align*}
\]

If the lexical array contains there, the expletive merges into Spec TP to eliminate the EPP-feature of T, as in (3a), and if it does not contain an expletive, a man is attracted to Spec TP to satisfy the EPP, as in (3b). The DP a man moves to Spec TP only when an expletive is unavailable; otherwise, it can stay in situ as in (3a). In this case, the Case feature of the DP is deleted when an agreement relation is established between the uninterpretable $\phi$-features of T and the interpretable $\phi$-features of DP within the c-commanding domain of T. What is relevant to our discussion is the asymmetry of features; the EPP-feature drives movement for feature deletion, while Case-features of DP can be deleted in situ, although both features are uninterpretable.

3. Passives and a Functional Head

3.1. Passives and Tense

Since the advent of the GB theory (Chomsky (1981)), it has been widely assumed that the process of passivization is one of the instances of Case-driven movement (Jaeggli (1986) and Baker, Johnson, and Roberts (1989), among others). If we adopt the feature deletion theory, however, the Case-driven analysis cannot be maintained since Case features do not motivate overt movement. Chomsky (2000) sug-

\(^1\) Based on the definiteness effect, it has been claimed in the recent literature that the status of associate nominal phrases in there-constructions is NP rather than DP. In this paper, however, I ignore the NP/DP distinction and treat them as DP simply to avoid complications, because the distinction does not affect our arguments.
suggests that the same holds for movement in passives. Consider the examples below, which are parallel to (3).

(4) a. There is [a man killed in the field]
   b. A man is killed in the field

(cf. Chomsky (2000))

The sentences in (4) show that the DP a man can stay in situ if an expletive is available; otherwise, it must move to Spec TP to delete the EPP-feature. The parallelism between (3) and (4) indicates that movement in passives is also EPP-driven but not Case-driven.

If the above argument is correct, it follows that movement in passives must be induced by the EPP-feature of T. However, this conclusion is only apparent, and a close examination reveals that it is not just the EPP-feature of T that can induce movement. Notice that in (4a) overt movement does take place. If a man stayed in its base-generated position, an ungrammatical sentence would result, as in (5).

(5) *There is [killed a man in the field]

Under the earlier version of the minimalist framework (Chomsky (1994)), Lasnik (1995) suggests that there must be a functional head with a strong NP feature to drive overt movement of passive subjects. Assuming that Case-features can be licensed at LF by AgrO with the be+past participle killed complex, Lasnik argues that the DP a man should be able to stay in situ at Spell Out in (5). Nevertheless, the DP must move overtly to a particular position by virtue of the strong NP feature of a functional head, as in (6).

(6) There is [a man killed in the field]

Chomsky (2000) suggests that the associate DP in (4a) should be able to stay in situ in general. Actually, the word order in (5) is allowed in some languages, for example, Scandinavian languages, but not in English. In our theory, the word order variation can be captured as a parametric variation of the EPP-feature. I assume that a function head v is parameterized as to whether it has the EPP-feature or not. English allows the EPP-feature on the v with a passive voice, while Scandinavian languages do not.

As an anonymous reviewer points out, a man killed in the field in (3a) can be analyzed as a reduced relative. If this is the case, the DP a man can be base-generated in (6). However, as we will see below, observations in small clauses provide robust evidence that the relevant DP must move even in a tense-less clause, and hence the movement is induced by the EPP-feature of a functional head other than T.
Lasnik's analysis can be accommodated straightforwardly within our assumptions. Given that Case features of DP are deleted under the mechanism of Agree, the overt movement of the DP in (4a) cannot be Case-driven. The strong NP feature that Lasnik assumes is interpreted as the EPP-feature in our terms. Thus, a possible conclusion we can draw here is that movement in passives is driven not only by the EPP-feature of T but also by that of a certain functional head in small clauses.

This conclusion crucially depends on the assumption that small clauses do not involve T. If a small clause is headed by T, we would have to draw a different conclusion; movement in passives is still motivated by the EPP-feature of T, and hence movement is always driven by the EPP-feature of T, as suggested by Chomsky (2000). We will next examine the small clause complements of perception verbs, where Tense is absent for the reasons to be clarified below, and argue that not only T but also another functional head, i.e. functional head $v$, can have the EPP-feature.

3.2. A Functional Head in Small Clauses

Although a question as to whether a small clause is a lexical projection or it has a more articulated structure including functional categories has been at issue, there is abundant evidence to show that no tense elements are contained in the small clause complements of perception verbs. One of the well-known properties to indicate that they have no independent tense is the simultaneity of tense interpretation (Felser (1998)). Direct perception constructions require that the tense interpretation of the small clause complements always depend on that of the matrix clauses. Thus, the events denoted by the former must be simultaneous with the acts of perception described by the latter. This means that small clause complements of perception verbs do not contain independent Tense elements. Furthermore, they allow neither temporal adverbs nor sentential negation (Dic and Hengevelt (1991), Mittwoch (1990), Guéron and Hoekstra (1995), and Felser (1998), among others). When they contain temporal adverbs as in (7a), they must be interpreted as modifying the matrix tense as in (7b).

(7) a. ?I saw them recently paint the house.
   b. I recently saw them paint the house.

(Felser (1998: 359))

Likewise, if they contain sentential negation, it will lead to ungramma-
ticality as shown in (8) (taken from Mittwoch (1990) with * being added).

(8)  a. *I heard the baby not cry.
    b. *I watched the baby not eat this porridge.

(Mittwoch (1990: 108))

Since temporal adverbs and sentential negation are generally taken to be indicators of T, these facts clearly show that the small clause complements of perception verbs do not contain T.

With this much in mind, consider the examples below.

(9)  a. John saw [Bill; arrested t]
    b. *John saw [arrested Bill]

As observed in (9), passive subjects must undergo movement within the small clause complements of perception verbs. If T is not involved in small clauses, the observed movement in (9) cannot be attributed to the EPP-feature of T. This implies that there must exist a certain functional head other than T that can drive movement within small clauses. In other words, it is not only T that bears the EPP-feature, but another functional head also can have it to drive overt movement.4

4 There is a possibility that the subjects of small clauses raise into a certain functional projection in the matrix clause. As an anonymous reviewer points out, the following example indicates this possibility.

(i) *She discovered him; dead with the tool Bill; had invented.

(Aoun and Sportiche (1983: 227))

It is not implausible to assume that the subject moves to a case position of the matrix clause, either overtly or covertly (cf. Lasnik and Saito (1991) and Bošković (1997)), as in the case of ECM subjects. If this is the case, our argument remains intact because the object case position does not seem to affect any semantic import of the moved DP. For this reason, I will ignore the potential movement into the higher clause here.
tional head \( v \) with the relevant feature compositions.

Based on the observation of Object Experiencer (ObjExp) verbs, Arad (1999) claims that the property of \( v \) can be determined in accord with the composition of features. An agentive reading of ObjExp verbs stems from the \( v \) with an agentive semantic feature and a stative reading of them comes from the \( v \) with a stative semantic feature. Likewise, it is suggested that passives may involve with a head \( v \) without a semantic feature introducing an external argument and a Case feature. Extending this feature composition analysis, I assume here that besides semantic and Case features, \( v \) may contain other features, such as the EPP-feature and a voice feature. Given this, it would be possible to argue that voice specification must be encoded in \( v \) with a voice feature, either active or passive in English, as stated in (2), repeated here as (10).

\[ (10) \quad \text{Voice Specification in } v \]

A clause with voice specification involves a functional head \( v \) with the relevant voice feature.

Furthermore I assume with Lasnik (1995) that the passive morpheme -en is a lexical realization of the functional head with the property proposed in (11).

\[ (11) \quad \text{The passive morpheme is a functional head } v \text{ with a passive voice feature and the EPP-feature but no Case feature and semantic feature for an external argument.} \]

If (11) is on the right track, (4a) and (9a) will have more articulated structures as in (12) and (13), respectively.

\[ (12) \quad \text{There has been } [\text{[\text{\textit{VP }a \text{ man} \text{kill-ed } [\text{\textit{VP }t_{\text{verb}} t_i \text{ in the field}]]}]}] \]

\[ (13) \quad \text{John saw } [\text{\textit{VP }Bill \text{arrest-ed } [\text{\textit{VP }t_{\text{verb}} t_i}]}] \]

The proposed analysis provides an account of why overt movement

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5 Kratzer (1994, 1996) suggests that Voice heads fall into two classes: one with an external argument and the other without an external argument. The former occurs with actives, and the latter with passives and unaccusatives. This approach seems to be rather descriptive. The present approach, however, does not have to assume two types of voice. The difference between the two classes of Voice heads that Kratzer assumes can be recaptured as vs with different feature compositions. Giving the different terms to the heads of actives and passives might make the feature compositions less clear, compared with our analysis attempting to find the detailed feature compositions of the heads.
takes place within the small clauses; the EPP-feature of the passive voice head triggers the movement and provides a position for the attracted DP.

If the hypothesis in (10) is correct, it is predicted (i) that actives and passives may show virtually the same syntactic behaviors attributable to some property of \( v \) because both constructions involve similar heads with different feature compositions, and that (ii) not only passives but also unaccusatives should show the same behavior. In the next section, we will first discuss structural \( \theta \)-assignment to Spec \( vP \) as one of the properties of \( vP \) and show that actives and passives/unaccusatives exhibit the same behaviors attributed to this property. The following sections, then, confirm our hypothesis that a functional head \( v \) is responsible for voice specification.

5. The Nature of Spec \( vP \)

5.1. Structural \( \theta \)-Assignment

In this section I will discuss the nature of Spec \( vP \) and propose that Spec \( vP \) is a canonical position where DP can be assigned a structural agent role, regardless of the kind of voice features that the head has. In the recent literature, it has been claimed that interpretations of arguments are defined by structural positions that they appear in rather than by lexical specification (Hoekstra and Mulder (1990), Gleitman (1990), Borer (1994), and Arad (1998), among others). Arad (1998) implements this claim by utilizing the \( vP \)-VP structure, suggesting that an agent is structurally defined as an argument occupying Spec \( vP \), as illustrated in (14).

\[
(14) \quad [vP \text{ Agent} \; v \; [VP \; V...] 
\]

Let us adopt the view that syntactic positions determine interpretations of arguments, and Spec \( vP \) in particular defines an agentic reading. I further assume that in addition to structural positions, lexical specification also determines thematic interpretations of arguments. Following Roberts (1987), I will refer to thematic interpretations defined in structural positions as structural \( \theta \)-roles and those lexically assigned to arguments as inherent \( \theta \)-roles. Roberts shows that two distinct \( \theta \)-role assignments enable us to account for the secondary agentivity effect, as illustrated in (15).

\[
(15) \quad \begin{align*}
\text{a. } & \text{John received the package.} \quad \text{(Goal+Agent)} \\
\text{b. } & \text{John sent the package to Bill.} \quad \text{(Source+Agent)}
\end{align*}
\]
c. John opened the door. (Instrument+Agent)  
d. John worried about Bill. (Experiencer+Agent) (Roberts (1987: 46))

Each subject in (15) bears two different θ-roles. One is an inherent θ-role specified lexically (i.e. goal, source, instrument, and experiencer) and the other is a structural θ-role assigned in Spec vP (i.e. agent). Notice that the agentive reading in (15) is optionally available. For this reason, I assume here that an argument can bear both a structural θ-role and an inherent θ-role, with the former being available optionally, as stated in (16).

(16) Structural θ-Assignment
Spec vP is a position for structural θ-assignment, where arguments may be assigned an agent role.

If (16) is correct, passives should also exhibit the secondary agentivity effect due to the presence of v. Moreover, we expect that the effect should be attested in unaccusatives as well, since they must involve v for their voice specification. In what follows, we will see that this prediction is borne out.

5.2. Secondary Agentivity in Passives
As discussed above, if passives involve Spec vP, it is expected that passive subjects behave as active subjects with respect to the secondary agentivity effect. It has been noticed in the literature that passive subjects can receive an agentive reading. This is obvious especially when they are modified by subject-oriented adverbs such as carelessly or intentionally (Jackendoff (1972), Roberts (1987), among others).

(17) a. Fred was carelessly arrested by the police.  
b. Mary was intentionally seduced by Joe.  
   (Jackendoff (1972: 82))

In each example, the subject-oriented adverb modifies the passive subject; in (17a) it is Fred who was careless, and in (17b) it is Mary’s intention that was seduced. The same effect can be obtained with rationale clauses, which behave in the same fashion with subject-oriented adverbs in selecting agents as their controllers, as shown in (18).

(18) a. Fredi was arrested by the police [PROi to save his friend]  
b. Maryi was seduced by Joe [PROi to sell the products]

The secondary agentivity effect observed in (17) and (18) implies that
passive subjects receive an agent role in Spec vP, as expected.

One might argue that Spec TP is a position for the secondary agent-role, because under the traditional analysis, there is no other position available for structural θ-role assignment. Compare the structures of passives under the traditional analysis and the present analysis, given in (19) and (20), respectively.

(19) \([TP \text{ Fredi was } [VP \text{ arrested } t_i]]\)
(20) \([TP \text{ Johni was } [vP \text{ arrest-ed } [VP \text{ tverb } t_i]]]\)

A difference between the traditional analysis and the present one is that what is responsible for an agentive reading is Spec TP in the former but it is Spec vP in the latter.

The two analyses appear to make no difference at first sight, but once we investigate small clauses, where TP is absent (see section 3.2), they make different predictions. If Spec TP is responsible for agent role assignment, the secondary agentivity effect will not emerge since TP is missing in small clauses, but it will still emerge if Spec vP is responsible. Consider (21) and (22).

(21) a. We saw [Fred carelessly arrested by the police]
b. We saw [Mary intentionally seduced by Joe]
(22) a. We saw [Fredi arrested by the police [PROi to save his friend]]
b. We saw [Maryi seduced by Joe [PROi to sell the products]]

The fact that subject-oriented adverbs and rationale clauses are associated with the passive subjects in the small clauses in (21) and (22) indicates that what is responsible for an agentive reading in passives is Spec vP rather than Spec TP.

The secondary agentivity effect can be accounted for under our analysis of passives, together with the proposal that Spec vP is in general a structural θ-assignment position. Passive subjects can receive an agent reading when it is attracted to Spec vP, where a structural agent role can be assigned optionally as a general property of Spec vP.

5.3. Secondary Agentivity in Unaccusatives

The other prediction that our analysis makes is that unaccusatives should involve v with an active voice feature. Let us consider (23).

(23) \([TP \text{ Johni } [VP \text{ arrived } t_i]]\)

The active sentence with the unaccusative verb in (23) appears to involve direct movement into Spec TP. However, if we observe move-
ment in the small clause complements of perception verbs, it is revealed that the EPP-feature of T does not attract the DP directly, but the EPP-feature of some other functional head attracts it first.

(24) We saw [Johni arrive ti]

In parallel with the case of passives, (24) indicates that the DP is attracted to delete the EPP-feature of a certain functional head other than T. Under the present analysis, the relevant functional head must be v with an active voice feature. As in the case of passives, I propose that the v in unaccusatives contains the EPP-feature and an active voice feature but not a Case feature and a semantic feature for an external argument. The exact structure of (24) will be as in (25).

(25) \[TP \text{Johni} T [vP \text{ti} \text{arrived} [VP \text{tiverb ti}]]\]

As illustrated in (25), the subject DP is attracted to Spec vP, where it receives an agentive reading optionally before moving further to Spec TP.6

If unaccusatives necessarily involve v with the EPP-feature, the secondary agentivity effect should emerge, as in passives.

(26) John arrived late.

The unaccusative sentence in (26) can be given two interpretations; one simply describes what happened, while the other involves an agentive reading, in which John carried out the action arrived late. The latter interpretation becomes clearer when an adjunct requiring an agentive reading is added, as in (27).

(27) a. John arrived late intentionally.

b. John arrived late to impress the guests.

The situation is completely parallel with passives in that an agentive reading is secondarily available. The passive sentence in (28a) can be understood ambiguously on a par with (26); it can simply state what

6 In there-constructions, movement would not be involved, as shown in (i).

(i) a. There arrived a man.

b. *There a mani arrived ti

The contrast in (i) can be accounted for if we assume that the EPP-feature is absent from v in the there-constructions with unaccusative verbs. This is further confirmed by the absence of the secondary agentivity effect, as in (ii).

(ii) *There arrived a man intentionally late.

In contrast, the v with passive voice must have the EPP-feature even in there-constructions, as is obvious from a sentence like there was a man arrested. I leave open the question why the possibility of the EPP-feature differs in the two cases.
happened or can mean that the subject is responsible for what happened, as attested in (28b, c).

(28)  
   a. John was arrested.
   b. John was arrested intentionally.
   c. John was arrested to save his friend.

If the above argument is correct, it is further expected that the secondary agentivity effect should be observed in the small clause complements of perception verbs as well, since unaccusatives are headed by a functional head $v$, as illustrated in (25). This prediction is borne out. Consider (29).

(29)  We saw [John arrive late]

The complement clause in (29) is ambiguous in that both non-agentive and agentive readings are possible. The secondary agentivity reading in (29) is confirmed by adding adjuncts to force agentive readings, as illustrated in (30).

(30)  
   a. We saw [John arrive late intentionally]
   b. We saw [John arrive late to impress the guests]

Under our analysis, the subject is attracted to Spec $vP$ to delete the EPP-feature of $v$. Furthermore, the DP can receive an agent role in Spec $vP$ via the mechanism of structural $\theta$-assignment and hence can be associated with subject-oriented adverbs and rationale clauses in the complements of the perception verbs.

To summarize this section, we have obverted that actives, passives, and unaccusatives exhibit the same secondary agentivity effect. Given the assumption that the effect results from structural $\theta$-assignment to Spec $vP$, the observation strongly indicates the presence of $vP$ in all the cases. The result is obtained from our proposal that voice specification must be encoded in $v$ with a relevant voice feature, and hence passives and unaccusatives, as well as actives, must project $vP$. What characterizes the $v$ in actives and that in passives/unaccusatives is the feature compositions; the $v$ in the former contains a Case feature and a semantic feature for an external argument, while the $v$ in the latter contains the EPP-feature instead of a Case feature and a semantic feature for an external argument.

The present analysis further raises a question against the traditional unified analysis of raising constructions and passives. We will claim in the next section that unlike passives, the subjects of raising constructions do not show the secondary agentivity effect. The observed phenomenon implies that the $v$ in raising constructions does not have the
EPP-feature.

6. Raising Constructions

According to the traditional unified analysis of raising constructions and passives, they share the process of overt movement; a DP that merges into a $\theta$-position directly moves to Spec TP, as illustrated in (31).

\[(31) \quad \text{a. } [\text{TP Johni was } [\text{VP arrested } t_i]]
\]
\[\text{b. } [\text{TP Johni seems } [\text{TP } t_i \text{ to } [\text{vP } t_i \text{ win the race}]]]
\]

In both cases the subject DP first merges into a $\theta$-position and moves to Spec TP to delete the EPP-feature of T. Under the present analysis, the passive sentence in (31a) must have a more articulated structure with a functional head $v$, as in (32).

\[(32) \quad [\text{TP Johni was } [\text{vP } t_i \text{ arrest-ed } [\text{vP } t_{\text{verb }} t_i]]]]
\]

Here the DP does not directly move to Spec TP, but instead it first moves to Spec vP to delete the EPP-feature of the $v$ before moving to Spec TP. Since our analysis claims that $v$ must be involved in the derivation as long as voice is specified, there must be $v$ in raising constructions as well. If we attempt to maintain the traditional view that raising and passive constructions involve the same type of movement, raising constructions would have the following structure.

\[(33) \quad [\text{TP Johni } T [\text{vP seems } [\text{vP } t_{\text{verb }} [\text{TP } t_i \text{ to } [\text{vP } t_i \text{ win the race}]]]]]]
\]

The derivation in (33) suggests that the $v$ contains the EPP-feature like in passives. However, we will see in this section that in raising constructions, the $v$ does not provide Spec to assign a structural $\theta$-role. This indicates that the $v$ in these constructions may not allow the EPP-feature. In our analysis, the difference in $v$ between passives and raising constructions can be captured easily by supporting that the property of $v$ is dependent on a set of features; the $v$ in passives contains the EPP-feature but that in raising constructions does not. Then raising constructions actually should have the structure with Spec-less vP, in (34).

\[(34) \quad [\text{TP Johni } T [\text{vP seems } [\text{vP } t_{\text{verb }} [\text{TP } t_i \text{ to } [\text{vP } t_i \text{ win the race}]]]]]]
\]

6.1. An Invalid Test Case: Subject-Oriented Adverbs and Rationale Clauses

Recall that the secondary agenativity effect of passive subjects results from structural $\theta$-assignment to a specifier position of vP, which is pro-
vided by the EPP-feature to accommodate attracted DPs. In this respect, it might be tempted to argue that raising constructions do not involve a specifier position responsible for structural $\theta$-assignment, because neither subject-oriented adverbs nor rationale clauses can occur with raising predicates, as indicated in (35).

(35) a. *John is intentionally likely to win the race.
    b. *John$_i$ is certain [PRO$_i$ to please his son] to win the race.

However, the ungrammaticality of (35) does not necessarily mean that raising constructions do not involve a specifier for structural $\theta$-assignment. This is because these adjuncts are sensitive to the eventive/stative distinction, as shown in (36).

(36) *John is intentionally/carelessly/reluctantly known to everyone.

Even though a structural agent role is optionally available in passives, subject-oriented adverbs cannot be licensed in (36) since the predicate is stative.

Thus, in order to examine whether raising constructions have Spec $\nu P$ for structural $\theta$-assignment, we have to use an adjunct clause that may appear regardless of the types of predicate. We will see in the next section that non-purposive adjunct clauses may cooccur with stative predicates, including raising predicates. Crucially, however, the subjects of raising constructions cannot control these adjunct clauses.

6.2. Non-purposive Adjunct Clauses

Roberts (1987) observes that PRO of non-purposive adjunct clauses can be controlled by subjects with any kinds of $\theta$-roles. Consider the examples below.

(37) a. They sold the books [without PRO telling us]
    b. Bill struck John as smart [without PRO seeming pompous to him] (Roberts (1987: 122))

Besides subject control, PRO of non-purposive adjunct clauses allows event control, such as in (i).

(i) The lightning struck the house [without PRO starting a fire] (Roberts (1987: 123))

It is obvious that none of the arguments of the matrix clause controls PRO in (i). Here PRO is controlled by the event denoted by the matrix clause. Nevertheless, this type of control seems to be unavailable in raising constructions.
c. John knew the answer [without PRO asking anyone]
d. John got surprised [before PRO opening the jack-in-the-box]
The examples suggest that subjects with an agent role as in (37a) and those with a non-agent role as in (37b–d) can control PRO. This means that unlike subject-oriented adverbs and rationale clauses, these adjunct clauses may appear even with stative predicates such as raising predicates.

Let us see how raising constructions behave when they cooccur with non-purposive adjunct clauses. Consider (38).

(38) a. John is certain to have won the election [without PRO watching TV news]
h. John was likely to be a liar [before PRO questioning]
It should be noted that in the examples in (38), the non-purposive adjunct clauses are understood to be in the matrix clauses but not in the embedded clauses. The sentences in (39) are odd because the matrix event has nothing to do with the event described by the adjunct clauses unless an appropriate context or presupposition is given.

(39) a. *John won the election [without PRO watching TV news]
b. *John was a liar [before PRO questioning]
This suggests that the non-purposive clauses occur in the matrix clauses with raising predicates in (38).

If the non-purposive adjunct clauses in (38) are licensed within the matrix clauses, there must be a DP θ-marked within the raising predicate. This is because an adjunct must appear in a clause with a θ-assigning head associated with it. To show this point, consider the paradigm below.

(40) a. John intentionally lost the game.
b. John seems to have intentionally lost the game.
c. *John intentionally seems to have lost the game.
The subject-oriented adverb intentionally modifies John, which is θ-marked by lost in (40a, b). In (40c) crucially, the adverb cannot modify John in the higher clause even though it is located closely to the NP. If the adverb were to be licensed just by being associated with a DP with a θ-role (cf. Rothestin (1983) and Zubizarreta (1982)), (40c) could have the same status as (40b). In (40c), the adverb could be associated with John, which is θ-marked through its chain, and hence (40c) could yield the same reading as (40b). The contrast between (40b) and (40c) shows, however, that the adverb must be licensed with-
in the clause with the head *lost*, but not in the higher clause. This means that the distribution of adjuncts is restricted to clauses where the DP associated with them is *θ*-assigned. If the same restriction holds for other adjuncts, the distributional restriction on adjuncts can be stated more generally as follows.

(41) An adjunct must appear in a clause where the DP associated with it is *θ*-assigned.

Given (41), it follows that in (38), there must be DPs that are *θ*-assigned within the raising predicates since the non-purposive adjunct clauses can occur in the matrix clause.

A question which arises here is what is the *θ*-assigned DP to control PRO in (38). Notice that a structurally *θ*-assigned DP can serve as a controller of PRO. Consider (42).

(42) John was arrested [without PRO claiming his innocence]

Although there is no lexical *θ*-assigning head for the subject in (42), PRO is controlled by the subject DP. This indicates that a structurally *θ*-assigned DP can be a controller.

If the mechanism of structural *θ*-assignment were available in raising constructions, the subject would receive an agent-role and could control PRO as a result. However, this option is unavailable. PRO in (38) cannot be interpreted as *John* but rather it must be someone who makes epistemic judgment on the event denoted by the embedded clause. This becomes clearer when the internal argument, that is a dative DP is overtly realized.8,9

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8 I assume with Chomsky (1995) and Kitahara (1997) that the dative phrase in raising constructions is an internal argument. Notice that our argument that this phrase can control non-purposive adjunct clauses further provides evidence for the status as an argument rather than as an adjunct.

9 Roberts (1987) observes that when controlled by arguments, PRO of non-purposive adjunct clauses can be controlled only by subjects, but not by objects or implicit arguments.

(i) a. They sold the books [without PRO telling us]
   b. *They sold the books [without PRO being proofed]
   c. *This books were sold [without PRO telling] (Roberts (1987: 121))

The grammaticality of (ia) indicates that subjects can control PRO. By contrast, the ungrammaticality of (ib–c) indicates that neither objects nor implicit arguments can control it. This generalization, however, does not hold for the case of raising constructions, where the internal argument serves as a controller.
(43) a. John is certain to Mary_{i} to have won the election [without PRO_{i} watching a TV news]
b. John was likely to Mary_{i} to be a liar [before PRO_{i} questioning]

The internal argument assigned to Mary is responsible for the judgment on the event of the embedded clause: its certainty in (43a) and likeliness in (43b). Crucially, it is this internal argument rather than the subject that controls PRO in (43). This means that the subjects of raising predicates cannot have an agentive reading via structural θ-assignment, and hence cannot control the non-purposive adjunct clauses.\(^{10}\)

The situation is quite different from passives; passive subjects can be interpreted as agents whereas those of raising constructions cannot. The feature composition analysis presented here seems to provide a solution. The observed fact follows naturally if we assume that unlike passives, the v in raising constructions lacks the EPP-feature. In passives, the EPP-feature of the v provides a specifier position, where DP can be assigned a structural agent role. On the other hand, since the EPP-feature is absent on the v in raising constructions, a specifier to assign a structural agent role is unavailable.

To conclude this section, we have argued that passive and raising constructions differ in their feature compositions in v; the EPP-feature is present in passives but it is absent in raising constructions. Under the traditional analysis, according to which passive and raising constructions involve movement from a θ-position to Spec TP, passives are expected to behave like raising constructions rather than actives with respect to secondary agentivity. By contrast, we have found that the subject of passives can receive an agentive reading as in actives, but the subjects of raising constructions cannot. The present analysis seems to be favorable to account for the difference in the two. Under the

\(^{10}\) It should be noted here that certain or likely, which are traditionally analyzed as raising predicates, are potentially ambiguous since they also allow control readings (Martin (1996, 2001)). Under the control reading, the subject John in (42a), for example, is expected to serve as a controller if some appropriate context is given. Osawa (2000) discusses this issue and shows that this prediction is actually borne out.
analysis, the property of a functional head $v$ is determined in accord with the features that the head consists of. Besides voice and other relevant features, what makes the property of the two distinctive is the EPP-feature. It is allowed in passives but not in raising constructions. When the EPP-feature is present, it provides Spec $vP$ to assign a structural agent role, but when it is absent, the position is unavailable and no structural agent role is assigned.

The system we adopted here allows us to explain straightforwardly why the subjects of passives and unaccusatives behave like those of actives but not of raising constructions with respects of the secondary agentivity effect, although $v$ is involved in all the cases for voice specification. Spec $vP$ is always needed for an external argument in actives. In the case of passives and unaccusatives, the EPP-feature makes this position available. Thus, the secondary agentive reading is available due to the presence of Spec $vP$. As opposed to this, Spec $vP$ is never provided in raising constructions because neither a semantic feature for an external argument nor the EPP-feature is contained in the $v$, and thus the secondary agentivity effect cannot be attested in this case.

7. Theoretical Implications: Weak Phase and the EPP-Feature

Here I will address some theoretical implications. First, our conclusion that $v$ can differ in the feature compositions between active transitives and passives/unaccusatives provides support for the strong/weak distinction in phase suggested by Chomsky (2001). Chomsky suggests that a derivation develops phase by phase, that is CP or $vP$, but not TP or projections of passive/unaccusative verbal heads. It is further suggested that a transitive verbal head forms a strong phase, whereas a passive/unaccusative verbal head forms a weak phase with incomplete $\theta$-features.

We have concluded that passives/unaccusatives must involve $vP$ as well as transitive actives in terms of their voice specification, but this $v$ has the different feature composition from that of transitive actives. Under our analysis, the relevant feature compositions of $v$ among different sentence types are as summarized in (44).
The v of active transitive sentences includes a semantic feature for an external argument and a Case feature (i.e. the transitive property), while that of passives/unaccusatives lacks these features. In the sense that they lack the features that transitives have, the v of passives/unaccusatives is not as complete as that of transitives and hence weak. In addition, our findings indicate that there is yet another, weaker vP, i.e. the v in raising constructions. It lacks the EPP-feature as well as the transitive property. Thus, our conclusion provides support for the view that a passives/unaccusative verbal head forms a vP, which is not as complete as the one in transitives.

Second, our analysis implies that the EPP-feature may be included not only in T but also in other functional categories such as v. The EPP-feature has been considered to be a feature associated with T, but Chomsky (2000) suggests that the EPP-feature may be included in the core functional categories: T, C, and v. As illustrated in (45), the EPP-feature of T induces movement of subject, that of C causes overt A'-movement, and that of v drives overt object shift attested in certain languages.

\[
\begin{array}{cccc}
\text{active} & \text{passive} & \text{unaccusative} & \text{raising} \\
\text{Case} & + & - & - \\
\text{Voice} & A & P & A \\
\text{the EPP} & - & + & + \\
\end{array}
\]

(active=active transitive sentence, semantic=semantic feature for an external argument, A=active voice feature, P=passive voice feature)

Our study has found that the pattern in (45c) where the EPP-feature is included in v can be attested in English passives/unaccusative, as shown in (46).

\[
\text{(46)} \quad [XP_i [v [V \text{ t}_i]]]
\]

8. Conclusions

Based on the observation that passives involve a functional head with the EPP-feature, we have proposed that voice specification must be en-
coded in phrase structure as a voice feature in \( v \). To confirm the proposed voice specification hypothesis, we have argued that actives and passives share some syntactic behaviors that result from a certain property of \( vP \). On the assumption that structural agent-role assignment is defined in terms of the syntactic position, Spec \( vP \), it was shown that the subjects of both actives and passives can receive an agentive interpretation via structural \( \theta \)-assignment to Spec \( vP \). In addition, we have seen that this mechanism is available for the subjects of unaccusatives.

Although actives and passives/nomina necessitate involve \( v \) as voice specification, we have proposed that the difference lies in the feature compositions of \( v \). The \( v \) of passives/nomina is not as complete as that of actives in that they lack a semantic and a Case features (transitive property). In this sense the \( v \) in passives/nomina forms a weak phase as suggested by Chomsky. The feature compositional analysis further allows us to account for the syntactic difference between passive and raising constructions. We have seen that unlike passives, the subject of raising constructions does not show the secondary agentivity effect, which is unexpected under the traditional analysis where passive and raising constructions involve identical derivations. The fact naturally follows by assuming that the \( v \) in raising constructions lacks the EPP-feature as well as the transitive property. Hence the \( v \) in this case forms a weaker phase in that it is more incomplete than that of passives. Our study finally implies that not only certain languages with object shift but also English has \( v \) with the EPP-feature.

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