VERB MOVEMENT IN NARROW SYNTAX[*]

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Abstract

I argue that verb movement should be derived in narrow syntax. The derivational system of *Labeling Algorithm* proposed by Chomsky (2013, 2015) allows movement to occur in narrow syntax without recourse to any movement-triggering features, contra Chomsky (2001, 2004, 2008). In this system, (both external and internal) Merge is free, even if a new semantic effect does not occur on a raised category in its raised position, contra Chomsky (2001). Thus, verb movement, which does not change a semantic interpretation in the unmarked case, should be able to occur in narrow syntax without recourse to any driving features. As we see in the Icelandic data, it is actually difficult to claim that verb movement occurs in phonology, contra Chomsky (2001). I propose a way to carry out verb movement in narrow syntax in terms of *feature inheritance* and *copy deletion*. In the Romance languages as well as languages such as English, both φ-features and tense are inherited by T, to which R(=V)+v* moves, whereas in the V2 languages, only φ-features are inherited by T with tense remaining in C, to which R+v* directly moves. In all of those languages, it is a matter of morphophonology which copy of a verbal head, the one in a higher position or the one in the v* head position, is chosen to be pronounced. I also claim that *do* is inserted in English to phonetically embody features such as [Q], [Foc(us)] and [Pol(arity)]. The feature that the inserted *do* embodies is adjacent to tense and φ-features in each of the relevant constructions, which accounts for why the inserted *do* carries tense and agreement as pointed out by the traditional literature.

[*] Special thanks to Anders Holmberg for giving me many insightful comments and suggestions and much advice, which helped me improve this paper in many points. Thanks also to Christer Platzack and Johan Brandtler for giving me many helpful comments for this work and to Halldór Ármann Sigurðsson for giving me Icelandic data. Many thanks to two anonymous reviewers for their very insightful comments, which enabled me to revise a former version of this paper significantly. Part of this paper was presented at Keio University Linguistics Colloquium, 30 January 2016. I would like to thank Hisatsugu Kitahara and the audience there for their many comments for this work. I take all responsibilities for any errors.

1. Introduction

The position in which a finite verb appears can differ depending on languages. The finite verb *kisses* follows the adverb *always* in English; see (1a). *Embrasse* 'kisses' moves and precedes *toujours* 'always' in French; see (1b). *Kysser* 'kisses' moves not only across *alltid* 'always' but also across the subject *Jon* in Swedish; see (1c). These facts indicate that the finite verb is located in the v*P domain in languages such as English (referred to as type (1a) languages hereafter), in the TP domain in languages such as French (referred to as type (1b) languages), and in the CP domain in V2 languages such as Swedish (referred to as type (1c) languages).

(1) a. [$_{TP}$ John (*kisses) always [$_{VP}$ (^{OK}kisses) Mary]]. [Eng.]

b. [$_{TP}$ Jean (^{OK}embrasse) toujours [$_{VP}$ (*embrasse) Marie]]. [Fre.]
Jean kisses always kisses Marie
'Jean always kisses Marie.'

c. [$_{CP}$ Marit (^{OK}kysser) [$_{TP}$ Jon (*kysser) alltid [$_{VP}$ (*kysser) ~~Marit~~]]]. [Swe.]
Marit kisses Jon kisses always kisses
'Marit, Jon always kisses (her).'

Though much traditional literature has dealt with verb movement as a syntactic movement (Emonds 1978, Travis 1984, Pollock 1989, Belletti 1990, Vikner 1990, Roberts 1993, Svenonius 1994, Chomsky 1995, Holmberg and Platzack 1995, Grimshaw 2000, Matushansky 2006, Truckenbrodt 2006, among others), Chomsky (2001:37-38) claims that verb movement occurs in the phonological component. Specifically, verb movement does not change the semantic interpretation: in (1c), the main verb *kysser* 'kisses' moves to C, but the verb is not interpreted differently in C than in v* (1a) or in T (1b).[1] As we will see in detail along with the transition of movement theory within Chomskyan generative syntax in the next section, Chomsky has claimed that movement operations such as verb movement that do not cause any semantic change occur not in narrow syntax, but in phonology (see also Chomsky et al. 2017).

[1] See, e.g. Truckenbrodt (2006) for an argument that verb movement can cause a semantic change in some contexts.

If verb movement were an operation carried out in phonology, a verbal head could freely appear in various positions both inter- and intra-linguistically: it is standardly claimed that morphophonology can show various manifestation, compared with quite a limited computational system in narrow syntax. But as illustrated in (1a-c), the syntactic positions where a finite verb can be located are actually quite limited cross-linguistically: either C, T or v*. In addition, the head position in which a finite verb is located (in main clauses) in the unmarked case is determined for each language type: in C in V2 languages, in T in the Romance languages such as French, and in v* in languages such as English. Furthermore, verb movement can affect morphophonological embodiment: type (1b) languages in which a verbal head appears in a higher position tend to have a rich agreement system, whereas type (1a) languages in which a verbal head appears in a lower position tend to have quite a poor agreement system. These facts indicate that verb movement is likely to be a syntactic phenomenon, which operation can feed morphophonology where linguistic features are manifested in various forms.

In this paper, I argue that verb movement should be derived in narrow syntax. This paper is organized as follows. Section 2 introduces the transition of movement theory in the history of Chomskyan generative syntax as well as the derivational system of *Labeling Algorithm* (LA) proposed by Chomsky (2013, 2015). It is argued that since (both external and internal) Merge freely occurs in the LA system, verb movement, which does not change a semantic interpretation in the unmarked case, should be able to occur in narrow syntax. We will see in the Icelandic data that it is difficult to claim that verb movement occurs in phonology, contra Chomsky (2001). Section 3 proposes a way to carry out verb movement in narrow syntax in terms of *feature inheritance* (cf. Richards 2007) and *copy deletion* (cf. Nunes 2004). Section 4 discusses how to derive *do*-support constructions in English-type languages. Section 5 concludes this paper, mentioning some of the theoretical consequences that arise by adopting feature inheritance.

2. Free Merge, Labeling Algorithm, and Verb Movement

A long-term research question in Chomskyan generative syntax was that though a category receives an (argument-structural) interpretation in the original position, why does it have to move at all? (Chomsky 1981, 1986, 1995). Movement was regarded as a kind of 'imperfection' (Chomsky 1995), and with the theoretical transition, many attempts were made to 'motivate' movement.

In the *Principles and Parameters* theory (Chomsky 1981, 1986, 1995), it was assumed that the semantic component is uniform for all languages, and that movement can occur either at narrow syntax or at the semantic component if the final semantic representation is the same. In English *wh*-questions, a *wh*-phrase appears in sentence-initial position (e.g. *what did you eat?*), whereas in Japanese *wh*-questions, a *wh*-phrase appears in the original position (e.g. *kimi-wa nani-o tabe-ta-no?* (you-TOP what-ACC eat-PAST-Q 'what did you eat?')). Within the *X-bar* model (Chomsky 1981, 1986), it was claimed that a *wh*-phrase moves to [Spec,CP] overtly in narrow syntax in the former, whereas a *wh*-phrase moves there covertly in the semantic component in the latter.

Since the *Minimalist Program* was proposed by Chomsky (1995), it has been assumed that a syntactic structure is built by an operation called *Merge*, which takes two lexical items and combines them, contrary to the 'built-in' *X-bar* model. In Chomsky (1995), it was reasoned that movement is 'morphology-driven'. A cross-linguistic tendency regarding movement is that when movement occurs, agreement morphology is likely to appear overtly. As introduced in section 1, a finite verb appears in different positions in different languages. Type (1b) languages in which a verbal head appears in a higher position tend to have a rich agreement system, whereas type (1a) languages in which a verbal head appears in a lower position tend to have quite a poor agreement system. It was claimed that languages that have a rich agreement system have a strong agreement feature which causes verb movement, whereas the agreement feature of languages that have quite poor morphology is weak and does not raise a verbal head. For Chomsky (1995:348), movement was less economical than Merge, in that Merge is a one-time

operation, whereas movement consists of two operations, Merge and movement.

Chomsky (2001) established the *phase* framework. v* and C are assumed to be the phase head, the domain of which corresponds to an argument structure and a proposition respectively and is subject to Spell-Out (or *Transfer*, in the term of Chomsky et al. 2017).[2] Within in this framework, Chomsky (2001) claims, contrary to the *Principles and Parameters* theory, that not only the semantic component but also narrow syntax should be uniform for all languages, with the surface difference between languages confined to morphophonology. He also claimed that movement can occur only when it affects the interpretation at the semantic interface. The *Extended Projection Principle* (EPP) – originally, the requirement that a sentence must have a subject (Chomsky 1981, 1986) – was referred to as the feature that is assigned to a functional head and triggers movement. Specifically, *wh*-movement as described previously causes the change in the interpretation of *wh*-phrases: a *wh*-phrase is interpreted as an argument of a verb in its original position, whereas it is interpreted as a *wh*-operator in its raised position. The EPP is assigned to phasal heads, v* and C, and raises a relevant *wh*-phrase successive-cyclically. A *wh*-phrase moves up to [Spec,CP] in narrow syntax both in English and in Japanese, leaving a copy in its original position and one in its raised position. The copy in sentence-initial position is chosen to be pronounced in English, whereas the copy in the original position is chosen to be pronounced in Japanese. On the contrary, movement operations such as verb movement that do not cause any semantic change, as introduced in section 1, were claimed to occur not in narrow syntax, but in the phonological component (Chomsky 2001:37-38; see also Chomsky et al. 2017).

Chomsky (2004) argues that the long-term view that movement is an imperfection is wrong, with the claim that movement is unified into Merge operations. That is, if Merge takes two independent syntactic objects (, or lexical items) and combines them, this is called *external Merge*. If Merge takes a syntactic object from inside an already built structure and merges it to that structure once again, this is called *internal Merge*. Chomsky (2008) claims that both

[2] I introduce the latest definition of the operation *Transfer* proposed by Chomsky et al. (2017) later.

external and internal Merge can occur freely, saying that the system which lacks the latter would be odd. Movement is assumed to occur due to the *edge feature*, which simply allows movement to occur. He also claims that functional features such as tense and φ-features are not inherently located in T. Those features are located in the phase head C, and T inherits them from C in the C-T configuration (*feature inheritance*; cf. Richards 2007, Ouali 2008). The same argument applies to the v*-V configuration: functional φ-features are located in the phase head v* and inherited by V.

Chomsky (2013, 2015) definitely claims that (both external and internal) Merge can occur freely, saying that seeking some motivation for movement is wrong. In the previous frameworks (Chomsky 1981, 1986, 1995), it was assumed that a head automatically projects itself. Contrary to this tradition, Chomsky (2013, 2015) claims that in configuration [DP, v*P], for instance, there is no necessity to assume that the v* head always projects. But a syntactic object needs a label so that it can be interpreted at the interfaces. It is claimed that a syntactic object is labeled in the course of the derivation by *Labeling Algorithm* (LA).

Labeling of syntactic objects proceeds as follows. The phase heads, v* and C, are assumed to be able to label themselves. When a phase head merges with a maximal projection XP, i.e. in configuration [v*/C, XP], LA finds a phase head by minimal search and labels that projection <v*/C>, which results in either [$_{<v*>}$ v*, XP] or [$_{<C>}$ C, XP].

A non-phase head, either T or a verbal root R (, which corresponds to V in the traditional notation) is, unlike phase heads, assumed to be weak in that it cannot label itself. When a non-phase head merges with XP, i.e. in configuration [R/T, XP], either XP itself or a category inside XP, say YP (i.e. [$_{XP}$ … YP …]), needs to move to strengthen that non-phase head.[3] A non-phase head and a raised category go on to the procedure of feature valuation. In the valuation procedure between two categories, one's valued features assign values to the other's unvalued counterpart. In the feature valuation between T and a raised category, unvalued φ-features of T, which are inherited from C, are assigned values by the valued counterpart of the raised category;

[3] When XP, which has already merged with a non-phase head as the complement, moves and merges with that same non-phase head twice, the problem of anti-locality (Grohmann 2003) would arise, which I leave aside here.

an unvalued Case of the latter is assigned Nom(inative) by tense. In the feature valuation between R and a raised category, unvalued φ-features of R, which are inherited from v*, are assigned values by the valued counterpart of the raised category; an unvalued Case of the latter is assigned Acc(usative).[4] After feature valuation takes place between a non-phase head and a raised category in this way, LA finds the φ-features matched between them and labels the entire projection <φ,φ>, which results in either [$_{<\varphi,\varphi>}$ XP$_{[\varphi]}$ [R$_{[\varphi]}$, ~~XP~~]] or [$_{<\varphi,\varphi>}$ YP$_{[\varphi]}$ [T$_{[\varphi]}$ [$_{XP}$ … ~~YP~~ …]]].[5]

When two maximal projections, XP and YP, merge with each other, i.e. in configuration [XP, YP], there are two ways to label that projection. One way is that either XP or YP moves out of that configuration, and the remaining maximal projection determines the label. That is, after one of them moves out, its copy in the original position becomes part of a discontinuous object. Blind to such an element, LA finds the head of the remaining maximal projection by minimal search and labels the entire configuration <X/Y>, which results in either [XP [$_{<Y>}$ ~~XP~~, YP]] or [YP [$_{<X>}$ XP, ~~YP~~]]. The other way is that when XP and YP have matching φ-features, feature valuation occurs between them. LA finds the matched φ-features and labels the projection <φ,φ>, which results in [$_{<\varphi,\varphi>}$ XP$_{[\varphi]}$, YP$_{[\varphi]}$], with neither of them moving out.

On the basis of the labeling procedure introduced above, the derivation of *John kisses Mary* proceeds as illustrated in (2), which is the final representation of the derivation. Let us consider the derivational process until when β<v*> (= v*P, in the traditional notation) is transferred.

(2) … C [$_{\alpha<\varphi,\varphi>}$ John [T [$_{\beta<v^*>}$ ~~John~~ [kiss(=R)+v* [$_{\gamma<\varphi,\varphi>}$ Mary [~~kiss(=R)~~ [$_{\delta}$ ~~Mary~~]]]]]]][6]

[4] Since φ-features of R are unvalued, they cannot assign an Acc Case value to a raised category. In fact, it is the transitive property of v* that assigns Acc to the complement of a verb (cf. Epstein et al. 2012). Contrary to tense, transitivity is not an independent feature category. In this paper, I simply say that Acc is assigned in the feature valuation procedure between R and a raised category.

[5] Here, I notate all φ-features with [φ] for convenience sake, whether they are valued or unvalued. I introduce a detailed derivational process soon below.

[6] R has unvalued φ-features, [uφ], which are inherited from v*, and T also has [uφ], which are inherited from C; *John* and *Mary* each have an unvalued Case, [uCase]. I omit them from the notation in (2) for simplicity sake. Hereafter, the verbal root R is represented by an infinitival form in all languages.

The verbal root R, *kiss*, merges with the internal argument, *Mary*. Since *kiss*(=R) is a non-phase head and weak by assumption, *Mary* moves to strengthen it. The phase head v* merges with γ. Functional φ-features that are located in v* are inherited by *kiss*(=R). This means that phasehood is inherited by R from v*. *Kiss*(=R) and *Mary* go on to the feature valuation procedure. The φ-features inherited by *kiss*(=R), which are unvalued, are assigned values by the valued counterpart of *Mary*, and an unvalued Case of the latter is assigned Acc.[7] LA finds the φ-features matched between *kiss*(=R) and *Mary*. LA labels γ <φ,φ>. *Kiss*(=R) moves to v* to become a verbal category.[8] Phasehood is, at this stage, assumed to be activated in the original position of R; its complement, δ, though it is now vacuous, is transferred.

Then, the external argument of v*, *John*, and T merge in turn. Since T is a non-phase head and weak by assumption, DP in its complement, i.e. *John* in [Spec,β], moves to strengthen it. After *John* moves out, LA finds the phasal head v* by minimal search, and β is labeled <v*>. The phase head C merges with α. Functional features such as φ-features and tense that are located in C are inherited by T, which means that T inherits phasehood from C. T and *John* go on to the valuation procedure. The φ-features inherited by T, which are unvalued, are assigned values by the valued counterpart of *John*. An unvalued Case of the latter is assigned Nom by (valued) tense. LA finds the φ-features matched between T and *John*, and labels α <φ,φ>. At this stage, it is assumed, phasehood is activated in T, and its complement, β<v*>, including γ<φ,φ>, is transferred.[9]

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[7] Chomsky (2016) revises his claim, saying that i) a category moves to strengthen a non-phase head, ii) a phase head merges, iii) the raised category and the phase head go on to the valuation procedure, and iv) functional features such as φ-features located in that phase head are inherited by the lower non-phase head. In this claim, it is not clear why φ-features must be inherited by a non-phase head after the valuation procedure occurs between a phase head and a raised category. In this paper, I follow the system of Chomsky (2013, 2015).

[8] After R moves to v*, v* is assumed to be deleted due to its affixal nature (Chomsky 2015). In this paper, I notate R+v* in its final transferred position without a deletion line on v*.

[9] Christer Platzack (p.c.) addresses the question whether v*, the verbal functional head with transitive property, should be distinguished from v, the verbal functional head with intransitive/unaccusative property (cf. Chomsky 2001), in this new system. By assumption, R needs some category in its Spec to strengthen it. An unaccusative verb takes, but an intransitive verb does not take, an internal argument (Burzio 1986). Though an unaccusative R can strengthen itself by raising its argument in the same way as a transitive R, an intransitive R cannot do so. The projection of the former can have a label after feature valuation occurs, whereas the projection of the latter cannot

Note that, as illustrated above, the LA system allows movement to occur in narrow syntax without recourse to any movement-triggering features such as the EPP, contra Chomsky (2001, 2004, 2008). The internal argument of R, *Mary*, and the external argument of v*, *John*, are simply allowed to move to strengthen the non-phase head, R and T respectively.[10] In addition, movement of those nominals does not always produce new semantic effects such as focus and topic in their raised position. The constraint that movement can occur only when a new semantic effect occurs on a raised category in its raised position is no longer imposed on movement in the LA system, contra Chomsky (2001). In the same way, verb movement, which does not produce a new semantic interpretation in the unmarked case as illustrated in (1a-c), should be able to occur in narrow syntax without recourse to any movement-triggering features.[11]

Chomsky (2015) claims that R-to-v* is a syntactic operation which results in composing the verbal amalgam R+v* as illustrated in (2), whereas the other steps of verb movement, i.e. v*-to-T and T-to-C, occur in *externalization*, the mapping process to morphophonology. But after R moves to v* and the complement of R is transferred, T and C merge in turn. It is only after phasehood is activated in T that β<v*>, which contains R+v*, is transferred. If verb movement occurs before β<v*> is transferred, R+v*, T and C are all accessible to syntactic derivations. (R+)v*-to-T and T-to-C can fully be carried out in narrow syntax.[12]

According to Chomsky et al. (2017:10), before a syntactic object is sent to phonology,

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have a label due to the absence of feature valuation. Thus, the difference in transitive, intransitive and unaccusative properties lies in the properties of R, not in those of the functional head v*. How to label the projection of an intransitive R is left for future research. Throughout this paper, I notate the verbal functional head as v* for convenience sake.

[10] But as Anders Holmberg (p.c.) points out, it can also be said that movement is still triggered by the weakness of the non-phase heads, R and T, in the LA system: saying that a category moves to strengthen a non-phase head, the weakness of non-phase heads seems to act as the trigger of movement of a category.

[11] Thus, it is not necessary to seek any interpretive effect for verb movement as has been done in the literature (e.g. Roberts 2010).

[12] I thank one of the reviewers for letting me notice this point. Matushansky (2006) pointed out that V-to-v* in phonology would violate the *Phase Impenetrability Condition* (Chomsky 2001): it was assumed that the complement of a phase head is spelled out and cannot be accessed by further syntactic operations at a higher phasal level; V should not be able to move to v* after the complement of v*, VP, has been spelled out. This problem does not occur in the currently assumed derivational system, since R-to-v* is now syntactic.

it is subject to *Transfer*, which is defined as the operation that 'renders the objects to which it applies impenetrable to later operations'. See below:

(3) [$_{\alpha}$ The verdict [$_{\beta}$ that Tom Jones is guilty]] seems to have been reached __ by the jury.

Since β is a CP phase, it is transferred (at least) at the derivational stage at which α, the entire noun phrase that contains β, is generated in the original, object position. But β is not sent to phonology in its original position: it is only after α moves from the original to sentence-initial position that α as well as β contained in it are sent to phonology. Since an already transferred syntactic object can appear in a higher position, Chomsky et al. (2017) claim that a transferred object is not directly sent to phonology, but Transfer only closes a phase and makes it inert to further syntactic operations (cf. Obata 2010).

In the same context as above, i.e. in the *that*-clause contained in a noun phrase that is raised from the original to sentence-initial position, verb movement does occur:[13]

(4) [$_{\alpha}$ Sú staðreynd [$_{\beta}$ að drottningin elskar ekki ___ konunginn]] [Ice.]
the fact-FEM.SG.NOM that queen-the loves not king-the
er nú rædd ___ af þinginu.
is now discussed-FEM.SG.NOM by parliament-the
'The fact that the queen does not love the king is now being discussed by the parliament.'

In the *að* 'that'-clause β, the main verb *elskar* 'loves' moves across the negation *ekki* 'not'. The entire noun phrase α, which contains β, is raised from the original to sentence-initial position. In the original position of α, β contained in α is transferred. After β is transferred, the clausal elements inside β cannot be modified. Thus, verb movement should occur before β is transferred in its original position, i.e. in narrow syntax.

Assume in (4) that *elskar* 'loves' moves after β is transferred but before α containing it is raised. At this derivational stage, β is only transferred but not sent to phonology: the narrow-

[13] Thanks to Halldór Ármann Sigurðsson (p.c.) for giving me this Icelandic data. As we see in the next section, verb movement obligatorily occurs in Icelandic *that*-clauses.

syntactic operation that raises α containing β continues; it is only after α as well as β are raised that they both are sent to phonology. Movement of *elskar* 'loves' at the timing described above cannot be said to occur in phonology.

Assume that *elskar* 'loves' moves after α containing β is raised and sent to phonology in the raised position. In the copy of β in the original position, the main verb would remain in situ, whereas in the copy of β in the raised position, the main verb would move. The nondistinctness of copies is obviously lost. Thus, as all the arguments suggest, it is difficult to argue that movement of *elskar* 'loves' occurs in phonology.[14]

In sum, the LA system (Chomsky 2013, 2015) allows movement to occur in narrow syntax without recourse to any movement-triggering features such as the EPP, contra Chomsky (2001, 2004, 2008). The constraint that movement can occur only when a new semantic effect occurs on a raised category in its raised position is no longer imposed on movement, contra Chomsky (2001). Verb movement, which does not change a semantic interpretation in the unmarked case, should be able to occur in narrow syntax without recourse to any movement-triggering features. In the LA system, R+v*, T and C are all accessible before a verbal projection is transferred; not only R-to-v* but also v*-to-T and T-to-C can be carried out in narrow syntax. As we saw in the Icelandic data, it is difficult to claim that verb movement occurs in phonology. Rather, it should occur before Transfer, i.e. in narrow syntax.

3. Verb Movement in Narrow Syntax

In this section, I propose a way to carry out verb movement in narrow syntax in terms of feature inheritance (cf. Richards 2007, Chomsky 2008, Ouali 2008) and copy deletion (cf. Groat and O'Neil 1996, Bobaljik 2002, Nunes 2004, Landau 2006, Trinh 2011). As introduced in section

[14] Verb movement has long been claimed not to occur in narrow syntax due to the countercyclic operation, in which a relevant category moves into inside a position of an already built structure. This operation violates the *Extension Condition* (Chomsky 2000), which requires that Merge should extend a tree. Prohibiting any other kinds of Merge operation than internal and external Merge, Chomsky et al. (2017:10) claim that head movement, being countercyclic, would not be carried out in narrow syntax. To make this claim, the definition of Merge (operations) has been changed to *Simplest MERGE*, which discussion I leave for future.

2, movement was claimed to be morphology-driven; the presence of verb movement was associated with a rich agreement system (Chomsky 1995). But the recent literature (Biberauer and Roberts 2010; Holmberg and Roberts 2013) has claimed that it is not a rich agreement system, but a rich tense inflectional system, that causes verb movement.[15] Biberauer and Roberts (2010) argue that v* has an unvalued tense feature, which is valued by the interpretable counterpart of T. Based on their claim, I assume that the verbal functional head v* has an unvalued tense feature, which is notated as [uTns], whereas the valued counterpart notated as [Tns] is located in a higher functional head, and that in the same way as assumed in the LA derivational system introduced in section 2, after verb movement takes place, feature valuation occurs between [uTns] and [Tns], with the former valued by the latter.[16]

According to Chomsky (2015), all functional features such as φ-features, tense and Q, if any, are located in C and inherited by T. According to Miyagawa (2010, 2017), some of those functional features are inherited by T but others remain in C, depending on individual languages.[17] As Holmberg and Platzack (1995) convincingly claim, the finiteness feature is located in C in V2 languages, whereas it is located in T in non-V2 languages. Let us assume that both φ-features and tense are inherited by T in type (1a-b) languages, as illustrated in (5a), whereas only φ-features are inherited by T with tense remaining in C in type (1c) languages, as illustrated in (5b).[18]

(5) a. $[C_{\sout{[Tns,\varphi]}}\ [T_{[Tns,\varphi]}\ [R+v^*_{[uTns]}\ [\sout{R}]]]]$ (=type (1a-b))

b. $[C_{[Tns,\sout{\varphi}]}\ [T_{[\varphi]}\ [R+v^*_{[uTns]}\ [\sout{R}]]]]$ (=type (1c))

[15] Chomsky (1995:196-198) assumes [±finite] to account for the presence or absence of infinitival verb movement in French. See the argument there.

[16] Hereafter, I leave aside φ-features of v*, which are relevant to Case assignment to an internal argument, omitting them from the notation.

[17] Johan Brandtler (p.c.) addresses the question how to decide which functional features are inherited by T in a given language. This issue concerns tightening the mechanism of feature inheritance, which I leave for future research.

[18] Biberauer and Roberts (2010) make a similar assumption that both φ-features and tense are inherited by T in languages such English and French, but they assume that both φ-features and tense remain in C in V2 languages. The latter assumption is the crucial difference between their proposal and ours. See also footnote 28.

In type (1a-b) languages, R+v* moves to T. [uTns] of (R+)v* is valued by [Tns] located in T; see (6a).[19] In type (1c) languages, [Tns] that can assign a value to [uTns] of (R+)v* is located in C. Holmberg and Hróarsdóttir (2003) and Chomsky (2008) propose that a category can skip the closest target position and directly move to the next target position. Based on their 'direct movement analysis', let us assume that R+v* in the v* head position skips T and directly moves to C. [uTns] of (R+)v* is valued by [Tns] located in C; see (6b).[20] Recall the argument in section 2 that verb movement needs to occur before β<v*> is transferred, so that R+v*, T and C are all accessible to syntactic derivations. Since β<v*> is transferred after phasehood is activated in T, it is plausible that verb movement occurs right after T's feature inheritance from C occurs.[21]

(6) a. $[C_{\text{[Tns,φ]}}\ [_{\alpha<\varphi,\varphi>}$ DP $[R+v^*_{\text{[uTns]}}+T_{[Tns,\varphi]}\ [_{\beta<v^*>}$ ~~DP~~ $R+v^*_{\text{[uTns]}}$ … [~~R~~ …]]]]] (=type (1a-b))

b. […$R+v^*_{\text{[uTns]}}+C_{[Tns,\varphi]}\ [_{\alpha<\varphi,\varphi>}$ DP $[T_{[\varphi]}\ [_{\beta<v^*>}$ ~~DP~~ $R+v^*_{\text{[uTns]}}$ … [~~R~~ …]]]]](=type (1c))

One of the copies of a verbal head, either the one in T/C or the one in the v* head position, must be chosen to be pronounced to receive an appropriate interpretation in the Sensorymotor system.[22] According to Groat and O'Neil (1996), which copy, the one in the highest position or the one in the original position, is actually pronounced is a matter of morphophonology.[23] In type (1a-b) languages, when the copy of a verbal head in the v* head position is chosen to be pronounced, a finite verb appears in the v* head position, as illustrated by type (1a) languages; see (7a). When the copy of a verbal head in T is chosen, a finite verb appears in T, as illustrated by type (1b) languages; see (7b). In English, a type (1a) language, the finite Aux(iliary verb) *have* and the finite *be* appear in T: e.g. *John has not read that book*

[19] (6a-b) represent the syntactic objects that have not yet been transferred. R+v* in the v* head position is represented without a deletion line. Hereafter, I leave aside labeling of CP phases, omitting the label of CP phases from the notation.

[20] See Wiklund et al. (2007), who argue that verb movement in Icelandic main clauses directly targets the CP domain and does not have v*-to-T. Their analysis is based on *Remnant Movement* originated in den Besten and Webelhuth (1987). See also Roberts (2010), who suggests that v* directly moves to C in V2 languages.

[21] See Carstens et al. (2016), who discuss the timing of head raising.

[22] Cf. Chomsky (1995:253) and Chomsky et al. (2017:6).

[23] See Bobaljik (2002), Nunes (2004), Landau (2006), and Trinh (2011) for the theory of copy deletion.

(cf. *John did not read that book*).[24] This fact results from choosing their copy in T to be pronounced in morphophonology, as illustrated in (7c).

(7) a. [$C_{\sout{[Tns,φ]}}$ [$_{α<φ,φ>}$ DP [~~kiss(=R)+v*$_{[uTns]}$~~+$T_{[Tns,φ]}$ [$_{β<v*>}$ ~~DP~~ kiss(=R)+v*$_{\sout{[uTns]}}$ …
[~~kiss(=R)~~ …]]]]] (=1a)

b. [$C_{\sout{[Tns,φ]}}$ [$_{α<φ,φ>}$ DP [embrasser(=R)+v*$_{\sout{[uTns]}}$+$T_{[Tns,φ]}$ [$_{β<v*>}$ ~~DP~~ ~~embrasser(=R)+v*$_{[uTns]}$~~
… [~~embrasser(=R)~~ …]]]]] (=1b)

c. [$C_{\sout{[Tns,φ]}}$ [$_{α<φ,φ>}$ DP [have(=R)+v*$_{\sout{[uTns]}}$+$T_{[Tns,φ]}$ [$_{β<v*>}$ ~~DP~~ ~~have(=R)+v*$_{[uTns]}$~~ …
[~~have(=R)~~ …]]]]]

In type (1c) languages, R+v* in the v* head position directly moves to C in main clauses, as illustrated in (6b). The copy of a verbal head in C is chosen to be pronounced in the unmarked case, and a finite verb appears in C:

(8) [… kyssa(=R)+v*$_{\sout{[uTns]}}$+$C_{[Tns,φ]}$ [$_{α<φ,φ>}$ DP [$T_{[φ]}$ [$_{β<v*>}$ ~~DP~~ ~~kyssa(=R)+v*$_{[uTns]}$~~
… [~~kyssa(=R)~~ …]]]]] (=1c)

When an overt complementizer does not appear in embedded clauses, R+v* in the embedded v* head position directly moves to the embedded C in the same way as in main clauses. In German, the copy of a verbal head in the embedded C is chosen to be pronounced, and a finite verb appears in that position; see (9-10a). In Mainland Scandinavian, the copy of a verbal head in the embedded v* head position is chosen, and a finite verb appears in that position; see (9-10b).[25]

(9) a. Maria glaubt, Peter gab einen Ring zu Julia. [Ger.]
Maria believes Peter gave a ring to Julia
'Maria believes (that) Peter gave a ring to Julia.'

[24] I turn to *do*-support in type (1a) languages in section 4.

[25] Thanks to Johan Brandtler (p.c.) for letting me know various patterns of embedded clauses of V2 languages. In (9b), the finite Aux *hade* follows the negation *inte*, which indicates that the Aux appears in the v* head position. I turn to the case in which an overt complementizer appears in embedded clauses later.

b. Hon sa, hon inte hade läst den. [Swe.]
she said she not had read it
'She said (that) she had not read it.'

(10) a. … [… geben(=R)+v*$_{\text{~~[uTns]~~}}$+C$_{[\text{Tns,~~φ~~}]}$ [$_{\alpha<\varphi,\varphi>}$ T$_{[\varphi]}$ [$_{\beta<v^*>}$ … ~~geben(=R)+v*$_{[\text{uTns}]}$~~ …
[~~geben(=R)~~ …]]]] (=9a)

b. … [… ~~ha(=R)+v*$_{[\text{uTns}]}$~~+C$_{[\text{Tns,~~φ~~}]}$ [$_{\alpha<\varphi,\varphi>}$ T$_{[\varphi]}$ … [$_{\beta<v^*>}$ … ha(=R)+v*$_{[\text{uTns}]}$ …
[~~ha(=R)~~ …]]]] (=9b)

There are many consequences that arise from the proposal here. First, much traditional literature has differentiated verb movement from phrasal movement.[26] Here, verb movement does not differ from phrasal movement in that they are both carried out by feature valuation. In phrasal movement, after a category is raised, feature valuation occurs between a head and that raised category; one's valued features assign values to the other's unvalued counterpart. In verb movement too, after R+v* moves, feature valuation occurs between T/C and R+v*; [uTns] of (R+)v* is valued by [Tns] located either in T or in C.

Secondly, it has traditionally been claimed that verb movement is quite a local operation in that a head cannot move up across another head: e.g. *has John ~~(has)~~ been arrested?* VS **been John has ~~(been)~~ arrested?* (the *Head Movement Constraint* (HMC), Travis 1984). In his recent paper, Roberts (2010) claims that that kind of constraint does not exist. We have reached the same conclusion here. That is, since [uTns] belongs to v*, only v* can move up so that its [uTns] can be valued by [Tns] located either in T or in C. The reason why the participle verbal head cannot move across other heads is that it does not have [uTns], so, it has no reason to move up.

Thirdly, with the copy deletion analysis of verb movement, it is not necessary to assume, contra Chomsky (2015), that T of type (1a) languages such as English is weak, whereas T of type (1b) languages such as French is strong. Since [Tns] is inherited by T from C in type (1a-b) languages, R+v* obligatorily moves to T in both type (1a-b) languages. It is simply a matter of morphophonology which copy of a verbal head, either the copy in T or the one in the v* head

[26] See the literature given in section 1.

position, is chosen to be pronounced.

Fourthly, based on the claim that both φ-features and tense are inherited by T in type (1a-b) languages, whereas only φ-features are inherited by T in type (1c) languages, both φ-features and tense should be embodied in the verbal head located in T in the former: richer inflectional morphology should appear (in the verbal head located in T) in type (1a-b) languages than in type (1c) languages. As has been confirmed by much traditional literature,[27] the Romance languages, which represent the (1b) language type, have a richer inflectional system than the Germanic languages, which represent the (1c) language type. Some of type (1a-b) languages have a poor inflectional system, as illustrated by English. As we saw in (7a), this language type has only the option to choose the copy of a verbal head in the v* head position to be pronounced for main verbs. It is not surprising that rich inflectional morphology does not appear in the pronounced copy of a verbal head in the v* head position, where neither φ-features nor tense is located. When the copy of a verbal head in T is chosen to be pronounced, as in the case of the finite Aux *have* and the finite *be*, rich morphology is likely to appear in the pronounced copy; see (7c). It has also been observed that some of the Germanic languages, Mainland Scandinavian in particular, have quite a poor inflectional system, though the main verb moves to C. This fact is straightforward in the account here. In these type (1c) languages, φ-features are inherited by T, and only tense remains in C. R+v* directly moves from the v* head position to C, and the copy in C is pronounced in the unmarked case, but no φ-features remain there.[28]

Fifthly, since tense is located in C but φ-features are located in T in type (1c) languages, it is predicted that those features can be separated and embodied in different syntactic heads in those languages. This is confirmed by Swedish participle constructions. Swedish has two kinds

[27] See the literature given in section 1.

[28] The claim here matches that of Biberauer and Roberts (2010) and Holmberg and Roberts (2013), who argue that a rich tense inflectional system, but not a rich agreement system, enables verb movement to occur. Biberauer and Roberts (2010) assume that both φ-features and tense remain in C in V2 languages, which requires them to make a lot of assumptions to account for the difference between type (1b-c) languages. Holmberg and Roberts (2013) argue that V-to-T occurs, or in other words, a verbal head is pronounced in T, if rich inflectional morphology appears in T. In the argument here, the causal relation is in reverse: when a verbal head is pronounced in T, where φ-features are located, rich inflection is likely to appear in the verbal head.

of perfect participle, *supine* and non-supine forms. The supine form does not inflect for any grammatical categories. Non-supine forms inflect for gender and number. See below:

(11) a. Ingenting har Marit erbjudit Elsa. [Swe.]
nothing has Marit offered Elsa
'Nothing, Marit (has) offered Elsa.'

b. Ingenting blev hon erbjuden.
nothing was-PAST she offered-COM-SG
'Nothing, she was offered.'

c. Ingenting blev de erbjudna.
nothing were-PAST they offered-COM-PL
'Nothing, they were offered.

The supine participle *erbjudit* 'offered' in (11a) does not inflect for any categories. The non-supine participle *erbjuden* 'offered' in (11b) agrees with the subject *hon* 'she' and inflects for common gender and singular. The non-supine participle *erbjudna* 'offered' in (11c) agrees with the subject *de* 'they' and inflects for common gender and plural. As illustrated in (11b-c), in which the non-supine participles appear, φ-features are embodied in the participle, whereas the finite Aux in C expresses only tense.[29] Compare with French illustrated in (12), a type (1b) language. In this language type, both φ-features and tense are inherited by T and embodied in T, as illustrated by the finite *be* form, *sommes* 'are-PRES-1PL' (present and the first person plural).

(12) Nous sommes invités à dîner par Particia. [Fre.]
we are-PRES-1PL invited-PL to diner by Patricia
'We are invited to diner by Patricia.'

[29] Thanks to Johan Brandtler (p.c.) for giving me the Swedish data of (11a,c). Based on Belletti (1990), the inflected participle in (11b-c) might move to T contrary to uninflected participles. But the relative position between a negation and a participle does not differ between the supine and non-supine forms:

i) De har inte erbjudit henne det jobbet. [Swe.]
they have not offered her that job
'They haven't offered her that job.'

ii) Det jobbet blev hon inte erbjuden. [Swe.]
that job was she not offered-COM-SG
'That job, she wasn't offered.'

The supine participle *erbjudit* in (i) and the non-supine participle *erbjuden* in (ii), the latter of which agrees with the subject *hon* 'she' in common gender and singular, both follow the negation *inte*. This indicates that participles, whether they inflect or not, do not move. Thanks to Anders Holmberg (p.c.) for letting me notice this fact.

Finally, in embedded clauses of type (1c) languages, when an overt complementizer which is itself irrelevant to tense appears, it is predicted that tense as well as φ-features are inherited by the embedded T; R+v* in the embedded v* head position will move to the embedded T so that [uTns] of v* can be valued there. The data of the Scandinavian languages suggests that this prediction is tenable:

(13) a. Ég veit að Jón keypti ekki bókina. [Ice.]
I know that Jón bought-PAST-3sg not the-book
'I know that Jón didn't buy the book.'

b. Jag sa att Johan inte köpte boken. [Swe.]
I said that Johan not bought the-book
'I said that Johan didn't buy the book.'

(14) a. … [að$_{\text{~~[Tns,φ]~~}}$ [$_{\alpha<\varphi,\varphi>}$ … keypa(=R)+v*$_{\text{~~[uTns]~~}}$+T$_{[\text{Tns},\varphi]}$ … [$_{\beta<v^*>}$ … ~~keypa(=R)+v*$_{[uTns]}$~~
… [~~keypa(=R)~~ …] (=13a)

b. … [att$_{\text{~~[Tns,φ]~~}}$ [$_{\alpha<\varphi,\varphi>}$ … ~~köpa(=R)+v*$_{[uTns]}$~~+T$_{[\text{Tns},\varphi]}$ … [$_{\beta<v^*>}$ … köpa(=R)+v*$_{\text{~~[uTns]~~}}$
… [~~köpa(=R)~~ …] (=13b)

In Icelandic (13a), the finite verb in the embedded clause, *keypti* 'bought', moves across the negation *ekki* 'not', whereas in Swedish (13b), the finite verb in the embedded clause, *köpte* 'bought', follows the negation *ekki* 'not'. As illustrated in (14a-b), tense and φ-features are inherited by the embedded T, and R+v* moves to the embedded T, in both Icelandic and Swedish. In Icelandic (14a), the copy of the verbal head in the embedded T is chosen to be pronounced. Since both tense and φ-features are located there, rich inflectional morphology appears in the pronounced copy. In Swedish (14b), the copy in the embedded v* is chosen to be pronounced. With tense and φ-features located in the embedded T, only poor inflection appears in the pronounced copy in the v* head position.[30]

[30] There is some variation in embedded clauses with an overt complementizer between type (1c) languages concerning the position of a raised verb and the embodiment of inflection. In Swedish (i), a finite verb can appear in the embedded T as illustrated by *hade* 'had', though no verbs including the Aux inflect; see also (9b). In German (ii), a finite verb appears in the embedded v* head position as illustrated by *gab* 'gave', despite its relatively rich inflection.

In sum, verb movement is carried out in narrow syntax in terms of feature inheritance and copy deletion. As a general mechanism (in main clauses), both φ-features and tense are inherited by T in type (1a-b) languages, whereas only φ-features are inherited by T with tense remaining in C in type (1c) languages. In the former language type, R+v* in the v* head position moves to T, and [uTns] of v* is valued by [Tns] located in T. In the latter language type, R+v* directly moves to C, and [uTns] of v* is valued by [Tns] located in C. It is a matter of morphophonology which copy of a verbal head, the one in a higher position or the one in a lower position, is actually pronounced.

With the argument here that verb movement occurs in narrow syntax and that the surface difference in verb movement between languages is attributed to the position where the copy of a verbal head is actually pronounced, it is not the case that '[head movement] might fall within the mapping to [phonology]' as Chomsky et al. (2017:18) claim: verb movement does fall within narrow syntax; only the process of choosing a pronounced copy of a verbal head will fall within the externalization process.

Richards (2016) argues that some movement phenomena including verb movement are imposed by the requirement from phonology. According to Richards, in some languages that have a rich agreement system, agreement morphemes can be part of the prosody of a verbal head, which may affect the presence or absence of verb movement. Based on the argument here, no phonological properties affect the syntactic operations of verb movement: verb movement is carried out in narrow syntax in terms of feature valuation, independently of any phonological effects. Phonological effects on verb movement, if any, will only be involved in the externalization process, where a pronounced copy of a verbal head is determined.

Bobaljik (2002) argues that assuming movement and copy deletion, there are four

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i) Hon sa att hon hade inte läst den. [Swe.]
she said that she had not read it
'She said that she had not read it.'

ii) Maria glaubt, dass Peter einen Ring zu Julia gab. [Ger.]
Maria believes that Peter a ring to Julia gave-PAST-3sg
'Maria believes that Peter gave a ring to Julia.'

See also Heycock et al. (2010), who claim that verb movement in embedded clauses is optional in Faroese, in which verbs inflect for some, but not all, persons.

patterns in which the position where a copy is interpreted and the position where one is pronounced are associated: i) the copy in a higher position is both interpreted and pronounced (overt movement); ii) the copy in a higher position is pronounced, but the copy in a lower position is interpreted (reconstruction); iii) the copy in a higher position is interpreted, but the copy in a lower position is pronounced (covert movement); and iv) the copy in a lower position is both interpreted and pronounced (expletive constructions). According to Bobaljik, which position is chosen to be interpreted and/or pronounced depends on which position the semantic and phonological interfaces 'privilege'. In verb movement, however, it is not the case that the semantic interface prefers one position to the other position, since no semantic change occurs in verb movement. But the choice will not be totally free at the phonological interface. As we saw in (7a), type (1a) languages such as English have only the option to choose the copy of a verbal head in the v* head position to be pronounced for main verbs. Some phonological factors of this language type may be involved in determining the pronounced position of a verbal head, as stated above based on Richards (2016). Thus, a property specific to verb movement in which a verbal head appears in different positions in different languages though no semantic change is caused is ultimately attributed to the fact that the choice of a pronounced copy of a verbal head is free at the semantic interface but constrained in some way at the phonological interface.

4. *Do*-Support (in English-type languages)[31]

English, a type (1a) language, requires '*do*-support' in constructions such as (*yes-no*/*wh*-) interrogatives (15a), emphasis (15b) and negation (15c).

(15) a. Do you like John?
b. I DO like John.
c. I do not (/don't) like John.

[31] I thank one of the reviewers for recommending me to discuss this issue.

It has been traditionally claimed that *do* is inserted to morphophonologically support tense and agreement. Based on Chomsky (1995:139), *do* is inserted into a head position higher than the tense and agreement heads, after which the features of the latter are raised to the former; *do* ends up carrying the morphophonological properties of tense and agreement.[32] With the claim here that a verbal head moves to T in both type (1a-b) languages, however, the question is why the Aux *do* needs to be inserted in the constructions illustrated above only in the limited language type.

In interrogative constructions, a main verb moves to C both in type (1c) languages and in type (1b) languages; see (16a) illustrated by Swedish and (16b) illustrated by French. In the same context, the Aux *do* is inserted into C and a main verb appears in the v* head position in English; see (16c).

(16) a. Talar du franska? [Swe.]
speak you French
'Do you speak French?'

b. Parlez-vous le français? [Fre.]
speak-you the French
'Do you speak French?'

c. Do you speak French? [Eng.]

The interrogative property of a sentence is attributed to the interrogative *Force*, which is carried by a functional head located in the CP domain (Rizzi 1997). According to the literature (Cable 2010; Chomsky 2013, 2015), C has a valued Q, which is notated as [Q], in interrogatives in all languages. Since the interrogative C requires a main verb to be located in its head as illustrated in (16a-b), it is plausible that a verbal head moves to C to phonetically embody [Q] in (*yes-no*/*wh*-) interrogatives, as already claimed by Chomsky (1995:139): 'Q … must be "completed" in the overt syntax by X^0-raising'.[33]

[32] See also the literature given in section 1, as well as Bobaljik (2002) and Roberts (2010).

[33] It is not likely that v* has a feature such as an unvalued [uQ] in interrogative sentences. The interrogative property of a sentence is attributed to [Q] located in a functional head, not to a verbal head.

Specifically, in type (1c) languages, R+v* directly moves to C, where [uTns] of (R+)v* is valued, as has been claimed so far; see (17a). In type (1b) languages, after R+v* moves to T, where [uTns] of (R+)v* is valued, R+v*+T moves to C; see (17b). In both type (1b-c) languages, [Q] located in C is phonetically embodied by the raised verbal head, with its highest copy chosen to be pronounced.

(17) a. [… tala(=R)+v*$_{\text{~~[uTns]~~}}$+C$_{[Q,Tns,\text{~~φ~~}]}$ [$_{\alpha<\varphi,\varphi>}$ DP [T$_{[\varphi]}$ [$_{\beta<v^*>}$ ~~DP~~ ~~tala(=R)+v*$_{[uTns]}$~~ … [~~tala(=R)~~ …]]]]] (=16a)

b. [… parler(=R)+v*$_{\text{~~[uTns]~~}}$+T$_{[Tns,\varphi]}$+C$_{[Q,\text{~~Tns,φ~~}]}$ [$_{\alpha<\varphi,\varphi>}$ DP [~~parler(=R)+v*$_{[uTns]}$+T$_{[Tns,\varphi]}$~~ [$_{\beta<v^*>}$ ~~DP~~ ~~parler(=R)+v*$_{[uTns]}$~~ … [~~R(parler)~~ …]]]]] (=16b)

In English, a type (1a) language, too, after R+v* moves to T, where [uTns] of (R+)v* is valued, R+v*+T moves to C, as in type (1b) languages; see (18a).[34] As we saw in (7a), type (1a) languages only have the option to choose the copy of a verbal head in the v* head position to be pronounced for main verbs; [Q] in C cannot be phonetically embodied by a verbal head, contrary to type (1b-c) languages. Let us assume that in type (1a) languages such as English, *do* is inserted into C in morphophonology to phonetically embody [Q], as illustrated in (18b).

(18) a. [… speak(=R)+v*$_{\text{~~[uTns]~~}}$+T$_{[Tns,\varphi]}$+C$_{[Q,\text{~~Tns,φ~~}]}$ [$_{\alpha<\varphi,\varphi>}$ DP [speak(=R)+v*$_{\text{~~[uTns]~~}}$+T$_{[\text{~~Tns,φ~~}]}$ [$_{\beta<v^*>}$ ~~DP~~ speak(=R)+v*$_{\text{~~[uTns]~~}}$ … [~~speak(=R)~~ …]]]]] (NS) (=16c)

b. [… ~~speak(=R)+v*$_{[uTns]}$~~+T$_{[Tns,\varphi]}$+C$_{[Q,\text{~~Tns,φ~~}]}$ [$_{\alpha<\varphi,\varphi>}$ DP [~~speak(=R)+v*$_{[uTns]}$~~+T$_{[\text{~~Tns,φ~~}]}$

do

[$_{\beta<v^*>}$ ~~DP~~ speak(=R)+v*$_{\text{~~[uTns]~~}}$ … [~~speak(=R)~~ …]]]]] (PHON)

In emphatic constructions, a main verb receives a focal accent both in type (1c) languages as illustrated by Swedish and in type (1b) languages as illustrated by French; see (19a-b). In the same context, the Aux *do* is inserted and receives a focal accent, and a main verb appears in the v* head position in English; see (19c).

[34] *NS* in (18a) stands for narrow syntax, and *PHON* in (18b) stands for (morpho)phonology.

(19) a. Jag TALAR franska. [Swe.]
I speak French
'I DO speak French.'

b. Je PARLE le français. [Fre.]
I speak the French
'I DO speak French.'

c. I DO speak French. [Eng.]

Emphatic constructions are likely to contain a focus feature, [Foc], which is located in the CP domain (Rizzi 1997). Contrary to [Q], which affects the Force of a sentence and must be located in the CP domain, emphatic constructions are all declarative sentences and do not affect the Force of a sentence; there is no reason to think that [Foc] must stay in the CP domain in all languages. According to Miyagawa (2010, 2017), the focus feature, which is located in C, can be inherited by T in languages such as Japanese. Let us assume that [Foc] located in C is inherited by T along with φ-features and tense in type (1a-b) languages, whereas tense and [Foc] remain C with only φ-features inherited by T in type (1c) languages.

Specifically, in type (1c) languages, R+v* directly moves to C, where [Foc] (and tense) is located; see (20a). In type (1b) languages, R+v* moves to T, which inherits [Foc] (as well as φ-features and tense) from C; see (20b). In both type (1b-c) languages, the highest copy of a verbal head is chosen to be pronounced. As a result, [Foc] is phonetically embodied by the raised verbal head, which receives a focal accent.[35]

(20) a. [DP tala(=R)+v*$_{\text{[uTns]}}$+C$_{\text{[Foc,Tns,φ]}}$ [$_{\alpha<\varphi,\varphi>}$ ~~DP~~ [T$_{[\varphi]}$ [$_{\beta<v^*>}$ ~~DP~~ ~~tala(=R)+v*$_{\text{[uTns]}}$~~
… [~~tala(=R)~~ …]]]]] (=19a)

b. [C$_{\text{~~[Foc,Tns,φ]~~}}$ [$_{\alpha<\varphi,\varphi>}$ DP [parler(=R)+v*$_{\text{~~[uTns]~~}}$+T$_{\text{[Foc,Tns,φ]}}$ [$_{\beta<v^*>}$ ~~DP~~ ~~parler(=R)+v*$_{\text{[uTns]}}$~~
… [~~parler(=R)~~ …]]]]] (=19b)

[35] In the same way as in interrogatives, no properties of emphatic constructions are attributed to a verbal head. It is not likely that a raised verbal head has an unvalued feature such as [uFoc] related to emphasis. In (20a), DP, i.e. the subject *jag* 'I', is located in the Spec of C. Here, I leave aside all the discussions concerning the position of a subject in V2 languages. See, e.g. Zwart (1993), who claims that the subject in V2 languages moves to [Spec,TP], not to [Spec,CP].

In English, a type (1a) language, too, [Foc] (as well as φ-features and tense) is inherited by T, and R+v* moves to T; see (21a). But type (1a) languages only have the option to choose the copy of a verbal head in the v* head position to be pronounced for main verbs; [Foc] could not be phonetically embodied, contrary to type (1b-c) languages. Let us assume that in type (1a) languages such as English, *do* is inserted into T in morphophonology to phonetically embody [Foc], as illustrated in (21b).

(21) a. [$C_{\sout{[Foc,Tns,φ]}}$ [$_{α<φ,φ>}$ DP [speak(=R)+v*$_{\sout{[uTns]}}$+$T_{[Foc,Tns,φ]}$ [$_{β<v*>}$ ~~DP~~ speak(=R)+v*$_{\sout{[uTns]}}$
… [~~speak(=R)~~ …]]]]] (NS) (=19c)

b. [$C_{\sout{[Foc,Tns,φ]}}$ [$_{α<φ,φ>}$ DP [~~speak(=R)+v*~~$_{\sout{[uTns]}}$+$T_{[Foc,Tns,φ]}$ [$_{β<v*>}$ ~~DP~~ speak(=R)+v*$_{\sout{[uTns]}}$
do
… [~~speak(=R)~~ …]]]]] (PHON)

In negative constructions, a main verb moves across the negation both in type (1c) languages as illustrated by Swedish and in type (1b) languages as illustrated by French; see (22a-b).[36] In the same context, the Aux *do* is inserted above the negation *not*, and a main verb appears in the v* head position in English; see (22c).

(22) a. Jag talar inte franska. [Swe.]
I speak not French
'I don't speak French.'

b. Je ne parle pas le français. [Fre.]
I NE talk not the French
'I don't speak French.'

c. I do not (/don't) speak French. [Eng.]

It has been traditionally assumed that the structure of sentential negation contains the syntactic category of negation, *Neg* (Pollock 1989, Chomsky 1995, Haegeman 1995). Recently,

[36] Hereafter, I leave aside the syntactic status of the negative expletive *ne* in French. See Laka (1990) for a thorough investigation of negative constructions.

Holmberg (2016) has claimed that the negative construction contains, below CP, *PolP*, which is headed by a polarity feature, [Pol], below which NegP is located: [$_{CP}$ C [$_{PolP}$ Pol [$_{NegP}$ Neg …]]]. According to Holmberg, [Pol] is unvalued when it is merged; it is assigned a value by the negation in the course of the derivation.[37] Holmberg's claim suggests that the syntactic property of sentential negation is not inherently attributed to the negative functional head Neg, but to the polarity feature [Pol], with the negation itself simply determining the value of a sentence as negative. As we have seen so far, properties of a sentence such as question and focus are carried by a functional feature located in the CP domain. Based on Holmberg's intuition, but instead of building PolP, let us assume that [Pol] is located in C in negative constructions. They are declarative sentences and do not affect the Force of a sentence (cf. Rizzi 1997). Hence, in the same way as [Foc], there is no reason to think that [Pol] must stay in C in all languages. Let us assume that [Pol] located in C is inherited by T along with tense and φ-features in type (1a-b) languages, whereas tense and [Pol] remain in C with only φ-features inherited by T in type (1c) languages.[38]

Specifically, in type (1c) languages, R+v* directly moves to C, where [Pol] (and tense) is located; see (23a).[39] In type (1b) languages, R+v* moves to T, which inherits [Pol] (as well as φ-features and tense) from C; see (23b). In both type (1b-c) languages, the highest copy of the verbal head is chosen to be pronounced. As a result, the raised verbal head phonetically embodies [Pol].

(23) a. [DP tala(=R)+v*$_{[\sout{uTns}]}$+C$_{[Pol,Tns,\sout{\varphi}]}$ [$_{\alpha<\varphi,\varphi>}$ ~~DP~~ [T$_{[\varphi]}$ [inte [$_{\beta<v^*>}$ ~~DP~~ ~~tala(=R)+v*$_{[uTns]}$~~ … [~~tala(=R)~~ …]]]]]] (=22a)

[37] See Holmberg (2016) for the detailed mechanism of the valuation of [Pol].

[38] In the same way as in interrogative and emphatic constructions, no properties of negative constructions are attributed to a verbal head. It is not likely that a raised verbal head has an unvalued feature such as [uPol] related to negation.

[39] According to Zeijlstra (2004), it is different in different languages whether and which negative element is categorized as a head or a maximal projection. See Zeijlstra (2004) for much cross-linguistic data and his detailed analysis of the structure of negative constructions. In this paper, I deal with the negation simply as a sentential adverb, attaching it to a verbal projection. I do not assume NegP, due to which verb movement was claimed to violate the HMC (Chomsky 1995). As argued in section 3, the HMC does not exist as a consequence of this paper. R+v* moves to C/T, where [Tns] that can value [uTns] of v* is located. Even if we assume NegP in the structure of negative constructions, the Neg head position is not counted as a dropping site of verb movement.

b. [$C_{\sout{[Pol,Tns,φ]}}$ [$_{α<φ,φ>}$ DP [ne [parler(=R)+v*$_{\sout{[uTns]}}$+$T_{[Pol,Tns,φ]}$ [pas
[$_{β<v*>}$ \~~DP~~ \~~parler(=R)+v*$_{[uTns]}$~~ … [\~~parler(=R)~~ …]]]]]]] (=22b)

In English, a type (1a) language, too, [Pol] (as well as φ-features and tense) is inherited by T from C, and R+v* moves to T; see (24a). But type (1a) languages only have the option to choose the copy of a verbal head in the v* head position to be pronounced for main verbs; [Pol] could not be phonetically embodied, contrary to type (1b-c) languages. Let us assume that in type (1a) languages such as English, *do* is inserted into T in morphophonology to phonetically embody [Pol], as illustrated in (24b).

(24) a. [$C_{\sout{[Pol,Tns,φ]}}$ [$_{α<φ,φ>}$ DP [speak(=R)+v*$_{\sout{[uTns]}}$+$T_{[Pol,Tns,φ]}$ [not [$_{β<v*>}$ \~~DP~~ speak(=R)+v*$_{\sout{[uTns]}}$
… [\~~speak(=R)~~…]]]]]] (NS) (=22c)

b. [$C_{\sout{[Pol,Tns,φ]}}$ [$_{α<φ,φ>}$ DP [\~~speak(=R)+v*$_{\sout{[uTns]}}$~~+$T_{[Pol,Tns,φ]}$ [not [$_{β<v*>}$ \~~DP~~ speak(=R)+v*$_{\sout{[uTns]}}$
do
… [\~~speak(=R)~~ …]]]]]] (PHON)

The claim here is well tied up with Holmberg's (2016) system in which [Pol] is unvalued at the time of its Merge and valued by the negation in the course of the derivation: after feature valuation occurs between [Pol] and the negation, [Pol] is phonetically embodied by a raised verbal head/an inserted *do*. In addition, Holmberg's claim suggests that sentential negation is encoded by the chain composed of [Pol] and the negation that assigns a value to it.[40] Claimimg that a verbal head moves to the position where [Pol] is located, the raised verb does not move over the negation chain. This means that the raised verb can still be in the scope of sentential negation in the raised position.[41]

The claim here also accounts for the fact that contrary to negative constructions with *not*, *do* is not inserted into sentences that have other types of negative adverbs such as *never*:

[40] Thanks to Anders Holmberg (p.c.) for suggesting this point to me.

[41] In the same way, claiming that *do* is inserted into [Pol], *do* is not located over the negation chain and can be in the scope of sentential negation in the inserted position. For clarification, the raised verb moves across the negation word such as *inte* (23a) and *pas* (23b); the inserted *do* is located above *not* as illustrated in (24a-b). The point here is that the raised verb/the inserted *do* is not located over the chain composed of [Pol] and the negation.

e.g. *John never ate it* (cf. Bobaljik 2002). This type of construction does not contain [Pol] in C, which would be embodied by a verbal head. Instead, a negative adverb carries the focus of a sentence. The derivation of this construction proceeds in the same way as illustrated in (7a), in which the verbal head moves to T and its copy in the v* head position is chosen to be pronounced; a negative adverb will merge to a verbal projection in the course of the derivation.

With the claim that *do* is inserted to phonetically embody features such as [Q], [Foc] and [Pol], it is clear why *do* is inserted only in the limited contexts as illustrated in (15a-c), though this fact cannot be clarified in the traditional account of *do*-support that *do* is inserted to morphophonologically support tense and agreement. The reason why the inserted *do* carries tense and agreement results from the fact that *do* is inserted into the head where [Tns] and φ-features are located: in emphatic (21b) and negative (24b) constructions, *do* is inserted into T, where [Tns] and φ-features are located; in interrogative constructions (18b), *do* is inserted into C, to which (R+v*+)T, where [Tns] and φ-features are located, merges. The feature that the inserted *do* should embody is adjacent to [Tns] and φ-features in each of the constructions; all those features morphophonologically appear in the inserted *do*.[42]

5. Conclusion

In this paper, I have argued that verb movement should be derived in narrow syntax. The LA system (Chomsky 2013, 2015) allows movement to occur in narrow syntax without recourse to any movement-triggering features, contra Chomsky (2001, 2004, 2008). The constraint that movement can occur only when a new semantic effect occurs on a raised category in its raised position is no longer imposed on movement operations, contra Chomsky (2001). Thus, verb movement, which does not change a semantic interpretation in the unmarked case, should be able to occur in narrow syntax without recourse to any driving features. As we saw in the

[42] See, e.g. Embick and Noyer (2001), Bobaljik (2002) and Matushansky (2006), who claim that the features that are adjacent to each other can merge to each other. As illustrated in (22c), *do* can be attached to the negation and the latter is contracted, which results in *don't*. As illustrated in (24b), the head position into which *do* is inserted is adjacent to the negation. The contraction of a negation form is plausibly a matter of morphophonology.

Icelandic data, it is actually difficult to claim that verb movement occurs in phonology, contra Chomsky (2001). I have proposed to carry out verb movement in narrow syntax in terms of feature inheritance and copy deletion. In type (1a-b) languages, both φ-features and tense are inherited by T, to which R+v* moves, whereas in type (1c) languages, only φ-features are inherited by T with tense remaining in C, to which R+v* directly moves. [uTns] of v* is valued by [Tns] which is located in T in the former and in C in the latter. In all those languages, it is a matter of morphophonology which copy of a verbal head, the one in a higher position or the one in the v* head position, is chosen to be pronounced. I have also claimed that *do* is inserted in English to phonetically embody features such as [Q], [Foc] and [Pol]. They are adjacent to tense and φ-features in each of the relevant constructions, which accounts for why the inserted *do* carries tense and agreement as pointed out by the traditional literature.

Finally, I mention some of the theoretical consequences that arise by adopting feature inheritance.[43] As introduced in section 2, it was assumed in the *Principles and Parameters* theory (Chomsky 1981, 1986, 1995) that the semantic component is uniform for all languages, and that movement can occur either at narrow syntax or at the semantic component if the final semantic representation is the same. In *wh*-movement, for instance, a *wh*-phrase was assumed to move overtly in English but move covertly in Japanese. In this theory, the parametric difference between languages was accounted for in terms of at which level of representation movement occurs.[44] On the contrary, Chomsky (2001) claims that not only the semantic component but also narrow syntax should be uniform for all languages, with the surface difference between languages confined to morphophonology. Both in English and Japanese, a *wh*-phrase moves to the operator position in narrow syntax. The difference between them lies in which copy, the one in a higher position in the former or the one in the original position in the latter, is chosen to be pronounced. Thus, based on Chomsky (2001), the parametric

[43] This statement is inspired by two reviewers' comments for a former version of this paper. I thank them for giving me many insights. Special thanks to Anders Holmberg (p.c.) for giving me many insightful comments for this issue.

[44] It has long been argued in generative grammar that the parametric difference lies in the properties of functional categories of each language (Borer 1984). The difference in *wh*-movement between English and Japanese will be ultimately attributed to the property of the C head, to the Spec of which a *wh*-phrase moves.

difference between languages is accounted for in terms of copy deletion (cf. Groat and O'Neil 1996, Bobaljik 2002).[45]

The recent literature (Richards 2007, Chomsky 2008, Ouali 2008), and also this paper, adopt feature inheritance. In the argument here repeated in (25a-c), tense is inherited by T in type (1a-b) languages, whereas it remains in C in type (1c) languages; a verbal head moves to T in the former, whereas it moves to C in the latter; the copy of a verbal head in the highest position is chosen to be pronounced in type (1b-c) languages, whereas the copy of a verbal head in the v* head position is chosen to be pronounced in type (1a) languages:

(25) a. $[C_{\text{~~[Tns,φ]~~}}$ $[_{\alpha<\varphi,\varphi>}$ DP $[$~~kiss(=R)+v*$_{\text{[uTns]}}$~~$+T_{[\text{Tns},\varphi]}$ $[_{\beta<v^*>}$ ~~DP~~ kiss(=R)+v*$_{\text{~~[uTns]~~}}$
… [~~kiss(=R)~~ …]]]]] (=7a)

b. $[C_{\text{~~[Tns,φ]~~}}$ $[_{\alpha<\varphi,\varphi>}$ DP [embrasser(=R)+v*$_{\text{~~[uTns]~~}}$$+T_{[\text{Tns},\varphi]}$ $[_{\beta<v^*>}$ ~~DP embrasser(=R)+v*~~$_{\text{~~[uTns]~~}}$
… [~~embrasser(=R)~~ …]]]]] (=7b)

c. […kyssa(=R)+v*$_{\text{~~[uTns]~~}}$$+C_{[\text{Tns},\varphi]}$ $[_{\alpha<\varphi,\varphi>}$ DP $[T_{[\varphi]}$ $[_{\beta<v^*>}$ ~~DP kyssa(=R)+v*~~$_{\text{~~[uTns]~~}}$
… [~~kyssa(=R)~~ …]]]]] (=8)

Note that the loci of functional features are different between the languages above: [Tns] is located in C in type (1c) languages, whereas it is located in T in type (1a-b) languages. Thus, by adopting feature inheritance, the parametric difference between languages is accounted for not only in terms of copy deletion, but also in terms of the loci of functional features, i.e., in terms of which functional feature is located in which head position.[46]

That the loci of functional features can differ further indicates that a category can move to different syntactic positions between languages. That is, without assuming feature inheritance, a category moves to the same syntactic position in narrow syntax in all languages, as described by *wh*-movement based on Chomsky (2001). By adopting feature inheritance, however, a verbal head moves to T in type (1a-b) languages but moves to C in type (1c) languages, as illustrated by verb movement in (25a-c). Depending on the loci of functional

[45] Bobaljik (2002) proposes *Minimize Mismatch*, which states that the copy interpreted in the semantic component and the one pronounced in phonology should be the same.

[46] Which claim is in line with Miyagawa (2010, 2017).

features, narrow syntactic operations can differ between languages. Adopting feature inheritance thus leads to claiming that the parametric difference exists in narrow syntax,[47] and that narrow syntax is not uniform for all languages, contra Chomsky (2001).[48]

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[47] See a debate on this issue between Newmeyer (2004, 2006), and Roberts and Holmberg (2005) and Holmberg (2010).

[48] Which claim is in line with Obata et al. (2015) and implied by Miyagawa (2010, 2017) and Jiménez-Fernández and Miyagawa (2014).

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