

lexical heads and phrases, and the places each of these eventually occupy in the phonetic string, are made possible through a process of feature-valuation that each element must satisfy (Chomsky 2000, 2001 et seq.).

The analysis of V-to-T movement to be proposed differs from those in seminal works in the literature of the 1980s and 1990s –originally mainly on the diachronic front– according to which V-to-T movement is triggered by rich agreement or ϕ -features (that is, person and/or number features), and it also differs from more recent influential works that put the focus on tense or τ -features (that is, features like [+/-present]), rather than on ϕ -features, or on a combination of both. On a par with all cited approaches, the present analysis of V-to-T differs also from recent views in the minimalist literature that V-to-T should be treated e.g. as a phenomenon belonging to the phonological or PF component proper rather than to syntax proper.

In essence, I defend in this paper that V-to-T movement is a core syntax process and that the trigger of V-to-T lies in a specific type of morphological segment that is known in the traditional philological literature as *stem vowel* or *thematic vowel*, and that is the segment mediating in the verbal forms of some languages between the root on the one hand, and τ -features and ϕ -features on the other. The cited stem vowel is identified in the ensuing discussion as a feature of the T head itself, and it can actually be likened to the V-feature postulated in the minimalist literature of the first decade (Chomsky 1995). However it is crucially argued that the feature defended here correlates with rich morphology. More specifically, it is argued that the relevant feature is capable of having an impact on τ -features and/or ϕ -features across verb classes making up the paradigm of any given language, thereby making syntactic computation of verbal forms a relatively complex or long process. This way, richness of τ -features and/or ϕ -features is considered here to be an indispensable part in the equation of the phenomenon of V-to-T, but only insofar as such richness is available across a productive set of verb classes.

My aim is to explore an analysis that can account for the type of language described in (2), and that can further explain the diachronic dimension in (3), that is, the phenomenon of the loss of V-to-T affecting the Germanic family. Nevertheless, the diachronic issue, which is actually a controversial one given the existence of various different views in the recent literature, is still under research by the present author.

- (2) Languages *with rich ϕ -features in all tenses but no V-to-T*, as has been seriously suggested to be the case with German and also with Icelandic in the recent literature (Vikner 2001, 2005; Wiklund et al. 2007)
- (3) The assumption held by a large part of the literature that Germanic languages are V-moving languages in their old periods, and become V-in situ languages in their modern periods.

A proper account of V-to-T, then, requires answers to the puzzles in (2) and (3), and an explanation of the language-type in (4) below.

- (4) Languages *with poor φ -features but with V-to-T movement*, like the Swedish dialect of Kronoby, or the Norwegian dialect of TromsØ, or one of the two varieties of Faroese.

As observed above, the analysis proposed here claims that V-to-T is a core syntax process triggered by rich morphology in the way to be justified below – note for now the reference above to the so-called stem vowel, and the potential impact it can have systematically upon τ -features and/or φ -features. The present discussion thus rejects the theory that morphology is located exclusively at the PF component that is made active after core syntax, and relies instead on the idea that morphology can be part of core syntax generally speaking.

However, I also adopt the view that the relation between morphology and syntactic movement as regards the phenomenon of V-to-T is a one-way implication in the sense that rich morphology arguably implies V-to-T, but not the other way round: the language-type in (4) is actually one where V-to-T cannot possibly be the result of abundance or richness of morphological segments.

More specifically, the Scandinavian grammars described in (4) appear to be deviations or developments from a(n expected) pattern where lack of rich morphology is actually coupled with lack of V-to-T. The hypothesis that I would like to suggest here in an interim way and that I could possibly develop in future work is that the languages in question become V-moving languages once they cease to be V2 languages. If the configurationality parameter actually means for a (finite) verb to always move to a front position within sentence structure, then the fact that these languages are ceasing to be V2 languages –that is languages where the verb moves to C in a systematic way– could be the reason why they have incorporated the phenomenon of V-to-T movement. In effect, according to Kristin M. Eide (personal communication), these dialects are still V2 in declarative main clauses, but many are no longer V2 in interrogative main clauses. The existence of languages like those in (4) would then presumably not be associated with morphology but rather with the issue of the cross-linguistic choice between lexical T vs. lexical C.

The present paper is organised as follows. In Sections 2–2.2 I deal with previous approaches to V-to-T in the generative literature, from the times of Government and Binding (GB) theory till recent minimalist theory analyses, all of which are based on richness of φ -features and/or τ -features, or otherwise on strong/weak features irrespective of morphology, and I point out where, in my opinion, their explanations fall short. In Sections 3–3.1 I analyse what this morphological trigger to V-to-T is, first from a descriptive and cross-linguistic point of view and

then, in Section 3.1, from the point of view of syntactic theory. I propose that the cause or trigger of V-to-T lies in the richness of a so-called *v*-feature on T, which can in turn lead to richness of τ -features and/or ϕ -features of the verbal forms making up the paradigms in the languages in question. Section 4 is a summary of the discussion.

2. Approaches to V-to-T in the generative literature

The accounts of V-to-T previous to Chomsky (2000, 2001) rely heavily on agreement or ϕ -features as the cause of V-to-T, whereas such a view is called into question in Chomsky (2000, 2001) and in later minimalist works. In Section 2.1 I deal with the former and in Section 2.2 I focus on the latter.

2.1. Approaches to V-to-T before Chomsky (2000, 2001)

The seminal issue of verb movement to T(ense), or more properly in its origin to I(nflection), began with generative works like Emonds (1978), Roberts (1985), or Kosmeijer (1986), and also most importantly Pollock (1989), and it highlighted the fact that there are languages where the finite verb occupies the position before elements such as negation and also before certain adverbs like frequency adverbs in the phonetic string, whereas in others it is negation or the adverbs in question that precede the finite verb. More specifically, within the Indo-European family, Romance languages were analysed as V-moving languages generally speaking (see (1a) above) and Germanic languages, on the other hand, were analysed as ones where the finite verb stays put in situ within the VP, or more precisely in later minimalist accounts, on the little *v* head that takes VP as its complement (see (1b) above). Note the contrast between the English or Swedish sequences in (5) on the one hand and the Spanish and French sequences in (6) and (7) on the other: frequency adverbs and/or negation must be placed before the finite verb in the former, whereas it is the verb that precedes such elements in the latter. Nevertheless, it must be observed that for Germanic languages such as German or Icelandic to be analysed as V-in situ is a recent claim in the literature (see (2) above), since they have traditionally been considered to be V-moving languages.

- (5) a. John always goes to school / John does not love Mary
 b. om hom inte köpte boken¹
 whether she not bought book-the
 ‘whether she didn’t buy the book’
- (6) Juan va siempre al colegio²
 John goes always to-the school
 ‘John always goes to school’

- (7) Jean mange pas du chocolat
John eats not chocolate
'John doesn't eat chocolate'

On the other hand, highly-influential works mostly within the diachronic literature came to defend the theory that it is *rich morphology* that causes the raising of the verb to the T head (or, originally, the I head): see e.g. Roberts (1985, 1993), Platzack and Holmberg (1989), Rohrbacher (1994, 1999), Vikner (1997).

Pollock (1989) postulated the so-called *split-I analysis*, which establishes that IP consists of an Agr(ement)P projection on the one hand, and a T(ense)P projection on the other. This means that agreement or ϕ -features, that is, person and/or number features as exhibited by a finite verb, can be structurally differentiated from other features such as tense or τ -features. Most interestingly, those works mentioned above that analyse the raising of the verb to Inflection put the focus initially on agreement morphology proper, that is, on richness in person and/or number features of the languages under scrutiny. Quite soon, however, the need is felt to include in the specific empirical generalisations the type and/or number of *tenses* where such ϕ -morphology must show in order for V-to-T to apply. A widely-known example of this is Vikner (1997), who postulates the principle in (8) below.

- (8) V-to-T movement applies if and only if person morphology is found in all tenses
The above generalisation fails to account for the language-type in (4) above, though it is the language-type in (2), repeated below with the same numeration, that I think should be given full attention in order to tackle the core of the V-to-T phenomenon.

- (2) Languages *with rich ϕ -features in all tenses but no V-to-T*, as has been seriously suggested to be the case with German and also with Icelandic in the recent literature

In effect, Wiklund et al. (2007) suggest that Icelandic, which had traditionally been analysed as a V-to-T language, should rather be considered as a language lacking V-to-T, where all verb movement is to the CP domain. The arguments the authors provide to support their analysis rely, as described above in relation to GB theory, on the relative order of verbs and adverbs and/or negation. Their analysis concludes that the verb may precede adverbs and negation, which indicate that it has risen to C, or it may stay in situ, and follow adverbs and negation. Similarly, it is argued that the verb must follow adverbs and negation in Exceptional Case-Marking Structures, which is a type of structure containing IP but no CP. Analysing the argumentation in Wiklund et al. (2007) is actually out of the scope of this paper, and I restrict myself here to assuming the theory or hypothesis proposed –the reader is referred to the work itself for the full discussion and for relevant illustrations.

As regards German, which has been at the centre of the V-in situ vs. V-moving dispute for some decades, Vikner (2001, 2005) contends that the clause-final position of finite verbs in embedded clauses of this asymmetric V2 language – which is actually V2 in main clauses and SOV in embedded clauses– is the same position that non-finite verbs have in all clauses, and he further observes that the relevant position is below the I head, which should mean that German lacks V-to-I.

Assuming therefore the statement in (2), and turning to the major claim that I would like to make in this paper, the concept of rich morphology that is needed to explain the V-to-T phenomenon is actually not the one contained in (8). Before introducing the relevant proposal in Section 3, and before dealing with the recent minimalist literature on V-to-T in Section 2.2 below, I must first refer to Bobaljik and Thráinsson (1998), who offer an articulation of (8) above in structural terms.

Bobaljik and Thráinsson (1998) make use of a split IP, that is, the type of hierarchical construct postulated in Pollock (1989) and consisting of an AgrP and a TP, at a time when minimalist theory already postulates that a TP projection is enough to check both its own features and also those previously attributed to AgrP. Bobaljik and Thráinsson nevertheless make use of both an AgrP and a TP in order to argue that the trigger of V-to-T can actually be for agreement features to work independently of tense features. More specifically, the authors postulate that a language where the finite verb moves to Inflection is a language projecting an AgrP on top of a TP, given that the verb has no possibility of checking its ϕ -features against Agr other than raising first to T –see the simplified structure in (9a) below. By contrast, V –or rather *v* in more modern terms – is in the position of sister or complement to I in a language where I consists of just one projection, with the result that V does not have to move to I and can check all its inflectional features while staying put in the V, or rather *v* head –see (9b).

- (9) a. [_{AgrP} [Agr] [_{TP} [T] [_{VP} [V...]]]]
 b. [_{IP} [I] [_{VP} [V...]]]

Bobaljik and Thráinsson (1998) aim to account for the language-type depicted in (2) by using one of the two varieties of Faroese, specifically the non-V-moving variety, rather than German or Icelandic: the authors argue that a language with rich morphology but no V-to-T is a language with a split IP which nevertheless does not exploit its potential for verb movement. The solution that the authors give to the language-type in question (that is, a language with rich morphology but no V-to-T) does not seem to clarify the matter enough. As described above, their idea is that it is a split IP that makes V-to-T possible, but that a language with a split IP may decide whether to apply V-to-T or not. A key point in their analysis is the assumption that morphology is not the trigger of syntax: but, as just observed, the authors ultimately base the availability of a split IP on rich

morphology. All in all, why a language with a split IP should fail to exhibit V-to-T is left unexplained in their account: they just say that such a language would simply not make use of its potential for verb movement.

Despite the cited weakness of Bobaljik and Thráinsson's analysis, I would like to acknowledge the importance of their observation that in some languages agreement markers and tense markers are in complementary distribution, whereas in other languages both agreement and tense markers co-occur (overtly) with the root. In effect, in a language like English the root is never increased by more than one segment *-/s/* for the 3rd psn sg in the present, and */d/* for all persons in the past—whereas in German or Icelandic the segment corresponding to agreement co-exists for several persons side by side with the segment corresponding to tense: note (10) below as contrasted with (11). My claim in this paper is that there is a further complication regarding verbal morphology which is to be considered as the trigger of V-to-T movement and which cannot be identified just with (overt) occurrence of agreement markers and tense markers. I justify the existence of such complex morphology in Section 3, though I would like to observe now that it is not found in any of the languages in (10)–(11) below. Incidentally, reference to the plausible existence of zero morphological markers or segments for the forms in (10) and above all (11), which could lead to a different division to the one signalled below, is to be found in Section 3 in connection with Spanish paradigms.

(10) English - Indicative mood

	call	
	Present	Past
1 psn sg	call	call-ed
2 psn sg	call	call-ed
3 psn sg	call-s	call-ed
1 psn pl	call	call-ed
2 psn pl	call	call-ed
3 psn pl	call	call-ed

(11) a. German - Indicative mood

	kaufen 'to buy'	
	Present	Past
1 psn sg	kauf-e	kauf-t-e
2 psn sg	kauf-st	kauf-t-est
3 psn sg	kauf-t	kauf-t-e
1 psn pl	kauf-ten	kauf-t-en
2 psn pl	kauf-t	kauf-t-et
3 psn pl	kauf-en	kauf-t-en

b. Icelandic - Indicative mood

	kasta 'to throw'	
	Present	Past
1 psn sg	kasta	kasta-ði
2 psn sg	kasta-r	kasta-ði-r
3 psn sg	kasta-r	kasta-ði
1 psn pl	kōst-um	kōstu-ðu-m
2 psn pl	kast-ið	kōstu-ðu-ð
3 psn pl	kast-a	kōstu-ðu

2.2. The view on V-to-T in Chomsky (2000, 2001) and after

The minimalist framework of Chomsky (2000, 2001) is fully relevant for syntactic theory because of the new so-called *Agree/Move* mechanism between a probe and a goal. As regards the V-to-T phenomenon, no completely satisfactory account has so far appeared, since, on the one hand, Chomsky resorts to a V-feature on T unrelated to morphology, as in Chomsky (1995) and, on the other hand, Chomsky (2001) contains a proposal to eliminate head movement, that is the type of movement that V-to-T is typically identified with, from core or narrow syntax altogether.

2.2.1. Chomsky (2000, 2001) and Pesetsky and Torrego (2001, 2004)

The most relevant aspects of Chomsky (2000, 2001) that have a bearing on V-to-T are shown in (12) in schematic form, followed by a more elaborate description.

(12) Chomsky (2000, 2001)

- a. derivations proceed through Agree and/or Move between a probe and a goal
- b. a distinction is established between valued vs. unvalued features and interpretable vs. uninterpretable features, the relevant connection between these being captured in the biconditional in (c) immediately below:
- c. a feature is uninterpretable if it is unvalued
- d. the probe must have unvalued features (and therefore uninterpretable ones)
- e. the probe attracts the goal, that is, Move applies if the probe has an EPP-property

Specifically on the trigger of V-to-T:

- f. ϕ -features are no longer analysed as the cause of V-to-T
- g. the cause of V-to-T is a V-feature on T, which can be strong or weak: for it to be strong means that T's V-feature has an EPP-property
- h. T probes DP and values its ϕ -features while DP values its Case-feature; then, T probes ν and values its V-feature while ν values its ϕ -features
- i. also, ν has τ -features to value against T, and T has a D-feature to value against DP

Chomsky (2000, 2001) introduces a new minimalist framework, which has of course become by now a seminal one, where derivations proceed through the operations *Agree* and *Move*, and where a distinction is made between *valued* vs. *unvalued features* on the one hand, and *interpretable* vs. *uninterpretable features* on the other. In addition to the semantically-based distinction between interpretable

vs uninterpretable, which was established in Chomsky (1995), and which refers to the capacity of a feature to contribute some kind of meaning to the lexical item it appears on, and eventually to the sentence or proposition as a whole, Chomsky (2000, 2001) argues that a distinction between valued and unvalued feature is also necessary. Certain features come fully valued on certain elements from the Lexicon, that is, the elements themselves have all syntactic properties already specified from the Lexicon, while other features receive their value during the derivation.

Agree means that an element acting as a *probe* searches for a *goal*, which the probe must c-command, in order to value corresponding features: feature valuation can take place without resort to movement, the latter (that is, *Move*) applying only when there is additionally an EPP feature or EPP property involved on the part of the probe.

Crucially, Chomsky (2001: 5) couples together the properties of feature interpretability and feature valuation by positing that a feature is uninterpretable if and only if it is also an unvalued feature (see (12c) above). This way, valued features in Chomsky (2001) are taken to be interpretable features and, similarly, unvalued features are analysed as being intrinsically uninterpretable features.

Regarding V-to-T movement, it must be observed that ϕ -features were not analysed any longer in Chomsky (1995) as the cause or trigger of V-to-T (as they were in previous generative analyses of the 1980's and part of the 1990s), a trend that is continued in Chomsky (2000, 2001). In the wake of Chomsky (1995), then, the *Agree* framework of Chomsky (2000, 2001) similarly postulates that V-to-T is caused by a V-feature that T must value against *v*. The *Agree* relation that is invoked to apply between T and *v* is one through which *v* values its ϕ -features against T (once T has learnt such ϕ -features from DP) and T values a V-feature against *v*.

In a crucial distinction, T's V-feature is considered to be either *strong* or *weak*, though such a distinction is strongly speculative in the sense that it is not made to correlate with any type of abundant or scarce morphology. It is so postulated that, if T's V-feature is strong, then movement of V to T applies in core syntax; by contrast, if T's V-feature is weak, then some type of affix-hopping process takes place in the PF component.

Pesetsky and Torrego's (2001, 2004a, 2004b/2007) approach keeps to the troublesome idea of early generative theory that ϕ -features are the cause of V-to-T, though they do so in an indirect way, as described below. Also, and very importantly, Pesetsky and Torrego postulate that T itself has its own τ -features to value.

(13) Pesetsky and Torrego (2001, 2004a, 2004b/2007)

- a. feature interpretability and feature valuation are independent of each other
- b. T has unvalued (though interpretable) τ -features

- c. for any given derivation, T probes DP in order to value the τ -features as mentioned in (b) immediately above
- d. in the relevant Agree relation between T and DP, DP gets its own τ -features valued, which are to be identified with a Case-feature on DP
- e. also in the Agree relation between T and DP, T values its ϕ -features against DP
- f. after the Agree relation between T and DP, the τ -features on T are still unvalued, and so T probes next for ν , and values the cited τ -features

Pesetsky and Torrego (2004b/2007) propose to reject the biconditional established in Chomsky (2001) between valuation of features and their interpretability (see (12c) above), thus defending the view that each of the two properties actually works independently of the other (13a). In Pesetsky and Torrego's framework, features that are interpretable can at the same time be unvalued features, and such is precisely the case with the τ -features on T. In a framework like Chomsky (2000, 2001), T's τ -features are unable to drive the probe of T in V-to-T movement, since such features are analysed (in Chomsky (2000, 2001)) as interpretable, and therefore as valued features. Hence, Chomsky argues for a strong/weak V-feature on T – which is incidentally the type of feature that will be used in the present proposal. By analysing T's τ -features as interpretable but unvalued (13b), Pesetsky and Torrego indeed open up the possibility that T's τ -features act as a probe for ν , a theory which is actually endorsed in the more recent analysis of Biberauer and Roberts (2008/2010) (Section 2.2.2 immediately below).

38

However, Pesetsky and Torrego (2004b/2007) do not use T's τ -features to support the phenomenon of V-to-T movement: as noted above, their discussion appears to imply that V-to-T is due to the strength of ϕ -features that ν values against T once T probes for ν in order to value the above-mentioned τ -features (13e–f). Thus, Pesetsky and Torrego do make use of the generalised though troublesome idea present in syntactic theory from the GB period onwards that V-to-T relies on ϕ -features, though they do so indirectly.

The present proposal –to be expounded in Section 3– does not agree specifically with τ -features being the trigger of V-to-T but defends instead, as suggested above, a V-feature on T (similar to that in Chomsky 2000, 2001). However, the present account welcomes indeed the distinction made by Pesetsky and Torrego between feature valuation on the one hand and feature interpretability on the other.

Before putting an end to the present Section, it must be observed that, independently of the account of V-to-T endorsed in Chomsky (2000, 2001) from Chomsky (1995), Chomsky (2001) postulates the theory that head movement (and therefore V-to-T movement) is very plausibly not a core syntax process, but one that must be analysed as belonging to the Phonological component of the

grammar. Chomsky's rejection of head movement as a core syntax mechanism is based on multiple problems related to structural relations such as c-command, the Extension Condition, or also the so-called *trigger problem*.

2.2.2. The τ -feature *analysis* of Biberauer and Roberts (2008/2010)

Biberauer and Roberts (2008/2010) is a recent analysis of the V-to-T phenomenon that shares the idea already expounded in Chomsky (2001) that head movement cannot be sustained as a core syntax process. Though Biberauer and Roberts actually treat rich morphology in verb movement of Romance languages as playing a central role in the syntax, they manage to stick to the rejection of head movement as a core syntax process by arguing that V-to-T (in Romance languages) is actually not an instance of a head moving to another head T, but rather a compound [V+T] determining the formation of TP itself by way of movement (see immediately below).

Biberauer and Roberts (2008/2010) begin their analysis with a kind of observation that is assumed in this paper in a straightforward way, that the V-to-T vs. V-in situ parameter largely correlates with the division between Romance languages on the one hand (which are typically V-moving languages) and Germanic languages on the other (which are in general V-in situ languages). The authors' approach to V-to-T is based on richness of tense or τ -features, which means that both the analysis of Biberauer and Roberts' and the one proposed in this paper owe a lot to Pesetsky and Torrego's original suggestion that features on T itself, not to be identified with ϕ -features proper, can actually drive a derivation. Nevertheless, the present proposal departs from that of Biberauer and Roberts in the specific type of feature that is held responsible for V-to-T.

Specifically, the authors focus on the fact that verbal tensed forms are richer in Romance languages than in Germanic languages in the sense of there being a much higher number of synthetic tenses in Romance as compared to Germanic, and go on to argue that in V-moving languages – as should be the case with Romance languages – verbal forms constitute a morpho-phonological compound [V+T] already at the Lexicon/Numeration, due precisely to the richness of synthetic tensed forms. Given that the authors assume that morphology belongs as a rule to the PF component, they propose that T behaves in an exceptional way in V-moving languages by valuing its τ -features against V in core syntax (that is, before the activation of PF) while being at the same time part of the relevant morpho-phonological compound already built up in the Lexicon. As for T and V in V-in situ languages, these are separate lexical items on their approach, and T values the corresponding τ -features against V in core syntax just through *Agree* (without any resort to *Move*) since, as just mentioned, morphology plays no role at

this stage, but belongs genuinely later, within the PF component, according to the authors' theoretical tenets.

In this way, Biberauer and Roberts' account relies in the first place on morphology behaving differently in relation to syntax in languages with rich synthetic tenses as compared with languages without: in the former, verbal forms come inflected from the Lexicon and features are satisfied in core syntax through *Agree* and *Move*; in the latter, verbal forms do not come inflected from the Lexicon and features are satisfied in core syntax just through *Agree*, morphology being part exclusively of the PF component. According to the account to be defended here, in Section 3 below, morphology is part of the Lexicon in both V-moving and V-in situ languages, since all verbal forms come inflected from the Lexicon: subsequently, depending on the morphological richness of certain features that T must satisfy (to be specified in Section 3), morphology either triggers V-to-T or else lets the verb stay in situ.

Very importantly, the concept of complex morphology that Biberauer and Roberts defend –namely, one based on the number of synthetic tenses– does not appear to account in a neat way for the diachronic facts described in (3), but this is an issue that belongs to work in preparation by the present author.

40

3. The present proposal on the morphological trigger of V-to-T

As stated in Section 1 above, the goal of the present discussion is to account for the phenomenon of V-to-T with reference to the existence of languages like those mentioned in (2).

- (2) Languages *with rich ϕ -features in all tenses but no V-to-T*, as has been seriously suggested to be the case with German and also with Icelandic in the recent literature

The relevance of (2) lies in the fact that the generative literature of the last decades, starting mainly with the GB tradition, has very often put the focus precisely on richness of ϕ -features, either alone or in combination with τ -features. Later, within the minimalist framework, there has been a strong tendency towards rejecting the morphology of V-to-T as a core syntax process in various guises: either through claiming that V-to-T is triggered by a V-feature of T, or by e.g. postulating that V-to-T is a PF-phenomenon,... (see Sections 2.2–2.2.2 above).

The plausible existence of languages like (2) poses a serious problem for an analysis of V-to-T in terms of *gross* morphological abundance of ϕ -features and/or τ -features. I would like to argue that V-to-T indeed has a morphological trigger that is part of core syntax proper and that is closely connected with morphological

richness of τ -features and also of φ -features, though the morphological trigger in question lies in a kind of complexity that has as yet, or so it seems to me, not been given due attention.

Two specific analyses within the recent literature have been criticised in the preceding Sections in relation to V-to-T, namely Bobaljik and Thráinsson (1998) and Biberauer and Roberts (2008/2010), and the two use morphology only partially and arguably in a non-satisfactory way. Indeed, (2) is a problem for the analysis of Bobaljik and Thráinsson (1998), since the authors analyse a language like Icelandic as a V-moving language, because of the distinction it is possible to make in the language between φ -features on the one hand and τ -features on the other, which correlates, in the authors' approach, with a split IP in the syntax of Icelandic. In addition, Bobaljik and Thráinsson argue that languages with a split IP, and therefore with the cited distinction between φ -features and τ -features, may decide not to apply V-to-T. Bobaljik and Thráinsson's analysis therefore lacks explanatory power given that it does not offer any account as to why a language should apply no V-to-T despite exhibiting rich verbal morphology.

As for Biberauer and Roberts (2008/2010), their account relies on the higher number of synthetic tenses in V-moving languages when compared with V-in-situ languages –which would fit in principle with German or Icelandic not being V-to-T, as stated in (2), since these languages have just a (synthetic) present tense and a past. However, the authors' approach consists in positing that, just because of the above-mentioned higher number of tenses, morphology works differently with respect to core syntax in V-moving languages than in V-in-situ languages. It would seem to me that the type of morphological richness that lies at the core of V-to-T must be one that affects the *inner structure* of verbal paradigms (in the way to be explained below) and not one based on just how many tenses can be found within verbal paradigms. In the analysis to be proposed immediately below, the connection between morphology and core syntax is the same for both V-moving and V-in situ languages.

I make the claim in this paper that the concept of rich morphology that is needed to explain the V-to-T phenomenon is one that relies on the existence of *productive verb classes* across the verbal paradigms of a language as caused by the so-called *thematic* or *stem vowel*.

I would like to argue that in order to explain V-to-T, a concept of *verb class* is needed that emerges from the availability of *distinct stem vowels* in the verbal paradigms of languages, which have the property of differentiating *sets of verbs for the various tense slots and the various person and/or number slots within each tense*. In order to explain the relevant concept, I will use the simplified structure in (14) as representative of the morphological build-up of a verbal form.

16)	a. Icelandic – Indicative mood		b. Icelandic – Indicative mood	
	kasta ‘to throw’		beina ‘to direct, aim’	
		Present Past		Present Past
	1 psn sg	kasta kastaði	beina	beindi
	2 psn sg	kastar kastaðir	beinir	beindir
	3 psn sg	kastar kastaði	beinir	beindi
	1 psn pl	kōstum kōstuðum	beinum	beindum
	2 psn pl	kastið kōstuðuð	beinið	beinduð
	3 psn pl	kasta kōstuðu	beina	beindu

In addition to the fact that the verbs in a language like (Modern) German cannot be said to be grouped in any systematic way into stem classes, the crucial aspect to highlight in relation to the German paradigms and the Icelandic paradigms in (15a) vs. (15b) and (16a) vs. (16b), respectively, is that the observed differences (that is, vowel mutation in 2nd and 3rd psn sg in (15b), or back vs. front stem vowel in (16)) do not have an effect upon the endings for the various person slots: all endings are identical, except for the allomorphic variation /ð/-/d/ in the past of (16a) vs. (16b). Consequently, learning what the pattern is for one verb in these languages appears to be enough to conjugate the vast majority of verbs.

43

In contrast with German and Icelandic, the verbal paradigms of such languages as Spanish, Portuguese, or Italian, that is, languages that are unambiguously characterised as V-moving languages, are ones where a change in the stem vowel results in uniform alterations of tense and/or agreement endings throughout the whole paradigm. Now, such morphological complication, which is shown in (17a) below for the three classes of (regular) verbs in Spanish, namely the *-ar* class, the *-er* class and the *-ir* class, and in (17b) for the *-are*, *-ere*, and *-ire* class in Italian, is significantly absent from the verbal paradigms of German or Icelandic, and of course from those of English: it is my contention that this kind of morphological alteration is the cause of the V-to-T phenomenon. For reasons of space, only three tenses are illustrated.

(17)	a. Spanish – Indicative mood		
	cantar ‘to sing’ (<i>-ar</i> class)		
		Present Past	Imperfect
	1 psn sg	canto canté	cantaba
	2 psn sg	cantas cantaste	cantabas
	3 psn sg	canta cantó	cantaba
	1 psn pl	cantamos cantamos	cantábamos
	2 psn pl	cantáis cantasteis	cantabais
	3 psn pl	cantan cantaron	cantaban

	temer 'to fear' (-er class)		
	Present	Past	Imperfect
1 psn sg	temo	temí	temía
2 psn sg	temes	temiste	temías
3 psn sg	teme	temió	temía
1 psn pl	tememos	temimos	temíamos
2 psn pl	teméis	temisteis	temíais
3 psn pl	temen	temieron	temían

	partir 'to break, cut' (-ir class)		
	Present	Past	Imperfect
1 psn sg	parto	partí	partía
2 psn sg	partes	partiste	partías
3 psn sg	parte	partió	partía
1 psn pl	partimos	partimos	partíamos
2 psn pl	partís	partisteis	partíais
3 psn pl	parten	partieron	partían

44

b. Italian – Indicative mood

	amare 'to love' (-are class)		
	Present	Past	Imperfect
1 psn sg	amo	amai	amavo
2 psn sg	ami	amasti	amavi
3 psn sg	ama	amó	amava
1 psn pl	amiamo	amammo	amavamo
(...)			

	temere 'to fear' (-ere class)		
	Present	Past	Imperfect
1 psn sg	temo	temei/temetti	temevo
2 psn sg	temi	temesti	temevi
3 psn sg	teme	temé/temette	temeva
1 psn pl	temiamo	tememmo	temevamo
(...)		temettero	

	capire 'to understand' (-ire class)		
	Present	Past	Imperfect
1 psn sg	capisco	capii	capivo
2 psn sg	capisci	capisti	capivi
3 psn sg	capisce	capi	capiva
1 psn pl	capiamo	capimmo	capivamo
(...)			

As just suggested, if the material in (17) above is compared to that in (15) or (16), we will see that the endings for all persons in the present and/or past tenses are the same in (15) and (16), irrespective of whether it is one verb class or another, a situation that is not to be found in (17). In Spanish (17a), not only does the stem vowel change e.g. from /a/ to /e/ in the present tense for verbs in /ar/ or /er/ respectively, as could be expected. In addition, the stem vowel in the simple past for the /er/ class is /i/ while the corresponding stem vowel for the /ar/ class varies for each person (*canté, cantaste, cantó, cantamos*, etc.); or also the imperfect for the /ar/ class features a bilabial plosive (*cantaba*,...), which is not the case at all for the /er/ or the /ir/ class; or also, the /ir/ class coincides with the /er/ class in the vocalism for all persons in the simple past and imperfect but not so in the present –note the form *partimos* ‘we cut’ vs. *tememos* ‘we fear’, or *partís* ‘you cut’ vs. *teméis* ‘you fear’.

Though in German or Icelandic knowing the pattern for one verb may entail knowing the pattern for most verbs, in a language like Spanish or Italian (or also Portuguese, French,...) it is necessary to know the pattern for *each verb class* featuring a *distinct stem vowel*. The hypothesis proposed here is thus for the computation of features of verbal forms to be more complex or to take longer in Spanish, Italian, or Portuguese than in German, Icelandic, Norwegian or English. The relevant process of computation is described in Section 3.1 below.

It must be observed that no morpheme segmentation has been applied to the forms in (17) above as has been the case of (14). Similarly, the segmentation marking the paradigms in (10) and (11) above must be understood in an informal way. This is due to the fact that so-called zero or covert markers or exponents should probably have to be identified for several forms of verbal paradigms, which is outside the scope of this paper, since it would at the very least entail assuming and/or rejecting a specific framework within morphological theory. Regarding Spanish, the reader is referred to a recent comprehensive philological work, namely Real Academia Española (2009: 185ff.), where various possible segmentations for a form like e.g. *canto* ‘I sing’ or one like *cantábamos* ‘we used to sing’ are suggested, with or without zero morphemes, and with or without so-called morpheme-fusion. The purpose of (17) is just to illustrate the co-variation in morphological segments that can be found in just three of the tenses of the verbal paradigms of two Romance languages such as Spanish or Italian, and to be able to emphasise the much higher degree of morphological complexity in these as compared to the verbal paradigms of German or Icelandic, let alone those of English.

One further aspect that must be highlighted is that the concept of verb class that is considered here to be key for V-to-T movement relies on the set of *regular verbs*. Thus, all languages cited, both of the V-moving and the V-in-situ type, contain

paradigms of irregular verbs or strong verbs, in various different guises –in fact, the German verbs in (15b) are of the irregular type. The idea that is endorsed in the present discussion is for a language to be set for the V-moving or otherwise V-in situ parameter by attending to the morphological complexity of its regular class verbs. Though of course the phenomenon of *ablaut* or root vowel alternation clearly deserves deep reflection in this respect, it will be enough for me to suggest in this paper that regular verbs are ones that arguably set the line for the morphological process of computation taking place in core or narrow syntax, whereas irregular verbs would lend themselves to the same process of V-to-T (or lack of V-to-T) as applied to regular verbs. In other words, it should be the class of regular verbs proper that set the line for the V-to-T movement parameter.

The analysis of V-to-T suggested in this Section would correspond roughly to the description below:

- (18) V-to-T is triggered by some kind of feature in the form of a thematic or stem vowel that results in the availability of productive verb-stem classes

I will proceed presently to the identification of the cited syntactic feature in minimalist terms.

46

3.1. On the unvalued and interpretable *v*-feature on T

The actual theoretical explanation of V-to-T that I would like to propose assumes the following basic aspects of the description of Chomsky (2000, 2001) and of Pesetsky and Torrego (2001, 2004a, 2004b/2007) as provided in Section 2.2.1 above:

- (19) a. feature interpretability and feature valuation are independent of each other (as in P&T)
b. *v* has τ -features (as in Chomsky and P&T) which are valued but that must be interpreted against T (as in P&T)
c. T has interpretable τ -features to value against *v* (as in P&T)
d. T has a D-feature to value against DP (as in Chomsky and also P&T)

Now, I would like to argue specifically that:

- (20) the cause of V-to-T is an interpretable though unvalued *v*-feature on T that T must value against *v* in order to be able to value its τ -features against the same head *v*

I would like to observe that the account of V-to-T that is defended here makes use of Pesetsky and Torrego's (2004b/2007) theory that T's τ -features are unvalued though interpretable –the syntactic locus where these can possibly get valued being naturally on the *v* head. My aim is to argue for a similar characterisation for what I would like to propose is the actual trigger of V-to-T, namely a *v*-feature on T, which

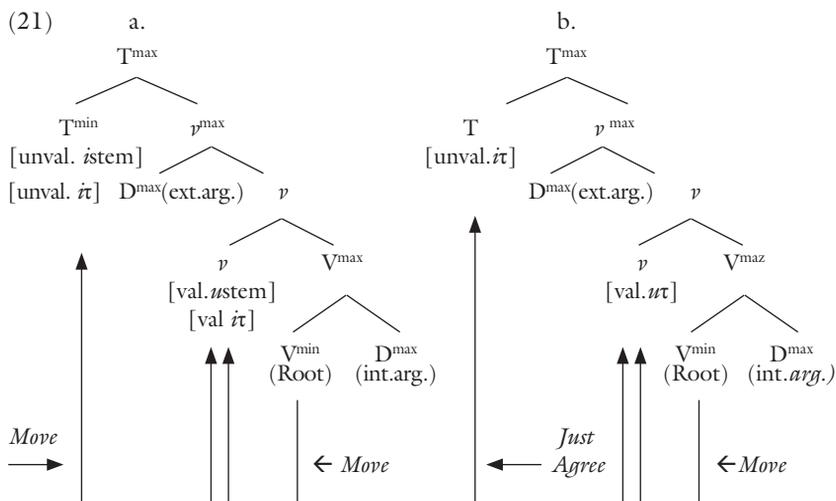
is greatly inspired by the V-feature on T postulated in Chomsky (1995) and also later in Chomsky (2000, 2001). In an important way, T's V-feature is not associated in the cited frameworks with any kind of morphological richness, which contrasts radically with the account proposed here. Further, the present account uses the label *v* in particular, since it identifies the verbal element in question with the head of the functional projection *v*P, rather than with the lexical base merged at V.

The fact that the *v*-feature on T is unvalued on T itself means that T must learn its value from the value *v* brings with it from the Lexicon. While being an unvalued feature on T, the *v*-feature in question is interpretable on this very head, and also on *v*, a claim that I would like to base on the fact that this kind of feature would appear to be historically associated with *aspectual* distinctions relative to the type of Event that is described by *v*P. Aside from the fact that both T and *v* are functional heads, there exists also a close semantic link between the two, since T represents the Time of an Event, and *v*P represents, as just mentioned, the Event itself.

The *v*-feature that T must value (against *v* itself) can vary in morphological richness depending on the availability in the verbal paradigm of the language in question of a stem vowel morpheme, and on how productive this is, as discussed in the Section immediately above. In particular, T's *v*-feature takes the form of a stem-vowel. I would thus like to make the claim that, in V-moving languages, the valuing of T's *v*-feature (which arguably applies just before the valuing of T's τ -features in the sequence of computation) entails the identification of the verb class that the verbal form in the sentence in question belongs to. By contrast, in case there is no such stem-vowel (as would be the case in e.g. English), or if this is not productive in the sense that it does not correlate in a systematic way with distinct verb classes (as has been argued in Section 3 immediately above to be the case in German or Icelandic), then the corresponding *v*-feature is valued (again before the valuing of τ -features) with the verbal form in question staying put in *v*, that is without any V-to-T movement.

The present account of V-to-T thus contends that the syntactic computation of verbal forms, that is, the process that takes place at core or narrow syntax, is sensitive to the number of morphemes or overt segments that make up the verbal forms in question. It makes the claim that there is one type of segment –the so-called stem vowel– that is identified here as a *v*-feature on T– that can actually make syntactic computation of the overall verbal form a complex or long process, specifically a process that involves the movement of V to T. The length or complexity of the process itself would be due to the speaker having to identify the specific verb class of the form he/she is computing in his/her mind/brain as compared to the other verb classes making up the overall verbal paradigm of the language in question.

The tree-diagram in (21) below shows the process of V-to-T as postulated in this paper, whereas (22) would correspond to a finite verbal form that remains in situ.



48

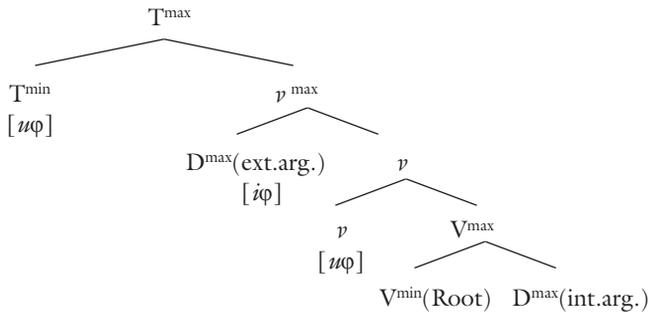
The feature that figures in both (21) and (22) as [unval.*iv*] just below the T head and as [val.*iv*] below *v* is actually the one argued here to be key for V-to-T, namely T's *v*-feature. As suggested, such a feature would be computed before T's τ -feature, that is the one figuring [unval.*ít*] under T, and as [val.*úτ*] under *v*. While the arrow indicating the movement of the verb from V into the little *v* head is the same in both (21) and (22), the second arrow, that is the one indicating the *Agree* relation between T and the little *v* head, includes the operation *Move* only for (21) but not for (22).

The licensing of ϕ -features is of course a crucial part in the computation of a finite verb, though an analysis of these is not indispensable in order to account for V-to-T movement. Actually, a detailed analysis of the failure of the theory of richness in ϕ -feature agreement as the cause of V-to-T has been offered in preceding Sections of the paper.

As described in Section 2.2.1, Chomsky (2000, 2001 et seq.) postulates that ϕ -features are valued by T against DP and are subsequently valued by *v* on its *Agree* relation with T, a view that is generally endorsed by other authors, among these Pesetstky and Torregó (2001, 2004a,...), who nevertheless explain Case in different ways than Chomsky's own view. For reasons of space, a detailed account

of the ordering of computation of φ -features with respect to τ -features must be left out of the scope of the present paper. The cited standard analysis of φ -feature agreement is shown in the tree-diagram in (23) below, which, as just observed, can actually be incorporated as such into the tree-diagrams in (21) and (22).

(23) Valuation of φ -features as in Chomsky (2000, 2001), or also in P&T



4. Summary of the discussion

I have argued in this paper that V-to-T movement is the result of the licensing of an unvalued though interpretable ν -feature on T that T must value against ν in core or narrow syntax, and that is associated with rich morphology in the form of a productive stem vowel. The displacement of ν to T takes place whenever the cited stem vowel morpheme, which, as just noted, is the morphological realisation of T's ν -feature, results in productive stem verb classes, and it arguably correlates with a longer or more complex process of computation of verbal forms in the mind/brain of speakers (of V-moving languages as opposed to those of V-in situ languages). The very plausible existence of languages with rich φ -features in all tenses but no V-to-T has been taken as the centre of the critique of analyses where mere richness of φ -features and/or τ -features are taken as the cause of V-to-T. In the present approach, rich τ - and φ -morphology is an integral part of the phenomenon of V-to-T, but only in so far as such morphology is a consequence of the occurrence of distinct stem vowels, which serve as the basis for the grouping of the verbs of the language in question into any given number of classes.

The theory or idea that T has a feature which is interpretable on T but unvalued on T itself is based on Pesetsky and Torrego's (2004b/2007) rejection of Chomsky's (2000, 2001) biconditional. Given that T c-selects νP , the relevant feature has been labeled as a ν -feature.

A specific approach to V-to-T like Bobaljik and Thráinsson (1998) has been criticised in this paper on the grounds that the authors argue that morphology cannot be the trigger of syntax, which explains, in the authors' view, why it is not possible to explain why some languages with a split IP do not exhibit V-to-T, as opposed to other languages. However, it must be emphasised that Bobaljik and Thráinsson do base the existence of a split IP on rich morphology. By contrast with Bobaljik and Thráinsson's account, the analysis proposed in the present paper defends rich morphology as the trigger of V-to-T in a systematic way.

As for Biberauer and Roberts (2008/2010), the authors argue that morphology is part of core syntax only for V-moving languages but not for V-in situ languages, since they seek the trigger of V-to-T in the number of synthetic tenses (as opposed to periphrastic tenses) for any given language. On the account proposed here, the trigger of V-to-T is to be sought in the inner build-up of verbal paradigms.

Notes

50

¹. The Swedish example is of an embedded clause since main clauses are typically V2 in this language, and therefore whether V-to-I movement has actually applied cannot be clearly acknowledged, if indeed it is the case.

². It must be observed that frequency adverbs can also appear before the finite verb in Spanish, as in (i) below, though

such an ordering appears to be due to multiple base-generation of adverbs in the language.

(i) Juan siempre va al colegio
John always goes to-the school
'John always goes to school'

³. The past tense paradigms of *fahren* 'to travel' or *sprechen* 'to speak' are not relevant here, since these are irregular or strong verbs.

Works Cited

BIBERAUER, Theresa and Ian ROBERTS. 2008/2010. "Subjects, Tense and Verb Movement in Germanic and Romance". *Cambridge Occasional Papers in Linguistics* 3: 24-43.

BOBALJIK, Jonathan and Höskuldur THRÁINSSON. 1998. "Two Heads Aren't Always Better Than One". *Syntax* 1: 37-71.

CHOMSKY, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.

—. 2000. "Minimalist Inquiries: The Framework". In Martin, Roger, David Michaels, Juan Uriagereka and Samuel Jay Keyser (eds.) *Step by Step: Essays on Minimalist Syntax in Honour of Howard Lasnik*. Cambridge, Mass.: MIT Press: 89-156.

On the trigger of V-TO-T movement

- . 2001. "Derivation by Phase". In Kenstowicz, Michael (ed.) *Ken Hale: A Life in Language*. Cambridge, Mass.: MIT Press: 1-52.
- EMONDS, Joseph. 1978. "The Verbal Complex V-V in French". *Linguistic Inquiry* 9: 151-175.
- KOSMEIJER, Wim. 1986. "The Status of Finite Inflection in Icelandic and Swedish". *Working Papers in Scandinavian Syntax* 26: 1-41.
- PESETSKY, David and Esther TORREGO. 2001. "T-to-C Movement: Causes and Consequences". In Kenstowicz, Michael (ed.) *Ken Hale: A Life in Language*. Cambridge, Mass.: MIT Press: 355-426.
- . 2004a. "Tense, Case, and the Nature of Syntactic Categories". In Guéron, Jacqueline and Jacqueline Lecarme (eds.) *The Syntax of Time*. Cambridge, Mass.: MIT Press: 495-539.
- . 2004b/2007. "The Syntax of Valuation and the Interpretability of Features". In Karimi, Simin, Vida Samiian and Wendy K. Wilkins (eds.) *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation. In Honor of Joseph E. Emonds*. Amsterdam and Philadelphia: John Benjamins: 262-294.
- PLATZACK, Christer and Anders HOLMBERG. 1989. "The Role of AGR and Finiteness". *Working Papers in Scandinavian Syntax* 43: 51-76.
- POLLOCK, Jean-Ives. 1989. "Verb Movement, Universal Grammar, and the Structure of IP". *Linguistic Inquiry* 20: 365-424.
- REAL ACADEMIA ESPAÑOLA. 2009. *Nueva Gramática de la Lengua Española. Morfología-Sintaxis: Vol. I*. Madrid: Espasa Libros.
- ROBERTS, Ian. 1985. "Agreement Parameters and the Development of English Modal Auxiliaries". *Natural Language and Linguistic Theory* 3: 21-58.
- . 1993. *Verbs and Diachronic Syntax*. Dordrecht: Kluwer.
- ROHRBACHER, Bernhard W. 1994. "Directionality and Word Order Change in the History of English". In van Kemenade, Ans, and Nigel Vincent (eds.) *Proceedings of the Third Diachronic Generative Syntax Conference*. University of Amsterdam: 397-426.
- . 1999. *Morphology-Driven Syntax: A Theory of V to I Raising and Pro-Drop*. Amsterdam and Philadelphia: John Benjamins.
- VIKNER, Sten. 1997. "V-to-I Movement and Inflection for Person in All Tenses". In Liliene Haegeman (ed.) *The New Comparative Syntax*. London: Longman: 189-213.
- . 2001. "Verb Movement Variation in Germanic and Optimality Theory". Ms., University of Tübingen.
- . 2005. "Immobile Complex Verbs in Germanic". *Journal of Comparative Germanic Linguistics* 8: 83-115.
- WIKLUND, Anna-Lena, Gunnar H. HRAFNBJARGARSON, Kristine BENTZEN, and Þorbjörg HROARSDÓTTIR. 2007. "Rethinking Scandinavian Verb Movement". *Journal of Comparative Germanic Linguistics* 10: 203-233.