Nor Jnl Ling 29.1, 5–44 © 2006 Cambridge University Press doi:10.1017/S033258650600148X
Printed in the United Kingdom

Brattico, Pauli & Huhmarniemi, Saara. 2006. Finnish negation, the EPP feature and the valuation theory of morphosyntax. *Nordic Journal of Linguistics* **29.1**, 5–44.

# Finnish negation, the EPP feature and the valuation theory of morphosyntax

Pauli Brattico & Saara Huhmarniemi

The Extended Projection Principle (EPP) has remained a controversial topic in generative grammar. This article proposes to derive the EPP from a generalized theory of nominal case and verbal agreement. According to the proposal presented in this article, morphosyntactic features such as case and verbal phi-features are valued uniformly by the closest asymmetrically c-commanding element, whereas the PF interface is constrained so as to prevent verbs from being valued nominal case and nominals by verbal phi-features. This constraint together with a new theory of valuation explains the appearance of the EPP. The theory is applied to the investigation of negative clauses in Finnish and other languages, Finnish (elliptical) non-finite negative clauses, expletive constructions, multiple *wh*-movement in a variety of languages, multiple agreement both in the finite and nominal domains, and asymmetries between finite and non-finite clauses.

**Keywords** asymmetric c-command, EPP, finiteness, minimalism, negation, valuation

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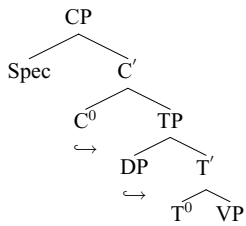
## 1. INTRODUCTION

### *1.1 The hypothesis*

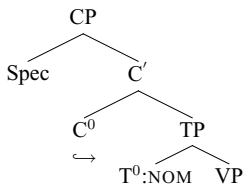
This paper presents a new model of nominal case and verbal phi-features. Following Kayne's (1994) basic insight that asymmetric c-command relations regulate mapping between narrow syntax and PF, we argue that morphosyntactic features such as structural case and verbal phi-features are also valued uniformly by the closest asymmetrically c-commanding element. For instance, nominative case is valued by the local finite C that c-commands the nominal at (Spec, T(ense)P). The phi-features of the finite verbal element in $T^0$ are valued by the nominal in (Spec, TP) as shown in (1).

(1)



Valuation applies unconditionally in the narrow syntax, but can cause the derivation to crash at the morphological/phonological (PF) system. If C values nominative case, then without the specifier of T filled by a nominal, the verbal element at $T^0$ would be valued structural case:

(2)




Because the PF cannot interpret the combination of a complex verbal head *v*–V–T and a structural case, the resulting expression is ill-formed. (Spec, TP) must be either filled with a nominal, which is copied from the underlying structure by using the most economical operations available, or inserted directly from the lexical array in the case of expletives. The copied nominal, then, values its phi-features to the verbal element at $T^0$. Thus, we argue that valuation and the EPP are two sides of the same phenomenon: they represent morphosyntactic encoding of the formal relations established at narrow syntax.

This paper is organized into two main sections. Section 2 does some groundwork and examines data concerning negative constructions in Finnish. The purpose of this section is to look at the interaction between various morphosyntactic phenomena relating to finiteness: tense morphology, case valuation, and full verbal agreement. Specifically, we argue for the hypothesis that the locus of finiteness lies in C. What we mean by this is that finiteness is a property of a certain kind of combination of C and another head selected by C. It seems that tense is irrelevant to finiteness: data from Finnish shows that the head selected by C in finite clauses carrying full verbal agreement and checking nominative case can be clausal negation that does not inflect for tense. The fact that tense morphology, agreement, and nominative case often go in tandem turns out to be a general tendency rather than a strict rule. A description of these negative constructions is given under what we take to be the standard minimalist architecture of Chomsky (2000a, 2001, 2004, 2005). In particular, we argue in favour of the LOCUS C HYPOTHESIS, which says, roughly, that any head $\alpha$ becomes finite when selected by a certain kind of C in the sense that it obtains full phi-features and checks nominative case.

We nevertheless think that this analysis is insufficient on independent grounds. Briefly, these problems have to do with multiple agreement of various kinds, explanations of linguistic variation between and within languages, certain theory-internal aspects of the minimalist architecture itself, data from negative infinitive constructions in Finnish, and the role of the EPP, which is supposed to explain why certain DPs move upwards in the linguistic structure. In section 3, we present a minimalist solution to these problems. The key idea of our solution lies in the

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hypothesis that the EPP is a PF phenomenon: it is controlled by morphosyntactic properties of expressions at PF rather than at LF. We begin with an introduction to a certain minimalist theory of morphosyntax (valuation) and reduce it first to a simple rule which is based on a local asymmetric c-command head-to-head relation. The basic idea comes from Kayne (1994), who argues that asymmetric c-command relations regulate the relation between narrow syntax and PF. We then show that this rule as it stands produces expressions that are uninterpretable at PF, and that these violations can be prevented automatically by moving DPs cyclically into what have been called 'specifier positions' in the X-bar theory. In contrast with the standard minimalist theory of movement, which explains such phrasal movement (A-movement, to be exact) in terms of LF conditions, we purport to derive the EPP from PF conditions. We argue that the present explanation implies a number of puzzling features of movement having to do with expletives, multiple-subject and multiple *wh*-constructions, complementizers and other constructions, and most importantly, it solves the remaining problems of the LOCUS C HYPOTHESIS. In section 3.3, we return to negative infinitivals in Finnish, which we are unable to explain within the standard minimalist architecture, and argue that the properties of these constructions follow from the present model.

## *1.2 The minimalist framework*

The discussion will be presented in the framework of the Minimalist Program (MP). According to MP, language is a perfect solution to the so-called 'legibility conditions'. An essential aspect of these legibility conditions is constituted by the INTERFACE REPRESENTATIONS, which make language a usable system within an array of other cognitive mechanisms, such as meaning and speech production. The language faculty is thereby linked to meaning and speech production through the interface systems, LF and PF, respectively. If language had a 'perfect design', it would implement an 'optimal mapping' between LF and PF.

One aspect of this idea is that the interface levels must contain representations that can be interpreted by the respective cognitive systems. Thus, at the PF, all representations must be interpretable by the phonological system, whereas at LF level, all representations must be interpretable by the conceptual–intentional system(s). If some feature cannot be interpreted at some interface level, we will refer to it as an 'uninterpretable feature' with respect to that interface level. If a linguistic expression contains only interpretable features at some interface level, we say that it converges at that level. Typical examples of semantically uninterpretable features are verbal agreement and structural case. To illustrate, consider (3).

(3) John loves her.

In this sentence, the verb agrees with the subject, but the verbal agreement by itself does not contribute to the interpretation of the sentence. The same appears to be the case with structural case. Whereas nominative DPs (e.g. *John* in (3)) and

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accusative DPs (*her*) are systematically associated with certain thematic roles, such as agents and patients, respectively, this is by no means a strict law. In expletive structures, passives, dative subject constructions and raising constructions, among other constructions, the connection between structural case and thematic roles breaks down. Thus, structural case as well as verbal agreement are purely formal features. Because they are formal, they cannot be interpreted at the LF which can contain only semantically interpretable features.

The minimalist hypothesis is that such features must be deleted from the linguistic representation before it is sent to LF (Chomsky 2001, 2004). To illustrate deletion, consider (4), which represents a particular phase in the derivation of (3).

(4) T(phi) [$_{v}$P John(NOM) love her(ACC)]

T represents tense and *v*P is a Larsonian light verb projection (Larson 1988), where we take *v* to be a verbal transitivity head (hence *v** in some systems). T contains the uninterpretable phi-features (gender, person, number) which must be deleted before the expression converges at LF. The DPs, in turn, contain uninterpretable case features (nominative, accusative). Deletion is implemented by a computational operation AGREE, where uninterpretable features of the probe T seek the closest element with identical features, thus the DP *John*.[1] We call this participant of the agreement relation the GOAL. Agree then deletes the uninterpretable phi-features of T and the case feature of the DP before the expression is sent to LF.

(5) T(–) [$_{v}$P John(–) love her(ACC)]
⟵ Agree ⟶

This renders the goal DP unable to participate in another agreement relation. We say that such a DP is inactive. If the probe contains only a subset of the relevant phi-features, it is called DEFECTIVE or PHI-INCOMPLETE. In that case, the phi-features of the probe are deleted, but the case feature of the goal remains. The goal thus remains active, being free to enter into another agreement relation. This situation occurs in the non-finite complements, where the embedded DP first agree with the defective T ($\alpha$) and then with the non-defective matrix T ($\beta$).

(6) T(-s) [$_{v}$P seem [$_{T}$P T(–) [$_{v}$P John love her]]]
($\beta$) ⟵ ⟵ ⟵ ($\alpha$) ⟵ ⟵

This leaves it open as to why the T is sometimes phi-complete, as it is in the finite clauses, and why it is sometimes phi-incomplete, as in the non-finite clauses. While it is possible to take phi-completeness as a primitive property of the grammar,[2] it is also worth trying to understand its origin. Thus, according to Chomsky (2001:8, alternative 2) and Chomsky (2004, 2005), T is phi-complete because it has been selected by a phi-complete C. If construction (4) is merged to the phi-complete C, it becomes a finite clause, but if it is merged with the matrix V, T becomes

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phi-incomplete, resulting in a non-finite clause. This difference is illustrated in (7a–b).

(7) a. C T [$_{vP}$ John love her] : *John loves her.*
b. V T [$_{vP}$ John love her] : *John seems to love her.* (V = *seem*)

We will refer to this hypothesis as the LOCUS C HYPOTHESIS, meaning that the locus of finiteness is in C (Kayne 1994:95; Rizzi 1997).

The operation AGREE does not alone trigger movement. In example (6), the subject DP has not been moved to the position of the grammatical subject. In the Government & Binding theory, the requirement that one DP moves or is inserted into the position of the grammatical subject was described by assuming a condition of the Extended Projection Principle, which basically forced a finite clause to have a subject. The EPP described the subject-requiring properties of finite clauses, raising constructions, expletives and passives, among other examples (Chomsky 1981). That condition is now replaced in MP by saying that a head such as T has an uninterpretable EPP feature, or that some feature of the head has the EPP property, which either forces overt movement to the specifier position after Agree, or requires the insertion of an expletive.

(8) John T(-s) [$_{vP}$ seem [$_{TP}$ T(–) [$_{vP}$ (John) love her]]]
← ← ← *Copy/Move* ← ← ← ←
'John seems to love her'.

It is assumed that all core functional categories including at least C, T and *v* can have an EPP feature. The EPP feature of the phi-complete T refers to the original Extended Projection Principle, the EPP feature of C to the *wh*-fronting, and the EPP feature of *v* to Object Shift (e.g. Chomsky 2000a:122). There is thus a general rule which demands specifiers of functional heads to be filled. When agreement and EPP occur together, EPP being a consequence of Agree, we refer to these together as 'Agree/EPP'.

## 2. NEGATION AND DOUBLE AGREEMENT IN FINNISH

In this section we argue in favour of the LOCUS C HYPOTHESIS by using data from Finnish negative constructions. The basic point of this section is that the standard markers of finiteness, i.e. full verbal agreement, nominative case and the EPP, revolve around a certain kind of C, not around T or any other separate finiteness head, such as AgrS. More specifically, we argue that whatever head $\alpha$ is selected by finite C automatically obtains the properties of finteness (Chomsky 2001, 2004). This examination of the morphosyntax of finiteness then provides the essential background for the new theory of valuation and EPP.

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To begin with, Finnish can be characterized as a language with a reasonably free word order: although the basic word order is SVO, all other arrangements are possible, except that Finnish tends to avoid verb-initial declarative sentences (Hakulinen & Karlsson 1979; Vainikka 1989; Vilkuna 1989). However, the negation is close to the subject, as illustrated in (9a–c).

(9) a. Pekka e-i rakasta Merja-a.
*Pekka-NOM not-3SG love-PRES Merja-PRT*
'Pekka does not love Merja.'
b. *?Pekka rakasta e-i Merja-a.
*Pekka-NOM love-PRES not-3SG Merja-PRT*
c. *Pekka rakasta Merja-a e-i.
*Pekka-NOM love-PRES Merja-PRT not-3SG*

The negation also agrees fully with the nominative subject, i.e. in the first-, second- and third-person in the singular and plural. Finnish negation thus contains a complete set of phi-features. Based on the above data, one could take the negation to represent an 'auxiliary' in $T^0$, but Finnish negation does not inflect for tense: tense is shown in the other verbal element of the same clause.[3] This suggests that negation is situated above $T^0$ (or TP) (Holmberg 2001; Holmberg & Nikanne 2002; Kaiser in press). However, number agreement occurs between the other verbal element and the subject. This partial agreement is illustrated in (10a–b). Partial agreement is also present in perfective clauses (10c–d).

(10) a. Hän e-i lähte-nyt koti-in.
*he not-3SG leave-PAST.SG home-ILL*
'He did not go home.'
b. He e-ivät lähte-neet koti-in.
*they not-3PL leave-PAST.PL home-ILL*
'They did not go home.'
c. Hän o-n lähte-nyt koti-in.
*he is-PRES.3SG leave-PAST.SG home-ILL*
'He has gone home.'
d. He o-vat lähte-neet koti-in.
*they is-PRES.3PL leave-PAST.PL home-ILL*
'They have gone home.'

The presence of negation thus makes the T-node defective, which accounts for the partial agreement: the subject DP moves through (Spec, TP), but the phi-features of T are defective and there is no complete agreement, nor is the case valued.[4] Further evidence that the subject moves through (Spec, TP) is provided by floating quantifiers.[5] In Finnish, a floating quantifier can be situated between the negation and the tense:

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(11) He e-ivät kaikki lähte-neet koti-in.
*they not-3PL all leave-PAST.PL home-ILL*
'They did not all leave for home.'

If we assume that floating quantifiers are stranded constituents of DPs (Sportiche 1988) and that DPs are base generated inside of the *v*P, the above example suggests that the quantifier is stranded from the DP after the DP has moved out of the *v*P, but before it lands in (Spec, NegP). What position is occupied by the quantifier? The most likely candidate is (Spec, TP) between Neg and T. If so, the DP must move through this position on its way up to (Spec, NegP).

According to the received view, Finnish negation cannot occur in a non-finite embedded clause:

(12) a. *Pekka halusi [Merja-n e-i nukku-van]
*Pekka wanted Merja-GEN not-3SG sleep-INF*
'Pekka wanted Merja not to sleep.'
b. *Pekka näki [Merja-n e-i nukku-massa]
*Pekka saw Merja-GEN not-3SG sleep-INF*
'Pekka saw Merja not to sleep.'
c. *Merja$_i$ näyttä-ä [t$_i$ e-i nukku-van]
*Merja$_i$ seem-3SG* t$_i$ not-*3SG sleep-INF*
'Merja seems not to be sleeping.'

These constructions all involve embedded non-finite clauses or participle clauses (labelled as 'INF' but analyzed in detail in section 3.3 below), but in each case, sentential negation is impossible (e.g. Vilkuna 2000:260–265). The reason for the lack of negative infinitivals cannot be the lack of phi-features, because in Finnish subjectless clauses, negation (and any verbal element) take the third-person singular default agreement. Furthermore, the explanation that negation cannot be phi-incomplete in Finnish may also be incorrect, because it seems that a non-finite clause can contain negation in what looks like an elliptic construction:

(13) a. He näki-vät meidä-n lähte-vän, mutta (*he näki-vät meidä-n)
*they saw-3PL us-GEN leave-INF but they saw-3PL us-GEN*
e-i juokse-van.
*not-3SG run-INF*
'They saw us leave, but not run'
b. He näki-vät meidä-n lähte-vän, mutta (*he näki-vät)
*they saw-3PL us-GEN leave-INF but they saw-3PL*
teidä-n e-i (*lähte-vän).
*you-GEN not-3SG *leave-INF*
'They saw us leave, but not you.'

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c. He näki-vät meidä-n lähte-vän, mutta (*he näki-vät) e-i
*they saw-3PL us-GEN leave-INF but they saw-3PL not-3SG*
teidä-n juokse-van.
*you-GEN run-INF*
'They saw us leaving but not you running.'

We call these constructions 'negative infinitival clauses'; they should be compared to (12), where inserting the negation results in an ungrammatical sentence. In a negative infinitival clause, the negation takes the default agreement (3SG), regardless of the embedded subject. The type of non-finite clause also influences the distribution of the negative particle; the details of these constructions and an in-depth examination of their properties are left to section 3.3.

Negation can be adjoined to a complementizer (14a–b), and it can be fronted much like an auxiliary in a yes/no interrogative, as in (14c).

(14) a. Pekka epäili, että Merja e-i rakasta hän-tä.
*Pekka suspected that Merja not-3SG love-PRES him-PRT*
'Pekka suspected that Merja does not love him.'
b. Pekka epäili, ett-e-i Merja rakasta hän-tä.
*Pekka suspected that-not-3SG Merja love-PRES him-PRT*
c. E-i-kö Merja rakasta Pekka-a?
*not-3SG-Q Merja love-PRES Pekka-PRT*
'Doesn't Merja love Pekka?'

If the clause contains a verb or an auxiliary, it is still the negation that is fronted in yes/no questions, not the verbal element, (15a). Fronting the verbal element instead of the negation produces an ungrammatical sentence, (15b–c). On the other hand, if there is no negation, then the verbal element can be fronted, (15d).

(15) a. E-i-kö Pekka ole kaupungi-ssa?
*not-3SG-Q Pekka is-PRES town-INE*
'Isn't Pekka in town?'
b. *Ole-ko Pekka e-i kaupungi-ssa?
*is.PRES-Q Pekka not-3SG town-INE*
c. *On-ko Pekka e-i kaupungi-ssa?
*is.3SG.PRES-Q Pekka not-3SG town-INE*
d. On-ko Pekka kaupungi-ssa?
*is.3SG.PRES-Q Pekka town-INE*
"Is Pekka in town?'

This data suggests that negation is situated above the verbal element, including the auxiliaries (Holmberg 2001). In Finnish, apart from negation and all verbal elements, other constituents can likewise be fronted in a yes/no question. Negation does not

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interact with the fronting of nominal arguments, (16a–c), but it does interact with the fronting of any verbal element, (16d). Example (16e) shows that when there is no negation, the main verb can indeed be fronted. Examples (16d–e) illustrate the minimalist principle of Attract Closest: the verb cannot be fronted, because the negative element is a closer potential goal.

(16) a. Pekka ei rakasta Merja-a.
*Pekka not love Merja-PRT*
'Pekka does not love Merja.'

b. Pekka-ko ei rakasta Merja-a.
*Pekka-Q not love Merja-PRT*
'Is it Pekka who does not love Merja?'

c. Merja-a-ko Pekka ei rakasta?
*Merja-PRT-Q Pekka not love*
'Is it Merja who Pekka does not love?'

d. *?Rakasta-a-ko Pekka ei Merja-a?
*loves-3SG-Q Pekka not Merja-PRT*

e. Rakasta-a-ko Pekka Merja-a?
*loves-3SG-Q Pekka Merja-PRT*
'Does Pekka love Merja?'

This indicates that the (Finnish) negation is a head, as are the other verbal elements of the sentence, and therefore it interacts with the fronting of other heads (head movement) rather than with the fronting of DPs (phrasal movement). Furthermore, if the complement clause contains a complementizer, the *wh*-word and negation, negation cannot adjoin the complementizer:

(17) a. Pekka pohti, että miksi Merja ei rakasta hän-tä.
*Pekka wondered that why Merja not love him-PRT*
'Pekka wondered why Merja does not love him.'

b. *Pekka pohti, ett-ei miksi Merja rakasta hän-tä.
*Pekka wondered that-not why Merja love him-PRT*

In other words, negation cannot move over the *wh*-element.[6] Note, further, that in example (17a), both C and the *wh*-element occur together at the left periphery of the embedded clause, suggesting that they cannot occupy the same head (say, $C^0$) (see Manninen 2003). The complementizer must also precede the *wh*-element:

(18) *Pekka pohti, miksi että Merja ei rakasta häntä.
*Pekka wondered why that Merja not love him*
'Pekka wondered why Merja does not love him.'

This data is in disagreement with the standard theory which locates the complementizer *that* in $C^0$; we return to this matter below.

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Based on the data and given that we assume the minimalist framework presented in section 1.2 above, the following conclusions are straightforward. First, negation is a head that bears an EPP feature and a complete set of phi-features in a finite clause: it is often adjacent to the subject and shows overt agreement with it. The position of the negation is above the $T^0$ since the main verb must raise to $T^0$ in order to inflect for tense (see Holmberg 2001, Holmberg & Nikanne 2002). T also probes the DP, but does not block further movement; agreement with T is only partial, so the phi-features of T are incomplete, which makes T defective. Thus the subject DP is free to enter into an agreement relation with the Neg. The fact that T is defective explains why the goal DP does not receive the nominative case from T and is thus able to continue up to the specifier of $Neg^0$: defective heads do not delete features. Finally, the negation is situated below $C^0$, as $C^0$ can be filled with a complementizer.[7]

Instead of stipulating that the presence of negation above TP renders T phi-incomplete and that the negation just happens to value nominative case, we would like to capture the generalization that when the Agree/EPP cluster is associated with some head, be it negation, the auxiliary verb, or the main verb, it is systematically selected by the finite C. In other words, the crucial criterion is not the presence of tense. This explains, furthermore, why only one element is associated with Agree/EPP: if the phi-completeness is allowed to shift dynamically, for example from T to Neg, it becomes at once a mystery why it is possessed by only one element in a finite clause, and why it does not, and cannot, shift from T to either V or C, not to mention other constituents of the clause. Finally, finiteness cannot be an intrinsic property of the negation head itself, since the same negation with default agreement occurs also in non-finite contexts, cf. (13) above. Consequently, Finnish negation provides support for the LOCUS C HYPOTHESIS which takes the locus of the phi-completeness (and hence, finiteness) to be C rather than T(ense).

This conclusion rests crucially upon the Neg-above-T hypothesis, which takes negation to be a head over T. If negation were to reside in $T^0$ (as argued in Vainikka 1989), the data would also be compatible with a proposal which takes the locus of Agree/EPP to be T rather than C. But there is no evidence of the head Neg+T in Finnish. The Neg could also occupy the second specifier of T, but the evidence clearly shows that negation is its own head and hence subject only to head movement. It is also certainly possible to assume that Neg is located at $C^0$, Finnish being a 'Neg2 language'. This hypothesis was initially inspired by Eythrsson (2002), who assumes that in Old Norse, $C^0$ contains a negative feature which is adjoined to the main verb, creating negative verbs. However, there is no evidence that C and negation would interact in this way. Rather, the Neg-to-C movement is optional.

Having now argued that the locus of finiteness is in C, the next problem is to tie all morphosyntactic features of finiteness into C in a manner that agrees with all the data. Recall from section 1.2 above that in minimalist theory, the phi-completeness of a head makes it finite, so if C is the locus of finiteness, it must have the power

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to make the head (i.e. T/Neg/Aux) it selects phi-complete. According to one version of MP, C itself is phi-complete (Chomsky 2004). But there is some evidence that C cannot be the (sole) locus of the phi-completeness. Carstens (2003) discusses examples where the subject agrees with several verbal elements, yet every agreement relation seems to be phi-complete. The following example is from Swahili (from Carstens 2003:150):

(19) Juma a-li-kuwa a-me-pika chakula.
*Juma 3SG-PST-be 3SG-PERF-cook food*
'Juma had cooked food.'

Since the lower verbal element has not been selected by C, it cannot be phi-complete due to the presence of local phi-complete C. This observation is related to another issue that we find puzzling: the assumption that phi-complete C is the locus of finiteness leaves it open as to what are the phi-features of complementizers, as phi-features belong naturally only to nominals. Furthermore, as noted by Chomsky (2001, fn. 38), if C is phi-complete, how are uninterpretable phi-features of C then deleted? Finally, in many languages, including Finnish, a phenomenon resembling multiple agreement is also observed within the phrase that has been valued case. For instance, Finnish demonstrative pronouns, quantifiers, adjectives and nouns are inflected by the case feature of the DP:

(20) nii-tä kah-ta pien-tä punais-ta talo-a
*those-PRT two-PRT small-PRT red-PRT house-PRT*
'(I painted) those two small red houses.'

Thus, both phi-features and case features can be distributed along several elements both within a finite clause and a DP. Ideally, we would like to capture partial agreement in the finite and nominal domains by relying upon the same grammatical mechanism. If so, then local relations established by selection (e.g. C–T) seem insufficient.

Another worry concerns the variation among languages. Unlike in Finnish, negation in many languages can reside or resides exclusively below T, not above it (e.g. Ouhalla 1990; Zanuttini 2001). For instance, in English, the negation resides below T in a finite clause:

(21) John did not sleep.
*John T-PAST NEG V*

In the spirit of the P&P theory, we try not to allow any language-specific rules in narrow syntax. More generally, the ideal is a completely cross-linguistically uniform theory of narrow syntax which means, in effect, that we cannot postulate an independent rule for handling the merging of the negation above or below TP.[8] Rather, the difference between English and Finnish must be derivable from independently motivated principles which rely only on 'some parts of the lexicon and

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certain peripheral aspects of the sensorimotor [PF] interface' (Chomsky 2000b:14). While this is of course an ideal which is supposed to make the explanation of language acquisition easier, data from Finnish negation shows that there might be a kernel of truth here: the location of clausal negation IS marked overtly in its morphology (see above 9a–c). What we want to do is explain cross-linguistic differences in the syntax of negation as a function of differences of overt morphosyntax (or, in the standard terminology, as a function of overt 'feature strenght').

Furthermore, the position of negation in Finnish is puzzling. It seems to reside somewhere between $C^0$ and $T^0$, thus some kind of head may exist there, such as the AgrS or F representing finiteness. This hypothesis is questionable for minimalist-theory-internal reasons, being a departure from 'perfection' because it postulates the existence of a purely formal head. Thus, Chomsky states:

> Evidence has accumulated that the verb can raise to a position higher than T but lower than C . . . there is reason to doubt that such [a head] can exist; or, to put it differently, if it does, then departures are needed from what appears to be the simplest and most principled form of phrase structure theory. (Chomsky 2000a:93)[9]

Another problem with the assumption that negation is located at the finiteness head (or AgrS) between the $C^0$ and $T^0$ in Finnish is that negation is possible in some non-finite constructions (negative infinitival clauses). Even without a detailed analysis of these non-finite constructions, it is evident that negation in Finnish should not be tied to finiteness.

Finally, we would like to mention the problem of why certain heads require their specifier to be filled in the first place. This problem occupies a rather central role in minimalist theory, where virtually any type of phrasal movement is motivated by the EPP. In effect, an active debate is currently underway about the nature of the EPP. Some proposals try to eliminate EPP features by reducing their overt effects on other grammatical principles (Frampton & Gutmann 1999; Grohmann, Drury & Castillo 2000) or by trying to find an independent motivation for their existence in terms of legibility conditions (Kayne 1994; Chomsky 2000a:120ff.; Moro 2000; Rosengren 2002). We will argue in the next section that the EPP itself is the key to solving the problems mentioned above.

## 3. VALUATION AND THE EPP

### *3.1 The proposal*

In this section we propose a new theory of structural case and verbal agreement. We then show that the EPP follows from the model and that it fares better than

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the original theory of the EPP. We discuss a number of open problems and apply the theory to them, including the asymmetries between the matrix and embedded clauses, expletive constructions and multiple *wh*-constructions, variation between languages, case distribution and complementizers. We show that the theory can meet the problems of the original LOCUS C HYPOTHESIS. In section 3.3, the theory is applied to a detailed analysis of Finnish negative infinitivals. Overall, our discussion will lead us to question the relevance of LF interface in the explanation of locality-based grammatical movement.

The minimalist theory reviewed in section 1.2 is based on the STRONG LEXICALIST HYPOTHESIS, which posits that morphosyntactic features are attached to lexical elements already before syntactic derivation begins. For instance, when the derivation begins to build the sentence *John loves her*, the DP *John* bears a nominative case feature. Likewise, the finite T bears phi-features which are matched with the phi-features of the relevant DP, *John* in this example. This assumption was originally motivated in the minimalist theory by the desire to explain movement in terms of formal features: simply, formal features trigger movement. This largely theory-internal assumption then lead to the proliferation of formal features, since there is independent evidence that grammar is saturated with movement of various kinds.

The recent valuation theory nevertheless rejects this kind of strong lexicalism and posits that the structural case of the DP and the phi-features of the probe T are lexically undifferentiated features which are 'valued' as a consequence of Agree (Chomsky 2000a, 2001, 2004). When the DP and T agree, the undifferentiated phi-features of T are valued by copying the phi-features from the DP, whereas the undifferentiated case feature of the DP is valued nominative case by T (analogously, accusative case by *v*). If we label the undifferentiated phi-features as [uPhi] and undifferentiated case feature as [uCase], Agree then deletes the undifferentiated formal features from the path leading to LF, (22b), whereas the path leading to the PF contains valued features, (22c).

(22) a. T(uPhi) [$_{vP}$ John(uCase) loves her]
$\longleftarrow$ Agree $\longrightarrow$
b. LF: T(–) [$_{vP}$ John(–) loves her]
c. PF: T(phi), John(NOM)

Verbal agreement and case features are thus not part of the lexical elements, but they are instead created during the derivation. This marks an important return to the traditional theory in the context of MP, where 'verbs agree with nouns, not conversely, and Case is assigned' (Chomsky 2000a:124).[10] Crucially, the valuation theory is made possible by the fact that the explanation of movement seems to require only more coarse-grained, unvalued formal features. Yet, insofar as we explain movement (EPP, etc.) in terms of formal features, some form of lexicalism becomes

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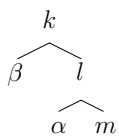
inevitable. In Finnish negative constructions, the phi-complete C makes the head it selects also phi-complete, which then acts as a probe in order to delete those features. The most local element that bears a case feature is selected as a goal, and these agree with each other. The actual value of the case feature does not play any role prior to the probe–goal relation, so it can be dispensed in the lexical array. Yet, in the lexical array, C still has to bear complete phi-features, and the DP must bear unvalued case features in order to ensue correct matching.

We will first look at valuation from a non-lexicalist perspective, which relies on the PF interface. As explained above, this threatens to leave movement completely unaccounted for, but on closer inspection, things turn out well. Let us begin by making the following tentative generalization, inspired by Kayne's (1994) theory of syntax–PF mapping:

(23) Syntactic elements are valued by their closest asymmetrically c-commanding valuator.

Element $\beta$ is the closest asymmetrically c-commanding valuator of $\alpha$ if and only if $\beta$ is the closest element which c-commands $\alpha$ such that $\beta$ is capable of valuation and $\alpha$ does not c-command $\beta$. The intuitive idea behind this rule is that it purports to convert, in the most economical way possible, formal relational properties of the syntactic derivations into formal features that can be interpreted at the PF interface. One instance of this relation is shown in (24).

(24)




The notion of 'syntactic element' in (23) is meant to cover the standard cases of valuation: case for nominals and the phi-features for functional heads. In the following canonical example, C values nominative case to the nominal, and the nominal values phi-features to the verbal, element at $T^0$ (or Neg, if it is there instead). Similarly, the accusative case is valued by the *v* at the specifier of V.

(25) $[_{CP}$ C $[_{TP}$ DP $[$ T $[_{vP}]]]]$
C ↪ NOM ↪ *phi*

(26) $[_{vP}$ *v* $[_{VP}$ $DP_i$ $[$ V $t_i]]]$
*v* ↪ ACC ↪ *phi*

Because valuation is supposed to be a PF phenomenon, only word-like elements qualify as 'syntactic elements' in our definition (23). We assume that phrases do not exist at PF. In other words, valuation is a head-to-head relation instead of a relation between heads and phrases. This has many consequences that turn out to

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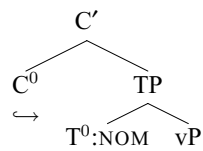
be interesting. To mention one, it cannot be the DP as a whole that enters the valuation mechanism in (25); rather, all the individual word-like elements inside of DPs must enter into valuation relations independently of each other. This is an important consequence with respect to partial case agreement, reviewed briefly in the previous section and to be investigated later.

In examples (25) and (26), we have assumed that the DP moves into a position between C and T (and, likewise, between *v* and V) AFTER valuation, not before. Thus, this proposal resembles earlier formulations of the minimalist program, where EPP triggered movement before morphosyntactic feature interchange between functional heads and DPs. However, it may still be the case that, in the logical sense at least, EPP is a consequence of valuation. To see how, assume that certain combinations of valuations are not interpretable by the PF interface. A typical example is a verbal element receiving the structural case. We assume that in that situation, the derivation CRASHES at PF:

(27) *–N+Case

Rule (27) characterizes an independent morphological rule constraining syntactic derivations and is not merely a byproduct of syntactic derivation (see Addis 1993; Richards 1997). Consider what happens if the verbal complex T–*v*P is combined directly with C as shown in (28).

(28)




An element at $T^0$ would now receive nominative case. This possibility is, however, ruled out by the PF legibility condition (27), rejecting sentences such as (29).

(29) C *found-NOM John Mary

Note that there is concrete surface evidence that words such as *found*-V-NOM are not possible. An element capable of inflecting for case must occur between C and verbal complex T–*v*P. Assuming that the derivation cannot introduce brand-new lexical elements to guarantee convergence ('Inclusiveness', see Chomsky 1995:228ff.), one strategy is to copy from the existing material, hence Copy/Move. We assume that this process is constrained by the relevant notions of optimality ('Attract Closest').[11] The consequence is that heads require their specifiers to be filled if there is another head above them. Consider an ECM construction as shown in (30).

(30) I saw him leave.

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In the simplest possible scenario, the matrix V is merged to T without DP raising. This would result in (31).

(31) *I saw [leave him]

However, according to (23) above, the non-finite verb cannot be merged to TP if TP does not contain an intervening DP. First, a specifier position (Spec, TP) has to be created between V and T, and the subject has to be copied to it. Moving to the matrix clause, the *v* must be merged after the V, the nominal is copied to fill the specifier of the matrix VP, and *v* then values accusative case to the moved DP.[12] If the matrix verb is in the passive form, the nominal is further required to fill the specifier of TP in the matrix clause. This process is automatically successively cyclic: a new functional head cannot be merged to the structure before the specifier position below it is created and filled. Speficially, the EPP becomes a joint property of Merge and PF interface, not a feature of functional heads.

In agreement with minimalist theory, the EPP is still a consequence of valuation, but under this model formal features of the goal do not trigger the EPP. What triggers movement is, rather, the LACK of formal features: because T does not inflect for case, a derivation which values its case crashes at PF. Moreover, the distribution of formal features, and the lack thereof, is motivated on independent grounds and it is firmly grounded on 'peripheral aspects of the sensorimotor [PF] interface' (Chomsky 2000b:14).

In the following sections we will compare the PF-motivated theory of the EPP with the standard theory and argue that the present model explains the data equally well, if not better. Moreover, it leads to a highly constrained model of the grammar that seems to be vindicated by a number of grammatical phenomena. After arguing for this explanation of the EPP on independent grounds, we return to the LOCUS C HYPOTHESIS and show that the remaning problems of this hypothesis disappear. In brief, C does not have to be phi-complete, partial agreement follows automatically, cross-linguistic variation can be attributed to overt morphology, there is no need for formal heads, and the EPP principle follows automatically.

### *3.1.1 Asymmetries between matrix and embedded clauses*

One difference between the present proposal and the minimalist alternative is that the EPP is a property of the operation Merge, not a property of individual probes. More specifically, the EPP is related to the need to merge two heads to the structure, not one. As a consequence, we predict that whenever there are no further functional heads to be merged into the structure, no further specifiers are needed.

Consider the Aux-Inversion constructions such as *Does John love Mary?* Here agreement occurs between the raised auxiliary and *John*, but *John* does not need to raise to the specifier of the CP. In other words, (32) is not the correct form for the intended yes/no interrogative.

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(32) *John does love Mary?

To reiterate, in the standard minimalist theory, the probe T seeks a goal in order to satisfy its own EPP feature by copying another element to its specifier position. The difference between T and C would be the presence of an EPP feature: T has it, whereas C does not. The theory of valuation presented here eliminates this stipulation. DP does not have to rise to (Spec, CP) because there is no further functional head above $C^0$. Yet if the CP itself is a complement of another verb and the matrix V is thereby merged to the CP, (Spec, CP) must again be filled. Later we argue that complementizers can fill this role. But the best case for verifying this prediction would be a language which allows both *wh*-in-situ and *wh*-fronting in finite clauses. The prediction is that the in-situ strategy should not be preferred for the embedded clauses if nothing else intervenes between the matrix clause and the embedded clause. Bošković (2000) shows that this is true for French. French finite clauses allow both *wh*-in-situ and fronted *wh*-elements:

(33) a. Qui as-tu vu?
*whom have-you seen*
'Who did you see?'
b. Tu as vu qui?
*you have seen whom*

Nevertheless, if these clauses occur in the complement position of another clause, then the *wh*-in situ is not allowed:

(34) a. Pierre a demandé qui tu as vu.
*Pierre has asked whom you have seen*
'Pierre asked who you saw.'
b. *Pierre a demandé tu as vu gui.
*Pierre has asked you have seen who*

A similar pattern emerges in English. Example (35a) is a possible question in English when *who* is emphasized and understood as an echo question, but (35b) is always ungrammatical. The correct form is (35c), where (we assume) the *wh*-element occupies (Spec, CP).

(35) a. John saw who?
b. *I wonder John saw who?
c. I wonder who John saw.

Finally, in a *wh*-in-situ language, the embedded clause must be headed by a question particle (Cheng 1991); we will return to this phenomenon in the next section. The theory of the EPP developed earlier thus accounts for the asymmetry between embedded and matrix clauses with respect to whether the specifier of C

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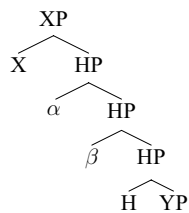
needs to be filled. The exact theory of *wh*-movement and complementizers still needs to be worked out.

The asymmetry between the embedded complement clause and the matrix clause generalizes automatically to other heads besides verbs. An embedded clause can occur as the complement of a noun. If nothing intervenes, this creates a construction with an illegitimate N–C configuration. However, it is well-known that relative clauses need to be headed by either a *wh*-element or a complementizer (e.g. *The man who loves Mary*). Furthermore, the *wh*-operator heading the relative clause is subject to locality constraints similar to the interrogative *wh*-movement (Chomsky 1977), thus Attract Closest (or equivalent) which characterizes EPP-initiated movement.

### 3.1.2 Multiple specifiers

Another important difference between the present proposal and the stipulative EPP concerns the treatment of multiple specifiers. The present proposal does not rule out constructions having several non-functional elements stacked on top of each other, resulting in 'multiple-spec structures' (Chomsky 1995:219–394). Suppose that Merge forms a double-spec structure of the following kind, where $\alpha$ and $\beta$ are non-functional elements and X and H are functional heads:

(36)




The present proposal implies that X values $\alpha$, whereas $\beta$ values H. Moreover, $\alpha$ values $\beta$ if $\alpha$ is a valuator, in which case $\alpha$ must be able to value $\beta$ without the derivation crashing at PF:

(37) [X [ $\alpha$ [ $\beta$ [ H ]]]]
H $\hookrightarrow$ *val* $\hookrightarrow$ *val* $\hookrightarrow$ *val*

For example, if $\alpha$ is a DP it values its phi-features which are PF interpretable at a verbal element but not interpretable if $\beta$ is a nominal.[13] This configuration is illustrated in (38).

(38) C [ DP [ DP [ T ]]]
C $\hookrightarrow$ *NOM* $\hookrightarrow$ *phi* $\hookrightarrow$ *phi*

It is clear from this that double-spec constructions must be heavily constrained in terms of PF legibility. In fact, we should be asking whether there are ANY legitimate double-specifier structures. Our proposal is explicit about the kind of structures that these can be. In short, the structure is legitimate if the upper DP

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does not value phi-features to the lower DP. This occurs either if the upper DP is a special nominal which does not agree, such as an expletive, or if the language does not have verbal agreement at all. We know of two candidates which satisfy these conditions: multiple DP-constructions (e.g. expletive structures), and multiple *wh*-fronting constructions.

MULTIPLE DP-CONSTRUCTIONS. In expletive structures, an expletive such as *there* can fill the upper specifier position $\alpha$. The prediction is that the expletive should not value its phi-features, which is exactly what we observe (i.e. *there* does not agree with *arrive* in a sentence such as *There arrive three men*). Moreover, the verb agrees with the object, which follows if the object is situated in the lower specifier position $\beta$, as assumed in Chomsky (1995:340–379) and illustrated in (39a). On the other hand, the expletive cannot occur in the lower specifier position, because in that case, the expletive would be valued by the phi-features of the upper DP. Thus, the present proposal rules out a construction with two expletives, a construction in which the lower DP is an expletive, and a construction where both DPs are full determiner phrases (see Chomsky 1995:372).[14] These are all shown in (39b–d).

(39) a. C [ there [ DP [ T ]]]
C ↪ *NOM* → *NOM* ↪ *phi*
'There-EXPL arrive three men.'

b. C [ there [ there [ T ]]]
C ↪ *NOM* → *NOM* → *NOM**
'*There-EXPL arrives there-EXPL.'

c. C [ DP [ there [ T ]]]
C ↪ *NOM* ↪ *phi** → *phi*
'*John arrives there-EXPL.'

d. C [ DP [ DP [ T ]]]
C ↪ *NOM* ↪ *phi** ↪ *phi*
'*John she loves.'

Moreover, the present proposal predicts that, if nothing else intervenes, double-subject constructions should be possible if DPs do not value their phi-features at all. This prediction is confirmed by Japanese, as argued by Miyagawa (2001). First, Japanese allows both SOV order and OSV order. Miyagawa shows that in the case of negative clauses, when the object raises over the negation in the OSV variation, it takes scope over the negation. This is contrary to the SOV order, where the negation takes scope over the object. Miyagawa then shows that in a double-subject construction where both DPs are marked for nominative case, the object again takes scope over the negation, thus it raises. Yet, where does it raise to? Miyagawa assumes that both the thematic subject and object DPs occupy the specifier position of T. Importantly, if this configuration is possible in a language, the prediction is that the DPs should not value their phi-features. This prediction is borne out, since both

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DPs are marked for nominative case, but the verb does not inflect for nominal phi-features. Thus, the Japanese double-subject construction is represented by (40), where ** marks the missing phi-features at the PF interface.

(40) C [ DP [ DP [ T ]]]
C ↪ *NOM* ↪ ** ↪ **

Cross-linguistically, the prediction is that if a language allows true double-subject constructions with two nominative DPs between C and T, it should not show overt agreement with the verb, at least not in those constructions. This is true of Korean and Chinese, both well-known examples of languages which allow double-nominative multiple-subject constructions but which do not show overt verbal agreement.

Furthermore, if such DPs behave like expletives with respect to verbal agreement, and if nothing else intervenes, the present proposal allows unlimited stacking of such DPs as long as they are semantically licensed and no other grammatical rule is violated. Kim (2001) shows that these constructions are not impossible, as they occur both in Korean and Japanese. In the following examples from Kim (2001), the verb is preceded by a number of nominative DPs:

(41) a. John-i chunkwu-ka apeci-ka ton-i manh-ta. (Korean)
*John-NOM friend-NOM father-NOM money-NOM many*
'It is John's friend's father who has lots of money.'

b. Ken-ga imooto-ga se-ga taka-i. (Japanese)
*Ken-NOM sister-NOM height-NOM tall-PRES*
'It is Ken whose sister is tall.'

In Finnish, DPs with genitive case do not agree with the heads that license them. Given that such a construction is otherwise licensed in the grammar, it ought to be possible to stack genitive arguments in the same way as it is possible to stack nominative DPs in Korean. One example is shown in (42), which illustrates a nominalized clause that is built by stacking the genitive DPs to the specifier positions of the deverbal nominal.

(42) Isä-n auto-n osta-minen kesti ikuisuuden.
*father-GEN car-GEN buy-N.NOM last-PAST forever*
'The buying of the car by the father lasted forever.'

On the other hand, nominative DPs cannot be stacked in the same way in Finnish, because they valuate their phi-features to the verbal elements:

(43) *isä auto osti.
father-*NOM car-NOM buy-PAST.3SG*
'The father bought the car.'

The lack of verbal agreement leads to other predictions under the present theory. In the previous section, we remarked that relative clauses must be headed by a

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complementizer or a *wh*-element, otherwise the embedded C would be valued by the nominal head N. This requirement is not universal, however. In Japanese, for instance, relative clauses are merged to the nominal head without an overt, intervening element. In standard terminology, this means that Japanese relative clauses are not CPs but TPs (Fukui & Takano 2000). The present proposal provides a way of capturing this phenomenon. Because nominals do not valuate their phi-features in Japanese, it is also likely that the nominal *head* does not do so. If this were the case, then the relative clause can be complemented to the nominal head directly without intervening elements, much like two nominals can be merged on top of each other without a PF violation.

MULTIPLE WH-CONSTRUCTIONS. Another operation which creates constructions resembling multiple-specifier construction is fronting, because in some languages, such as in Bulgarian, several *wh*-elements can be fronted (Rudin 1988; Pesetsky 2000).

(44) a. Koj kakvo e kupil?
*who what is bought*
'Who bought what?' (Bošković 2000:53)

b. Koj na kogo kakvo s kakvo napisa?
*who to whom what with what wrote*
'Who wrote what to whom with what?' (Pesetsky 2000:21)

To discuss these constructions and to see if the present proposal predicts their properties, it is necessary to look first at some basic facts concerning A′-movement. We assumed implicitly that DPs are valued case after C has been merged to the clause.[15] This guarantees that in Finnish negative clauses, the full valuation of a DP takes place between C and Neg and not earlier or later. A′-movement complicates the picture because it targets elements that have been already valued. In other words, topicalized or otherwise fronted elements do not change their case, nor do they agree with other elements at the left periphery.[16] For present purposes, we assume that valuation can be done only once. After valuation, the DP is marked with the feature [+VAL]. This makes it immune to valuation. Within this context, then, the reason why *wh*-elements can be stacked in the C-domain is because they are valued BEFORE fronting. In the example below, the matrix V does not valuate C because of the intervening *wh*-elements:

(45) V [$_{CP}$ $wh_1$ $wh_2$ $wh_3$ C TP]
*V* [$_{CP}$ +VAL +VAL +VAL *C TP*]

Given these assumptions, we can use our theory to explain certain properties of multiple *wh*-constructions. As mentioned earlier, according to our proposal, movement due to the EPP is subject to locality effects (Attract Closest). In multiple *wh*-constructions, the first *wh*-element suffices to pay the 'subjacency tax', so to speak, as it alone prevents C from valuating valuate T. If the rest are moved for

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some other, say, stylistic or semantic reason, the prediction is that they should no longer be constrained by these locality restrictions. Confirming this prediction, if several *wh*-elements move, there is indeed a difference in how they are treated. The first element is typically assumed to land in (Spec, CP), and it is subject to the Attract Closest (i.e. locality restrictions on transformations). The other *wh*-elements that follow are moved more freely, to the extent that Bošković (2000, 2003) argues that this movement is based on a different mechanism, such as focusing (see also Brody 1995; Richards 1997; Pesetsky 2000). Crucially, Bošković also shows that in the matrix clauses, the ordering of the *wh*-elements is free, whereas in the embedded clauses, the first *wh*-movement must obey locality effects, exactly as the present proposal predicts. In short, the present theory of valuation explains why the first-moved *wh*-element is treated differently from the rest, namely, because it suffices to prevent crashing at PF and thus satisfies the EPP.

What the present proposal rules out, then, are languages in which nothing appears between the matrix V and the embedded C. For example, consider a language where all *wh*-elements are located in situ and where nominals are valued case. The prediction is that when such interrogatives are inserted into an embedded context, (Spec, CP) must be filled with an overt or phonologically covert complementizer. Agreeing with this prediction, (Spec, CP) is always overtly filled in Japanese, which is a *wh*-in-situ language (Aoun & Li 1993; Lasnik & Saito 1993; Ogawa 2001). Furthermore, Lasnik & Saito (1993) observe that this occurs just in case the interrogative occupies the embedded position, not when it takes the matrix position. Cross-linguistically, this generalization does seem to hold for interrogatives. On the basis of an analysis of twelve languages, Cheng (1991) proposes that all *wh*-in-situ languages have a specific particle for yes/no questions. Cheng's idea is that the availability of the yes/no particle licenses the *wh*-in-situ, but in the present context, this generalization can be recast in terms of the EPP: if nothing moves to (Spec, CP), something else, i.e. the yes/no particle, must be inserted there.

In the case of declarative complement clauses, the situation is more complex, as, for example, Chinese is a *wh*-in-situ language but has no evidence of an overt complementizer in a declarative complement clause. The problem is that because Chinese nouns do not show overt case, functional heads probably do not valuate their case features and thus PF interpretability does not rule out constructions with two adjacent functional heads. Furthermore, because there would then be no, or very little, EPP-motivated phrasal movement, the prediction is that the word order should freeze, as is indeed the case as Chinese word order is inflexible. It is not obvious if Chinese is a genuine counterexample to our proposal.[17]

The re-analysis of complementizers in the present context is still without a satisfactory solution. In English, the complementizer cannot occur with a fronted

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*wh*-element, which has led to the proposal that both *wh*-elements and complementizers occupy the C-node. This is in disagreement with the present proposal, since the complementizer can satisfy the EPP feature and thus occur between the matrix V and the embedded C. In the vocabulary of the X-bar theory, the complementizer occurs in (Spec, CP) position. Finnish data led us to believe that this is true, because the complementizer can optionally precede the *wh*-element. This is shown in (46).

(46) a. Pekka ties-i että miksi Merja rakast-i hän-tä.
*Pekka knew-PAST that why Merja loved-PAST him-PRT*
'Pekka knew why Merja loved him.'

b. Pekka ties-i että Merja rakast-i hän-tä.
*Pekka knew-PAST that Merja love-PAST him-PRT*
'Pekka knew that Merja loved him.'

c. Pekka ties-i miksi Merja rakast-i hän-tä.
*Pekka knew-PAST why Merja loved-PAST him-PRT*
'Pekka knew why Merja loved him.'

d. *Pekka ties-i Merja rakast-i hän-tä.
*Pekka knew-PAST Merja love-PAST him-PRT*

In (46a), the complementizer precedes the *wh*-element. This shows that the complementizer must occupy a higher position in the clause than the *wh*-element. However, there is no evidence that the *wh*-element would occupy a lower position than C, if only because the subject, being located at (Spec, TP), follows it. Examples (46b–c) show that either one of these elements can be dropped. Thus, sentence (46b) lacks interrogative force, whereas example (46c) is synonymous with the construction that has the overt complementizer. Yet, a sentence where neither the complementizer nor the *wh*-element occurs is ungrammatical.

The underlying pattern behind these examples is that some element, whether it is the complementizer, the *wh*-element or both, occurs between C and T. In the construction where they both occur and where the complementizer precedes the *wh*-element, the complementizer occupies the second specifier of C. This double-specifier structure is licensed, because neither the complementizer nor the valued *wh*-element are valuators, the former because it neither bear phi-features nor is a functional head, the latter because it has been already valued before fronting.

We thus believe that the theory which locates both *wh*-elements and complementizers in C cannot be maintained as a property of the UG. Rather, both elements can occupy (Spec, CP) to satisfy the EPP requirement if the clause is in the embedded position, but neither one is needed if the clause occupies the matrix position (**that John loves Mary*, *wh*-in-situ languages).

We have argued that our proposal makes correct predictions about legitimate double-spec structures and can cover the evidence better than the theory which

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assumes that the EPP is a feature of the probes. The key assumption which does the explaining here is the idea that valuation is a blind process, whereas certain possibilities are filtered out only at PF. This allows us to deduce the constraints on various multiple-spec constructions.

The discussion in this section is presented not as a complete theory of expletives, multiple *wh*-constructions or multiple-subject constructions, but rather as an argument to the end that the present theory of the EPP is an improvement when compared with the standard theory, and can thus lead us closer to a full account of these phenomena. That is, the simplest theory of valuation, accompanied by certain morphological restrictions, applies quite well to the analysis of multiple-specifier constructions without positing additional constraints, rules or principles.[18]

### *3.2 The* LOCUS C HYPOTHESIS *revisited*

In this section we return to the problems concerning the original LOCUS C HYPOTHESIS. In the present model, the Agree/EPP follows from a domino effect that originates in C: C values nominative case, but because this case cannot be valued to T, a DP is probed to the position of grammatical subject (Spec, TP). As a consequence of this movement, that DP then values its phi-features to T. The complementizer is not anymore the locus of phi-features, which we found to be an unprincipled and unmotivated assumption. Rather, C is the locus of nominative case, whereas the phi-features belong intrinsically to the DPs only. The fact that C values nominative case is one instance of the more general principle, which says that (presumably all) functional heads valuate case features. Intuitively, nominative case is just a reflect of a nearby c-commanding C.

The model explains not only why Agree/EPP is correlated with T but also why it does not have to be, as shown by the properties of Finnish finite negative clauses: whatever head is selected by C (T/Neg) inherits Agree/EPP properties automatically. This also implies that we do not need to assume that there is a separate formal head, such as AgrS, between C and T. Rather, whatever semantically interpretable head is located there receives the correct morphosyntactic properties.

Why is Finnish negation merged over TP, whereas in other languages, as in English, it is merged to the *v*P? In order to sharpen the question, let us concentrate here on two kinds of languages as proposed in Ouhalla (1991): Neg selecting TP (e.g. Finnish) and Neg selecting *v*P (e.g. English). We also continue to assume that narrow syntax is uniform across languages, and that the differences between languages should be attributed to their surface properties, in our case to the surface lexicon.

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First, note that rule (47) is part of the surface lexicon of English.

(47) *Neg + phi-features (English)

This rule is completely accidental, a random feature of modern English. It says that the negative element does not inflect for person, number or gender (i.e. **John not-s sleep*). Rule (47) is a language-specific rule, but it stays within Chomsky's Uniformity Principle, which assumes that the variation among languages is to be 'restricted to easily detectable properties of utterances' (Chomsky 2001:2), these being restricted, according to one influential theory, to the lexical elements (Borer 1984) or functional elements (Fukui 1988). This rule alone prevents the Neg from being merged above TP in English finite clauses, because at that position it would be automatically valued by the phi-features of the DP. If nothing else intervenes, in English non-finite clauses negation should be able to occupy both above-TP and below-TP positions because in neither case it is valued by the phi-features of the DP. This prediction is borne out, as shown by (48a–b).

(48) a. John wanted him-*ACC* [$_{\text{NegP}}$ not [$_{\text{TP}}$ to die]]
b. John wanted him-*ACC* [$_{\text{TP}}$ to [$_{\text{NegP}}$ not die]]

In certain languages, such as Nenets, the negation shows both subject agreement and tense marking. In these languages, T must adjoin to the Neg. In Finnish, T does not adjoin to the Neg, because (49) is a condition on the Finnish surface lexicon.

(49) *Neg + T (negation does not inflect for tense)

One argument for this can be derived from the observation made by Korhonen (1973) that a strong correlation exists between the presence of the past-tense form of negation and the lack of obligatory copula. Thus, if the main verb itself does not indicate tense marking, either tense is realized by an auxiliary at $T^0$ or the T is raised to the $Neg^0$. If there is no auxiliary, then we are indeed left with the latter possibility: adjoining T to Neg. This gives us a total of three strategies for realizing T: to raise to a head above T (Neg), to insert auxiliary to T (*do*-support), or to raise lexical material to T (verb raising). We propose that the PF-legibility conditions such as (47) and (49) regulate the interaction and instantiation of these possibilities, as discussed above.[19]

Overall, our theory is in agreement with the target property explained earlier, whereby the differences between languages should reduce to the properties of their lexicons: if overt morphology constrains syntax directly, there is a straightforward deductive path from the overt morphological properties of lexical elements to their arrangement in narrow syntax. More specifically, if valuation is a blind process defined over syntactic configurations, and the morphology is restricted, it turns out that morphological properties can constrain the syntactic positions where lexical

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elements are allowed to appear at Spell-Out. As noted by Richards (1997:223), the reliance on the stipulative notion of such widely-used 'feature strength' (i.e. strong and weak features), vehicles for controlling movement and variation across languages should, in the long run, be replaced with a theory that deduces the same effects from general principles; this is precisely what the present proposal at least aims to do.

The case valued for a DP can be distributed within the whole DP. The present theory handles this situation automatically: thus, instead of assuming that the DP itself searches for the closest potential valuator, we assume that the theory applies individually to the lexical elements inside the DP. Thus, demonstrative pronouns, quantifiers, adjectives and nouns are all inflected for prepositional or structural case in Finnish because the relevant head (i.e. C, P or *v*) is the closest valuator for each of them. To see how this works, consider numerals larger than one, such as *kaksi* 'two'. Such numerals valuate the partitive case to their complement NPs in Finnish (Vainikka 2003).

(50) a. Minä löysin valkoi-sen suka-n.
*I found white-*ACC *sock-*ACC
'I found a/the white sock.'

b. Valkoi-nen sukka oli kaapi-ssa.
*white-*NOM *sock-NOM was closet-INE*
'The white sock was in the closet.'

(51) a. Minä löysin kaksi valkoi-sta sukka-a.
*I found two white-PRT sock-PRT*
'I found two white socks.'

b. Kaksi valkoi-sta sukka-a oli kaapi-ssa.
*two white-PRT sock-PRT were-SG closet-INE*
'Two white socks were in the closet.'

The existence of the DP-internal numeral overrides the effect of the matrix case, which then values partitive case to the adjective and the nominal head. This is what we expect if case is valued by the closest valuator in a head-to-head relation. In a DP without a numeral, the closest valuator is the functional head C or *v* in the matrix clause, hence the adnominals appear in nominative and accusative case (50a–b). Nevertheless, in the presence of the numeral representing pluralities above one, the closest valuator is not the matrix head, but the numeral, cf. (51a–b).

This evidence suggests that Finnish numerals serve as valuators inside DPs, but so far, the extension of the category of 'valuators' has not been defined properly. According to the most conservative version, only specific heads such as C, *v*, Num, phi-features of nominals and presumably V belong to this category. This suffices for the purposes of deducing the EPP, but the above analysis of case distribution suggests that there is more to it. One possibility is that all heads and all full XPs

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with phi-features are automatically valuators, excluding only adjuncts (adjectives, adverbs).[20] Finnish, for example, has a wide variety of non-affixal heads such as prenominal prepositions, (52a), numerals, (52b) and comparatives, (52c), which valuate structural partitive case to their complements (Vainikka 2003).

(52) a. ilman tietokonet-ta
*without computer-PRT*
'without a computer'

b. kolme tietokonet-ta
*three computers-PRT*
'three computers'

c. Pekka on vanhempi Merja-a.
*Pekka is older Merja-PRT*
'Pekka is older than Merja.'[21]

Thus, heads other than the core functional heads may participate in the valuation mechanism proposed in (23).[22]

So far the valuation mechanism itself has been an unexplained assumption. However, this mechanism is not invented merely as a descriptive device for capturing data concerning negation, multiple-specifier constructions or case distribution. Kayne (1994) argues that asymmetric c-command relations, similar to those that work as part of the theory of valuation here, invariably map into linear precedence at PF. If this is true, then the asymmetric c-command relation plays an even more general role in the grammar, especially at the PF interface, accounting for linear ordering, valuation of the case and phi-features, and EPP-triggered phrasal movement.

## 3.3 Finnish negation and non-finite clauses

### 3.3.1 Data

Finnish has a construction which contains negation with a default agreement in what looks like an elliptic non-finite complement clause (cf. examples (13a–b) above, repeated here as (53a–b). In so far as we know, this construction lacks a principled explanation. In this section, we review the syntactic properties of the negative infinitival clauses, arguing that their properties follow from the theory presented here. More precisely, we argue that in Finnish, the negative infinitival clauses can appear only in the A′-positions and not in A-positions. We then use the valuation theory outlined above to explain the difference.

To begin with, Finnish 'VA-infinitives'[23] are formed in the present tense by adding a *-vA* suffix together with an *-n* to the verbal stem. Then negative VA-infinitives are possible in what first looks like an elliptical context:

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(53) a. He näki-vät meidä-n lähte-vän, mutta (*meidän) e-i juokse-van.
*they saw-3PL us-GEN leave-VA but us-GEN not-3SG run-VA*
'They saw us leave, but not walk.'

b. He näki-vät meidä-n lähte-vän, mutta teidä-n e-i (*lähte-vän).
*they saw-3PL us-GEN leave-VA but you-GEN not-3SG leave-VA*
'They saw us leave, but not you.'

As shown in (53a–b), either the subject or the non-finite verb of the infinitival clause can be deleted elliptically (but not both). Similar facts are obtained with the MA-infinitives (or 'third infinitives', Vilkuna 2000:238), but although the negation can occur with the verb, as in (54a), it cannot occur with the subject only, as in (54b).

(54) a. He näki-vät meidä-t lähte-mä-ssä, mutta (*meidä-t) e-i
*they saw-3PL us-ACC leave-MA-INE but us-ACC not-3SG*
juokse-ma-ssa.
*run-MA-INE*
'They saw us leaving' but not running.'

b. *He näki-vät meidä-t lähte-mä-ssä, mutta teidä-t e-i
*they saw-3PL us-ACC leave-MA-INE but you-ACC not-3SG*
(*lähte-mä-ssä).
*leave-MA-INE*

In both VA-infinitives and MA-infinitives, the verb appears in the non-finite form, and the negation takes a default agreement. The Finnish A-infinitives, in (55a), and the E-infinitives, in (55b), behave similarly to the VA-infinitives. The following examples are thus identical to (53), except that the non-finite verb is different:

(55) a. He anta-vat [$_{XP}$ laiva-n liikku-a], mutta e-i lähte-ä. (A-infinitive)
*they let-3PL ship-GEN move-A but not-3SG leave-A*
'They let the ship move, but not leave.'

b. He laula-vat [$_{YP}$ syöd-e-ssä], mutta e-i juod-e-ssa. (E-infinitive)
*they sing-3PL eat-E-INE but not-3SG drink-E-INE*
'They sing when they eat, but not when they drink.'

The problem is to explain why negation is possible in these marked contexts, but not in standard non-finite clauses.

### 3.3.2 Negative infinitivals are adjunct phrases

How should these negative infinitivals be analysed in the first place? To begin with the syntactic properties of MA-infinitives, there is evidence which suggests that MA-infinitives can be adverbial clauses (Vilkuna 2000:238–240; Manninen 2003). The verb ending of an MA-infinitive consists of two parts: the MA-affix

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and a prepositional case ending (the paradigm is defective, allowing the inessive, elative, illative, adessive, abessive and instructive case suffixes in non-adjectival uses). For instance, the verb *lähte-mä-ssä* 'leaving/lit. in leaving' in (54b) contains three components: the verbal stem, the MA-affix and the case affix:

(56) lähte-mä-ssä
*leave-MA-INE*
lit. 'in leaving'

It is a general property of Finnish that prepositional adjuncts can be negated:

(57) He näki-vät meidä-t [$_{PP}$ Helsingi-ssä], mutta e-i [$_{PP}$ asema-lla]
*they saw-3PL us-ACC Helsinki-INE but not-3SG station-ADE*
'They saw us in Helsinki, but not at the station.'

Note that here negation takes a default agreement as in the case of MA-infinitives. Furthermore, the deverbal PP *lähte-mä-ssä* is an adjunct, since it is optional; the matrix clause in (54) is grammatical without it. Finally, apart from PP adjuncts, other kinds of adjuncts can likewise be negated in Finnish:

(58) He näki-vät laiva-t tänään, mutta e-i eilen.
*they saw-3PL ships-ACC today but not-3SG yesterday*
'They saw the ships today, but not yesterday.'

In each case, the negation occurs in the default third-person singular form *ei*. The MA-infinitives can thus occur as PP adjuncts or adverbial clauses (Hakulinen & Karsson 1979; Vilkuna 2000:238–240; Manninen 2003):

(59) a. He [$_{VP}$ näk-i-vät [$_{DP}$ laiva-t]] [$_{PP}$ lähte-mä-ssä]
*they saw-PAST-3PL ships-ACC leave-MA-INE*
b. He [$_{VP}$ näk-i-vät [$_{DP}$ laiva-t]] [$_{PP}$ mere-ssä]
*they saw-PAST-3PL ships-ACC sea-INE*

The most simple hypothesis is therefore to take the NEGATED MA-infinitives to be negated PP adjuncts. Comparable to (59a–b), we find (60a–b):

(60) a. He [$_{VP}$ näk-i-vät [$_{DP}$ laiva-t]] [$_{PP}$ lähte-mä-ssä]
*they saw-PAST-3PL ships-ACC leave-MA-INE*
[$_{NegP}$ (mutta) ei [$_{PP}$ uppoa-ma-ssa]]
*but not sink-MA-INE*
b. He [$_{VP}$ näk-i-vät [$_{DP}$ laiva-t]] [$_{PP}$ mere-ssä] [$_{NegP}$ (mutta) ei
*they saw-PAST-3PL ships-ACC sea-INE but not*
[$_{PP}$ tuule-ssa]]
*wind-INE*

One might therefore assume that the negative VA-infinitives are also adverbial clauses at A′-positions, as illustrated in (61).

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(61) He näk-i-vät [$_S$ meidä-n lähte-vän] [$_{AdvP}$ mutta ei juokse-van]
*they saw-PAST-3PL us-GEN leave-VA but not run-VA*
'They saw us leave, but not run.'[24]

Additional evidence suggests that the negative infinitivals are adjuncts. First, the negative VA-infinitives are always optional and they never appear as the sole complement. Moreover, negative MA-infinitives behave similarly. As pointed out by an anonymous referee, affirmative MA-infinitives, on the other hand, are capable of occurring in a position which resembles an A-position, as in (62a). For instance, compare (62a–b).

(62) a. Hän on ampu-ma-ssa jäniks-i-ä.
*he is shoot-MA-INE rabbit-PL-PRT*
'He is shooting rabbits.'
b. *Hän on e-i ampu-ma-ssa jäniks-i-ä.
*he is not-3SG shoot-MA-INE rabbit-PL-PRT*
'He is not shooting rabbits.'

In (62a), the MA-infinitive can be in the argument position, but a negative MA-infinitive still cannot occupy this position. Thus, NEGATIVE infinitives are clearly banned from A-positions. Secondly, if negative VA-infinitives are adverbial phrases, then the syntactic analysis of negation in Finnish can be unified: negation can head a non-finite clause just in case the clause occurs in an A′-position.

Another piece of evidence in favour of this hypothesis comes from binding. Finnish has a reflexive possessive marker Px that must agree with its correlate:

(63) a. Me$_i$ luul-i-mme kuole-va-mme$_i$.
*we suspect-PAST-1PL die-VA-PX.1PL*
'We suspected that we were going to die.'
b. *Me luul-i-mme kuole-va-nsa.
*we suspect-PAST-1PL die-VA-PX.3SG*

Px is anaphoric and thus subject to binding (Vainikka 1989; Trosterud 1993; Nelson 1998; Kaiser 2003). Crucially, the subject-agreement possessive marker cannot occur in a negative VA-infinitive:

(64) *Me$_i$ luul-i-mme sairastu-va-mme$_i$, mutta e-i kuole-va-mme$_i$.
*we$_i$ suspect-PAST-1PL sick-VA-PX.1PL$_i$ but not-**3SG** die-VA-PX.1PL*
'We suspected that we were going to get sick, but not to die.'

However, if the embedded negation shows the subject agreement marking, then this form is possible:

(65) Me$_i$ luul-i-mme sairastu-va-mme, mutta e-mme kuole-va-mme.
*we suspect-PAST-PL sick-VA-PX.1PL but not-**1PL** die-VA-PX.1PL*
'We suspected that we were going to get sick, but not to die.'

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In the latter case, the negation is part of the embedded CP, negating the main verb, and the construction is formed elliptically by deleting the main verb. This explains why in (65), but not in (64), the possessive agreement marking is possible: the adverbial (64) lacks a suitable subject correlate that could bind the reflexive. In (65), the subject has been deleted elliptically, but is still part of narrow syntax, and thus available for binding. Exactly the same is true of Neg-DP adjuncts which are projected from the lexical nominals:

(66) ?*Me$_i$ nä-i-mme ystävi-ä-mme$_i$, mutta e-i lapsi-a-mme$_i$.
*we saw-PAST-1PL friends-PRT-PX.1PL but not children-PRT-PX.1PL*
'We saw our friends, but not our children.'

These are again much worse than the same sentences containing subject-agreeing negation formed elliptically from a whole CP. These data suggest that the negative VA-infinitives with a default agreement are syntactically different from the ones with matrix subject agreement: in the latter, but not in the former, a subject is available for binding. This, in turn, follows if the negative VA-infinitive is an adverbial clause in an A-bar position, as such adverbial clauses do not contain the subject and cannot be bound by the matrix subject. To summarize, these tests suggest that what matters is the agreement pattern of the negation. When there is default agreement, the negative infinitival is an adverbial clause, but when there is matrix subject agreement, it is formed by ellipsis. The difference is illustrated in (67).

(67) a. He näk-i-vät laivo-jen lähte-vän, [$_{CP}$ mutta (he) e-ivät
*they saw-PAST-3PL ships-GEN.PL leave-VA but they not-3PL*
(näh-neet) merimies-ten saapu-van]
*saw-PAST.3PL sailors-GEN.PL arrive-VA*
'They saw the ships leave, but not the sailors arrive.'

b. He näk-i-vät laivo-jen lähte-vän [$_{AdvP}$ mutta e-i
*they saw-PAST-3PL ships-GEN.PL leave-VA but not-3SG*
merimies-ten saapu-van]
*sailors-GEN.PL arrive-VA*
'They saw the ships leave, but not the sailors arrive.'

According to this analysis, negation can occur in non-finite contexts just in case the infinitival occurs in an A-bar position. What remains is an explanation of this pattern.

### 3.3.3 Explanation in terms of valuation

If the present analysis is correct concerning Finnish negative infinitivals, then Finnish non-finite clauses CAN be headed by a negation when the construction is located at an A′-position. In English, on the other hand, the Neg-TP can appear as a verbal complement and thus in an A-position. This difference remains unaccounted for. At first, it seems puzzling that an element can occur both in a finite clause and

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in adverbial clauses. However, the common denominator in both cases is the fact that the element is not in a position which is valued case: in the finite clause the negation is valued phi-features, whereas in the adjunct position, it is neither valued phi-features nor structural case. How to combine the presence of a negation inside a phrase that is not valued case? The theory of valuation developed here provides an answer to this puzzle: when the negative particle heads a non-finite clause in an A-position, its closest valuator becomes the matrix C/*v*. But since there is no case-inflected form of the negation in Finnish, this configuration would cause the derivation to crash at PF. Recall that in Finnish, many elements of a phrase (e.g. DP) which are situated in an A-position are valued the relevant structural case. For instance, if the DP contains demonstrative pronouns or adjectives, they are valued the structural case:

(68) Minä näin tuo-n piene-n poja-n.
*I saw that-*ACC *little-*ACC *boy-*ACC
'I saw that little boy.'

According to the valuation mechanism (23) above, the elements inside of the DP seek out the closest c-commanding valuator, such as the *v*. In (68), this appears to be true of demonstratives, adjectives and nouns. Similarly, it has been argued that in VA-infinitives, both the subject and the non-finite verb are inflected for genitive case (i.e. what Hakulinen & Karlsson 1979:357 call 'genetivization' of the subject and the verb):

(69) Minä näin laivoje-n lähte-vä-n.
*I saw ships-*GEN *leave-*VA-GEN
'I saw the ships leave.'

In (69), the elements inside the VA-infinitive are valued the genitive case. Thus, all elements inside XP in the configuration H–XP can be valued by H. The same reasoning should apply to a phrase containing negation. Thus, in (69), if the negation were part of the non-finite complement, it should be valued case as well. This derivation would crash since the Neg + case is not interpretable at PF: there is no nominal form of negation in Finnish. In (70), the negation should be marked with genitive case if it occurs after the embedded subject, (70a) and with prepositional case if it occurs inside the MA-infinitive, (70b), but these forms are all non-existent.

(70) a. Minä näi-n laivoje-n (*ei-n, *?ei-vän) lähte-vän.
I *saw-1*SG *ships-*GEN *not-*GEN *not-*VA *leave-*VA
'*I saw the ships not to leave.'

b. Minä näi-n laiva-t [PP (*ei-mä-ssä) lähte-mä-ssä]
*I saw-1*SG *ships-*ACC *not-*MA-INE *leave-*MA-INE
'*I saw the ship not to leave.'

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A non-negative nominalized clause can appear in an A-position just in case it shows case marking:

(71) a. Laivoje-n lähte-minen oli surullista.
*ship-GEN leave-MI.NOM was sad*
'The leaving of ships was sad.'
b. Minä näi-n laivoje-n lähte-misen.
*I saw-1SG ship-GEN leave-MI.ACC*
'I saw the leaving of the ships.'

The suffix of the deverbal noun *lähte-misen*/*-minen* depends on the structural position of the whole clause: again the structural case (valuation by C/*v*/V) penetrates the non-finite clause, inflecting the predicate. But if so, negation is again impossible, since it does not realize the case:

(72) a. Laivoje-n (*ei, *ei-nen) lähte-minen oli surullista.
*ship-GEN not not-NOM leave-MI.NOM was sad*
'The (not) leaving of ships was sad.'
b. Minä näin laivoje-n (*ei, *ei-sen) lähte-mi-sen.
*I saw ship-GEN not not-ACC leave-MI.ACC*
'I saw the leaving of the ships.'

On the other hand, phrases that appear in the sentential A′-positions are neither valued structural case nor phi-features.

Negated non-finite clauses can occur in English in object and subject positions as well, contrary to Finnish non-finite clauses listed in (69) above:

(73) a. I want him$_i$ [$_{\text{NegP}}$ t$_i$ not [$_{\text{TP}}$ t$_i$ to t$_i$ leave]]
b. [Not to leave now] would be extremely stupid.

This fact becomes inevitable given that case does not penetrate into the DP in English (cross-linguistically, case realization inside the DP is subject to a substantial amount of variation, see Dixon & Aikhenvald 2004:25). Overall, what accounts for the peculiar distribution of Finnish negative infinitivals is the fact that the negation does not inflect for case in Finnish, together with the observation that there is a productive case distribution.

A more complex argument in favour of the present proposal can be construed as follows. Nominalized sentences in Finnish can contain adverbial clauses. It is logically possible to add a negative adverbial clause (negative infinitival) to a nominalized sentence appearing in a position where it is valued case externally. The present theory predicts that the resulting construction is ill-formed just in case the negation takes a default agreement and is thus inside the adverbial clause. This is because, in that position, the closest valuator for the negation is the matrix valuator. This prediction is borne out:

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(74) a. *Minä näi-n [Merja-n nopea-n lähte-mi-sen] [$_{AdvP}$ mutta
*I saw-1SG Merja-GEN fast-ACC leave-MI-ACC but*
e-i tule-mi-sen]
*not-3SG come-MI-ACC*

b. *Minä näi-n [Merja-n nopea-n lähte-mi-sen] [$_{AdvP}$ mutta
*I saw-1SG Merja-GEN fast-ACC leave-MI-ACC but*
e-i *tule*-mi-sta]
*not-3SG come-MI-PRT*

c. Minä näi-n [Merja-n nopea-n lähte-mi-sen] [mutta e-n
*I saw-1SG Merja-ACC fast-ACC leave-MI-ACC but not-1SG*
(nähnyt Merja-n nopea-a) tule-mi-sta]
*saw Merja-GEN fast-PRT leave-MI-PRT*
'I saw the fast leaving of Merja, but not her coming.'

According to the present theory, the reason why (74a–b) are ill-formed is that when the negated adverbial clause occurs inside a nominalized clause, the most local valuator for the negation is either *v* or V. But negation does not inflect case.

## 4. CONCLUSIONS

While the earlier GB theory depicted syntactic competence as an output of a more or less autonomous and independent cognitive module, the recent minimalist framework has explored the possibility that many aspects of grammar emerge due to the interaction between linguistic and extra-linguistic processes. Two particular links between narrow syntax and other cognitive faculties have been studied most extensively: speech production (PF) and meaning (LF). The PF interface is responsible for converting the abstract syntactic representation into a concrete utterance, whereas the LF interface connects those representations with conceptual–intentional systems, which consists of largely unknown mechanisms responsible for 'interpreting' linguistic utterances in their broader context. The relation between LF and PF is mediated by optimal derivation, i.e. narrow syntax, which tries to satisfy the interface conditions of both LF and PF. For example, the LF interface cannot interpret formal morphosyntactic features since they are not relevant to the semantic interpretation of the sentence. Because such features are not interpretable at LF, they must be removed from the derivation before the representation is handed over to LF.

According to Kayne (1994), the PF interface is equally important in that linear ordering at PF constrains grammatical representations. Specifically, asymmetric linear order at PF must be determined by asymmetric c-command relations established at narrow syntax. We have proposed in this article that in addition to linear order, morphosyntactic valuation is based on an asymmetric c-command relation, and that the outputs of this process are constrained by the PF interface. We have argued in favour of this proposal on the basis of Finnish clausal and infinitival

https://doi.org/10.1017/S033258650600148X Published online by Cambridge University Press

negation, expletive constructions, multiple DP and *wh*-constructions, asymmetries between matrix and embedded clauses, complementizers, case distribution, cross-linguistic variation, and the EPP.

## ACKNOWLEDGEMENTS

This research was supported by the Finnish Cultural Foundation and the Academy of Finland (project number 106071) for the first author and the University of Helsinki for the second author. We thank the three anonymous referees for their comments.

## NOTES

1. Agree replaced the earlier notion of covert feature movement in Chomsky (1995). Feature movement, in turn, is one component of overt movement (Move $\alpha$ = feature movement + pied-piping).
2. As assumed in the the 'alternative 1' in Chomsky (2001:8), which is furthermore the conventional approach in MP, where the phi-completeness is a property of the head itself, not an element that selects it.
3. There is also reason to believe that mood (conditional/potential) is located in the $T^0$ in Finnish (Mitchell 1991; Holmberg et al. 1993), but negation does not inflect for mood, either.
4. This agreement disappears completely if the clause is in the present tense:

   (i) a. Hän e-i lähde.
   *he not-3SG leave-PRES.Ø*
   'He does not leave.'

   b. He ei-vät lähde.
   *they not-3PL leave-PRES.Ø*
   'They do not leave.'

   As these sentences are syntactically identical, apart from the difference in tense, we assume that incomplete agreement is overtly realized in Finnish only in the past form.
5. We thank an anonymous reviewer for pointing this out.
6. Since negation has a complete phi-set, and since it can be adjoined to a complementizer, the construction resembles complementizer agreement constructions (e.g. Hoekstra & Marcz 1989; Carstens 2003). In Finnish, the element bearing the subject agreement features clearly undergoes an I-to-C movement, which would be in agreement with most analyses of the CA constructions, taking them to represent an I-to-C movement (e.g. Zwart 2001). Some element carrying the subject phi-features is raised to $C^0$.
7. This analysis is close to the received view on Finnish negative constructions, according to which negation is located at the F between C and T. One could take the F to be a head associated with 'finiteness', which Holmberg & Nikanne (2002), conceived of as replacing AgrS, taking AgrS to be one particular 'realization' of finiteness. There is ample independent evidence to conclude that some kind of head appears between C and T (e.g. AgrS or something similar, see Holmberg et al. 1993; Zwart 1993; Chomsky 1995:129–217; Holmberg & Nikanne 2002) to which the negation is merged at some point in derivation.
8. The 'Uniformity Principle', Chomsky (2001:2).

9. Note that the problem is not the assumption that there are some kind of heads between $C^0$ and $T^0$; rather, the problem is only the assumption that the head is a purely formal one, such as an AgrS or AgrO (see Pollock 1989, for discussion of these).
10. In Chomsky's terms,

> Manifestation of structural Case depends on interpretable features of the probe: finite T (nominative), *v* (accusative), control T (null) … We may therefore regard structural Case as a single undifferentiated feature. The same would be expected for the uninterpretable $\phi$-set of the probe. Its manifestation depends on interpretable features (namely, $\phi$-features) of the goal, so that it too can be taken to be undifferentiated with respect to the valuae of the individual features of the $\phi$-set ([+/–plural], etc.). For both probe and goal, the form of the uninterpretable features is determined by Agree. To rephrase in traditional terms, verbs agree with nouns, not conversely, and Case is assigned. (Chomsky 2000a:124)

11. For purposes of this study, we assume the following optimality principles: targeting some position intervening between the two heads H and H*, Merge must satisfy the Full Interpretation at Morphology/PF, cf. (27); use the shortest move available ('Attract Closest'); do not introduce new lexical material ('Inclusiveness'); move an element that is c-commanded by the H and H*; and do not move anything below C ('Phase-Impenetrability Condition', taking CP to be a phase; see Chomsky 2001).
12. The present proposal therefore implies that the DP of an non-finite clause is moved up to the matrix clause (see Lasnik 1999; Bowers 2002; Lasnik & Hendrick 2003:131–137, among others).
13. Corbett (1998) claims that several Daghestanian languages allow case-marked nouns to take agreement markers. For this reason, the prohibition of DP–DP agreement should not be ruled out universally.
14. This explanation assumes that expletives cannot be merged to $\theta$-positions inside the *v*P and that only one expletive can exist per numeration. The former assumption is not controversial, whereas we do not have a valuation-based explanation for the latter restriction.
15. In terms of Chomsky (2000a, 2001), CP is a phase which is sent to PF as one package.
16. Richards (1997) lists several languages which obey what he calls an 'anti-agreement effect'. In these languages, extracting the subject *wh*-element weakens or eliminates the agreement with the verb where it occurs if there is no extraction. Richards assumes that in these constructions the verb fails to move to the functional head responsible for the subject agreement, but many possibilities remain to explain these effects. Furthermore, considerable variation among languages exists with respect to this phenomenon.
17. Another possibility is that in this case, (Spec, CP) is filled with a phonologically covert element or that, as argued by Ogawa (2001) following Pesetsky (1995), the complementizer has been adjoined to the matrix verb as an affix.
18. Another prediction concerning A′-movement that follows from the present proposal is as follows: because the EPP is triggered due to PF interpretability, the condition is relaxed when it comes to covert movement after Spell-Out. Like secondary *wh*-movement, covert movement should not necessarily be conditioned by Attract Closest. It is indeed well-known that covert movement is often immune to island effects, for instance. To illustrate, consider a multiple question such as (i).

(i) Who asked who bought what?

Here, the embedded *what* can take scope over the matrix *who*. As noted by Baker (1970), if this type of ambiguity is explained by means of quantifier raising, it comes as a surprise

https://doi.org/10.1017/S033258650600148X Published online by Cambridge University Press

that it cannot move overtly to the corresponding position:

(ii) *What did you ask who bought?

It seems that the *wh*-element can raise to the matrix position only if the movement is covert. Similarly, as argued by Huang (1982), in Chinese, which is a *wh*-in-situ language, no *wh*-island effects are observed. This follows from the present proposal, which associates the EPP with PF interpretability, not LF interpretability. Richards (1997) argues that whereas some languages obey this principle, there are others (Japanese, Korean) which do not. Richards's data shows that we cannot assume that covert movement must be entirely free of constraints. We have nothing to say about constraints on covert movement and related matters such as operator–variable binding; see Aoun & Li (2003) for a proposal which distinguishes derivational and representational chain formation for the purposes of explaining the variety of locality restrictions obtained among different constructions and languages.

19. In French, a finite verb seems to move over the negation and thus skips the $Neg^0$. But then the finite verb is adjoined to the negative element *ne* which, as assumed in Pollock (1989), could be the clitic head of the $Neg^0$ in French. The verb picks up this negative element on the way to $T^0$. Under this analysis, French *pas* is located at (Spec, NegP) and appears post-verbally.
20. Although we do not know of an example of a situation where adjectives or adverbs can valuate, there are languages where adverbs can be valued phi-features; see Corbett (1998).
21. According to Vainikka (2003), the partitive case is thus the 'complement case' in Finnish. Clearly, this cannot mean that partitive is the default the case for the Head–Complement relation, as many Head–Complement relations such as D–NP, C–TP, T–*v*P, V–TP or V–CP are not related to the valuation of partitive case. Rather, partitive case appears to be the default complement case for non-affixal heads.
22. Some recent ideas in the literature suggest that this is worthy of investigation. For example, V values null case to (Spec, TP) in non-finite complement clauses (Chomsky & Lasnik 1993; Martin 2001). Nouns and intransitive adjectives (see Dixon 2004) do not take accusative complements, since they cannot be selected by the transitivizer head *v*. The fact that clausal DPs (or nominalized clauses) cannot contain nominal subjects can be explained by virtue of the fact that they lack the C-node. Instead, DP-internal arguments appear in the genitive/preposition/possessive case, which we speculate to be a reflection of a nominalization head such as D (Marantz 1997), *nom* (Chomsky 1970) or Nz (Ogawa 2001). Hale & Keyser (2002) argue that a crucial factor determining the syntax of the argument structure of various verbs is determined by the universal impossibility of a *v*–V configuration without an intervening DP, for case marking reasons. The simplest possible hypothesis is, therefore, that all functional heads and all phrases with phi-features are valuators. Moreover, we suspect that these are valuators because they can be represented at the PF interface by PRIMITIVE FEATURES rather than by complex phrases. Thus, we assume that the PF interface is very austere in that it cannot deal with phrases, only primitive features or constellations of such features ('word-like elements'). This relatively uncontroversial condition is, thus, part of the PF- interpretability.
23. Or clausal complement infinitivals (Vainikka 1989), referential constructions (Vilkuna 2000) or participle constructions (Hakulinen & Karlsson 1979). There is no agreement upon terminology, nor is there an analysis of the Finnish non-finite clauses.
24. The exact analysis of the negative adverbial clauses is non-essential: the adjunct clause can be a CP, NegP, or any other constituent. The only thing that matters is that the negative infinitival is in an A′-position and not in the argument position. Furthermore, the exact

https://doi.org/10.1017/S033258650600148X Published online by Cambridge University Press

nature of the A′-position is irrelevant. What matters for present purposes is the fact that these adjuncts are not valued case or phi-features. This idealization is necessary, as there is no convincing theory of Finnish infinives in the generative tradition on which we could rely in our analysis.

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