

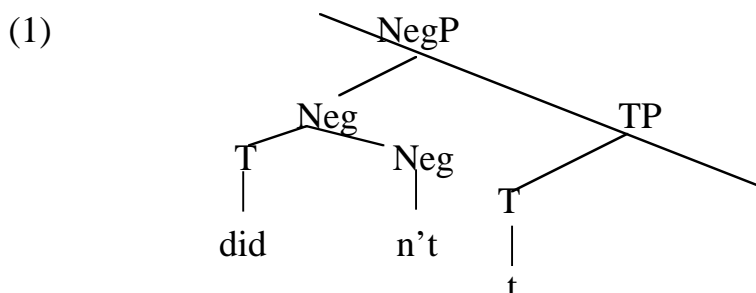
Questions, answers, polarity and head movement in Germanic and Finnish

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1. Introduction¹

Zwicky and Pullum 1983 argued that the English negation *n't* in *didn't*, *won't*, *can't* etc. is an inflection, not a clitic. In this paper I will combine this insight with the widely assumed, yet controversial hypothesis that inflected forms are derived in the syntax by movement. More specifically I will assume that forms inflected with suffixes in head-initial languages are derived by head-movement and left-adjunction of a head to the suffix, essentially as described in Baker 1988.

For *didn't*, *won't*, etc., this entails that it is derived from an underlying structure where the sentential head Neg c-commands T, containing the auxiliary, by left-adjunction (incorporation) of T to *n't*, as shown in (1).



Following much other work on English auxiliaries I assume that the modal auxiliaries and auxiliary *do* are merged as exponents of the category T, while auxiliary *have* and *be* are moved to T.

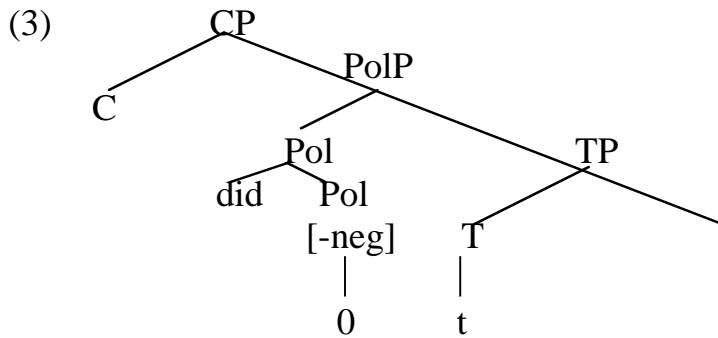
Subject-Aux Inversion (SAI), as in (2), is standardly taken to be head-movement of the auxiliary to C.

(2) Didn't they speak French?

Since SAI applies only to tensed auxiliaries, it has been described as Tense-movement to C (T-to-C) in much recent work on the sentential structure of English (for example Pesetsky & Torrego 2001). But (1) entails that that cannot be right. Instead, in the case of negative sentences, it would appear

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to be Neg-to-C, where Neg incorporates T in the form of an auxiliary. If Neg is the exponent of a category Polarity (Pol) which has two values, [\pm neg], where the exponent of the value [-neg] is a null-morpheme, then SAI can be formally described as Pol-to-C, and for example *Did they speak French?* would have the intermediate structure (3) (ignoring the subject), where at the next step, Pol moves to C.



In the following I will discuss the consequences of this hypothesis. It will be shown:

- (a) that the Pol-to-C hypothesis has certain interesting empirical consequences;
- (b) It makes possible characterizing SAI in yes-no questions as a special case of wh-movement;
- (c) It can be extended to those languages where not only auxiliaries, but any finite verb can undergo head-movement to C in yes-no questions, including the Scandinavian languages and Finnish.
- (d) It provides the basis for a principled theory of replies to yes-no questions;
- (e) Given a restrictive theory of movement, it entails the existence of a head between C and Pol which is crucially devoid of any interpretable features;
- (f) It entails that the standard view of *do*-support as triggered because the negation blocks a head-head relation between T and V cannot be maintained.

I am not the first one to propose that Neg c-commands T in English. Zanuttini (1996) argues for a strong version of this hypothesis, primarily based on her investigation of Romance languages: Neg selects TP universally. Haegeman (1995) also adopts this hypothesis, empirically based primarily on her investigation of West Flemish. Haegeman also discusses English, though, and argues, on the basis of different arguments than the ones adduced in this paper, that *n't* is a realization of Neg⁰, which c-commands T, and that *not* is a specifier of NegP. This view is also

reflected in Haegeman and Guéron 1999. But Haegeman 1995 and Haegeman and Guéron 1999 refrain from drawing the conclusion that SAI is Pol-movement to C, with all that that entails. Instead sweeping formulations such as the following can be found: “On it’s way to C the auxiliary transits through Neg^o and picks up the NEG-feature” (Haegeman 1995: 181, also referring to Rizzi 1996) and “/n’t/ is moved along with the inflected auxiliary in I-to-C movement” (ibid.: 189).

Arguments from the semantics of tense and negation are not unequivocal. Eythórsson 2002, following Lopez 1994, argues that negation takes scope over tense, in the unmarked case, in English as well as in many (or all?) other languages.

(4) Bill didn’t eat a hamburger.

Informally, the meaning of (4) is that there is not a time in the past at which Bill ate a hamburger. It does not mean that there is a time in the past at which Bill did not eat a hamburger. It is standardly assumed that scope corresponds to c-command in syntactic structure, and the null hypothesis is that it does so as a result of merge, without movement. That is to say, negation is merged above T, not vice versa. On the other hand it could be argued that (5) actually means that there is a time in the past, namely yesterday, when Bill did not eat a hamburger.

(5) Bill didn’t eat a hamburger yesterday.

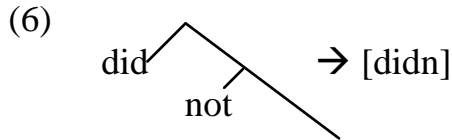
However, Lopez 1994 (as reported in Eythórsson 2002) argues that this is not what (5) means. What it means is that within the time interval denoted by *yesterday* there is not a time at which Bill ate a hamburger. That is to say, the adverbial provides a time frame within which the truth of the proposition is computed. If so, the negation does indeed take scope over tense, in the unmarked case.²

2. The negation n’t is an inflection

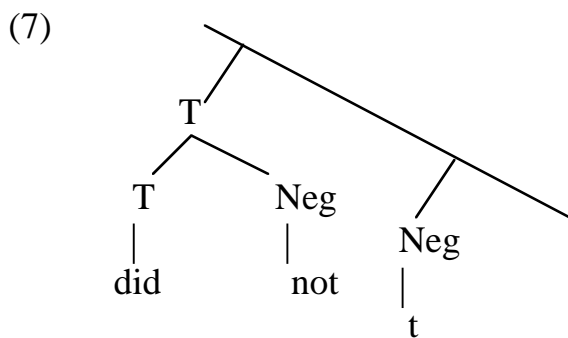
The alternatives to the analysis according to which the negation *n’t* is an inflection are

² But see Cormack and Smith 2002, who reach the opposite conclusion, based on an example where the time adverbial is *sometimes*.

- (a) It is a form of the independent negation word *not*, the result of a phonological contraction rule operating on the structure (6), to derive (in this case) the form [didn].



- (b) It is a clitic derived by movement and right-adjunction of the negation to the auxiliary, where the derived complex constituent is spelled out as [didn].



Alternative (a) is easily disposed of: Since the auxiliary and the negation under that analysis do not form a syntactic constituent, it is incompatible with the possibility of SAI of negative auxiliaries.³ The irregular forms *won't*, *shan't*, and Southern British English *can't* are also evidence against a purely phonological account.

Alternative (b) represents what is probably the standard view of negative auxiliaries, although it is rarely formulated explicitly. Zwicky & Pullum's (1983) arguments against this analysis, as a representative of the analysis of *n't* as a clitic, are based on a comparison of the properties of clitics and inflections in a range of clear cases. They identify the following as criterial properties:

³ There are dialects of English where the negation does not move along with the auxiliary under SAI; This is characteristic of most northern British dialects, here exemplified by the dialect of Tyneside.

- i. Ye canna dee that.
you cannot do that
- ii. *Canna ye dee that.
- iii. Can ye not dee that

In this dialect the form *canna* is presumably the spell-out of a structure such as (6).

- A. Clitics can exhibit a low degree of selection with respect to their hosts, while affixes exhibit a high degree of selection with respect to their stems.
- B. Arbitrary gaps in the set of combinations are more characteristic of affixed words than of clitic groups.
- C. Morphophonological idiosyncracies are more characteristic of affixed words than of clitic groups.
- D. Semantic idiosyncracies are more characteristic of affixed words than of clitic groups.
- E. Syntactic rules can affect affixed words, but cannot affect clitic groups.
- F. Clitics can attach to material already containing clitics, but affixes cannot.

They then proceed to show that *n't* qualifies as an affix by all these criteria. Consider first A: *n't* is highly selective, attaching only to finite auxiliaries.

- (8) a. I prefer not/*prefern't to leave at this point.
- b. Well, for her not/*hern't to understand is the last straw. (Zwicky and Pullum 1983)
- c. Would the police have not/*haven't been informed?

Affix-Criterion B is satisfied by the non-existence of the forms **mayn't* and **amn't* (in most dialects). Criterion C is satisfied by irregular forms such as *won't* and *shan't*. As for Criterion D, Zwicky and Pullum mention the variation between those *Aux+n't* forms which have the reading [NOT Aux] (for instance *can't*) and those which have the reading [Aux NOT] (for instance *mustn't*); These will be discussed below. As for Criterion E they mention SAI, and for Criterion F, they mention (9):

- (9) *I'dn't be doing this unless I had to.

As discussed by Z&P, *'d* (here the contracted form of *would*) is a clitic, by their criteria. The fact that *n't* cannot attach to *X+'d* is then another indication that *n't* is an affix, not a clitic.

Obviously, Z&P's argumentation is based on a particular view of what a clitic is. They assume a distinction between simple clitics and special clitics, where simple clitics are essentially phonologically reduced forms of full lexical items, while special clitics have a distribution which is different from the corresponding full forms; for instance, the French pronominal clitics are special clitics, since they precede the finite verb, while the corresponding independent pronouns follow the finite verb. Z&P discuss

the possibility that *n't* may be a special clitic, but eventually reject this hypothesis.

Let us, for the sake of argument, accept that there are special clitics which may undergo cliticization in the syntax, and therefore may precede syntactic operations. This would then, in principle, permit analysis (7), where *n't* is cliticized to T in the syntax, and may then follow T under movement to C.

There may be another reason for excluding analysis B, though, that is if right-adjunction is universally prohibited. This was argued by Kayne 1994, on the basis of certain theoretical arguments, ultimately as a consequence of Kayne's Linear Correspondence Axiom.

More recently, empirical arguments have been put forth, by Julien 2000, in support of a universal ban against adjunction to the right of a head. The argument is based on the absence, in a sample of 530 languages, of a certain order of morphemes predicted to be possible if right-head-adjunction is possible. Space does not allow a thorough review of the argument, but the following is a rough outline:

- a. Tense (T) and Aspect (A) are sentential heads; T universally c-commands A, so the universal underlying structure of T, A, and V is
 $[_{TP} T [_{AP} A [_{VP} V]]]$
- b. There is no right-adjunction;
- c. Suffixes are derived by head-movement and left-adjunction (or by movement of a phrase with a final head F to the spec of a functional head F, followed by a phonological rule interpreting F as a suffix of F; For the sake of presentation I ignore this possibility here, but see Julien 2000);⁴
- d. Prefixes are derived by a phonological rule interpreting a functional head F as the prefix of a right-adjacent head F in a structure $[_{FP} F [_{FP} F \dots]]$.

The orders of V, T, and A expected under this theory are (10a,b,c) (where '+' means 'morphologically a unit with').

- (10) a. T (+) A (+) V (no movement; T and A may be prefixes or unbound morphemes)
- b. T(+) V+A (V has left-adjoined to A, T may be a prefix or unbound)

⁴ The latter mechanism is characteristic of head-final languages, according to Julien 2000. The present paper is restricted to head-initial languages, in order to avoid this complication.

c. V+A+T (V has left-adjoined to A, and the V+A complex has left-adjoined to T.)

These orders are found abundantly. An order predicted not to be found under this theory, but predicted to be found if right-head-adjunction is allowed is the following:

(11) A+V+T

It would be derived by first right-adjoining V to A, and then left-adjoining the complex head V+A to T. This order is absent from Julien's sample.

Analysis (7) crucially assumes right-adjunction. If Kayne and Julien are right, this cannot be the right analysis.

3. SAI and the semantics of yes/no-questions

Let us, however, for the sake of argument accept the possibility of right-adjunction. Let us then compare analysis (7) (underlying order is [T [Neg]], *n't* right-adjoins to Aux+T) with analysis (1) (underlying order is [Pol [T]], Aux+T left-adjoins to Pol) with regard to their implications for how SAI works, in particular in yes/no-questions (YNQs), such as (12):

(12) Don't you speak French?

As for Analysis (7) there do not seem to be any interesting implications: SAI is formally T movement to C, where T may or may not have a negation attached to it. There is no semantic reason why T would move to C, though, so SAI is essentially a linearization rule, akin to, say, V-to-I in French in the framework of Chomsky 1993 and subsequent works. It could be formalized as a parametrized property of the question feature in C: In some languages the feature is 'strong,' attracting the closest head with phonological features, that is T (where T must then contain an auxiliary, in English).

Analysis (1), on the other hand, has an interesting implication: According to this analysis, SAI is Pol-movement to C. A YNQ is a question about the polarity of a proposition. Therefore SAI in YNQs may be construed as a semantically motivated rule, in a sense to be articulated below.

At least ever since Chomsky 1976, wh-movement is widely viewed as a syntactic operation deriving a structure which is almost isomorphic with the LF of wh-questions or relatives or other wh-constructions. Since LF is

the input to semantic interpretation, wh-movement is, in this specific sense, a semantically motivated operation.

Consider wh-questions: A wh-question such as (13) can be seen as having the tripartite structure familiar from studies of quantification (see Larson and Segal 1995 and references there): an operator, a restriction, and a proposition with a variable, which is the scope of the operator.

- (13) Who did John talk to?
 a. A proposition with a variable: *John talked to x* ,
 b. a restriction: *x is a person* ,
 c. a question operator: Qx

The restriction is derived from a combination of the meaning of the wh-word and the discourse context; *who* is restricted to humans by virtue of its lexical meaning, but may, in addition, be restricted to a set of contextually given individuals (say, Ian and Emma), in which case the restriction in (16) is ‘x is Ian or Emma.’

I take the question operator Qx to be an instruction to the addressee: “Identify the value of x.” In narrow syntax Q is encoded by a feature in C (in other words, there is a special complementizer encoding the feature [Q] required in questions). The role of wh-movement is then:

- (a) it provides an overt expression of [Q], and
 (b) it provides the binding relation between the operator and the variable, in the syntax represented by the copy (the trace) of the wh-phrase, by virtue of the movement chain.

In the case of wh-in-situ there must be some other overt expression of the presence of the Q-feature, typically a question particle in C (or a special intonation, as in French). And the operator-variable relation must be established in some other way than by overt movement. I return to wh-in situ directly, after discussing SAI in YNQs.

A YNQ such as (14) can also be seen as a tripartite structure, analogous with (16a,b,c), particularly with the version of (16) where the restriction is a finite set of individuals. In YNQs the variable whose identity is requested is polarity, its range restricted to two values: negative or affirmative.

- (14) Do you speak French?
 a. A proposition with a variable: *You x-speak French*. (or ‘You either do or you don’t speak French’)
 b. a restriction: *x is negative or affirmative*.
 c. a question operator Qx .

The question-operator again starts out as a Q-feature in C, by assumption the same feature as in *wh*-questions. Then the role of SAI is:

- (a) it provides overt expression of [Q], and
- (b) it ensures the binding relation between the operator and the variable, represented by the trace of Pol, by virtue of the movement chain.

The same would be the case for the negative question (15):

(15) Don't you speak French?

The structure is the same, except that the moved Pol contains the negation. (14) and (15) are both questions about the polarity of the proposition, and both can be replied by yes or no. In that sense they are synonymous. I return in section 10 below to differences between negative and non-negative questions.

What about embedded questions in English, and more generally YNQs where there is no overt movement of Pol (as seems to be the case in many languages)? I take it that languages with (overt) Pol-movement in YNQs are to languages without (overt) Pol-movement in YNQs as languages with (overt) *wh*-movement are to languages without (overt) *wh*-movement. For the sake of concreteness, I assume a theory of *wh*-movement along the lines of Watanabe 1992, Chomsky 1995:263, Hagstrom 1998. In this theory a *wh*-expression is (underlyingly) a compound, made up of a *wh*-morpheme and an indefinite pronoun. For example *who* would be underlyingly [*wh*-somebody]. All languages have *wh*-movement (Q is 'universally strong'; Chomsky 1995: 199), but differ with respect to whether the movement affects just the *wh*-morpheme, or whether it pied-pipes the indefinite pronoun. In *wh*-in-situ languages (Japanese, Chinese, and many other languages) the indefinite pronoun is not pied piped, but is spelled out in situ.⁵ In most European languages the whole compound is moved, together with the phrase it heads. Assuming the copy theory of movement, a copy of the indefinite pronoun is left behind in either case, whether spelled out or not, and is interpreted as a variable, selectively bound by the question-operator in the C into whose spec-position the *wh*-element is attracted.

Applying this theory to YNQs, I assume that there is a form of Pol which can be represented as *wh*-Pol. A sentential head C with a Q-feature will always attract *wh*. Languages (and constructions) differ with respect to

⁵ In addition, the *wh*-morpheme which moves may be overt or covert. According to Hagstrom 1998 it is overt in Japanese; the sentence-final question particle *ka* or *no* is the *wh*-morpheme, overtly moved to C.

whether Pol is pied-piped with *wh*. In English direct questions all of *wh*-Pol is moved, together with an incorporated auxiliary. In English embedded question we may assume that *wh* alone moves, stranding Pol. We may, in fact, assume that *whether* is the spell-out of *wh* moved to C (or to specCP, according to Kayne 1991). More generally, I suggest that clause-initial questions particles in YNQs, in languages where YNQs are marked by a question particle, can be analyzed as spell-outs of *wh*, extracted from *wh*-Pol.

4. Does not vs. doesn't

English has an alternative negation *not*, a free morpheme.

- (16) a. John does not speak French.
 b. Does John not speak French?

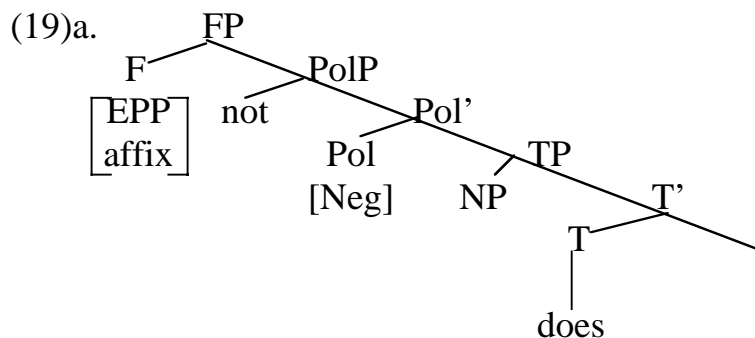
Following Ouhalla 1990, Haegeman 1995, I assume *not* is a specifier of negative Pol, the head of PolP, which in that case is a null morpheme. When the auxiliary moves, as for example in (16b), T containing the auxiliary first adjoins to the phonologically empty head Pol, and then moves along when Pol is attracted, exactly as in the case of *Doesn't John speak French?*.

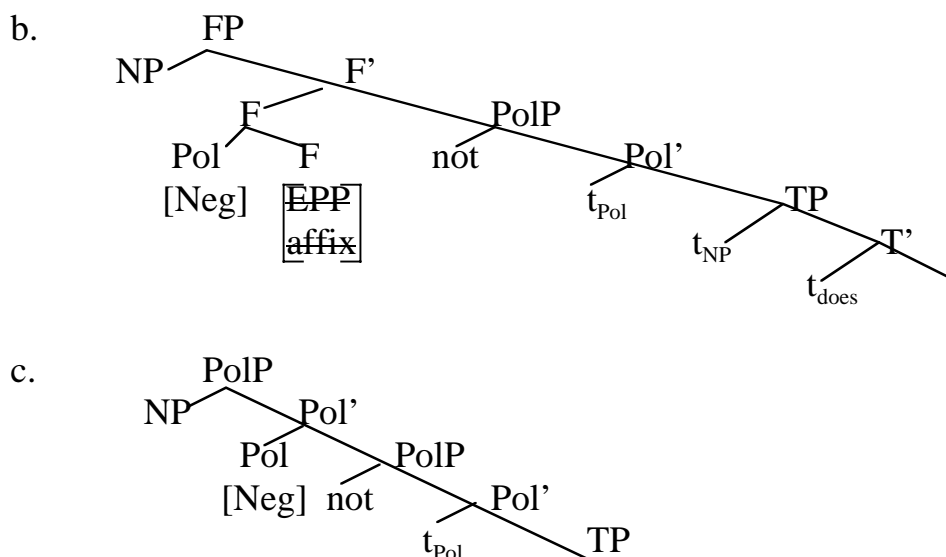
The relation between the specifier *not* and the head Pol is essentially agreement, a feature sharing relation. In the framework of a theory of features along the lines of Chomsky 1995: ch. 4 and subsequent works, the question arises which of the two terms of the relation has the interpretable feature, and which the uninterpretable one. In the present case we know that there can only be one interpretable negative feature, since if there were two, we would have a case of double negation. Without much discussion I will assume that the head Pol is the carrier of the interpretable feature. This is based primarily on the observation that (16a,b) have the same syntactic and semantic properties as their counterparts with *n't*, where I assume Pol is the carrier of the interpretable negative feature simply because there is no other candidate (rejecting the idea that *n't* is always coupled with a phonetically empty negative specifier). This means that *not*, as a sentential negation, is negative as a result of negative concord. The assumption that Pol rather than *not* is the interpretable term of the relation is actually necessary in a theory where C attracts Pol: Without an interpretable feature, Pol wouldn't be visible to C.

However, the word order in (16) indicates that there is a functional head between C and Pol, able to attract Pol with T and auxiliary. This is, apparently, the head which also attracts the subject. That is to say, it is the

and if Pol is incorporated in F, then Pol would not be visible to C, hence not be attractable by C, given standard assumptions about locality. Assume, for example, that F, situated between C and Pol, encodes finiteness, formally an interpretable feature [Finite], which is distinct from Tense. F would be the final landing site of the auxiliary in (16a). The existence of such a head has, in fact, been proposed in Holmberg and Platzack 2000 for Scandinavian. In that case, to derive (16a), F would attract Pol, containing the auxiliary+T, and as a result Pol would be adjoined to F, in other words, it would be incorporated as a non-head constituent in a derived complex X° category labelled F. By standard assumptions, when C is merged, it can select for the feature [Finite] of F, and it can attract this feature, hence F, (or FP), but it cannot look inside F (or FP) and cannot attract a non-head constituent of F. That is to say, the theory of SAI as Pol-movement to C would have to be given up.

However, if F consists exclusively of uninterpretable features, then the (interpretable) features of Pol, adjoined to F, will be visible to C. This is patently true if F encodes nothing but an EPP-feature, attracting the subject NP to specFP, and, say, an uninterpretable feature [affix], attracting Pol to F. In that case the two features of F will be deleted once the subject has moved to specFP and Pol to F (given that uninterpretable features, particularly features whose only function is to trigger movement, are deleted once they have done their job, following Chomsky 1995: ch. 4 and subsequent works), with the result that Pol will reappear as the head of the sentence. Schematically, the derivation of (16a) will be as in (19): In (19b) *does* has first been incorporated in Pol, and then Pol in F. In (19c) F is deleted along with all its features, and Pol becomes the derived head of the sentence.





Alternatively we may adapt Chomsky's (1995: ch. 4) discussion of structures like (18) to (16a): Placement of the auxiliary before *not* is a postsyntactic linearization rule. In that case (16b) is derived by Pol-movement directly to C, and the postsyntactic rule will not be invoked. In this paper I will assume that there is a head with the properties to F in (16) in English, so that the word order *do not* is the result of movement in the syntax.

It could be noted that the order of morphemes in the English auxiliaries (*doesn't, hasn't*) militates against the hypothesis that F encodes subject agreement. According to the 'mirror principle' the expected order under that hypothesis is *don'ts* and *haven'ts*. See section 7 below on Finnish, where the morphology supports an analysis where F encodes agreement.

Note that the auxiliary *does* in (16b) is incorporated in (negative) Pol. This is prescribed by the Head Movement Constraint (HMC), or the Minimal Link Condition (see Chomsky 1995: 294ff.): T containing the auxiliary cannot move across Pol, which means that the category attracted by C in (16b) is Pol, which in this case has negative value, as shown overtly by its specifier *not*. *Does* in (16b) is thus functionally equivalent to the overtly negative form *doesn't*, which accounts for why (16b) has the same interpretation as its counterpart with *doesn't*.

As discussed already by Klima 1966, there is good reason to think that English has another, lower negation also pronounced *not*. Cormack and Smith 2002 label it Adv-Neg, distinct from Pol-Neg, their label for the 'usual' sentential negation which we have discussed until now (the one which is pronounced *n't*, moves under SAI, etc.). Adv-Neg is most easily observed when combined with Pol-Neg. The following examples are based on Horn 1972.

(20) A good Christian can't not go to Church, and still be saved.

Here *n't* is (a realization of) Pol-Neg, *not* of Adv-Neg. Pol-Neg can be realized as *not* and still be combined with Adv-Neg, as we would expect given the analysis of sentential *not* (in (21), etc.) as the spec of an abstract Pol-Neg head.

(21) A good Christian can probably not not go to Church, and still be saved.

As shown by (22), Adv-Neg can occur independently of Pol-Neg. The Adv-Neg reading is induced here by stress on *not*.

(22) A good Christian can *nó*t go to Church, and still be saved.

Adv-Neg may be lumped together with constituent negation, the constituent in this case being an extended projection of vP. It may be noted that the projection is a fairly large one, as it may include a variety of adverbs, for instance *ever*. In fact, a sentence with Pol-Neg and Adv-Neg may include two instances of *ever*.

(23) A good Christian can't ever not ever go to Church and still be saved.

This suggests that we are dealing with a biclausal construction, and that Adv-Neg is the negation which is found in non-finite clauses, which may or may not be lumped together with constituent negation, but which crucially is to be kept distinct from Pol-Neg.

In the following I will ignore Adv-Neg.

5. The Scandinavian languages

In the Scandinavian languages, as in other V2 languages, the negation cannot be a head, or it would block verb movement to C, by (some version of) the HMC. This has been noted repeatedly in the literature, see Ouhalla 1990, Holmberg & Platzack 1995, Vikner 1995, Jónsson 1996. Maintaining that there is a negation head projecting a NegP in the projection line from VP to CP, the standard negation word must then be a specifier of that head, like *not* in the English *do not* construction. There is other evidence as well that the negation is a specifier rather than a head; see Holmberg & Platzack 1995: 17. The HMC is then observed if the verb on its way to C moves via the empty negation head, as indicated by the indices in (24), see Ouhalla 1990, Jónsson 1996.

- (24) a. Peter talar inte franska. (Swedish)
Peter speaks not French
 b. talar_i [_{NegP} inte [_{Neg'} Neg_i [... t_i ...]]]

What has generally not been noted is the consequence that, unless we assume excorporation, the category that moves from Neg to the next head up is not the verb, but Neg containing the verb. Assuming that Neg is Pol with a negative value, verb-second is in fact Pol-second.

In Mainland Scandinavian embedded clauses the finite verb remains in a low position, to the right of the negation and all sentence adverbs. In Icelandic, as in Old Scandinavian, the finite verb generally precedes the negation in embedded as well as in main clauses (see Holmberg & Platzack 1995: 71ff., Vikner 1995: 46ff.).

- (25) a. Det är uppenbart [att Anders inte talar isländska]. (Swedish)
it is obvious that Anders not speaks Icelandic
 b. Það er greinilegt [að Anders talar ekki íslensku]. (Icelandic)
it is obvious that Anders speaks not Icelandic

Taking seriously the incorporation theory of inflections (following Baker 2002), the finite verb has moved and incorporated in Tense in Mainland Scandinavian embedded clauses. This presupposes that T is merged before Neg/Pol. The word order in (25b) then indicates that there is a head between C and Pol, as we found was the case in English. The difference between Mainland Scandinavian and Icelandic is, then, that Pol, containing the tensed verb, moves to this head always in Icelandic, but only in main clauses in Mainland Scandinavian. This is, essentially, the analysis proposed in Holmberg & Platzack (2000) and Julien 2000, although in contrast to these, we now have to maintain that the head between C and Pol only contains uninterpretable features.

YNQs are verb-initial in the Scandinavian languages (as in the other Germanic V2 languages). We can thus maintain the same analysis for these as for English YNQs: C containing the Q-feature attracts wh-Pol, containing the tensed verb. A consequence of this is that ‘verb movement’ has a different role in YNQs as compared with V2 constructions, declaratives as well as wh-questions. In V2-constructions, Pol-to C movement has no semantic consequence. I will return to this below.

6. Deriving YNQs in Finnish

Finnish is a language where C has a feature make-up similar to the Germanic languages in that C in YNQs attracts wh-Pol (overtly). Unlike

the Germanic languages C in YNQs, by assumption encoding a feature Q, has morphological realization as a suffix in Finnish.

- (26) Puhuu-ko Jussi ranskaa?
speaks-Q Jussi French
 ‘Does Jussi speak French?’

The negation in Finnish is a head, quite uncontroversially. It is often characterized as an auxiliary verb since it is inflected for agreement, as in (27), for example, showing the singular paradigm in the conditional (CON) mood, where the mood and agreement inflections are highlighted.

- (27) a. Minä puhu-**isi-n** ranskaa. / Minä e-**n** puhu-**isi** ranskaa.
I speak-CON-1SG French / I NEG-1SG speak-CON French
 ‘I would speak French.’ / ‘I would not speak French.’
 b. Sinä puhu-**isi-t** ranskaa. / Sinä e-**t** puhu-**isi** ranskaa.
you speak-CON-2SG French / You NEG-2SG speak-CON French
 c. Jussi puhu-**isi** ranskaa / Jussi ei puhu-**isi** ranskaa.
Jussi speak-3SG-CON French / Jussi NEG-3SG speak-CON French

The 3SG negation has the invariant form *ei*. Apart from this form, the negation is inflected for subject agreement exactly like a verb throughout the paradigm (including the plural, not shown here). The negation is not inflected for tense or mood, though. The analysis proposed in Holmberg & al. 1993 as well as in Mitchell 1991 is the following (where T is Tense/Mood, a head encoding tense as well as one of the moods indicative, conditional or potential).

- (28) C [_{FP} F [_{NegP} Neg [_{TP} T ...]]]

In Holmberg & al.1993 the category F encodes finiteness, and is spelled out as agreement, except in the passive, where it is spelled out as an invariant suffix *-n*. In the present framework, for reasons discussed, F cannot encode finiteness, but consists exclusively of uninterpretable features.

Unlike English *n't*, Neg in Finnish is not an affix, so does not attract T. F is an affix, and thus attracts Neg. Assuming that Neg is Pol with a negative value, and that there is a Pol with affirmative value, the latter is an affix, attracting T, being then itself attracted by F. So the affirmative version of (27a) has the derivation in (29) (omitting the arguments, for ease of exposition), while the negative version has the derivation in (30):

- (29) a. $[_{TP} [_T \text{puhu+isi}] [...t_V...]]$ (The verb has incorporated in T, here with the value CON, spelled out as *-isi*)
 b. $[_{PolIP} [_{Pol} [\text{puhu+isi}]+0] [_T t_T [...t_V...]]]$ (Merge of affirmative Pol, a null-morpheme, and incorporation of T in Pol)
 c. $[_{FP} [_F [_{Pol} [\text{puhu+isi}]+0]+n] [_{PolIP} t_{Pol} [_{TP} t_T [...t_V...]]]]$ (Merge of F, encoding uninterpretable phi-features, here 1SG, and incorporation of Pol in F.)
- (30) a. $[_{TP} [_T \text{puhu+isi}] [...t_V...]]$ (The verb has incorporated in T, here with the value CON.)
 b. $[_{PolIP} [_{Pol} e-] [_{TP} [_T \text{puhu+isi}] [...t_V...]]]$ (Merge of negative Pol.)
 c. $[_{FP} [_F [_{Pol} e-] -n] [_{PolIP} t_{Pol} [_{TP} [_T \text{puhu+isi}] [...t_V...]]]]$ (Merge of F, and incorporation of Pol in F.)

C with the Q-feature attracts Pol (more precisely wh-Pol), in Finnish as in English and Scandinavian. As discussed in section 4, it can do so even if Pol is embedded in F, given that F encodes only uninterpretable features. That is to say, F does not, for example, encode an interpretable feature [finite] (as in Holmberg & al. 1993). The Q-feature is spelled out as *-ko* or *-kö*, subject to vowel harmony.⁶ The word order and morpheme order is as shown in (31a,b) when Pol is affirmative, and (32a,b) when Pol is negative.

- (31) a. Puhuisinko minä ranskaa?
 ‘Would I speak French.’
 b. $[_{CP} \text{puhu -isi -0 -n} [_C \text{-ko}] [_{FP} \text{minä} [_F' t_F t_{Pol} t_T \dots \text{ranskaa}]]]$
speak-CON-Pol-F Q I French
- (32) a. Enkö minä puhuisi ranskaa?
 ‘Would I not speak French?’
 b. $[_{CP} e \text{-n} [_C \text{-kö}] [_{FP} \text{minä} [_F' t_F t_{Pol} \text{puhu -isi} \dots \text{ranskaa}]]]$
Pol-F Q I speak-CON French

⁶ An alternative is the *-ko* is the spellout of the wh-part of wh-Pol, moved to C together with the head adjoined to Pol. This might provide a better account of YNQs with a focused constituent (which are ignored in the present paper). In those cases the focused constituent is fronted and affixed with *-ko*.

(i) Ranskaako Jussi puhuu?
 French-Q Jussi speaks
 ‘Is it French that Jussi speaks?’

In such cases *-ko* would move on its own, stranding Pol.

As predicted for a language which has overt Pol-movement to C in YNQs, and where the negation is a head, the negation undergoes movement to C (via F, which in Finnish, unlike English, encodes uninterpretable ϕ -features, and is spelled out as agreement inflection).

In the section on Scandinavian I noted that although Pol-movement to C is found in all main clauses where specCP is filled, it has a special status in YNQs, being semantically motivated only in YNQs (in the sense discussed here). We are thus not surprised to find that there are languages which have Pol-to-C in YNQs only, not in connection with wh-questions or topicalization: Finnish is a case in point. (317a,b) and (32a,b) show that Finnish does not have Pol-to-C in wh-questions or in connection with topicalization of an object.⁷

- (33) a. *Mitä kieliä Matti puhuu?*
which languages Matti speaks
 ‘Which languages does Matti speak?’
 b. **Mitä kieliä puhuu Matti?*
which languages speak Matti
- (34) a. *Ranskaa se ei puhu.*
French he NEG speak
 ‘French, he doesn’t speak.’
 b. **Ranskaa ei se puhu.*
French NEG he speak

This suggests that V2, as found in the Germanic languages, is a generalization of an operation, namely Pol-to-C, originally found in (main clause) YNQs to other main clause structures. If so, it seems plausible that Pol-to-C would first generalize to other main clause questions, and then to all main clauses. Given such a scenario, we are not surprised to find languages which exhibit Pol-to-C in YNQs and wh-questions but not in connection with fronting of (non-wh) objects or adverbials (so called “residual V2 languages”); these would have taken the first step of

⁷ Finnish does occasionally admit ‘V2 order.’ The following example is from Vilkuna 1989: 189.

- (i) *Kello 18.30 esittää Jorma Hynninen Sibeliuksen liedejä.*
clock 18.30 performs Jorma Hynninen Sibelius’s lieds
 ‘At half past six Jorma Hynninen will sing lieds by Sibelius’

As discussed by Vilkuna, this is not possible when the subject is an unstressed pronoun, which strongly suggests that the V2 order is not an effect of movement of the finite verb to C, but an effect of leaving the subject in a lower position (see also Holmberg & Nikanne, 2002).

generalizing Pol-to-C, but not the second. English is, of course, a case in point. In fact, Proto-Germanic is probably another case in point, prior to the generalization of V2 which is now characteristic of all Germanic languages except English; see Eythórsson 1996). We do not expect to find languages which exhibit Pol-to-C in YNQs and in connection with topicalization but not in connection with wh-movement. I am not aware of the existence of any such languages.

7. Deriving replies to YNQs in Finnish

Part of the motivation for the analysis of YNQs as crucially involving Pol-to-C movement in Finnish comes from a study of replies to YNQs, in Holmberg 2001. Finnish is a language where YNQs are standardly replied by repeating the finite verb or auxiliary (fully inflected), in the case of affirmative replies; negative replies consist minimally of just the negation.

- (35) Puhuuko Marja ranskaa?
speaks-Q Marja French
 -- Puhuu. / -- Ei.
 speaks / NEG
 ‘Yes.’ ‘No’

Simplifying the theory in Holmberg 2001, replies such as these are derived from full sentences by moving Pol to C, which contains a polarity focus operator (labelled Σ , following Laka 1990), and deleting, or not spelling out, the entire IP (that is FP in the present framework). An important argument that replies such as in (35) are derived by ellipsis of IP rather than, say, ellipsis of VP, is that Finnish doesn't allow third person null

subjects. The absence of a pronounced subject in these expressions is accounted for if they are derived by ellipsis of IP, including the subject.⁸

The replies have the following, schematized form, a special case of the familiar tripartite structure:

(36) Pol+C_Σ [IP ...t_{Pol}...]

They are made up of the polarity focus operator in C (hence the label C_Σ), a moved Pol in specCP providing the restriction, which is either ‘x is negative’ or ‘x is affirmative,’ depending on the value of the moved Pol, and an IP which crucially contains the trace of Pol, which in LF is the variable bound by the focus operator.

Ellipsis of IP is possible (in Finnish) only in replies to YNQs. Ellipsis in general is possible only where it is recoverable, that is, only where there is an antecedent by the help of which the ellipsis can be interpreted. Following Holmberg 2001 I assume that ellipsis is a matter of syntactically deriving but not spelling out/interpreting a syntactic structure. This structure is then interpreted by copying the LF of an antecedent, that is the corresponding portion of a sentence in the immediate context. In the case of (36) the antecedent must crucially contain a polarity variable, or the elliptical expression will be left with a focus operator with no variable to bind. The only other expression type which has a polarity variable is YNQs – given that they are derived, as argued in this paper. Taking (35) as our example, the LF of the YNQ is roughly (37), the IP containing lexical, interpreted, but not spelled out material (notated by small capitals), and a variable Pol, the trace of *wh*-Pol moved to C.

⁸ In fact the analysis in Holmberg 2001 is that the replies are derived by movement of a remnant PolP, not head movement of Pol. The reason is that the reply may consist of a string of verbs:

- (i) Olisiko Marja puhunut ranskaa?
be-CON Marja spoken French
 ‘Would Marja have spoken French?’
 -- Olisi puhunut. / -- Ei olisi puhunut.
be-CON spoken / NEG be-CON spoken
 ‘Yes, she would have.’ ‘No, she wouldn’t have.’

According to Holmberg 2001 the string of auxiliaries and the verb is what is left in PolP after movement of the non-finite verb out of VP, and movement of the remnant VP to a topic position. Given that (remnant) PolP is moved out of IP, the entire string of auxiliaries and verbs is eventually spelled out; see Holmberg 2001 for details. For our purposes the crucial claim is that the replies contain a polarity variable. In our simplified account, the trace of moved Pol, in the account in Holmberg 2001 the trace of moved PolP.

(37) wh -Pol+C_Q [_{IP} MARJA Pol_x SPEAK FRENCH]

Copying this IP and substituting it for the IP in the reply *Puhuu* ‘speak-3SG’ in (35) will give the structure (38):

(38) Pol_{affirm}+ C_Q [_{IP} MARJA Pol_x SPEAK FRENCH]

Only one more operation is required, namely binding the variable. This provides the value [affirmative] for x , and the question is thereby replied.

8. Do-support

The standard theory of *do*-support in connection with negation, as in (39), is the following: Because the negation intervenes between T and VP, blocking a movement relation between V and T (affix lowering, in earlier versions of the theory), *do*-support applies to support the tense-affix; see Pollock 1989, Chomsky 1991, Bobaljik 1995 for versions of this account.

(39) John doesn’t/does not speak French.

In the present framework this is not a viable account as the negation does not intervene between T and VP. Recall that the structure of the sentence is as in (40), where Neg is the negative exponent of Pol.

(40) C [_{FP} F [_{NegP} Neg [_{TP} T VP]]]

In the present framework *do* is merged as an exponent of T, which is attracted by Pol, and eventually moves with Pol to F (and in some cases to C). The question is, how is it ensured that *do* is merged if Pol has the value [negative] but not if it has the value [affirmative]? The question is especially acute in a strictly derivational framework with no look-ahead, as envisaged in much recent work within the Minimalist program (see Collins 1997, Chomsky 2000). In such a theory the grammar has no way of knowing, at the point when T is merged, what categories will be merged with TP subsequently. The problem cannot be avoided in a representational framework, either, though. In such a framework the question is, what principle will rule out a T-V relation (say, affix-lowering) when TP is c-commanded by negative Pol, but allow it when it is c-commanded by affirmative Pol?

Note that the ‘traditional’ theory where T is higher than Neg faces essentially the same problem in connection with SAI: In the absence of a modal or other auxiliary, *do*-support must apply in connection with SAI

(mainly in questions). SAI, which in that theory is T-to-C, applies when triggered by a question-feature in C. But without look-ahead, the grammar doesn't know, at the point when T is merged, what properties C will have. So how is the choice made between *do*-support and no *do*-support?

The following is a solution based on the notion of 'late insertion,' in the manner of Distributive Morphology: The syntax operates not on lexical items, but on syntactic feature bundles. The lexical items enter the picture only at spell-out, which is where the feature bundles are paired with a phonological form and (if they are content categories) with semantic content. Assume that the derivation of a negative sentence without an auxiliary yields the following structure, in highly schematic form:

$$(41) \quad [{}_{\text{NegP}} \text{V}+\text{T}+\text{Neg} [{}_{\text{TP}} \text{V}+\text{T} [{}_{\text{VP}} \text{V}]]]$$

Assume English has a set of rules of the following sort, which come into play at spell-out, as part of a post-syntactic morphology component as outlined Halle and Marantz 1993. The sentences in parentheses exemplify the rule.

- (42) 1. $[V+T_{\text{PRES } 3\text{G}}+\text{Pol}_{\text{Neg}}] \rightarrow \textit{doesn't}$ (*John doesn't speak French.*)
 2. $[V+T_{\text{PAST}}+\text{Pol}_{\text{Neg}}] \rightarrow \textit{didn't}$ (*They didn't survive.*)
 3. $[V+T_{\text{PAST}}+\text{Pol}_{\text{Affirm}}+\text{Emphasis}] \rightarrow \textit{did}$ (*They DID survive.*)
 4. $[V+T_{\text{PAST}}+\text{Pol}_{\text{Affirm}}+\text{C}_Q] \rightarrow \textit{did}$ (*Did they survive?*)
 5. $[V+T_{\text{PRES}}+\text{Pol}_{\text{Neg}}+\text{C}_Q] \rightarrow \textit{don't}$ (*Why don't you speak French?*)

As formulated here, the various forms of *do* are spell-out forms of a copy of the main verb, that is to say, *do*-support is the spellout of 'covert V-movement' to T. This is not crucial; alternatively the rules can be formulated without V. What is crucial is that *do*-support is relegated to 'the morphology,' that is the rules assigning word forms to syntactic feature bundles, and thus it doesn't bear on the question whether Pol c-commands T or vice versa. In Scandinavian, where there is no *do*-support but generalized verb movement to Pol and C in questions, and main clauses generally, there are similar but not identical morphological rules.

An important question which I leave unanswered here is how to account for affirmative declaratives such as *John speaks French* in this theory.

9. Negative questions

So far I have assumed that negative YNQs are derived, and interpreted just like non-negative YNQs: negative or affirmative, Pol is moved to C, leaving a trace which is a polarity variable, bound by the Q-operator in C.

- (43) a. Did they speak French?
 b. Didn't they speak French?

However, clearly negative and non-negative questions are not quite in free variation. One striking difference between them is that they, loosely put, give rise to different expectations: While (43a) is (or can be) neutral with respect to whether the expected answer is yes or no, (43b) appears not to be. More precisely, (43b) is ambiguous: It can be interpreted as expecting an affirmative answer (*Of course they did, but...*), or a negative answer, for instance, when used as an prompt to an interlocutor to expand on a statement just made to the effect that they didn't speak French. What it cannot be, is a neutral information-seeking question.

In support of the claim that negative and non-negative YNQs are essentially synonymous I mentioned the fact that they can both be replied by yes or no, which is true in the sense that, even though negative questions come with an expectation regarding the answer, the answer may contradict the expectation and still be linguistically appropriate. But in many languages an affirmative reply to a negative question is formally different from an affirmative reply to a non-negative question. For instance, in French the word used to reply affirmatively to a non-negative question is *oui*, but the word used to reply affirmatively to a negative question is *si*. Scandinavian and German exhibit a similar system; for instance in Swedish the word standardly used to reply affirmatively to a non-negative question is *ja*, but the word used to reply affirmatively to a negative question is *jo*. In Finnish, while a non-negative YNQ is replied affirmatively by repeating the finite verb (or, optionally a sequence of auxiliaries and verbs; see footnote 8), to reply affirmatively to a negative question, one has to resort other means, including use of a special affirmative particle *kyllä* ('yes,' 'indeed').

- (44) a. – Puhuuko Marja ranskaa? – Puhuu.
speaks-Q Marja French speaks
 'Does Marja speak French?' 'Yes.'
 b. – Eikö Marja puhu ranskaa? –*Puhuu. / – Kyllä (puhuu).
not+Q Marja speaks French speaks indeed speaks
 'Doesn't Marja speak French?' 'Yes she does.'

And even in English there is a difference between affirmative replies in the two contexts: While a non-negative YNQ can be replied to by just *yes* or by *yes* plus more sentential material, a negative question cannot be answered affirmatively by just *yes*.

- (45) a. – Does John speak French? – Yes./ Yes, he does.
 b. – Doesn't John speak French? – *Yes. /Yes, he does.

Consider the English case first. Following Holmberg 2001 and Laka 1990, assume that the word *yes* is adjoined to C_Σ , providing Σ with affirmative restriction. C_Σ requires an IP with a variable Pol. When the reply is short (just *Yes*), all of the IP complement of C_Σ is left not spelled out/interpreted. In that case the IP of an antecedent YNQ can, and must, be copied. Before copying, the structure of the short reply in (45) is (46a). After copying the IP of *Does John speak French?*, the structure is (46b):

- (46) a. Yes+ C_Σ [_{IP} ...] (where '...' is syntactically derived but uninterpreted structure)
 b. Yes+ C_Σ [_{IP} John Pol_x speak French]

Due to the affirmative feature of *yes*, Pol_x is identified as affirmative, and the reply is complete. By contrast, in the case of the long reply *Yes, he does* just the VP of the reply is left not spelled out/interpreted, and must be copied from an antecedent. (47a) is the structure before, and (47b) after, copying.

- (47) a. Yes+ C_Σ [_{IP} John Pol_x T [_{VP} ...]]
 b. Yes+ C_Σ [_{IP} John Pol_x T [_{VP} speak French]]

In this case the polarity variable is not provided by the antecedent but is derived as part of the derivation of (47b).

Why doesn't the short reply strategy work in the case of the negative question? Part of the answer is provided by the theory of movement: Under the copy theory of movement (see Chomsky 1995: 202ff.), movement of wh-Neg (i.e. wh-Pol with a negative value) to C_Σ is a matter of merging a copy of wh-Neg with C_Σ . Clearly this does not result in a second negation (or the result would be the cancelling out of negation). Only one copy has the interpretable Neg-feature. A comparison with embedded questions indicates that the negative copy is the one in PolP (the 'trace'); In embedded questions only the wh-morpheme moves, leaving the negation overtly behind, deriving for example (*I wonder*) *whether John doesn't*

speak French (see discussion end of section 3), so there is no reason to think that the negative feature would be anywhere but in PolP. In terms of its semantic/pragmatic implications, the embedded negative question is roughly equal to the main clause negative question. I conclude that the negative question has its interpretable Neg-feature in PolP, not adjoined to C_{Σ} .⁹

The negation feature in PolP of the negative question does not negate the proposition because, being embedded in a yes/no-question, the proposition has no truth value. The only effect that the negative feature has, therefore, is giving rise to certain Gricean implicatures, primarily a bias regarding the expected answer (I will not attempt to explain how these implicatures are derived). However, when the negative feature is copied along with the LF of the IP into the uninterpreted IP of the short affirmative reply, where the proposition obviously will have a truth value, it clashes with the affirmative force of *yes*. A short affirmative reply to a negative question, as in (48) (= (45b)), is therefore contradictory, containing contradictory polarity values.

(48) -- Doesn't John speak French? – *Yes./ -- Yes, he does.

The long affirmative reply works because only the VP of the question is copied, therefore the reply does not contain a negative feature.

What makes French affirmative *si*, Swedish *jo*, German *doch*, Finnish *kyllä* etc.¹⁰ different from *yes*, *oui*, and *ja*, then, is that they neutralize the negative feature of Pol, let us say formally by deleting it. After copying of the IP of the question and deletion of Neg, the LF of the reply in (49a) is (49b), where the variable is unambiguously assigned the value affirmative.

(49) a. – John, ne parle-t-il pas français? – Si.
 ‘– Doesn't John speak French? – Yes, he does.’
 b. $si+C_{\Sigma}$ [_{IP} John [_{Pol} x ~~Neg~~] parle Français]

We can now analyze *no* (*non*, *nej*, *nein*, *ei* etc.) as the negative counterpart of *si* (*jo*, *doch*, *kyllä* etc.) rather than as the negative counterpart of *yes* (*oui*,

⁹ Chomsky 2001 articulates a version of movement theory where a moved category α is not a copy of a category β , but instead α and β are occurrences of the same category. This avoids the double negation problem, while being consistent with the analysis where Pol in negative questions contains an interpretable negation feature.

¹⁰ The Finnish system has some additional complications; see Holmberg 2001 for some remarks on the syntax of the affirmative particle *kyllä*.

ja). Note that a short negative reply is fine as a reply to a non-negative YNQ.

(50) – Does John speak French? – No.

On the assumption that a sentence morphologically unmarked for polarity has an abstract category Pol with affirmative value (a crucial formal assumption in this paper), the full structure of the short negative reply after copying of the IP must be (51). Since the reply is not contradictory, it must be the case that *no* has the effect of deleting the affirmative feature in Pol.

(51) $no+C_{\Sigma}$ [_{IP} John [_{Pol} X ~~Aff~~] speak French]

Matters are complicated somewhat by the fact that *no* can also be used as a short reply to a negative question, where the result is simple negation, not double negation: The reply in (52) means ‘John doesn’t speak French’ and not ‘It is not the case that John doesn’t speak French.’

(52) – Doesn’t John speak French? – No.

An easy solution is to assume that *no* has the effect of deleting not only the feature Aff, but also the feature Neg of Pol. The structure after IP-copying and deletion of Neg in the reply in (52) is then (53):

(53) $no+C_{\Sigma}$ [_{IP} John [_{Pol} X ~~Neg~~] speak French]

In this way we avoid the unwanted double negation.

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