

The syntax of yes and no

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1. Introduction

1.1 Answers are derived by ellipsis

It is certainly not obvious that expressions like *yes* and *no* in (1) have syntactic structure.

- (1) Question: Is John coming?
Answer 1: Yes.
Answer 2: No.

One of the leading ideas of this book is that answers to yes-no questions, even when they consist of just one word, are derived by ellipsis from full sentential expressions. For example, the affirmative answer in (1) is derived by ellipsis of the bracketed clause as shown in (2). The elided (unpronounced) clause is essentially identical to the clause in the question, which is why it can be elided.

- (2) Yes [~~John is coming~~]

This hypothesis will be shown to have a variety of consequences, and explain a number of facts about the form and meaning of answers to questions in a variety of languages.

It is far from obvious that the hypothesis is right, for all affirmative or negative short answers, or even for any of them. There are various complications when facts from different languages are taken into account, as we will see. My ambition is to make the case for this analysis as convincing as possible. The alternative is that *yes* and *no* and their counterparts in other languages are clause substitutes, substituting for a whole clause, the content of which is inferred from the context, specifically from the question. See Krifka (2013) for a recent articulation of this idea. I will endeavour to show that the ellipsis hypothesis is superior to the clause substitute hypothesis, having wider coverage and more explanatory power.

Answers like those in (1) would then be a special case of so called fragment answers, as in (2) (from now on Q stands for 'question', A for 'answer').

- (2) Q: Who did John talk to?
A: Mary.

There is a good deal of evidence that this answer is derived from a full sentential expression by movement of (in this case) the object and ellipsis of the remnant clause, under identity with the clause in the question (Merchant 2004, Merchant, Frazier, Clifton and Wescott 2013).

(3) Mary [~~John talked to~~ <Mary>]¹

Straightforward evidence that this is essentially the right analysis is that the fragment is case-marked as it would be if were moved from the object position. This is not obvious in English, as English lacks overt case on lexical NPs, and pronouns fronted to A'-position tend to have a default form, which in English is accusative, but is obvious in for example Finnish, where the fragment answer in (4) must have accusative, the case assigned to the object of *tapasi* 'met', as expected if it is merged as the object of the verb, but moves to a clause-initial focus position, as indicated in (4).

(4) Q: Kenet Jussi tapasi? [Finnish]
who-ACC Jussi met
'Who did Jussi meet?'
A: Marja-n.
Marja-ACC
Marjan [~~Jussi tapasi~~ <Marjan>].

This all implies that the syntax of answers is to a large extent the same as the syntax of questions. I will therefore begin, in chapter 2, by articulating a formal account of the syntax of questions. The syntax of questions will shed light on the syntax of answers, but also vice versa, a scrutiny of the form and meaning of answers will be shown to shed light on the syntax of questions.

1.2 Answer by particle or verb

There is a type of answer to yes-no questions, very common among the languages of the world, for which the ellipsis/fragment answer analysis is particularly plausible. In many languages yes-no questions are standardly answered not by an affirmative or negative particle, but by echoing the

¹ Words within angled brackets represent silent copies of moved constituents (assuming the copy theory of movement; Chomsky 1993). In this particular case the copy is silent also because it is elided along with the IP.

verb of the question for affirmative answers, and echoing the verb of the question with a negation for negative answers. Finnish is one such language.

- (5) Q: Tul-i-vat-ko lapset kotiin? [Finnish]
come-PST-3PL-Q children home
'Did the children come home?'
- A: Tul-i-vat.
come-PST-3PL
'Yes.'

I shall henceforth refer to answers like this as verb-echo answers. In this case the analysis in terms of ellipsis is quite uncontroversial. Note that the verb in the answer is inflected for tense as well as subject agreement. Tense is a sentential category, locating the time of the event denoted by a sentence in relation to the time of utterance. So the presence of tense in the answer implies the presence of a sentence (pronounced or not). Subject agreement implies the presence of a subject, hence also the presence of a sentence. In Holmberg (2001) I argued that the structure of verb-echo answers in Finnish is basically (6). The verb has moved out of the IP (the clause, in the narrow sense of the constituent made up of a subject and its predicate), and the IP is elided.

- (6) Tulivat [_{IP} lapset <—tulivat> kotiin] [Finnish]
came children came home

As we shall see, probably close to half of the world's languages employ this type of answer. Not all of them pattern exactly like Finnish. For example, the answer in Finnish can consist of an auxiliary verb and a main verb, while in Welsh it can only ever be one verb (the highest). Compare (7) and (8) (INE = inessive case):

- (7) Q: Voinko panna maidon jääkaappiin? [Finnish]
can.1SG.Q put milk fridge.INE
'Can I put the milk in the fridge?'
- A: Voit (panna).
can.2SG put
'Yes (you can).'

(8) Q: Ga' i roi 'r llefrith yn yr oergell? [Welsh; B.M. Jones, p.c.)
may.1s I put.INF the milk in the fridge
'Can I put the milk in the fridge?'

A: Cei (*rhei).
may.2SG put
'Yes.'

In chapter 3 I will report the results of a cross-linguistic, typological investigation of the syntax of answers to yes-no questions, based on the literature, on the SSWL database², and my own fieldwork, and I will compare the syntax of these expressions in detail in a subset of these languages.

Insofar as it can be shown that verb-echo answers have some syntactic properties which depend on them being derived by ellipsis, and it can be shown that particle answers have the same properties, this provides evidence that the latter are also derived by ellipsis. Such properties will be discussed in this book.

1.3 How to answer negative questions

Another issue in relation to answers where there is significant cross-linguistic variation is answers to negative questions. Consider the following exchange, in Swedish and in Cantonese.

(9) Q: Dricker Johan inte kaffe? [Swedish]
drinks Johan not coffee
'Does Johan not drink coffee?'

A: Nej.
no ('He doesn't drink coffee.')

(10) Q: John m jam gaafe? [Cantonese]
John not drink coffee
'Does John not drink coffee?'

A: hai
yes ('John does not drink coffee.')

A negative yes/no-question, just like a neutral (non-negative) question, puts two alternative propositions before the interlocutor, p and $\neg p$, and asks them to say which one is true. The effect of

² SSWL (Syntactic Structures of the World's Languages, <http://sswl.railsplayground.net/>) is an online, free, searchable database. See section 1.5 for a more detailed presentation.

the negation is, to put it very simply, to bias the question towards one of the alternatives. In the present case, assume that the question is uttered upon seeing John decline the offer of a cup of coffee. In this situation the question conveys an expectation that the negative alternative is true. In a Swedish conversation, to confirm that the negative alternative $\neg p$ is true, I would use the negative answer particle. In a Cantonese conversation, I would use the affirmative answer particle to convey that same meaning.

The Cantonese way of answering is known in the literature as the ‘agree/disagree system’ (Kuno 1973, Pope 1976, Sadock and Zwicky 1985) or alternatively the ‘truth-based system’ (Jones 1999), while the Swedish way of answering is called the ‘positive/negative system’ or the ‘polarity-based system’, for reasons which will be discussed in Chapter 4. The distinction poses a well known learning problem, and is known to occasionally lead to misunderstanding and embarrassment in, for example, communication carried out in English between English and Chinese speakers. How common are the two systems? It will be shown that they are roughly speaking equally common among the languages of the world. Where does the difference come from? Is it just a matter of cultural conventions, comparable to cross-cultural variation in how people greet each other (by shaking hands or by making a bow). Or is it a lexical difference in the meaning of the affirmative answer particle? Or is it a syntactic matter? I will argue, in Chapter 4, that it is primarily a matter of syntactic variation, more precisely variation with regard to the syntax of negation. The difference between Swedish and Cantonese in (9) and (10) would thus be an effect of a parameter concerning the syntax of negation.

Consider how to answer when you want to disconfirm the negative alternative posed by a negative question, in English, Swedish, and Cantonese. First English:

- (12) Q: Does he not drink coffee?
A1: #Yes.
A2: Yes he does.

The intended reading of the question is, again, that it expects the answer that he does not drink coffee. In this case, the answer should convey that he does drink coffee, the positive alternative contradicting the negative expectation. Answering with the bare affirmative particle will not convey this meaning. It will either convey that he does not drink coffee, or it is unclear what it means; the variation between these two interpretations will be elucidated in Chapter 4 (see Kramer and Rawlins 2011, Holmberg 2013). The longer form, combining *yes* and a sentence with VP-ellipsis will convey the intended meaning. Now Swedish:

- (13) Q: Vill han ha kaffe? [Swedish]
will he have coffee
'Does he want coffee?'
- A: Ja.
yes
- (14) Q: Vill han inte ha kaffe? [Swedish]
will he not have coffee
'Does he not want coffee?'
- A1: #Ja.
yes
- A2: Jo.
yes.REV
'Yes he does want coffee.'

The most succinct affirmative answer to a neutral questions such as (13) is *ja*. But, not unlike English, as an answer to a negative question the affirmative answer particle will not do, to convey that the positive alternative is true (i.e. that he does want coffee). Instead a different affirmative particle *jo* is used, glossed here as *yes.REV* for 'polarity-reversing affirmative particle' (Holmberg 2003, Farkas and Bruce 2009). This is a device used in some languages to solve the problem, as it were, of how to contradict the expectation conveyed by the negative question that the negative alternative is true.

Now consider Cantonese.

- (15) Q: keoi m jam gaafe? [Cantonese]
he/she not drink coffee
'Does he not want coffee?'
- A1: #hai.
yes
- A2: m hai.
not yes
'Yes he does want coffee.'

The intention is, again, to convey that they do want coffee. The affirmative particle conveys the opposite meaning, as we just saw, confirming the negative alternative. The negative particle, which

literally negates the affirmative particle, now conveys that the negative alternative is false, i.e. the positive alternative is true.³

Summarising, in this book I will focus on two parameters of variation concerning the syntax of answers to yes-no questions:

1. Answer particles or echoed verb?
2. How are negative questions answered?

For languages which use the verb-echo strategy, the next question is, what is the structure of these answers? As will be shown, there is considerable variation among the languages employing this strategy. In fact, characterising what the common denominator is among the different subsystems as regards syntactic derivation turns out to be quite a challenge, which is interesting in itself, given that the meaning of the expressions is the same (answering a yes-no question affirmatively or negatively) and the surface form is typically the same (a bare verb, echoing the verb of the question, with or without negation).

As regards answers to negative questions, there are several issues, but mainly the following two:

- 2a. How is a negative question answered to confirm the negative alternative, by 'yes' or 'no'?
- 2b. How is a negative question answered to contradict the negative alternative?

One of the big questions is to what extent the variation with regard to 1 and 2a and 2b can be explained in terms of more general syntactic parameters. The overarching aim of the research reported in this book is to understand the nature of the cognitive system we call language, more precisely I-language (internal language; Chomsky 1986, 1995: ch. 4); what is the invariant core behind all the variation we can observe? In order to answer this question we need to know more about the variation. How is the variation structured? No doubt historical factors are important: Languages which have a recent common ancestor or have been in prolonged close contact show similarities. But how much, and regarding which properties? Are some properties diachronically more stable than others, and if so, why? Is there structure in the variation which cannot be explained by history? In other words, are there syntactic parameters involved in something like the

³ There is an issue whether the word *hai* in the Cantonese answer is more correctly glossed as 'be' or as 'yes'. It is clearly derived from the verb 'be'. The question is whether it has become grammaticalised as an affirmative answer particle. I assume here that it has; see Wu (in prep.) and also chapter 4.10.

principles-and-parameters sense (Chomsky 1981: 2-3, Roberts and Holmberg 2010, Biberauer, Holmberg, Roberts, and Sheehan 2014, Holmberg and Roberts 2014)? In the specific case of the answering system, is the variation with regard to this system linked with other properties of the grammar, so that the variation can be explained as a consequence of some more general parameters of variation?

1.4 Some terminological details

1.4.1 Questions, answers, rejoinders

Yes-no questions are also called *polarity questions*. This term has the property that it can be used for direct questions (main clause questions) as well as for indirect questions (embedded questions). I will use it only when referring specifically to the class of direct and indirect questions. In this book I will mainly be dealing with direct questions, those that can be answered *yes* or *no* in English or the equivalent in other languages, including echoing the verb of the question, hence *yes-no question* will usually be the appropriate term.

There are obviously many more ways to respond to a yes-no question than saying yes or no. The question in (1) can be answered *I don't know*, or *I don't care*, or *What do you think?*, etc. etc. I will refer to all these collectively as *responses*. In this book I will be interested only in a subset of all the possible responses, namely, those that provide an answer sought by the question, that is (some version of) yes or no, in the case of yes-no questions. These, and only these, will be referred to as *answers*, or sometimes, when there is a risk of misunderstanding, *yes-no answers*.⁴ Answers like *maybe/maybe not*, and *certainly/certainly not* do fall within the class of elliptical yes-no answers, and will be discussed where relevant.

A form of yes-no answer is spelling out the entire sentence expressing one of the two alternatives p or $\neg p$ which the question puts before the addressee. This is worth noting, as it tells us something about the meaning of yes-no questions, namely that they ask the addressee to indicate which of the two alternative propositions he/she believes is true, which can be done by spelling the entire proposition out, but from a syntactic point of view these answers are uninteresting. What we

⁴ Halliday and Hasan (1976: 206) make a terminological distinction between *rejoinder*, which is “/.../any utterance which immediately follows an utterance by a different speaker and is cohesively related to it” (where the utterance can be, for instance, a declarative), and *response*, being a rejoinder which follows a question, and a further distinction between *direct response* or *answer*, which is what I will refer to as *answer*, and *indirect response*, which is “either one which comments on the question /.../ or one which denies its relevance, /.../ or one which gives supplementary information implying but not actually expressing an answer.” If and when these further distinctions need to be made I will make use of their terminology.

are interested in are the various forms of elliptical answers, as they can tell us a variety of things about ellipsis, focus, and the syntax of polarity, in answers as well as questions. What makes the elliptical answers particularly interesting is the variation that we see across languages, briefly summarised above. The idea is that by comparative investigation of the cross-linguistically varying forms of answers we can eventually lay bare their common core, at which point we will have a better understanding of a range of issues pertaining to the syntax of natural language.

Yes and *no*, and corresponding expressions in many other languages, are not only used as answers to yes-no questions but also as expressions of agreement with statements, as in (16):

(16) St(atement) 1: It's cold outside.

St(atement) 2: Yes.

(17) St1: It isn't very cold outside.

St2: No.

See Farkas and Bruce (2009) on the semantics of such expressions. These are not answers, as there is no question (they are rejoinders; see note 4), and, as will be demonstrated, they do not have the same syntax as answers to yes-no questions. One indication that this is so, is the fact that verb-echo answers do not work as expressions of agreement, in Finnish, for example.

(18) S1: Ulkona on kylmää. [Finnish]
outside is cold
'It's cold outside.'
S2: *On.
is

For this reason they will be of interest in this book mainly because they show what answers to questions are *not* like. They will be discussed in chapter 5, although not in much detail.

1.4.2 *On ungrammatical answers*

The notion of ungrammatical or ill formed answer is crucial in this book. This is an expression which is not well formed as answer to a particular question, conveying a particular meaning, by virtue of its formal properties. The conversation in (14), repeated here as (19), is an example. In this example the question is intended to convey the expectation that the negative alternative is right, while the

answer should convey that the positive alternative is right, i.e. that the referent of 'he' does want coffee.

- (19) Q: Vill han inte ha kaffe? [Swedish]
will he not have coffee
'Does he not want coffee?'
- A1: *Ja.
yes
- A2: Jo.
yes.REV ('He does want coffee.')

In this context, the answer (A1) is decidedly ill formed, while (A2) is well formed. In my examples above, up to 18, I have used the hash # for such examples, as is conventional to indicate that a string is ill-formed only in a particular context. However, from now on I will prefix such answers with an asterisk/star *, while answers that are marginally acceptable are prefixed with ? or ??, in the usual fashion. One of the central claims in this work is that the syntax of an answer depends on the syntax of the preceding question. The same form of answer is good in relation to one form of question, bad in relation to another. The distinction between grammatical within or without a context will typically not be relevant, since the issues discussed are all about sentences in a particular context, namely the question-answer situation.

In the particular case of (19), the answer (19A1) cannot convey either meaning, that he wants coffee or that he doesn't want coffee. The case of (20) is different in this sense. The intended reading of the answer is, again, that it should convey that he does want coffee, contradicting the negative expectation.

- (20) Q: Does he not want any coffee at all?
A1: *Yes.
A2: Yes he does.

The bare *yes* answer would obviously be perfect as an answer to a neutral question, confirming the positive alternative. As will be discussed in chapter 4, it can also be well formed as answer to a negative question as confirmation of the negative alternative, depending on the syntax of the question. But as an answer confirming the positive alternative in the context of the question (20) it is deviant. This is indicated by *. Informants sometimes point out that it can convey that meaning if it

has emphatic enough intonation, typically rendered as high pitch, with a longer than usual vowel. This is noteworthy, but does not nullify the observation that, when pronounced with more or less neutral intonation, it clearly has a different status than the perfectly well formed and natural 'long answer' (b). This is a fact, among many other facts, that we want the theory of syntax to explain (and one which happens to be particularly interesting in the sense that it reveals properties of the syntax of ellipsis and polarity which are not obvious to the eye, as will be discussed in Chapter 4). The observation about the effect of intonation should ideally be explained as well, though. My suggestion is that it can have the effect of marking polarity reversal, making a high pitched, lengthened *yes* equivalent to Swedish *jo* in (19A2), in the right context. Another device which appears to have this effect in English is prefixing the answer with *oh*, so that (21) as a response to the question in (20) will convey that John does want coffee.

(21) Oh yes.

My suggestion is that the contribution of *oh* is to mark polarity reversal, making this answer similar to *jo* in (20A2). See chapter 4.5.⁵

A recurring issue when analysing answers to yes-no questions is that answers that are predicted by the syntactic theory to be ungrammatical, and are perceived as deviant by informants, are sometimes not judged to be deviant to the extent that the theory predicts. They may even go unnoticed in ordinary discourse. This is to be expected when dealing with expressions in discourse between two or more interlocutors. As mentioned, the form of the answer depends on the question, in principle. However, in practice, there are 'repair mechanisms' which allow a question to be reanalysed to fit an answer which actually violates some syntactic rule or principle, given the syntax of the question. It is obviously not always easy to distinguish such cases from cases where the theory just makes a false prediction.

1.5 On the data

The data in this study of the syntax of *yes* and *no* come from a variety of sources. For the typological part the data come from the SSWL database, from the literature (primarily descriptive grammars), and from questionnaire-based fieldwork.

Unfortunately, how to answer a yes-no question, or any kind of question, is only rarely mentioned in descriptive grammars. For example, out of about 60 PhD dissertations presenting a

⁵ See Wallage and van der Wurff (2013) on the history of polarity reversal in Old English.

descriptive grammar of a language which I have consulted,⁶ all except two written between 2000 and 2011, only 14 made any mention at all of answers to yes-no questions, and fewer than half of the 14 included more than a fleeting mention. The main reason is, presumably, that the authors do not think of the form of answers as grammatically significant information. In descriptions of more limited scope, such as, say, the grammatical descriptions in the *Handbook of Australian languages* (ed. by R.M.W. Dixon and Barry Blake), there is typically no more than a short paragraph devoted even to questions, of any kind, so the form of answers clearly has no place in the description.

Another related reason for this dearth of information is the traditional emphasis on morphology in grammatical description. Interrogatives are typically treated in more detail in those languages where they exhibit more complex morphology, and where interrogatives are treated in detail, there is sometimes discussion, or at least some examples, of answers to questions. In many languages yes-no questions are signalled only by intonation, with no morphology at all, and the descriptions are correspondingly short. If there is hardly any mention even of questions, we do not expect to see any information on answers to questions.⁷

A welcome exception to this generalization is the series of descriptive grammars edited by Bernard Comrie (published first by Croom Helm, later by Routledge). They all include, as part of the section on interrogatives, a subsection on answers, which sometimes is quite detailed.⁸

Syntactic Structures of the World's Languages (SSWL, <http://sswl.railsplayground.net/>) is an online, searchable database which has been an important source of data for the present project. This database works as follows: Researchers can post questions on the database about a grammatical phenomenon that they are interested in. In due course these questions are answered by a set of language experts. At the time of writing (December 2014) SSWL has data from 251

⁶ The dissertations were made available to me courtesy of Martin Haspelmath.

⁷ According to Austin (1981) “[t]he topic of question formation has been little studied by linguists working on Australian languages” (Austin 1981: 151). This was prior to 1981, but it seems true for much work on these languages also after this date. I suspect part of the reason is that, at least in many cases, they do not have very complex morphology.

⁸ The grammars in this series follow a strict format. The sections on interrogatives are among the very first in the grammars, with a special section on leading questions (which, as we shall see, play an important part in the present book), and are followed by sections on answers to the different types of questions. Bernard Comrie (p.c.) has told me that he was interested in the syntax of answers at the time when he devised the format of this series, after reading about answers to yes-no questions in Welsh (a verb-echoing language), which exhibit some properties which distinguish them from (other) declarative sentences (as will be discussed in Chapter 3, mainly based on Jones 1999). One of the subsections on answers is titled ‘Answers as distinct speech acts’. Only one or two of the authors of the various grammars have elaborated this particular idea, though.

different languages, although the amount of data for each language can vary considerably. These data are then freely available, searchable and processable in various ways on the SSWL website. Together with Craig Sailor, and with much assistance from Hilda Koopman, the current manager of SSWL, we have posted a set of questions concerning yes-no questions and answers to them. At the time of writing, we have received at least a partial set of answers to our queries for 114 languages. One likely reason why we have not received, say, 251 complete sets of answers, is that some of our queries concern aspects of grammar which require native-like competence. The language experts contributing to the SSWL do not always have that level of competence in 'their' language.

Another linguistic database is *The World Atlas of Linguistic Structure* (WALS; Haspelmath, Dryer, Gil and Comrie (eds.) 2011). This database has a much wider coverage than the SSWL (currently it has data from 2,679 languages). The data in WALS come from the literature, mainly descriptive grammars. It has data on almost two hundred linguistic features (properties), including phonological, morphological, syntactic and (some) semantic features/properties (from different subsets of the 2,679 languages). However, answers to yes-no questions is not one of those features. I will still occasionally make use of WALS.

I have also collected data by a questionnaire, distributed online and via personal contact.⁹ All in all I have data from 136 languages, from all continents of the world but unevenly distributed (with Europe well represented, Africa reasonably well represented, the Americas poorly represented, and Australia very poorly represented). The amount and reliability of the data also varies considerably among the languages. I am reasonably confident that I have nevertheless covered all of the important types, and most of the subtypes, for the parameters that I am interested in.

⁹ I posted a questionnaire on the Kwiksurveys site in the autumn of 2011. Early in the summer of 2012 Kwiksurveys was hacked and destroyed, and subsequently closed down. Most of the data that we had collected was at that point already recorded elsewhere, but the names of all the informants and additional comments they might have had disappeared in the crash.

Chapter 2: The syntax of questions

2.1 The meaning of questions

To account for the meaning of questions Hamblin (1958) proposed the following three postulates:

- a. An answer to a question is a statement.
- b. Knowing what counts as an answer is equivalent to knowing the question.
- c. The possible answers to a question are an exhaustive set of mutually exclusive possibilities.

It follows that to know the meaning of a question is to know the exhaustive set of mutually exclusive statements which constitute possible answers to the question (see Hamblin 1958, 1973). I will take this influential theory as my starting point. In this perspective the questions (1a, 2a) are semantically equivalent to the disjunctive statements in (1b, 2b), respectively.

- (1)
 - a. Do you want tea or coffee?
 - b. You want tea or you want coffee.
- (2)
 - a. Do you want tea?
 - b. You want tea, or you do not want tea.

(1a) is an alternative question, (2a) a yes-no question. In these two types of questions the disjunctive set of alternative propositions which is equal to the set of possible answers is defined by virtue of the form of the question. In the alternative question the alternatives are specified lexically, in the yes-no question they are syntactically encoded in ways to be discussed in detail below, and understood to be two, a proposition p and its negation $\neg p$.

The third major type of questions is *wh*-questions. In these, the disjunctive set of propositions which is equal to the set of possible answers is not inherently defined, but is typically restricted lexically, by virtue of the meaning of the *wh*-word and its co-constituents in the sentence, and pragmatically, by the discourse context. In the present perspective, there are two types of *wh*-questions, what we might call restricted and unrestricted *wh*-questions. For all types of *wh*-questions, the disjunctive set of propositions is restricted lexically, by the *wh*-word (*who*, *how*, *where*, etc.) and its co-constituents in the sentence, but in the case of restricted *wh*-questions, the set of propositions is also restricted pragmatically, by the discourse context. In the case of unrestricted *wh*-questions, the set of possible answers is in principle infinite. (3) is an example of a restricted *wh*-question, where (3b) is, again, the disjunctive set of propositions which constitutes the possible answers to the question.

- (3) a. What would you like to drink? (said when proffering a tray with glasses of orange juice and champagne)
- b. You would like to drink orange juice or you would like to drink champagne.

An example of an unrestricted wh-question is *What's your name?*; the set of possible answers is clearly infinite, even though answers can be at least partially ranked in terms of plausibility. I will, for the time being, put aside the complication that unrestricted wh-questions pose for the theory, and consider only the restricted wh-questions.

The difference between the (a) and (b)-sentences above is that the (a)-sentences ask the addressee to make a choice among the alternatives, indicating which one he/she believes is true. For Hamblin (1973) this is an aspect of the pragmatics of questions: "Pragmatically speaking a question sets up a choice-situation between a set of propositions, namely, those propositions that count as answers to it." Hamblin 1973: 48. Here, I regard it as part of the meaning of the question derived directly from the syntactic structure, as will be demonstrated below. We can render the meaning of (2a), for example, as

- (4) Tell me which of the following alternative propositions is true: You want tea or you do not want tea.

The question puts a set of alternative propositions, two, in the case of a yes-no question, before the addressee, and urges them to say which proposition is true. This is the case with direct (main clause) questions. Indirect (embedded) questions are also semantically equivalent to a disjunctive set of mutually exclusive propositions (a point developed by Karttunen 1977), but without the 'tell me which proposition is true' component.

- (5) a. John wonders whether you want tea.
- b. I need to know whether you want tea.
- c. They argue about whether you want tea.
- d. Whether you want tea is not interesting.

What is the case here, roughly speaking, is that the disjunctive set of propositions is the argument of a predicate expressing some epistemic/cognitive attitude towards the set, other than 'Tell me which of the propositions is true', characteristic of the direct question.

How does the syntax of questions map onto this meaning? An observation which will be important throughout this book is the following: Even if the meaning of *Do you want tea?* can be

paraphrased as (4), making explicit the semantic components of the yes-no question, when the question is formulated like this, it cannot be answered by *yes* or *no*. Compare (6) and (7).

(6) Q: Tell me which of the following alternative statements is true: You want tea or you do not want tea.

A1: *Yes.

A2: *No.

A3: I want tea.

A4: I don't want tea.

(7) Q: Do you want tea?

A1: Yes.

A2: No.

A3: I want tea.

A4: I don't want tea.

You can always respond by literally expressing the alternative proposition which you believe is true, but you can respond by *yes* or *no* only if the question is actually formulated as a yes-no question.

The crucial difference between (6) and (7) is not the fact that (6) is literally a request or command (Tell me...). Even if we reduce (6) to (8), which has the syntactic form of a question but lists the two alternatives explicitly, it still cannot be answered *yes* or *no*.

(8) Q: Do you want tea or do you not want tea?

A1: *Yes.

A2: *No.

This is not to say that the responses *yes* and *no* could not be construed, in a conversation, as meaning 'I want tea' and 'I don't want tea', respectively, in (8) and possibly even in (6). But this, I would claim, requires a reanalysis or reconstruction of the question as being 'Do you want tea?' on the part of both interlocutors (see below section 1.4.2). We are, after all, capable of understanding and responding to various types of ungrammatical sentences, for example when conversing with toddlers. The point is, formulating the question as in (6) or (8) does not invite the answer *yes* or *no*. Formulating it as in (7) does.

What is it about the question format in (7) that makes the answers *yes* and *no* possible? I propose it is the fact that the syntactic structure of (7) includes a free variable with two possible values, the polarity variable [\pm Pol]. Very roughly, the structure of the question is (9):

(9) [_{CP} do [_{IP} you [\pm Pol] want tea]]

Another paraphrase of the question *Do you want tea?* then is ‘What is the value of [\pm Pol] such that ‘you [\pm Pol] want tea’ is true?’ Now what the answers *yes* and *no* do is assign a value to the question variable such that the resulting proposition is true. *Yes* means ‘[+Pol]’, and thereby yields the answer [_{CP} [_{IP} you [+Pol] want tea]], *no* means ‘[-Pol]’, and yields the answer [_{CP} [_{IP} you [-Pol] want tea]]. How this works more precisely will be discussed in detail in Chapter 3.

This is a version of the idea that questions are propositional abstracts (Hamblin 1963, Hull 1975), see discussion in Ginzburg 2011, who points out that “/o/ne of the traditional attractions of identifying questions with abstracts has been that they provide the requisite semantic apparatus for short answer resolution” (Ginzburg 2011: 1136). In the works reviewed by Hamblin (1963) as well as in some later works, this is formally expressed in terms of a question operator or, in more recent contributions, a lambda operator binding a variable. See Ginzburg and Sag (2000) for a version of this theory. The question (9) could have the semantic representation (10):

(10) λx (you x want tea) ($x = +$ or $-$ Pol)

A way to see this is that a question is a propositional function which takes the answer as an argument. This is an attractive idea, especially in the case of short answers, as when the question in (7) is answered simply *yes*, or the question *What would you like to drink?* is answered *Champagne*. On the face of it, the answer names the argument needed to complete the proposition, and nothing more. As we shall see directly, matters are actually a bit more complicated. In what follows, I will not assume the propositional function idea. The main reason for rejecting it is that there is no reason, under this hypothesis, to assume that short answers like *yes* and *no* are elliptical versions of full sentences – even though they behave as elliptical sentences, as I will demonstrate in Chapter 3.

In what follows, I shall not employ the lambda notation or the question-operator notation, but instead take it to be a defining property of questions that they contain a free variable, which I will refer to as the *question variable*. The question variable is a disjunctive set of alternatives; I will also make reference to the notion *question disjunction*, for the disjunction relating the alternatives making up the question variable.

The relation between (9) and (6) is straightforward: A proposition with a free variable is equivalent to a set of propositions, restricted by the range of the variable. If the variable is restricted to two values, the set is two propositions. I will refer to the set of propositions as the *question set*, reminiscent of Rooth's (1992) notion *focus set*, which it is closely related to, as will be discussed below. What the answer does, if it does answer the question, is assign a value to the variable, thereby picking out one of the alternative propositions as the one that is true, or in pragmatic terms, indicating which of the alternative propositions the respondent wants to present as true. This is what *yes* and *no* do, as will be discussed in Chapter 3. As we shall see below, however, there are question types, employed in some languages, where the alternative propositions are expressed more directly in the question.

Exhaustive identification of the set of alternative propositions is not a requirement, under this hypothesis. What is crucial is that there is a free variable in the question which can be assigned a value by the answer. If exhaustive identification is possible, as is always the case in yes-no questions and alternative questions, and can be the case in wh-questions, this is an extra bonus, so to speak. The interpretation of the question does not depend on it.

This is different from an alternative hypothesis regarding the syntax/LF of questions which is probably more commonly assumed, implicitly if not explicitly, within generative grammar, going back to Katz and Postal (1964) and Baker (1970). According to this hypothesis a yes-no question has an operator in the C-domain which, in conjunction with the idea that a yes-no question is semantically a disjunction of p and $\neg p$, can be seen as a function mapping the proposition expressed by the IP onto a set consisting of that proposition and its negation. There would be no syntactically represented question variable in yes-no questions under this hypothesis. The sentence has positive or negative polarity, as the case may be, but is interpreted as denoting a set consisting of that proposition and its negation by virtue of the question operator. As in the case of the propositional function idea, my main objection to this hypothesis is that it does not provide a basis for an analysis of the syntax of answers. In particular, there is no reason, under this hypothesis, to assume that short answers like *yes* and *no* are elliptical versions of full sentences, which they are, as will be discussed in Chapter 3. It also, thereby, does not predict any strong similarity between yes-no questions on the one hand, and alternative questions and wh-questions on the other hand, or answers to them, as will be discussed in the next section.

In the following I will articulate the theory of the syntax of questions a bit more. I will do so by first considering the structure of alternative questions and wh-questions, and then discussing the form of questions in some other languages than English, starting with Chinese.

2.2 Alternative questions and disjunction

In the case of alternative questions the alternatives are listed overtly, so the mapping between overt syntax and the disjunctive set of propositions is particularly transparent. In particular, if there are independent reasons to think that (1a), repeated here as (11),

(11) Do you want tea or coffee?

is actually syntactically a disjunction of two sentences, let us say two IPs, expressing two propositions, the mapping will be close to one to one. All we need, in that case, is an operator meaning ‘Tell me which alternative proposition is true’. If we call this operator ‘Q-force’, the underlying structure of the question would be roughly (12).

(12) Q-force [[_{IP} you want tea] or [_{IP} you want coffee]]

The PF string could then conceivably be derived by ellipsis of ‘you want’ in the second conjunct, to yield the string (10), provided there is also T-to-C (‘subject-auxiliary inversion’). As I will show directly, there are good reasons to think that the disjunction in the alternative question is interpreted as disjunction of two clauses, so that part of the premise appears to be true.

Is this actually the structure of the question, though? Again, consideration how alternative questions are answered indicates that it is not. Corresponding to the contrast in (6) and (7) we have (13a) and (13b):

(13)a. Q: Tell me which of the following statements is true: You want tea or you want coffee.

A1: *Tea.

A2: I want tea.

b. Q: Do you want tea or coffee?

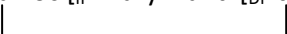
A1: Tea.

A2: I want tea.

You can always respond to an alternative question by expressing the alternative proposition which is true in full, but provided the question is formulated as in (13b), a perfectly sufficient and natural answer is naming just the alternative drink (in this case). This will follow if the syntactic structure of the question includes a question variable, and what the answer does is assign a value to the variable,

which entails selecting one of the disjunctive propositions as the true answer. What is characteristic of alternative questions is that the alternative values of the variable are listed explicitly. In (13b) the variable would be [tea or coffee]. The answer A1 in (13b) assigns the value [tea] to this variable, which yields the proposition ‘I want tea’ as the answer.

To be just a bit more detailed, the syntactic structure of the question would be, very roughly (14Q) and the structure and derivation of the answer (14A).

- (14) Q: Does [_{IP} Mary want [_{DP} tea or coffee]]
 A: [tea Foc [_{IP} Mary want [_{DP} tea]]] → [[Tea Foc [_{IP} ~~Mary want~~ [_{DP} ~~tea~~]]]
- 

The question has a variable with two values, the DP *tea or coffee*, which yields a question set of two propositions, ‘Mary wants tea’ and ‘Mary wants coffee’ (exactly how this happens will be detailed below). The IP in the answer is identical to the IP of the question except that instead of the disjunctive DP [tea or coffee] there is just one of the disjuncts, which is moved to initial focus position, the specifier position of an abstract Foc(us) head (following Merchant 2005). It is as if the IP of the question is recycled in the answer (this is an idea which will be important in this book), but undergoes an operation whereby one of the terms of the disjunction is moved to focus position while the other term, and hence the disjunction, is eliminated. The answer thereby assigns a value to the question variable, and asserts that the proposition ‘Mary wants tea’ from the question set is true, to the exclusion of the other proposition. Because the IP of the answer is identical to the IP of the question up to assignment of value of the variable, it can be elided. The only category which is pronounced, and has to be, is the focused constituent, as in the case of the short answer to a yes-no question. This will all be discussed in much more detail in Chapter 3.

I mentioned above that there is reason to believe that the disjunction in the alternative question has sentential scope. Thereby the alternative question puts a disjunctive set of propositions before the addressee (Mary drinks tea or Mary drinks coffee, in the case at hand). The scope of disjunction is discussed in some detail in Larson (1985). The paper discusses *either...or* and *whether...or*. Larson notes that the placement of *either* determines the scope of the disjunction, as shown in the following examples (Larson 1985: 221-222):

- (15) a. Sherlock pretended to be looking for **either** a burglar **or** a thief.
 b. Sherlock pretended to be **either** looking for a burglar **or** a thief.
 c. Sherlock **either** pretended to be looking for a burglar **or** a thief.

Larson distinguishes three readings for (15a), distinguished by the scope of the disjunction. One is a reading where Sherlock is looking for an individual who is either a burglar or a thief (the narrowest scope reading, where the disjunction is in the scope of ‘look for’). The second is the reading where Sherlock pretends that he is either looking for a burglar or that he is looking for a thief (the disjunction is in the scope of ‘pretend’, but outside ‘look for’). The third reading is that Sherlock is pretending that he is looking for a burglar, or (possibly) he is pretending that he is looking for a thief (the “I don’t know which reading”, in Larson’s words) Larson then notes that (15b,c) both lack the narrowest scope reading, and that (15c) has only the widest scope reading (“I don’t know which”). This can be explained if the disjunction is merged as [*either, or*], but *either* undergoes movement, overt or covert, to a position marking the scope of the disjunction. Its scope is then = the c-command domain of the highest copy of *either, or*, because covert movement is an option, higher than the highest (pronounced) copy of *either*.¹ A generalization which Larson states is the following: “/W/hen disjunction has scope wider than the surface position in which it appears, that scope is clausal. Hence as a scope indicator for *or*, I assume that if *either* moves, it must move (in the syntax or in LF) to positions associated with clausal scope.”

As for *whether*, Larson first notes that *whether* is a “wh-counterpart of *either*”, and mentions that its original meaning was ‘which of either A or B’ (citing Jespersen 1909-49, II: 200). Larson categorises *either* as a [-WH] scope indicator while *whether* is a [+WH] scope indicator for disjunction – based on the insight that *whether* is associated with disjunction, consistent with the idea that the question is equivalent to a disjunctive set of propositions. Like *either*, *whether* is merged as one member of [*whether, or*], but undergoes movement to determine the scope of the disjunction. Larson then posits that, like other wh-items, *whether* undergoes “movement to COMP”, i.e. movement to the C-domain (unlike *either*, which adjoins to I or to IP, according to Larson). Furthermore, while the scope indicated by *either* is bounded by the minimal finite clause dominating *or*, the scope indicated by *whether* is in principle unbounded, which is explained if *whether* can move successive-cyclically through the edge of CP (in modern terms), like other wh-items. I will adopt the assumption that *whether* moves to the C-domain, even though the unbounded nature of *whether* will actually not be relevant for the structures discussed in the present work; see Larson (1985: note 18). So essentially following Larson (1985), the structure of the embedded alternative question in (16a) is (b), where *whether* is a scope marker for the disjunction, which yields the interpretation in (c). (16d) exemplifies long-distance movement of *whether*, which yields the interpretation (16f).

(16) a. I wonder whether Mary wants tea or coffee.

¹ This is putting the generalization in terms of the copy theory of movement, not assumed by Larson (1985).

- b. [CP whether [IP Mary wants [tea [<whether> or] coffee]]]
- c. I wonder which proposition is true: Mary wants tea or Mary wants coffee.
- d. I wonder whether Bill thinks that Mary wants tea or coffee.
- e. [CP whether [IP Bill thinks [CP <whether> [IP Mary wants [tea [<whether> or] coffee]]]]]
- f. I wonder which proposition is true: Bill thinks that Mary wants tea, or Bill thinks that Mary wants coffee.

As Larson (1985) notes, *Sherlock pretended to be looking for a burglar or a thief*, without *either*, is three ways ambiguous between the readings described for (15a,b,c), which is to say that the movement marking the scope of the disjunction can be covert. The interpretation of the direct question is the same as for the indirect question, except that the direct question has the illocutionary force of a question paraphrasable as in (17). We can therefore assume, with some confidence, that it has the structure in (17b), where WHETHER is the abstract counterpart of *whether* in (16).²

- (17) a. Does Mary want tea or coffee?
- b. Q-force [CP WHETHER does [IP Mary want [tea [<WHETHER> or] coffee]]]
- c. Tell me which proposition is true: Mary wants tea or Mary wants coffee.

2.3 Wh-questions

In the case of yes-no questions and alternative questions the set of alternative propositions is finite, overtly listed in the case of alternative questions, and understood to be two (p and $\neg p$) in the case of yes-no questions. In the case of wh-questions the set of alternatives is in principle open, but for the restricted type of wh-questions, in practice restricted by the context, including the syntactic and the extrasyntactic context.

- (18) Who did John just talk to?

In the case of (18) it is restricted by the meaning of the wh-word (a human), the meaning of the verb 'talk' (a human, presumably speaking the same language as John), and, in any real life situation, more or less narrowly restricted by the discourse context to some persons who are in the vicinity or

² I will generally not specify the label of the root node of the tree headed by Q-Force. It is a CP with Q-force, which determines its distribution (for one thing, it is highly restricted in embedded contexts). In that sense it is a Q-forceP.

are familiar to John, etc. It can be even more narrowly restricted to, say, the two persons Kate and Mary. In that case (18) can be paraphrased as ‘Tell me which proposition is true: John just talked to Kate, or John just talked to Mary’. That is to say, it is equivalent to an alternative question.

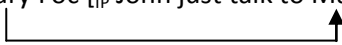
It seems to be pretty well universal that this is expressed syntactically as a sentence with an indeterminate pronoun as object, an item with inherently variable reference. This item can be a *wh*-word (or phrase) specific to questions, which can be overtly moved to the C-domain or not, subject to cross-linguistic variation (see Bruening 2007). It can also be common to questions and certain other constructions where it undergoes movement, such as relatives, as in English. In other languages the pronoun is the same item as the existential indefinite pronoun ‘somebody’, ‘something’, etc. , which in questions may or may not be coupled with a question particle in the C-domain, subject to cross-linguistic variation (Hagstrom 1998, Bruening 2007).

A minimal, yet perfectly sufficient, answer to (18) in the context given could be (19), meaning that it was Mary that John just talked to.

(19) Mary.

The structure of the question (18) is roughly (20Q), assuming the copy theory of movement. The structure and derivation of the answer, I contend, is (20A):

(20) Q: Q-Force [_{CP} who did [_{IP} John just talk to who]]
 A: [Mary Foc [_{IP} John just talk to who]] → [Mary Foc [_{IP} John just talk to Mary]]



In the answer the IP of the question, containing the free variable *who*, is recycled, and a DP *Mary* is merged in focus position in the C-domain. This DP assigns the value [Mary] to the variable. The IP is deleted under identity with the IP of the question (‘deleted’ here meaning that the IP is not spelled out at PF; we return to this issue in Chapter 3). In the influential analysis of fragment answers in Merchant (2005), the focused phrase is derived by movement (internal merge, in the terminology of Chomsky 2000). Under the analysis proposed here it is externally merged in the focus position. I will return to this issue in Chapter 3.

Why does the *wh*-phrase move to the C-domain? I will here assume that, just like in the case of alternative questions, it is in order to assign sentential scope to the disjunction encoded by the *wh*-phrase, i.e. the question variable. By virtue of the movement, the question is interpretable as a disjunctive set of propositions: John just talked to Kate or John just talked to Mary, in the case at hand. This can be understood if the *wh*-phrase actually encodes disjunction ‘A or B or...’, where the

identity of A, B, etc. is determined by the linguistic and extralinguistic context. In section 2.6 this hypothesis will be modified with an additional reason for movement to the C-domain. But for now, this will do.

If this is right, alternative questions and wh-questions have the following same syntactic components:

- (21) a. A question variable, which in the alternative question has its range overtly specified as a disjunction of two or more terms, while in the wh-question the range of the variable is lexically and pragmatically determined (and can potentially be open).
- b. Movement of the disjunction of the variable to the C-domain in order to assign sentential scope to the disjunction, where the movement may be overt or covert; this ensures the interpretation of the question as a set of alternative propositions.
- c. In direct questions, a Q-force feature taking the CP as complement; the Q-force feature contributes a request to the addressee to assign a value to the question variable.

In the case of unrestricted qh-questions the set of alternative propositions is in principle open. However, it will presumably still always be pragmatically restricted in that relevance-theoretic factors will impose an order on the alternative answers: Some are more plausible, because more relevant (Sperber and Wilson 1995).

What about yes-no questions? In the following I will argue that they, too, have the same syntactic components. I will do so, by way of a review of yes-no questions in Mandarin Chinese, mainly based on Huang, Li and Li 2009, henceforth HLL.

2.4 Chinese disjunctive yes-no questions

There is a variety of yes-no question forms in Mandarin Chinese as well as in other varieties of Chinese.³ Of particular interest in the present context are the so called disjunctive questions, of which there are two types, the *haishi*-question ‘or-questions’, exemplified in (22), and the A-not-A questions, exemplified in (23).

- (22) a. Zhangsan mai shu haishi bu mai shu? [Mandarin]
 Zhangsan buy book or not buy book
 ‘Does Zhangsan buy books or not buy books?’
- b. Zhangsan mai haishi bu mai shu?

³ I am much indebted to James Huang for discussion of the issues in this section, and also to Hofa Meng Jung Wu.

Zhangsan buy or not buy book
'Does Zhangsan buy or not buy books?'

- (23) a. Zhangsan mai shu bu mai?
Zhangsan buy book not buy
'Does Zhangsan buy books or not buy books?'
- b. Zhangsan mai bu mai shu?
Zhangsan buy not buy book
'Does Zhangsan buy or not buy books?'

Both types can occur embedded (see HLL: 246). On the face of it, the only difference is the presence of an overt disjunction in the first type. As discussed by HLL, early syntactic descriptions starting with Wang (1967) analysed these forms as deriving from the same underlying structure, by “the successive optional application of a deletion process” (HLL: 245). However, Huang (1988, 1991) argues against this ‘one-rule approach’, proposing instead that they should be treated as distinct in terms of underlying form and derivation. He also demonstrates that there are two types of A-no-A questions, VP-not-V questions and V-not-VP questions. (23a) exemplifies the former, (23b) the latter. In the discussion below I will focus on the V-not-VP type, a being the more interesting one, in the present context.

One striking difference between the A-not-A questions and the *haishi*-questions is that the former are subject to island constraints, while the latter are not. Compare (24a), exemplifying an A-not-A form embedded in a (sentential) subject, with (24b), exemplifying a *haishi*-disjunction similarly embedded in a subject.

- (24) a. *[ta lai bu lai] bijiao hao (ne)?
he come not come more good Q
Intended reading: ‘Is it better that s/he comes or that s/he doesn’t?’
- b. [ta lai haishi bu lai] bijiao hao (ne)?
he come or not come more good Q
‘Is it better that s/he comes or that s/he doesn’t?’

The question particle here ensures that the sentence is interpreted as a direct question. The reason why (24a) is ill-formed is, according to HLL (247, 254-256) following Huang (1991), that the A-not-A form needs to undergo LF-movement to the C-domain “ for the assignment of its scope in Logical

Form (LF)” (HLL: 254). Since subjects are islands, the result is ungrammatical. The *haishi*-question, on the other hand, does not undergo LF-movement, so (24b) is well-formed. The A-not-A form can be embedded as a subject with an indirect question interpretation, though, if selected by an appropriate predicate.

- (25) [ta lai bu lai] yidiar dou mei guanxi (*ne?)
 he come not come at-all all no matter Q
 ‘Whether s/he comes or not does not matter at all.’

In this case the A-not-A form need not (and should not) move out of the sentential subject.

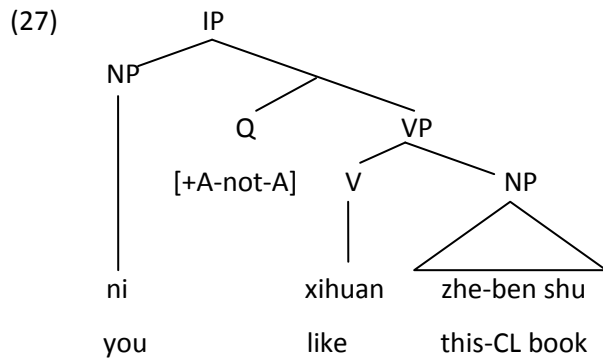
Another difference between A-not-A questions and *haishi*-questions (ascribed by HLL to McCawley 1994) is that only in the latter can the conjuncts be switched around.

- (26) a. ta daodi lai (haishi) bu lai?
 he truly come or not come
 ‘Let me get to the answer: will he come or not?’
 b. ta daodi bu lai *(haishi) lai?
 he truly not come or come
 ‘Let me get to the answer: will he not come or come?’

A-not-A questions strictly have the order V(P)>not>V(P). This applies to both the V-not-VP and the VP-not-V type.

In our terms, the *haishi*-questions would be a straightforward mapping onto syntax of the disjunctive propositions p and $\neg p$, with conjunction reduction applying optionally to the conjuncts. As with coordination in general, we expect either order of the two disjuncts to be possible. The A-not-A question, on the other hand, have a quite a different syntactic analysis, according to HLL (253) (following Huang 1991). The underlying source is a simplex sentence with an interrogative functional head in IP.⁴

⁴ This applies to the V-not-VP type. The VP-not-V type is also derived from a simplex sentence, but with a coordinated VP with a covert disjunction.



The surface form, in this case, are (27a or b):

- (28)
- a. ni xihuan bu-xihuan zhe-ben shu?
you like not like this-CL book
 - b. ni xi bu-xihuan zhe-ben shu?
you li- not-like this-CL book

They are morphologically derived by reduplication of the initial portion of the VP, and “/turning/ the second part of the reduplicated verb into its appropriate negative form” (HLL: 253). The reduplication may affect just the first syllable of the predicate, deriving (28b) in this case.

In the syntax, the Q undergoes movement “to an appropriate position in CP at LF, thus causing that CP to be interpreted as a question” (HLL: 255), as shown in (29a). According to HLL, the A-not-A head is thereby interpreted as a quantifier binding a variable, which in this case is the polarity of the sentence, restricted to the two possible polarity values [affirmative] and [negative], as shown in (29b).

- (29)
- a. $[_{CP} Q_{[A-not-A]} [_{IP} ni t_{[A-not-A]} [_{VP} xihuan zhe-ben shu]]]$
 - b. For which x , x is affirmative or negative, (you x like that book)

While I am happy to adopt the syntactic derivation (29a), I do not assume that the moved A-not-A head is interpreted as a quantifier binding the polarity variable, because I do not see the motivation for it, neither at LF nor PF. Instead, the construction has a free variable, a disjunction of two values, which has sentential scope as a result of movement. This difference is not crucial, though; more important is that we agree on the syntactic analysis in (29a).

HLL note that the A-not-A form may occur in a complement clause, where it can be interpreted as having scope over the main clause, in which case the sentence is a direct question, or as having scope over the embedded clause, for an indirect question.

- (30) a. ni juede [ta xi-bu-xihuan ni] (ne)?
 you feel he li-not-like you Q
 ‘Do you think he likes you, or (do you think he does) not?’
- b. wo bu zhidao [ta xi-bu-xihuan ni] (*ne).
 I not know he li-not-like you
 ‘I don’t know whether he likes you or not.’

This is predicted under the LF-movement hypothesis. Just as in the case of the more familiar case of *wh*-in-situ (Huang 1982, HLL: 260ff.), the variable can undergo LF-movement either to the C-domain of the minimal dominating clause, which yields an embedded question, or to the C-domain of a higher clause, which yields a direct question if the higher clause is a main clause.⁵ The Q-particle *ne* in (29a, 30a) I assume is a Q-force marker, therefore absent in (30b, 31b).

- (31) a. [_{CP} [A-not-A] [_{IP} ni juede [ta [xi bu-xihuan] ni]] (ne)?
 you feel he li-not-like you Q
- b. wo bu zhidao [_{CP} [A-not-A] [_{IP} ta [xi-bu-xihuan] ni]] (*ne).
 I not know he li-not-like you

In the *wh*-question the variable is the *wh*P, in the alternative question the variable is the disjunctive constituent, in the yes-no question the variable is polarity, encoded in Chinese by a head in the I-

⁵ We can construct an English counterpart to (30a).

(i) Do you claim that he does or doesn’t like you?

As in (30a), the disjunction in (i) has clausal scope, so that the two alternatives are: you claim that he does like you or you claim that he doesn’t like you. In this respect the embedded A-not-A question and the English counterpart are different from an English embedded question with *whether*.

(ii) *Do you believe whether he will come?

Intended reading: ‘Do you believe that he will come or do you believe that he won’t come?’

This is because *whether* undergoes (overt) movement to spec,CP of the embedded clause. As such it cannot then undergo overt or covert movement to the matrix clause (the effect of freezing; see Rizzi & Shlonsky 2007). The A-no-A constituent, on the other hand, is *in situ*, and therefore can escape the embedded clause, as long as it is not an island (thanks to Jim Huang (p.c.) for clarifying this point).

domain, the A-not-A head. As in the case of alternative questions and wh-questions discussed in the previous section, I assume the reason why the disjunctive head moves is in order for the disjunction to get sentential scope, hence in (29a, 30a) yielding the disjunction ‘You think he likes you or you don’t think he likes you’. In the *haishi*-question the conjunction has sentential scope without movement, consequently movement is not called for. This explains the difference between (23a,b).

In conclusion, the *haishi*-question maps almost directly onto the familiar disjunctive set of propositions, although conjunction reduction can apply to delete parts of the conjuncts, but the A-no-A question maps onto an open proposition with a question variable. The A-no-A questions have the three properties which were identified for alternative questions and wh-questions at the end of section 2.3; compare (21) and (31).

- (32) a. A question variable, inherently restricted to two values, A or not A, positive and negative polarity.
- b. Movement of the disjunction of the variable to the C-domain in order to assign sentential scope to it; the movement is covert.
- c. In direct questions, a Q-force feature taking the CP as complement; the Q-force feature contributes a request to the addressee to assign a value to the variable.

The answer to a yes-no question can either explicitly express the proposition which the respondent wants to present as the true one, or, more typically, it can assign a value to the question variable, thereby picking one of the two alternatives as the true one. The way this is done in the case of Chinese A-not-A questions is typically by echoing ‘A’ for the affirmative answer and ‘not-A’ for the negative answer.

- (33) Q: Zhangsan mai -bu-mai shu?
 Zhangsan buy not buy book
 ‘Does Zhangsan buy books?’
- A1: mai.
 buy
 ‘Yes.’
- A2: bu mai.
 not buy
 ‘No.’

The derivation of answers, including verb echo answers like this, will be discussed in detail in Chapter 3. To put it very concisely, the verb in A1 encodes the value [+Pol], and thereby conveys the meaning that the positive proposition is true, while the negation plus verb in A2 encodes the value [-Pol], and conveys the meaning that the negative proposition is true.

It seems plausible enough that the A-not-A question form has evolved historically from a *haishi*-question source, by grammaticalization. The disjunction of a clause and its negation, subject to ellipsis under identity, can be reanalysed as a monoclausal expression with a polarity variable, which then requires LF-movement to assign the disjunction sentential scope, deriving the structure in (28a).

In the next sections I will argue that (29a) represents a yes-no question structure found in, probably, very many languages, including English.

2.5. Yes-no questions in Finnish

The word order in declarative clauses in Finnish is SVO, as in (34a). Yes-no questions, direct or indirect, are marked by a question particle *-ko* or *-kö*, depending on vowel harmony, encliticized to the fronted finite verb or auxiliary. I will gloss it as *-KO*, for the time being.

- (34) a. Minä pidän tästä kirjasta. [Finnish]
 I like this.ABL book.ABL
 'I like this book.'
- b. Pidät-**kö** sinä tästä kirjasta?
 like-KO you this.ABL book.ABL
 'Do you like this book?'
- c. Marja haluaa tietää pidät-**kö** sinä tästä kirjasta.
 Marja wants know like-KO you this.ABL book.ABL
 'Marja wants to know if you like this book.'
- d. Olet-**ko** sinä jo lukenut tämän kirjan?
 have-KO you already read this book
- e. Et-**kö** sinä halua lukea tätä kirjaa?
 NEG-KO you want read this book
 'Don't you want to read this book?'

(34b) is the form of the direct yes-no question when the sentence has just one verb. (34c) is the corresponding embedded question. (34d) is a question with an auxiliary verb and a main verb. (34e)

is the form of a negative question. The rule is that the highest verb or auxiliary moves to the C-domain and serves as host of the encliticised question particle. The standard negation in Finnish is an auxiliary, inflected for subject agreement, which is always the highest verbal element, and therefore is the one that moves to the C-domain and hosts the question particle, when present (see Holmberg & al. 1993)

The question particle can also be cliticised to other fronted constituents, which results in questions with narrow focus.

- (35) a. Lontoossa-**ko** Jussi kävi?
 London.INE-KO Jussi went
 ‘Did Jussi go to LONDON?/Was it London Jussi went to?’
- b. Ollin autolla-**ko** te tulitte?
 Olli’s car-ADE-KO you came
 ‘Did you come in OLLI’s car?/Was it Olli’s car you came in?’
 ‘Did you come in Olli’s CAR (not on his motorbike)?’
- c. Ollin-**ko** autolla te tulitte?
 Olli’s-KO car-ADE you came
 ‘Did you come in OLLI’s car?/Was it Olli’s car you came in?’

The strategy I will follow is to first propose an analysis of the question particle in narrow focus questions, and then generalise it to the unmarked wide focus questions.

An initially plausible analysis is that the question particle is the spell-out of a head in C-domain, which attracts a constituent from within IP, which in the unmarked case is the finite verb or auxiliary, but can be some other constituent as a marked case. As a result the particle would consistently be in ‘second position’ in the clause. Second-position question particles are a fairly widespread phenomenon. According to Dryer (2011) about 6% of the world’s languages employ this system of marking yes-no questions. As shown in Holmberg (2014) this is probably not the right analysis of the Finnish second-position particle, though. In particular, as shown by (35c), the question particle is not necessarily cliticized to the constituent fronted, as in (35a,b), but can be cliticised to a subconstituent of the fronted constituent. In Holmberg (2014) I argue that the *-ko* particle is merged with the narrowly focused constituent in IP, and moves to the C-domain pied-piping the host constituent. Why does it move? The reason is, according to Holmberg (2014) that *-ko* is both a focus and question particle. As a focus particle the condition, necessary and sufficient, is that it must c-command the focused constituent. As a question particle the condition is that it must

The claim is that the clitic *-ko* is a spell-out of the question disjunction. It is not morphologically related to the standard disjunction particle, though. Finnish has two disjunction particles, one specifically for alternative questions, one for other disjunction.

- (39) a. Haluat-**ko** sinä teetä **vai** kahvia.
 want-Q you tea or coffee
 ‘Do you want tea or coffee?’ (exclusive reading)
- b. Marja haluaa teetä **tai** kahvia.
 Marja wants tea or coffee
- c. Haluat-**ko** sinä teetä **tai** kahvia.
 want-Q you tea or coffee
 ‘Do you want tea or coffee?’ (inclusive reading, roughly ‘Do you want some hot beverage?’)

The one which is relevant in the present connection is *vai* in (39a), which is only found in alternative questions, where it yields the exclusive ‘either-or’ reading. The disjunction *tai* is used in declaratives, as in (39b) or in questions, as in (39c), but with inclusive reading. Under the inclusive reading, the question is not an alternative question but a yes-no question, calling for *yes* or *no* as answer. The claim is (a) that the exclusive reading requires movement of the disjunction to the C-domain, to get clausal scope (Larson 1985), and (b) that *-ko* in (39a) marks the scope of the disjunction, by hypothesis as a result of movement. Interestingly, a copy of *-ko* may show up with the disjunction, providing overt support for the analysis.

- (40) Haluat-**ko** sinä teetä **vai-ko** kahvia.
 want-KO you tea or-KO coffee
 ‘Do you want tea or coffee?’ (exclusive reading)

Interestingly, *-ko* cannot double the disjunction *tai*.

- (41) *Haluat-**ko** sinä teetä **tai-ko** kahvia.
 want-KO you tea or-KO coffee

This is predicted, if this disjunction does not take clausal scope. It is a yes-no question where [\pm Pol] takes clausal scope, so the alternatives posed by the question are ‘You want tea or coffee or you don’t want tea or coffee’.

Matters are actually more complicated, since *tai* is, at least for many speakers, ambiguous between inclusive and exclusive reading in (39c) (while *vai* has unambiguously exclusive reading). In this light the contrast between (40) and (41) is surprising; we would expect (41) to be a well-formed alternative to (40) for those speakers. More research on speaker variation is needed here, though. Whatever the relation is between *vai* and *tai*, Finnish is an example of a language where on the one hand, the question particle is morphologically distinct from the disjunction particle(s), but on the other hand there is overt evidence of close interplay of disjunction and question-formation (the case of (40)), which can be explained under the hypothesis that question formation involves movement of a disjunction to the C-domain.

Returning to the unmarked questions in (34), in these, *-ko* spells out the disjunction of + and –Pol. The position of *-ko*, cliticised to a fronted verb or auxiliary, is because the polarity feature is carried by the highest verb or auxiliary, as a result of verb or auxiliary movement to the IP-internal Pol (Holmberg et al. 1993, Holmberg 2003). The movement of the verb or auxiliary with *-ko* to the C-domain in unmarked yes-no questions, is then overt evidence of movement of [\pm Pol], by hypothesis in order to assign sentential scope to the disjunction.

Summarising, unmarked yes-no questions in Finnish exhibit the same three properties as the Chinese A-not-A questions. There is

- (42)a. a question variable in IP, inherently restricted to two values, positive and negative polarity;
- b. movement of the question disjunction to the C-domain in order to assign sentential scope to it; the movement is overt in Finnish. This is on the assumption that the question particle is the question disjunction and that it is first merged within IP, but moves, pied-piping its morphological carrier, the finite verb or auxiliary.
- c. In direct questions, a Q-force feature taking the CP as complement; the Q-force feature contributes a request to the addressee to assign a value to the variable.

We can also see overt movement of the question disjunction to the C-domain in yes-no questions with narrow scope, where the movement pied-pipes a larger constituent, lending support to the theory articulated here. The difference between wide focus and narrow focus yes-no questions is

the identity of the question variable: [\pm Pol] in the wide focus questions, something else in narrow focus questions; I will return to narrow focus questions in Chapter 5.

See Jayaseelan (2012) for a similar, though not identical, account of the syntax of questions based on the notion that questions all involve movement of a disjunct to the C-domain.

2.6 On focus in questions

It is common in the literature to formulate movement to the C-domain in questions, including *wh*-movement and polarity movement, as movement to a focus position. There is a long-standing debate in the literature whether the landing site of *wh*-movement is the same as the position of focus-fronted phrases, universally or in individual languages (Horvath 1986, Cheng 1997, Bošković 2002; see discussion in Cable 2008). In Holmberg (2013: 36) I propose that [\pm Pol] in yes-no questions move to a focus position in the C-domain. However, if we adopt the alternative semantics approach to focus articulated by Rooth (1985, 1992), as I propose to do here, identifying *wh*-movement or polarity movement as special cases of focus-movement is potentially misleading. In the alternative semantics perspective focus presupposes a set of alternatives. For example, focusing the object of a transitive sentence, as in *I had FISH*, evokes a set of alternative propositions distinguished only by the value of the object: ‘I had fish, I had pork, I had squid’, etc.; the focus set, so called. The sentence then asserts that one of the propositions in the focus set is true, namely ‘I had fish’, to the exclusion of the other propositions. As discussed, a question also evokes a set of alternative propositions (following Hamblin 1958), what I have referred to as the question set. But of course the question, expressly, does not select one of the alternatives to the exclusion of the others. Instead, that is the job of the answer. Therefore the answer to a question necessarily has focus on a constituent, namely the one corresponding to the constituent that has different values in the propositions of the question set. A question does *not* have focus; this is a defining characteristic (questions with narrow focus do not contradict this claim as will be discussed in chapter 5). Tim Bazalgette (p.c.) has suggested calling the questioned constituent ‘anti-focus’.

Then, if the syntactic function of the head Focus in the C-domain, widely assumed in generative syntactic theory, is to identify the constituent merged with FocusP as focus, thereby allowing it to select one of the propositions of the focus set (= the question set, if there is a question) as the true one, then the *wh*-phrase or polarity head fronted in *wh*-questions and yes-no questions, respectively, do not merge with FocusP (i.e. do not ‘move to the spec of Focus’).

There is another understanding of the word *focus*, though, one which is closer to ordinary language usage. This is focus in the sense of ‘centre of attention’. Intuitively, the centre of attention in a question is the question variable. In a *wh*-question it is the choice between the different values

of the whP, in a yes-no question it is the choice between positive and negative polarity. A related, more technical term is *information focus* (É. Kiss 1998). In a declarative sentence the information focus is that constituent which provides information that is new in the discourse. In the context of question-answer pairs, the new information in the answer is provided by that constituent which corresponds to the variable in the question (in the dialogue *What did you have for dinner? I had fish for dinner.*, the information focus/new information in the answer is provided by the noun phrase *fish*). The questioned constituent itself is not information focus; the question does not provide any new information but calls for new information. But the questioned constituent (the question variable) is the centre of attention in the question.

Why does it move though? I have argued that the disjunction of the question variable moves to the C-domain to have sentential/propositional scope: a question always denotes a disjunctive set of propositions. Is that the only reason? Does the movement also ensure that it is the Centre of Attention, now in a technical sense, indicated by the capitals? Is it accidental that the disjunction, in the cases discussed, moves to the edge of CP, where it will be subjacent to Q-Force (in direct questions) or to a predicate defining an epistemic or evaluative attitude to it (in indirect questions)? Recall the meaning that I have argued that a direct question has, now putting it a bit more precisely: ‘Tell me the value of the variable α in β where β is an IP locally c-commanded by Q-Force containing a free variable α ’. This is meant to apply to all questions, yes-no questions, wh-questions and alternative questions. The movement of the variable, or minimally the disjunction of the variable, to the C-domain has the effect of formally and unambiguously identifying the variable as the object of ‘Tell me the value of’. This is, I submit, equal to being the Centre of Attention of the question, and may be regarded as a trigger for the movement. (43a) is a definition of Centre of Attention in questions, (43b) a definition of Centre of Attention in answers.⁸

- (43) a. α is the Centre of Attention (CoA) of a question if and only if α is subjacent to Q-force (direct questions) or to the matrix predicate (embedded questions).
- b. α is the Centre of Attention (CoA) of a declarative (including answers) if it is merged with FocP.

I have adopted the policy in this book of avoiding acronyms. However, I will use the acronym CoA for Centre of Attention to make it explicit that this is a technical notion. In the answer to a direct question the focused constituent in the C-domain is also the CoA. But it is also information focus

⁸ CoA is related to the notion Main Information Request (MIR) in Haddican, Holmberg, Tanaka and Tsoulas (2014). The MIR, in turn, is related to the notion Main Point of Utterance in Simons (2007). They are sufficiently distinct, though, to warrant giving a different name to the CoA.

(providing new information), and also focus in the alternative semantics sense: It provides a value for the question variable, and thereby picks one member of the set of propositions denoted by the question as the true one, to the exclusion of the others. Note that (43b) says ‘if’, not ‘if and only if’; I leave the question open whether the notion CoA plays a role in other declaratives than answers, and whether in that case there are other options for realisation of it.

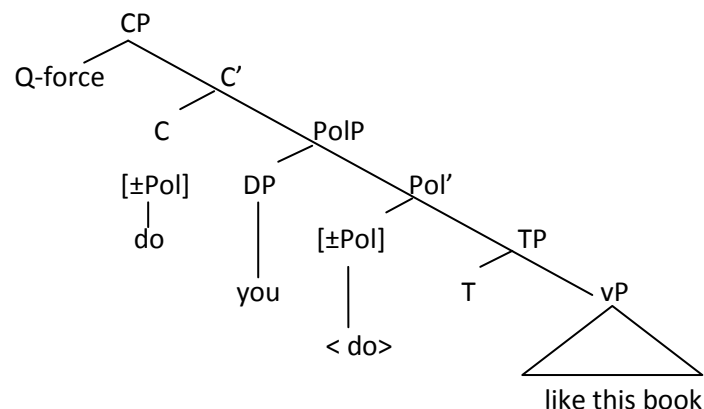
I will continue to keep it open what the exact position is of the fronted question variable/disjunction in terms of an articulated C-domain following Rizzi (1997). There are some arguments in Rizzi (2001) that a ‘question operator’ occupies a position called spec of Int(errogative)P, situated between ForceP and FocusP in the C-domain. This is compatible with the present theory, taking the question operator to be the question variable/disjunction. I have not, however, seriously tried to develop this idea in the context of the present theory, so I will leave it open (see Jayaseelan 2012, who does implement the idea that the question disjunction moves to spec IntP). The question variable/disjunction moves ‘to the C-domain’ to have sentential scope and be the CoA. In answers, the constituent specifying the value of the question variable is merged with FocusP, i.e. is in ‘the spec of FocusP’, which is the CoA for answers, and, I assume, for any declarative which has a focused constituent in the C-domain.

2.7 Yes-no questions in English

I propose that the English yes-no questions have essentially the structure of a Chinese A-not-A question and a Finnish unmarked yes-no question.

(44) a. Do you like this book?

b.



In place of HLL’s [+A-not-A] head, but just as in the Finnish yes-no question, there is an unspecified/unvalued polarity feature [±Pol] heading IP. As in Chinese and Finnish, the [±Pol]-

feature undergoes movement to the C-domain, by hypothesis for the same reason: to assign sentential scope to the disjunction and be the CoA, targeted by Q-force. As in Finnish, the movement is overt, in that it is accompanied by ‘subject-Aux inversion’ or ‘T-to-C’, which in this perspective would be more aptly termed Pol-to-C (as pointed out in Holmberg 2003). Unlike Finnish, there is no overt expression of the disjunction itself in direct questions, only the auxiliary which, by hypothesis, hosts the disjunction. On indirect questions, see below.

I have proposed that the polarity feature is the highest head in the IP-domain, c-commanding T. As discussed by Laka (1994: 63-73), in the context of a theory where polarity is a syntactic head which can have affirmative or negative value, focused positive polarity is expressed in English as stress on the auxiliary, with *do*-support supplying a default auxiliary: *They DO need help*.⁹ This is an indication where the syntactic feature is located in English, namely, in the vicinity of the finite auxiliary. If the negative auxiliaries *didn’t/doesn’t* are derived by head movement in the syntax, and if the clitic negation *-n’t* indicates the position of Pol, then the forms *didn’t/doesn’t* indicate that Pol is higher than T (Holmberg 2003). Note, however, that in the present model, the negation itself does not spell out polarity, as will be discussed below in section 2.8.

Holmberg (2003) argues that the polarity head in Finnish is higher than T based on morphological evidence: If the head Pol also encodes subject agreement in Finnish, then the morphological structure of the finite verb, V+tense+agreement, indicates that tense is merged lower than polarity, and therefore will occur closer to the verb stem as a result of successive head-movement. In Chinese, too, there is very good reason to think that the polarity head is the highest head in IP, since in A-not-A questions with auxiliaries it is always the highest auxiliary which forms the A-not-A constituent. There is also another question marker in Mandarin Chinese, *shi-bu-shi*, which, I assume, is an overt spell-out of [\pm Pol]. As shown, it may occur in a high position in IP, preceded only by the subject, or in clause-final position, as a tag (thanks to Hofa Meng Jung Wu for data and discussion).¹⁰

- (45) a. LaoCheng [shi-bu-shi] meiyou kai che lai? [Mandarin Chinese]
 LaoCheng [be-not-be] not.have drive car come
 ‘Did LaoCheng not come here by car?’
- b. LaoCheng meiyou kai che lai [shi-bu-shi]?
 LaoCheng not.have drive car come be-not-be

⁹ Laka (1994) may be the first to articulate this idea within modern generative grammar, but, as she acknowledges, the idea was proposed in Chomsky (1957: 65).

¹⁰ *Shi-bu-shi* can also be sentence-initial as a constituent of the C-domain. This is not just the overt effect of [\pm Pol]-movement; the initial *shi-bu-shi* is a focus marker, which can induce narrow focus on the subject; Wu (in preparation).

‘LaoCheng didn’t come here by car, right?’

As will be discussed in Chapter 4, the tag of tag questions generally is a spell-out of [\pm Pol] (where interpretation characteristic of tag questions which makes them different from ‘standard questions’ is an effect of the [\pm Pol]-feature combining with a proposition with specified polarity value). As shown in (45a), the *shi-bu-shi* constituent is high in the I-domain, preceded only by the subject.

There is also, arguably, a connection between polarity and finiteness: a finite clause will always have polarity, positive, negative, or in questions, unspecified/unvalued. This suggests that polarity may be a defining feature of the clausal head Finite, postulated by Rizzi (1997) and widely adopted in cartographic theories of clausal structure. This head is taken to be either a high head in the IP-domain or a low head in the C-domain. In Rizzi (1997) it is the lowest head of the C-domain. There are also infinitival clauses with polarity, though, including clauses with unspecified/unvalued polarity (*I don’t know whether to leave*).

I will assume, then, that the mostly abstract polarity feature is the highest head in the IP-domain in English, Finnish, Chinese, and presumably many other languages, though not universally, if the theory of Thai clausal structure to be expounded in section 2.9 is right.¹¹ The subject moves to the spec of Pol, i.e. merges again with PolP, in Chinese, Finnish, and English; it is the ‘EPP-position’, not because Pol calls for it, but, I assume, just because it is the highest spec-position in the IP-domain. If the A-not-A head in Chinese is an overt realisation of the polarity head, and if the subject is in an A-position within IP in unmarked Chinese sentences, then we have evidence from word order that the polarity head is a constituent of IP in at least some languages, typically preceded only by the subject in IP.

(44) being a direct question, there is an illocutionary force feature Q-force taking the clause with the polarity variable as complement. A difference, among many, between Finnish and English is that Finnish has obligatory Pol-to-C movement in both indirect and direct questions. Compare (34c), repeated here as (46a) and (46b,c).

- (46) a. Marja haluaa tietää pidät-kö sinä tästä kirjasta. [Finnish]
Marja wants know like-KO you this.ABL book.ABL
‘Marja wants to know if you like this book.’
b. Mary wants to know whether you like this book.
c. ?Mary wants to know do you like this book(?).

¹¹ See Duffield (2013) for arguments for a fairly low polarity head position in Vietnaemse.

The status of (46c) is uncertain, at least in many varieties of English. The uncertainty concerns whether it should be regarded as an embedded root phenomenon (Heycock 2005), a direct question even though it is syntactically embedded, or whether it is, or can be, just an alternative spell-out of (46b). There is a clear contrast in acceptability between (47a,b), though, which can be understood if (46c) is an embedded root phenomenon: embedded root clauses are islands (Heycock 2005).

- (47) a. ?Which book does Mary want to know whether you like?
 b. *Which book does Mary want to know do you like?

In the embedded question with *whether*, I assume, in the spirit of Larson (1985), that *whether* is first merged in IP, as an exponent of [\pm Pol], and undergoes movement to the C-domain. As for embedded questions with *if*, as in (48), I assume that they, too, are derived by movement of [\pm Pol] from IP to the C-domain, where it is spelled out as *if*.¹²

- (48) Mary wants to know if you like this book.

In Holmberg (2003) I proposed to redefine subject-aux inversion, or T-to-C, as it is often referred to (Pesetsky and Torrego 2001), as Pol-to-C, the overt movement of [\pm Pol] to C required in yes-no questions. One implication of this was that subject-auxiliary inversion in wh-questions in English would be a different operation, a pure linearization rule with no effects at the LF interface. An observation consistent with this theory was that Finnish has no T-to-C in wh-questions. However, English and Finnish both have T-to-C/Pol-to-C in alternative questions, Finnish with the overt question particle, English without any overt marker.

- (49) a. Haluat-ko sinä teetä vai kahvia? [Finnish]
 want-KO you tea or coffee
 'Do you want tea or coffee?'
 b. Do you want tea or coffee?

¹² See Jayaseelan (2012) on *if* and disjunction. Kayne (1991) observes that there is a difference between *whether* and *if* in infinitival embedded questions.

(i) I don't know whether to stay or go.

(ii) *I don't know if to stay or go.

Kayne takes this as evidence that *whether* is a specifier while *if* is a C-head. I will ignore this difference here.

As indicated in section 2.2, there is no [\pm Pol] feature in alternative questions. They do not call for a specification of polarity value, but for specification of value for the variable which is the disjunction of two categories, ‘tea or coffee’ in the case of (49). As also argued in the previous section, the particle *-ko* in the alternative question is a marker of the scope of the disjunction, by hypothesis derived by movement. It also defines the disjunction as the CoA, subjacent to Q-force (in direct questions) or to the matrix predicate (in indirect questions). This is also what the particle does in yes-no questions in Finnish: It marks the scope of the disjunction of the [\pm Pol] feature, and puts it in the CoA position subjacent to Q-force or a higher predicate. And I postulate that this is what subject-auxiliary version does in English, too: It marks the scope of the question disjunction, [\pm Pol] in yes-no questions and whatever other disjunction defines the variable in alternative questions, and puts them in the CoA position. In embedded questions *whether* or *if* do the same job: by moving from IP to CP they ensure sentential scope for the question disjunction and makes it the CoA (compare Jayaseelan 2012 for a related formal account of questions).¹³

If so, English yes-no questions have the same, by now familiar properties as the other questions discussed in this chapter:

- (50)a. a question variable in IP, inherently restricted to two values, positive and negative polarity;
- b. movement of the disjunction of the variable to the C-domain in order to give it sentential scope and make it the CoA (if movement of the highest verb or auxiliary is an indicator of movement of the polarity disjunction, then this movement is overt in English);
- c. in direct questions, a Q-force feature taking the CP as complement; the Q-force feature contributes a request to the addressee to assign a value to the variable.

We shall see a structural analysis of yes-no questions in yet another language, which will turn out be rather different from the languages discussed until now, namely Thai. However, before this, I will propose an account of negative questions, an important construction type in the context of the present work which will also be relevant in the account of Thai questions.

2.8 Negative questions

¹³ Under the present assumptions fronting of the auxiliary in direct *wh*-questions would not have this function, as movement of the *wh*-phrase itself ensures sentential scope for the question disjunction (see Jayaseelan 2012 for a different view). A different idea is that subject-aux inversion/T-to-C in English is triggered by question force, which would be why it is found in direct questions only; see Krifka (2012). See Haddican, Holmberg, Tanaka and Tsoulas (2014: 25-26) for a particular formalisation of this idea.

Yes-no questions can be negative, as in (51).

- (51) a. Aren't you tired?
 b. Do people not believe what they're told?

If it is a defining property of yes-no questions that they contain an unspecified polarity feature, how can they be negative? A-no-A questions, it should be noted, cannot be negative, but are by their very nature neutral. They explicitly posit a positive and a negative alternative and asks which is right. But many types of neutral yes-no questions, in many languages, do have a negative counterpart, even though they, too, are about the choice between a positive and a negative alternative.

As a point of terminology: I will refer to negative yes-no questions as negative questions, but to yes-no questions which are not negative as *neutral questions*, avoiding the notion 'positive question', sometimes seen in the literature. This is because the relation between them is not symmetrical; negative questions are a marked case, non-negative questions are the unmarked case.

A whole chapter in this book will be devoted to negative questions and how to answer them. Here I will just give the outline of the proposal regarding the syntax of negative yes-no questions, taking English as example. As discussed in the preceding sections, I propose that every finite sentence has a polarity feature merged as the highest head in the IP-domain. The polarity feature is merged unvalued, and is only assigned a value in the course of the syntactic derivation. Formally, as an unvalued feature it is a probe, in the sense of Chomsky (2001), searching its c-command domain for a matching category with a valued feature.¹⁴ The standard notation for 'unvalued feature F' in minimalist literature is [uF]. For the polarity feature I have preferred the notation [\pm F] because it expresses explicitly and concisely that the feature has two alternative values, positive or negative. Now if the sentence is declarative and contains a negation, the unvalued Polarity feature will copy the negative polarity value of the negation, as shown schematically in (52).

- (52) a. Mary should not buy this book.
 b. [_{IP} Mary [_{-Pol}] [_{TP} should+T [_{NegP} Neg [_{VP} <Mary> buy this book]]]]
-

Obviously the derivation of (52a) involves an auxiliary, and some rather complex interaction of the auxiliary and the negation (with *shouldn't* as an alternative realisation), all ignored at this point (cf. Cormack & Smith 2002). If the sentence is declarative and does not contain a negation, the polarity feature will get affirmative value as a default. By hypothesis, then, an affirmative sentence is marked

¹⁴ The standard notation for 'unvalued feature F' is [uF]. For the polarity feature I prefer the notation [\pm F] because it expresses in a concise fashion that the feature has two alternative values, positive or negative.

by an affirmative feature (Chomsky 1957: 65, Laka 1994: 63-73), which gets its value by default, in the absence of a category merged in the local domain assigning negative value to it.

The distinction between a polarity head and negation is not the same as the distinction between two negation positions discussed in Haegeman (1995), Zanuttini (1997), Holmberg (2003). It is also not quite the same as in Laka's (1994) theory, where there is a head Σ which encodes negation or affirmation, and is spelled out as a negation in the former case (Laka 1994: 68). As will be discussed in Chapter 4, there is variation across languages regarding the position of negation in the sentence. But by hypothesis all languages, including those with a notoriously high negation (such as Finnish, where the negation is a high auxiliary verb) have a sentential polarity feature which is even higher, and which is assigned negative value by the negation, or affirmative value by default.

This is the typical situation in declarative sentences and certain other sentence types. But there are sentence types where the polarity feature remains unvalued. Yes-no questions is one of them, conditional clauses is another (*If we buy this book...*). As discussed, it is a defining characteristic of yes-no questions that $[\pm\text{Pol}]$, the category encoding disjunction of positive and negative polarity, moves to the C-domain to get sentential scope. This movement, I submit, precludes valuation of the unvalued polarity feature by a negation, when the sentence contains a negation.

(53) Q-force $[[\text{should}, \pm\text{Pol}] \text{C} [\text{IP} \text{Mary} [\text{should}, \pm\text{Pol}]] [\text{TP} \text{T} [\text{NegP} \text{not} [\text{VP} \text{buy this book}]]]]]$

This analysis accounts for the fact that the negative question is still a question about two alternatives, a proposition p and its negation $\neg p$, and (in the case of the direct question) tells the addressee to indicate which one is true. However, as is well known, neutral and negative questions are not pragmatically identical. To put it simply, negative questions are always biased (but see below note 15). However, confusingly, they can be biased either way, towards a negative or a positive answer. In English this distinction is, or at least can be, made explicit in the question by the choice between *n't* and *not* as negation.

- (54) Q1: Do you want coffee? (neutral)
 Q2: Don't you want coffee? (positive bias)
 Q3: Do you not want coffee? (negative bias)

Assume that Q2 is directed by Mary to her acquaintance Kate when she is about to pour coffee into Kate's empty cup. In this situation it has a positive bias, conveying an expectation of a positive

answer. It is still a question, though, to double-check that her assumption about Kate's preferences is right, and offering Kate an opportunity to confirm or deny that she wants coffee. Assume that Q3 is directed by John to Bill after observing him decline the offer of a cup of coffee. In this situation the question has a negative bias, conveying an expectation of a negative answer. Again, it is still a question, offering Bill an opportunity to confirm or deny that he does not drink coffee. In a seminal paper, Ladd (1981) names the former, positively biased reading the 'outer negation' reading and the negatively biased one the 'inner negation' reading (although he did not consider the question form (25Q3), but was discussing two interpretations of the question form (25Q2).¹⁵ As we shall see, accounting for the role of the negation in the case of the positively biased 'outer negation' question is harder than in the case of the negatively biased 'inner negation' question. The strategy I will follow is to postpone discussion of the outer negation reading until Chapter 4. The following is thus a preliminary discussion of negative questions with a low negation, as in (54Q3), to be supplemented with more details in Chapter 4.

Putting aside then, for the time being, the case of the positively biased outer negation question, the difference between the neutral and the negative question shows clearly by how they are answered.

- (55) Q: Do you drink coffee?
A1: Yes.
A2: No.
- (56) Q: Do you not drink coffee?
A1: (??)Yes.
A2: Yes I do.
A3: No.

The neutral question can obviously be answered *yes* or *no*. The negative question (56) poses a conundrum, though. As discussed by Kramer & Rawlins (2011), Holmberg (2013), and as will be discussed in more detail in chapter 4.3, the status of the bare answer *yes* is ambiguous. For some speakers, and in some situations, it will be a well-formed answer meaning that I do not drink coffee, confirming the expected negative alternative. For other speakers, and/or other situations, it is just not a well-formed answer. Informally speaking, it is bad because the meaning is indeterminate. If anything, it means that I do drink coffee. This meaning can be brought out more clearly by emphatic

¹⁵ There is variation among English speakers regarding whether they accept an inner negation reading of questions with *-n't* fronted along with an auxiliary, as will be discussed in chapter 4. Ladd clearly does, and was apparently not even aware of any variation. This will be discussed in chapter 4.3.

intonation, and can be made entirely clear by adding a subject and an auxiliary (a clause derived by VP-ellipsis), as in (56A2). This answer is unambiguous for all speakers, meaning that I do drink coffee (contrary to the expectation conveyed by the question). The meaning of *no* is the same in the case of the neutral question and the negative question, for all English speakers, and means that I don't drink coffee.

The crucial difference between neutral and negative (inner/low negation) yes-no questions, I propose, is the following: While the neutral yes-no question denotes the disjunction of p and $\neg p$, a positive proposition and its negation, the negative question denotes the disjunction of $\neg p$ and $\neg(\neg p)$, a negative proposition and its negation. The disjunctive question set of the negative question is extensionally equivalent with the disjunctive question set of the neutral question, but different in terms of pragmatic function, because with the negative question the negative alternative proposition is the unmarked one; the positive alternative requires additional computation, eliminating the double negation.

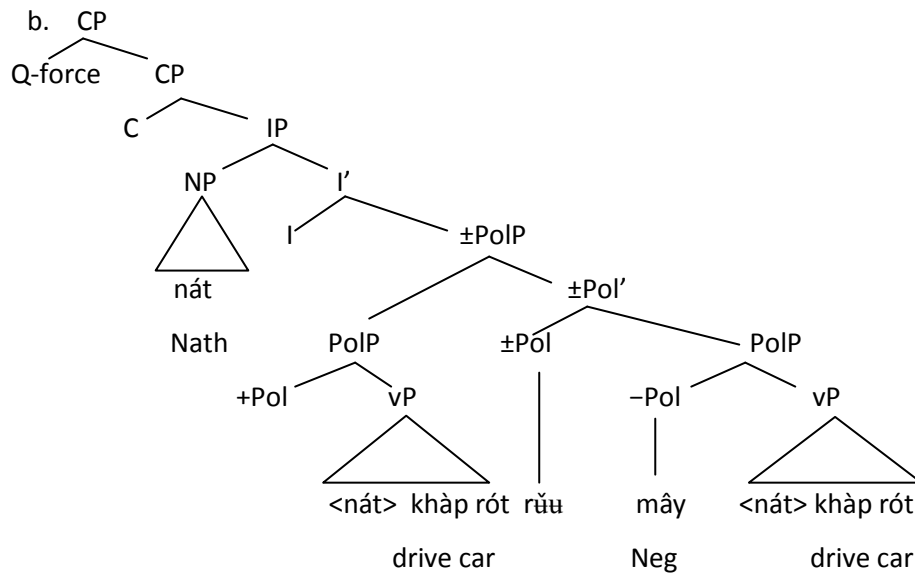
As discussed by Romero and Han (2004) it is not the case that inner/low negation questions necessarily have a negative bias. Contexts can be imagined where a negative question is natural even when the speaker has no prior beliefs or predilections as regards the answer. For example, I might want a list of people who are *not* going to attend an occasion which I know will be attended by a large cohort of people. In that situation, the question *Is John not coming?* can be a perfectly neutral question.¹⁶ This is compatible with the semantics of inner/low negative questions just proposed: The negative alternative is still formally the primary one, given by the polarity variable combined with the negation. The negation of it, that is the positive alternative, is the secondary alternative. They are therefore well disposed to expressing bias in favour of the negative alternative, and that is quite clearly how they are more typically used.

The positively biased outer negation questions are a different matter. Without going into any details here (but see chapter 4), the difference is indicated by how they are answered. Basically, outer negation questions can be answered like neutral questions.

- (57) Q: Don't you drink coffee? (I believe you do, but I still want to double-check.)
A1: Yes.
A2: No.

While a one-word answer may not always be the most polite way of answering this question, the short answer *yes* is not outright ill-formed, the way it is in (26). As in the case of the neutral question

¹⁶ Thanks to Craig Sailor for discussion of this point..

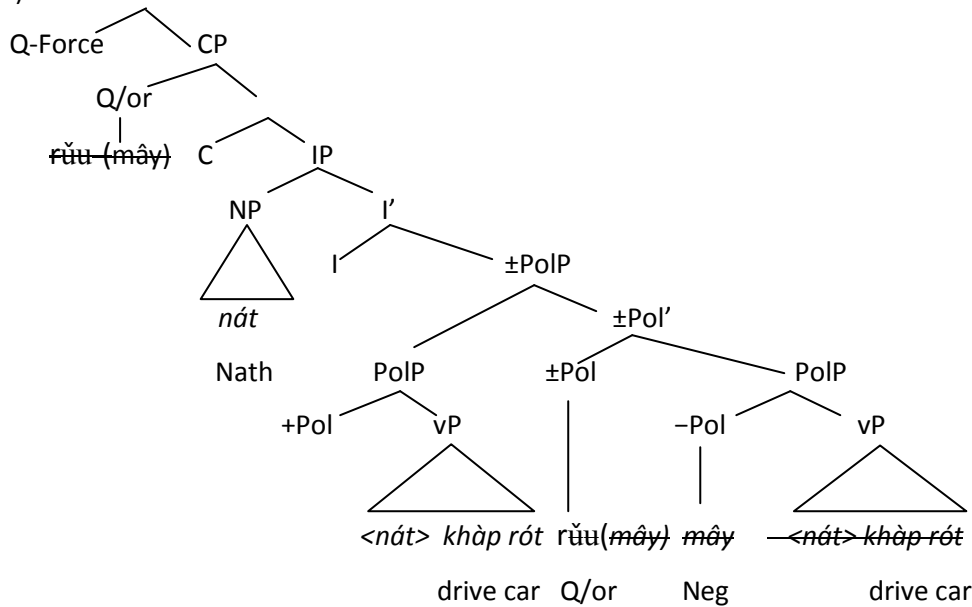


The predicate is made up of a disjunction of two PolP with opposite polarity value. Yaisomanang (2012) labels the disjunction as ConjP (following Johannesen 1996, 1998). I label it \pm PolP to make it explicit that it is a polarity phrase and that it constitutes the question variable, in the manner of an alternative question (see section 2.2). The claim is, following Yaisomanang (2012), that yes-no questions are alternative questions albeit with some special properties, in Thai. The subject is moved by across-the-board movement from the two vPs. Three further operations are required to derive the question: The negation is incorporated by the disjunction, the disjunction moves covertly to the C-domain, and the PolP of the second disjunct is deleted. In the case of the disjunction/Q-particle *rừu*, the incorporation leaves no morphological trace of the negation. In the case of the Q-particle *rừu mây*, the incorporation is overt in the sense that the negation is spelled out whole. In the case of the Q-particle *mây*, the incorporation results in a word with the segmental form of the negation and the tone of the disjunction (Yaisomanang 2012: 88). As mentioned, Yaisomanang (2012) labels the disjunction Q/or, meaning that it is a variety of the ordinary disjunction *rừu* ‘or’, but one which is specifically used in yes-no questions. I concur with this, but I label it $[\pm$ Pol], to make it explicit that this is what it means to be a disjunction specific to yes-no questions: it means encoding the feature $[\pm$ Pol]. The question variable in Type 1 questions is, then, the disjunction of the two PolPs, in the manner of an alternative question, with the disjunction particle, in a sense, as a formal representative of the variable.

Interestingly, deletion of the PolP of the second conjunct is obligatory in the question. The sentence (61), where the second disjunct is spelled out can only be interpreted as a (tautologous) statement (Yaisomanang 2012: 89).

The structure of the question would then be (62), where I represent covert movement by a strikethrough on the higher copy. The negation is incorporated in the disjunction but is not spelled out.

(62)



A negative question is the result when the first disjunct is negative, and consequently the second one affirmative. One fact that this theory can explain is why the question particles *mǎy* and *rǔu mây* cannot mark negative questions.

- (63) a. *nát mây khàp rôt rǔu mây?
 Nath NEG drive car Q/or NEG
- b. *nát mây khàp rôt mǎy?
 Nath NEG drive car Q

If yes-no questions have the underlying structure (60b), with a disjunction of two PolPs with opposite polarity value, it follows that if the first disjunct is negative, the second one has to be affirmative. Consequently *rǔu mây* lit. 'or not' is straightforwardly ruled out. If the Q-particle *mǎy* is derived not just historically but in synchronic morphological derivation from *rǔu mây* 'or not', it follows that it, too, is impossible if the first disjunct is negative. The same point is made by Ruangjaroon (2005: 76).

An alternative, possibly less controversial, hypothesis would be that the yes-no question format with Type 1 particles in Thai is historically derived from a source structure like (60b), but that

the erstwhile disjunction and the adjacent negation have been reanalysed in the course of the evolution of the language as a question particle with the features [\pm Pol], which would have essentially the same properties as [\pm Pol] in English and Finnish, for example. However, in that case we would not expect a negation in the sentence to have any effect on the choice of Q-particle. Question particles, and more generally the [\pm Pol] feature, co-occurs with the negation in questions in Finnish, Welsh, English, and many other languages. Yaisomanang's point is that the fact that the Q-particles *rǎu mây* and *mǎy* are contingent on the absence of negation shows that reanalysis has not occurred (yet). There may come a time in the future of Thai when the Q-particles/disjunctions cease to be dependent on absence of negation. At that point we will know that they have undergone reanalysis to become 'pure Q-particles'.

There is an additional argument in favour of the analysis of question particles in Thai as being different realisations of a disjunction taking a covert phrase as complement. The argument is based on the Final-over-Final Constraint (FOFC) (Holmberg 2000, Biberauer, Holmberg & Roberts 2014), Sheehan 2013a,b, Bailey 2010, 2012). This is a constraint, arguably universal, on the mapping of structure to word order which rules out the configuration where a head-final phrase dominates a head-initial phrase on the same extended projection line. It rules out, for example, the structure [_{AuxP} [_{VP} V Obj] Aux], spelled out in this order. FOFC also rules out final complementisers in VO languages. The combination of a final complementiser and VO order is ruled out either at the TP-level, if VP is head-initial but TP is head-final ($*[_{TP} [_{VP} V Obj] T]$) or at the CP-level, if CP is head-final and TP is head-initial ($*[_{CP} [_{TP} T VP] C]$). There is a claim in the literature that clause-final subordinating complementisers do not occur in VO languages; Hawkins (1982), Dryer (1992), as predicted by FOFC. However, clause final question particles are common in VO languages (Dryer 2011, Bailey 2012); Thai is only one example. If question particles are heads in the C-domain, as is commonly assumed, then they violate FOFC as a universal constraint. If, however, the final Q-particles in VO languages (not necessarily in OV-languages) are disjunctions taking a covert PolP (or other phrase in the extended projection of V) as second disjunct, then they do not violate FOFC. See Bailey (2012) for a detailed discussion of FOFC in relation to Q-particles, including the case of Thai.¹⁹

2.9.3. Questions with Type 2 particles

(64) is an example of a question with a Type 2 particle.

(64) nát khàp rót chây-mǎy

¹⁹ Matters are complicated by the observation that Thai exhibits some other constructions which look like counterexamples to FOFC, including cases of the structure/order [_{AuxP} [_{VP} V O] Aux]; see Simpson (2001), Yaisomanang (2012: 101-103).

Nath drive car Q/ right-NEG
 'Does Nath drive?/ 'Nath drives, right?'

In Iwasaki and Ingkaphirom (2009) questions with Type 2 particles are referred to as 'tag-questions'. Yaisomanang (2012: 34-35) points out that this terminology is misleading. A characteristic of tag-questions in English (as also in French, Swedish, etc.) is that they cannot be embedded.

- (65) a. John is coming, isn't he?/right?
 b. *I wonder whether John is coming, isn't he/right.

The tag question is a declarative sentence with a question appended to it (loosely speaking; see chapter 4), hence cannot occur in a context which requires a question (= a sentence with a free variable). Type 2 questions in Thai can perfectly well be indirect questions, though.

(66) chǎn tǎn-kaan rúu wāa nát khàp rít chây-mǎy
 I want know COMP Nath drive car Q/right-NEG
 'I want to know whether Nath drives.'

The literal meaning of *chây* is 'right'. The Type 2 particles are all variants of the complex expression *chây-rǎu-mǎy-chây*, lit. 'right-or-not-right', derived by reduction, according to Yaisomanang (2012). Thus, like the Type 1 particles, they have the disjunction *rǎu* as a base component (in Yaisomanang's terminology). He argues that this question particle is, in fact, a disjunctive predicate meaning 'right or not right', which takes the IP denoting a proposition as a subject. The structure of (64) is (67):

proposition. The answer *chây* ‘right’ in this case means that he doesn’t drive, while *mây chây* ‘not right’ means that he does drive (to be discussed in more detail in Chapter 4).

- (69) Q: nát mây khàp rót chây-măy [Thai]
 Nath NEG drive car Q/right-or-not-right
 ‘Does Nath not drive?’
- A1: chây
 right
 ‘Yes.’
- A2: mây chây
 not right
 ‘No.’

2.10 Conclusion

There is a basic syntactic distinction between two forms of yes-no questions, (a) those which list the two disjoint alternatives, the positive and the negative proposition, overtly in the form of two disjoint clauses, although optionally reduced by conjunction reduction in the manner of the Chinese *haishi*-questions, and (b) other yes-no questions. The former type maps quite directly onto Hamblin’s disjunctive set of propositions, p or $\neg p$. The latter type all exhibit the following syntactic properties, though realised in quite distinct ways: They have a polarity variable in IP, that is a constituent meaning ‘positive or negative polarity’, with a copy in the C-domain, as a result of movement which is overt in some languages (Finnish, English), mostly covert in other languages (Chinese, Thai). The former type cannot be answered by *yes* or *no*, or their counterparts in other languages, the latter type can. The case of Thai complicates the picture somewhat: The question variable is not a polarity head but a coordinate PolP consisting of two disjoint PolPs, one positive, one negative, where the negative one is elided.

Taking the lead from the syntax of *whether*, following Larson (1985), the copy in the C-domain is a scope marker assigning sentential scope to the disjunction relating the two values of the polarity variable. In that way the movement derives a syntactic structure which maps directly onto Hamblin’s disjunctive set of propositions. But it also places the polarity variable, with its two alternative values, in the position of CoA, where it is subjacent to the Q-force feature merged with the CP, to derive the direct yes-no question reading ‘Tell me the value of x , where x is [+ or – Pol]’, or the indirect polarity question reading ‘Subject-Predicate-the value of x , where x is [+ or – Pol]’, where the predicate typically denotes an epistemic-evaluative attitude to the value of the variable

(*want to know, don't care, is important*, etc.). Question particles, particularly those that are only found in polar questions, are likely to be morphological realisations of [\pm Pol]. Question particles that are only found in direct questions (see Bailey 2012: ch. 2.3) may be realisations of Q-force.

The hypothesis that every finite sentence has a polarity feature as a head high in the IP-domain which most of the time has no morphological realisation is obviously a controversial one. Perhaps particularly controversial is the claim that the sentential negation is not a spell-out of the polarity feature, although it can assign negative value to the feature, and typically does, in declarative sentences. This makes this notion different, in part, from the polarity head postulated in Laka (1994), labelled Σ , and also in Holmberg (2003). But note that the mere existence of negative yes-no questions is almost incontrovertible evidence that there is such a feature as a sentential head, that is if it is accepted that yes-no questions of the type which can be answered yes or no (that is excluding disjunctive questions) have a polarity variable, a [\pm Pol] feature, as a defining characteristic. The presence of negation in a sentence does not mean that the sentence has negative polarity – not if it is a yes-no question.

Another idea which is of paramount importance in this book is the following: Questions set the syntactic stage for the answers. They do so not just in the sense that the question denotes a disjunctive set of propositions out of which the addressee is asked to pick the one which is true, but the questions sets up a structure which can be, and typically is, employed as such by the answer. All it takes to provide an answer, syntactically speaking, is to provide a value for the variable left open in the question. The structural and lexical composition of the answer can be, and typically is, basically identical to the structural and lexical composition of the question. This idea will be further articulated in the next chapter.

Chapter 3: The syntax of answers

3.1 Introduction: Answers are full sentences

A claim that will be substantiated throughout this book is that answers to yes-no questions have sentential structure even when they consist of just one pronounced word, such as *yes* or *no*. As discussed in the previous chapter, Hamblin (1958) argued that they are propositions. The claim here is that they are not just semantically but also syntactically propositional, i.e. they have sentential structure. They are CPs where the answer particle is in the focus-position in the C-domain, with IP elided under identity with the IP of the question. This idea has been articulated in some recent works, including Kramer and Rawlins (2011) and Holmberg (2013). It is associated with the theory of fragment answers as derived by clausal ellipsis articulated in Merchant (2004). An early champion of the ellipsis hypothesis is Halliday & Hasan (1976).¹ Consider the following quotation from a chapter on ellipsis, and therein section 4.4.3 ‘Ellipsis in question-answer and other rejoinder sequences’:

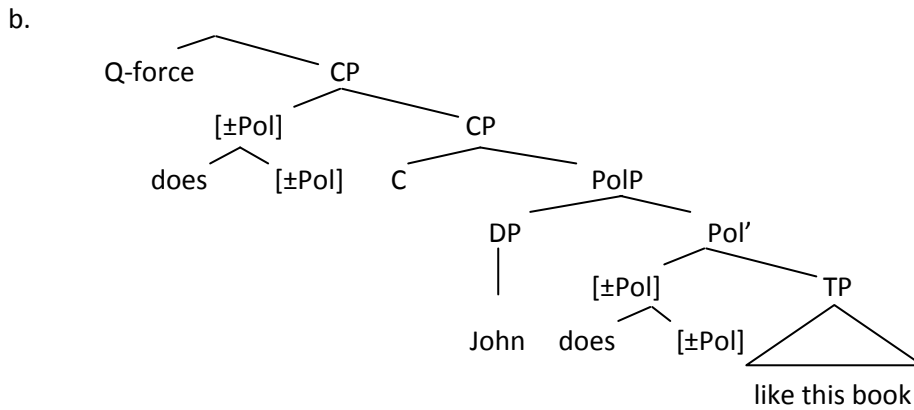
It is possible to consider *yes* and *no* as clause substitutes [comparable to, for example, *so* in *I think so*: AH]. But they are not really substitutes; for one thing, they can be accompanied by part or even the whole of the clause for which they would be said to be substituting, and that is precluded from substitution as usually defined. For example in [*Are you coming?*] the answer */.../* could be *yes*, *yes I am*, or *yes I am coming*. They are realizations of a single clause feature, that of polarity, which is being expressed on its own instead of in association with the verbal group; and the fact that it is expressed on its own means that the whole of the remainder of the clause is presupposed; */.../*.” (Halliday & Hasan 1976: 209).²

If the question is (1a), with roughly the structure (1b), as discussed in the previous chapter, then the answer (2a) has roughly the syntactic analysis (2b).

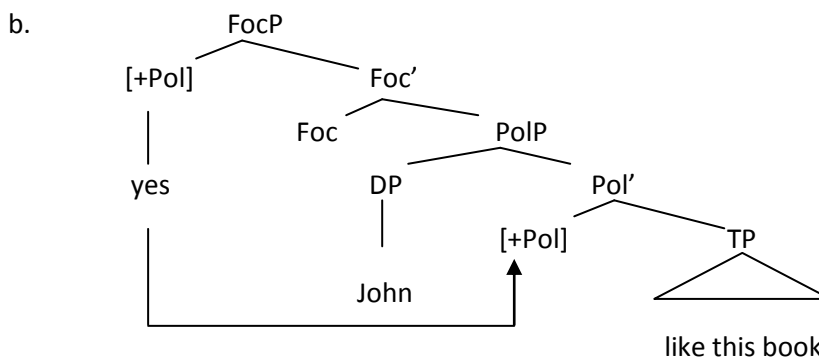
- (1) a. Does John like this book?

¹ Thanks to Paul Seedhouse for pointing out this reference.

² It is not obvious from this quotation that Halliday & Hasan (1976) are advocating clausal ellipsis in short *yes* and *no* answers in anything like our sense. However, it is made clear in the discussion around this quotation and elsewhere that they consider ellipsis to be a structurally defined element (even though they do not supply explicit syntactic analyses): “An elliptical item is one which, as it were, leaves specific structural slots to be filled from elsewhere.” (Halliday & Hasan 1976: 143).



(2) a. Yes.



As discussed, the question has a polarity head with the value + or –Pol left open, a variable restricted to two values. There is a copy of this variable in specCP as a result of movement, assigning sentential scope to the disjunction, so the denotation of the question is ‘John likes this book or John does not like this book’. To this is added a Q-force feature meaning ‘Tell me the value of the variable in specCP such that p , expressed by PolP, is true’, or equivalently ‘Tell me which of the propositions p or $\neg p$, the denotation of PolP, is true’.

The answer has the same PolP as the question, but in specCP there is a valued polarity feature, in this case valued [+Pol], i.e. affirmative. This feature is in focus position in CP, by hypothesis merged with a phrase headed by an abstract head Foc. It is an operator assigning a value to the unvalued polarity feature in PolP, whereby the CP is interpretable as a declarative sentence with a truth value, a positive proposition. The answer provides a value for the variable in the question, and thereby indicates which of the two disjunctive propositions posed by the question the respondent presents as being true. The PolP can be elided, i.e. not assigned overt form at PF, which is possible because it is identical to the PolP of the immediately preceding question, aside from the value of Pol. This value, the only new information provided by the answer, is encoded by the focused affirmative particle *yes*, which spells out the focused [+Pol] feature, and which has to be pronounced, if PolP is elided.

The negative short answer *no* has exactly the same structure, except that the focused answer particle has the value [-Pol], and assigns this value to the polarity feature heading the sentence.

Other short answers are possible, such as *maybe, certainly, apparently, etc.*

- (3) Q: Does John like this book?
A: Maybe.

Again, these have the same structure as (2). The adverb in (3A) is the spelled-out part of a complex polarity category [_{Pol} *maybe* [+Pol]], where *maybe* modifies a positive polarity head, and where the complex assigns this modified affirmative value to the sentence-internal polarity head. In English, the modified positive polarity feature can be spelled out as *so*: *maybe so* (see Laka 1991/1994, Kramer and Rawlins 2011). In the corresponding negative answer the polarity feature modified by *maybe* must be spelled out: [_{Pol} *maybe* [-Pol]] → *maybe not*.

- (4) Q: Does John like this book?
A: Maybe not.

In other cases answers may contain other material than just the spelled out focused polarity feature because a smaller portion of the sentence than the entire IP is deleted.

As we shall see, there is considerable variation within and across languages regarding how the focused polarity feature is realised. Using designated answer particles, affirmative or negative, is common, but another also common mechanism is employing a constituent of the IP as realisation of the focused polarity feature. Particularly common is using the finite verb for the purpose in affirmative answers, and the sentential negation, often together with the verb, in negative sentences. Finnish is an example.

- (5) Q: Lui-t-ko sinä tämän kirjan?
read-Q you this book
'Did you read this book?'
A: Lui-n.
read-1SG
'Yes.'
A: E-n (lukenut).

not-1SG read

'No.'

That the negation is the sentential negation and not a designated answer particle is shown by the fact that that it is inflected for agreement, a characteristic of sentential negation in Finnish (Holmberg & al. 1993). The claim that will be substantiated throughout this chapter is that verb-echo answers have essentially the structure in (2), with the finite verb moved to the initial focus position to lexically support and spell out the polarity feature, while the rest of the sentence is elided (see McCloskey 1991, Martins 1994, 2006, Jones 1999, Holmberg 2001, for different versions of this general idea).

I will, from now on, use the noun *ellipsis* and the verb *elide* for the non-pronunciation of the PolP or other syntactic constituents. As is common in current generative theory, I assume ellipsis is a matter of not assigning phonological features to a syntactic representation, rather than deleting phonological features from a fully derived syntactic representation.

3.2 Identity and ellipsis

The claim is that the PolP of the short answer is literally the same as the PolP of the question, prior to assignment of a value to the polarity variable. Considering the question-answer pair from the point of view of sentence construction and interpretation online, I assume, uncontroversially, that the question is constructed by syntactic, morphological and phonological rules applied to lexical items retrieved from the lexicon. The computation results in a representation at the Conceptual-Intentional (C-I) interface and another representation at the Articulatory-Perceptual (A-P) interface ((in Chomsky's 1995: 168-169 terms). I will use the traditional terms 'LF' and 'PF' for the two representations. More controversially I will assume that the answer can be derived without constructing a new sentence 'from scratch', but by copying the IP (more precisely PolP) of the question, and merging it with a focused, valued polarity feature. The result of this merger is that the unvalued polarity head in the PolP copied from the question can be assigned a value. Since in every other respect it is identical to the PolP of the question, and therefore is recoverable from the question, it need not be spelled out. What must be spelled out is the valued, focused polarity feature, pronounced *yes* or *no*, in the simple case, *maybe* or *maybe not*, etc., in the more complex cases, in English. This is a version of the copying approach to ellipsis pioneered by Williams (1977). For the most part this model makes the same predictions as the more traditional model where the identity required for ellipsis is determined by comparison of independently derived sentences. As will be demonstrated in due course, this cannot be the derivation of all answers, though, not even those that do consist of only one word. Instead, the claim is that some answers, in some languages,

are derived by copying the PolP of the question and externally merging a valued polarity feature with it, while other answers are derived by, typically, copying a smaller portion of the question and deriving a CP from it by moving, i.e. internally merging a valued polarity feature to the sentential focus position.

What does 'same' mean, though, in this context? What degree or kind of identity are we talking about? We may note first that complete featural identity is not required, since indexical items can have different features (and different spelled out form) in the elided constituent and the antecedent constituent, as long as they have the same reference. Consider (6), for example.

- (6) Q: Do you like this book?
A: Yes [I like this book]

The answer 'Yes' if completely spelled out will have a subject pronoun which is different in terms of person feature value in the question and the answer. The subject pronouns refer to the same person, though; formally, they have the same referential index. This is, apparently, sufficient to allow the ellipsis.

Merchant (2001), in his highly influential study of ellipsis in generative grammar, argued that what is required, for the types of ellipsis that he discussed, is a form of semantic identity between the elided constituent and the antecedent. The following is his formulation of the condition.

- (7) a. A constituent α can be deleted only if α is e-given.
b. An expression E counts as e-given iff E has a salient antecedent A and, modulo \exists -type shifting, (i) A entails the F(ocus) closure of E and (ii) E entails the F-closure of A.
c. The F-closure of α is the result of replacing F-marked parts of α with A-bar-bound variables of the appropriate type (modulo \exists -type shifting).
d. \exists -type shifting is a type-shifting operation that raises expressions to type $\langle t \rangle$ and existentially binds unfilled arguments.

This definition is part of a theory of ellipsis where there is a feature [e], which is a property of certain heads, subject to parametric variation, and which has the effect that the complement of the head will not be spelled out in PF, i.e. will not be pronounced, but only if the complement is e-given, in the sense defined. The identity relation required between the elided constituent and the antecedent is defined as mutual entailment. However, since only propositions have entailments, and ellipsis can

affect constituents that are not propositions, for examples VPs, which are predicates, the VPs have to be ‘ \exists -type raised’ from predicates to sentences. Furthermore, the required entailment is not between the two \exists -type-raised phrases as such, but between each phrase and the F-closure of the other phrase, as defined in (7c). Take the example of VP-ellipsis in (8).

- (8) a. John wasn’t arrested, but Bill was.
 b. [John wasn’t [_{VP} arrested <John>]] but [Bill was [_{VP} arrested <Bill>]]

Obviously the VPs as such are not identical, i.e. when \exists -type-raised from predicates to sentences they do not entail each other: $\exists x, x$ arrested John (or ‘Someone arrested John’) does not entail $\exists x, x$ arrested Bill (or ‘Someone arrested Bill’). However, if we replace the object *Bill*, which is focused in the second, elided VP, with a variable, deriving $\exists x, x$ arrested y (or ‘Someone arrested y ’), then this proposition will be entailed by $\exists x, x$ arrested John’ (or ‘Someone arrested John’). And conversely, if the focused object *John* in the antecedent VP is replaced by a variable, then the resulting proposition ‘Someone arrested y ’ is entailed by ‘Someone arrested Bill’. Thus the identity condition on ellipsis can be characterised as ‘mutual entailment modulo F-closure’. A constituent A can be elided if there is a constituent B in the required structural relation to A such that A and B, appropriately type-raised, mutually entail each other, modulo F-closure. The required structural relation is typically that B is a constituent of a sentence immediately preceding the sentence containing A, in the discourse.

Now consider a question-answer pair:

- (9) Q: Does John like this book?
 A: No (John does not like this book).

The short negative answer *no* is, by hypothesis, derived by ellipsis of PolP under identity with the PolP of the question. But if the PolP of the answer is spelled out, it will contain a negation not present in the antecedent IP. Consider, however, the structure of the question shown in (1). The question has a polarity head which is a variable, a copy of the disjunctive polarity feature moved to the C-domain. In the negative answer this polarity variable is assigned negative value by the focused negative answer particle. Thus, in terms of Merchant’s definition, the polarity head in the elided constituent in (9A) is a variable which is focus-bound. If it is not elided but phonologically spelled out, it will be spelled out as a negation in construction with *do*-support, as required by the rules of English syntax. Merchant’s F-closure proviso ensures that focus-bound variables do not count for

the identity required for ellipsis. To put it simply, the elided constituent and the antecedent need to be semantically identical up to the valuation of variables.

However, as noted by Krifka (2012) (who credits Adrian Brasoveanu for the observation), mutual entailment is too weak a condition on the type of ellipsis employed in question-answer pairs. Consider (10) and (11):

(10) Q: Did John not pass the exam?

A: No.

(11) Q: Did John fail the exam?

A: No.

There is mutual entailment between the PoIP of (10Q) ‘John did not pass the exam’ and that of (11Q) ‘John failed the exam’. The ellipsis which, by assumption, derives the short answer in (10A) should therefore, at least potentially, give the same meaning as the ellipsis which derives (11A), which it does not. In other words, the elided IP in (11A) cannot have the PoIP in (10Q) as its antecedent, even though they entail each other. Mutual entailment is apparently not a sufficient condition on all ellipsis; there is a lexical identity condition as well. If the constituent to be elided contains the word *fail*, the antecedent constituent must also contain this word. Presence of the synonym *not pass* in the antecedent is not sufficient.


When we consider languages which employ verb-echo answers (to be discussed in detail later on in this chapter), we can see another effect of the lexical identity condition, discussed in Gribanova (2013), Lipták (2012), Schoorlemmer and Temmermann (2012). Consider (12):

(12) Q: Hajotti-ko Marja ruukun?

broke-Q Marja the.pot

‘Did Marja break the pot?’

[_{CP} hajotti-ko [_{IP} Marja hajotti ruukun]]



A1: Hajotti.

broke

‘Yes.’

[_{CP} hajotti [_{IP} ~~Marja hajotti ruukun~~]]

broke Marja broke pot

A2: *Rikkoi.
 broke
 Intended: ‘Yes.’
 [_{CP} rikkoi [_{IP} ~~Marja rikkoi ruukun~~]]
 broke Marja broke pot

The question is derived by verb movement to the C-domain. Under the analysis in which the verb answer is also derived by verb movement to the C-domain, with ellipsis of PolP, as shown above, the PolP of the question provides the antecedent of the ellipsis. That is straightforward in (12A1) but not in (12A2). The verb *rikkoo* is a synonym of *hajottaa*: both mean ‘(cause to) break’. Therefore, the (content of) PolP in (12A2) entails the (content of) PolP in (12Q) and vice versa, yet the ellipsis is not possible. Mutual entailment between the elided constituent and the antecedent may be a necessary condition for ellipsis but is not sufficient; lexical identity is required as well.

This is fairly straightforward in a theory of grammar where the narrow syntax operates with actual lexical items. Assume, for example, that the derivation begins by selecting items from the lexicon for the Numeration, as in Chomsky (1995, chapters 3 and 4, 2000, 2001), which are then merged one by one, according to their selectional requirements, to form phrases and sentences. The lexical identity condition can then be stated as identity of Numeration (Chung 2006; Liptak 2012): The elided constituent and the antecedent must be based on identical Numerations. In terms of the idea that ellipsis is a matter of copying the LF of the corresponding antecedent constituent, but without spelling it out in PF, this requires a definition of LF such that it is composed of words drawn from the lexicon.

It is more of a challenge in a theory where narrow syntax operates strictly with syntactic features and feature bundles, deriving representations which are interpreted at the LF interface, with actual vocabulary items being introduced in the morphological component as part of ‘externalisation’, the derivation of PF. See Lipták (2012) for discussion.

From the point of view of the architecture of the grammar, it is interesting to note that the identity extends to vocabulary items but not to person features of arguments: all that matters is referential identity. This implies that fixing person features of arguments is a late operation, part of the externalisation of syntactic structures, as argued by Sigurðsson (2011a,b, 2013). Crucially it is later than insertion of (substantive) vocabulary items, as we can tell because insertion of vocabulary items precedes, but fixing the person features of arguments follows, the decision to elide or spell out a syntactic constituent. This interesting point will not be developed any further in this book, though.

The lexical identity condition can be added to Merchant's (2001) definition of the identity condition on ellipsis, as follows:

- (13) a. A constituent α can be deleted only if α is e-given.
b. An expression E counts as e-given iff E has a salient antecedent A and, modulo \exists -type shifting, (i) A entails the F(ocus) closure of E and (ii) E entails the F-closure of A, and A and E are based on the same Numeration.

3.3 On disconfirming the negative alternative proposition of a negative question

An observation which is important in this book is that answers to negative questions which are intended to convey that the negative alternative is not true, assuming the theory of negative questions sketched in Chapter 2, require something more than the usual affirmative short answer. In section 2.8 we saw that this was the case in English. The example (56) in chapter 2 is repeated here.

- (14) Q: Do you not drink coffee?
A1: (??)Yes.
A2: Yes, I do.

In the words of Pope (1976: 112) "To answer [He didn't go, did he?] with *yes* is at least partially ungrammatical – insufficient somehow." Her example is a tag question with a negative base, but her remark holds for the negative question (14Q) as well.

Likewise in Finnish, a language which relies on verb-echo answers, a bare verb is not enough in this case, but needs to be supported by a subject, as one possible means to convey the intended meaning (see Chapter 4 for more discussion).

- (15) Q: Ei-kö Jussi juo kahvia?
NEG-Q Jussi drinks coffee
'Does Jussi not drink coffee?'
A1: ??Juo.
drinks
A2: Juo se.
drinks he
'Yes he does.'

We find the same phenomenon in a wide range of other languages: Affirmation of the positive alternative when the question is negative requires some special device. For example, in some languages, including French, German, and Standard Arabic, a special affirmation particle must be used in this case.

(16) Q: Tu es fatigué? [French]
 you are tired
 'Are you tired?'
 A: Oui.
 yes

(17) Q: Tu n'es pas fatigué?
 you NEG-are NEG tired
 'Are you not tired?'
 A1: *Oui.
 yes
 A2: Si.
 yes.REV

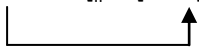
The standard affirmative particle is *oui*. In (17), this particle cannot be used to confirm the proposition that I am tired. Instead the affirmative 'polarity-reversing' (REV) particle *si* (Farkas & Bruce 2009, Holmberg 2003) must be used.

It will be argued in Chapter 4 that these facts can be straightforwardly explained given the hypothesis that the short answer inherits the IP, or PolP, of the question, although the PolP is normally deleted. When this PolP contains a negation, as it does when the question is negative, there is a problem: The affirmative particle clashes with the negation, as shown in (18), a rough representation of the syntactic structure of (4A1):

(18) [_{CP} yes Foc [_{IP} I not drink coffee]]

The reason why (14A2) is a viable answer is that in this case only the VP is deleted, because only the VP is identical with (is inherited from) that of the question. Consequently the answer does not need to contain a negation even if the question does, hence there is no feature clash.

(19) [CP yes Foc [IP I [+Pol] do [VP ~~drink coffee~~]]



Almost exactly the same explanation holds for Finnish (see Holmberg 2007). In the case of French, German, and Arabic, the effect of the polarity-reversing particle is to neutralise the negation inherited with the IP of the question. This will all be discussed in more detail in Chapter 4. It is taken up here just to make it clearer that the assumption that short answers to yes-no questions are, or at least can be, the result of ellipsis of IP has empirical motivation.

3.4. Alternatives to answer particles

Answering yes-no questions with designated answer particles like the English *yes* and *no* is common among the languages of the world, but is by no means the only way. Even in English, there are alternatives. For one thing, a yes-no question can be answered by a complete sentence, explicitly expressing one of the two alternative propositions posed by the question. Or, as we just saw, the answer can be a partial sentence with only VP deleted under identity with the VP of the question, as in (20a,b), two alternative forms of answer to the question in (1) (*Does John like this book?*):

- (20) a. He does./He doesn't.
 b. Yes, he does./No, he doesn't.

We will see some varieties of these forms of answer later on. A particularly common form of answer is the verb-echoanswer, which, as we have already seen, is employed in Chinese, Thai, and Finnish. This strategy will be discussed in detail later in this chapter. Another form is exemplified by the Mayan language Chol: There is an affirmative particle, but it is a suffix, carried by an aspectual auxiliary in this example.

(21) Q: Mi a -jap kajpe'? [Chol (Tumbalá); Nicolás Arcos López, p.c.]
 IMPF 2.ERG-drink coffee
 'Do you drink coffee?'

A: Muj -ku

IMPF-AFF

'Yes.'

Yet another form is represented by (22), from Thai. Here the affirmative answer is conveyed by a particle which is otherwise used as an honorific particle, as shown in (23) (S. Yaisomanang, p.c.).

(22) Q: nátt khàtt rǔtt [Thai: Yaisomanang 2012]

Nath drive car Q

'Does Nath drive?'

A: khà

HON

'Yes.'

A: mâtt khà

NEG HON

'No.'

(23) a. khǔtt hâtt khǎtt mii khwaam-sùtt khà

ask give he have happiness HON

'May he be happy.'

(b) mǣtt pùatt hǔtt khà

mother painful head HON

'Mother has a headache.'

Yet another form of answer, apparently quite unusual, is exemplified by Slovenian:

(24) Q: A ga poznaš? [Slovenian]

Q CL.3.M.ACC know.2.SG.PRS

'Do you know him?'

A: Ga.

CL.3.M.ACC

Here the affirmative answer is conveyed by echoing the clitic object pronoun of the question. This is systematic in Slovenian, according to Dvořák (2007).

Other forms of answers will be presented and discussed in due course.

3.5. Verb-echo answers: general

The idea that answers to yes-no questions, even when they consist of just one word, are full sentences where everything has been deleted except one word, is certainly not obviously right in the case of English or other languages where the one pronounced word is, or can be, an invariant answer particle such as *yes* or *no*. However, as already noted, there is another type of answer to yes-no questions, found in many languages, where the affirmative answer is an 'echo' of the finite verb in the question, while the negative answer is an echo of the finite verb in the question combined with a sentential negation; they are referred to here as verb-echo answers. One example is Chinese.

- (25) Q: Zhangsan mai bu mai shu? [Mandarin Chinese]
 Zhangsan buy not buy book
 'Does Zhangsan buy books?'
- A1: Mai.
 buy
 'Yes.'
- A2: Bu mai.
 not buy
 'No.'

(25) is an A-not-A question which overtly names the choice between, in this case, the two alternatives buy and not buy books (see section 2.5). The answer names one of these alternatives, the one which the respondent presents as being true, much like the short answer to an alternative question names the alternative which the respondent presents as being true.

- (26) Q: Do you want tea or coffee?
 A: Tea.

However, verb-echo answers are not only found with A-not-A questions. For instance, Chinese yes-no questions formed with a question particle can also be answered by a verb-echo answer.

- (27) Q: Zhangsan mai shu ne?
 Zhangsan buy book Q
 'Does Zhangsan buy books?'

- A: Mai.
buy
'Yes.'
- A: Bu mai.
not buy
'No.'

The following are examples from some other languages which employ verb-echo answers even though the questions are not A-not-A questions.

- (28) Q: Ostiko-ko Jussi sen kirjan? [Finnish]
bought-Q Jussi that book
'Did Jussi buy that book?'
- A: Osti.
bought
'Yes.'
- A: Ei ostanut.
not bought
- (29) Q: shra -shi John le-ktab haða:ka? [Tunisian Arabic: Mohamed Jlassi, p.c.]
bought- Q John the-book that
"Did John buy that book?"
- A: shra
bought
'Yes.'
- A. ma - shra -sh
not bought not
'No'.
- (30) Q: Czy John kupił ta książkę? [Polish: Malgorzata Krzek, p.c.]
Q John bought.3SM this.fem book.fem.acc
- A: Kupił.
bought
- A: Nie kupił.

not bought

- (31) Q: O João comprou aquele livro? [Portuguese: Michelle Sheehan, p.c.]
the João bought this book
- A: Comprou.
bought
'Yes.'
- A: Não.
no

Chinese has a clause-final particle marking yes-no questions, Finnish has a second position Q-particle, Tunisian Arabic has (or can have) a clause-internal Q-particle encliticised to the verb, Polish has a clause-initial particle, while Portuguese has yes-no questions marked by intonation only. The impression is that the precise syntax of the question makes no difference: The choice of answering strategy is either based on other grammatical considerations or is completely arbitrary.

In the case of verb-echo answers the hypothesis that they are derived by ellipsis of a full sentence, minus the verb, is less controversial than in the case of answer particles like *yes* and *no*. This is particularly so in languages where the verb is inflected for tense and agreement, as in Finnish, Tunisian Arabic, Polish, and Portuguese. The verb in the answer is inflected just like it would be in the corresponding complete, declarative sentence, which follows if the answer is a complete declarative sentence, except that most of it is left unpronounced. This idea will be articulated further in the next sections.

3.6. Verb-echo answers among the languages of the world

The following is a list of languages reported to employ verb-echo answers as a standard form of answer to a yes-no question, and a list of languages reported not to employ verb-echo answers. The data come from the SSWL database, a questionnaire distributed online, fieldwork, and descriptive grammars and other literature. In the list I have indicated the family/phylum of the language and in most cases a subgroup, which in some cases is the genus (Dryer 1992, Rijkhoff et al. 1993), in other cases is a larger subgroup. With less familiar languages, I have indicated the geographical location as well.

Languages employing verb-echo answers

Aguaruna	(Jivaroan, Peru)
Albanian	(Indo-European)
Amharic	(South Semitic , Afro-Asiatic)
Ancient Greek	(Hellenic, Indo-European)
Assamese	(Indo-Aryan, Indo-European)
Atong	(Grassfields Bantu, Niger-Congo)
Bandial	(Jola, Niger-Congo)
Bengali	(Indo-Aryan, Indo-European)
Bunaq	(Trans-New Guinea)
Cantonese	(Sinitic, Sino-Tibetan)
Chaha	(South Semitic, Afro-Asiatic)
Chickasaw	(Muskogean, North America)
Chol	(Mayan, central America)
Croatian	(South Slavic, Indo-European)
Czech	(West Slavic, Indo-European)
Dholuo	(Luo, Nilo-Saharan, Kenya and Tanzania)
Evenki	(Tungusic, North-East Asia)
Finnish	(Finnic, Uralic)
Garifuna	(Arawak, Central America)
Georgian	(Kartvelian)
Greek	(Hellenic, Indo-European)
Harari	(South Semitic, Afro-Asiatic)
Hindi	(Indo-Aryan, Indo-European)
Hungarian	(Ugric, Uralic)
Hup	(Nadahup, Amazonas)
Imbabura Quichua	(Quechuan, Equador)
Irish	(Celtic, Indo-European)
Japanese	(Japonic)
Kannada	(Dravidian)
Kobon	(Trans-New Guinea)
Kokama-Kokamilla	(Tupi-Guaraní, Peru)
Korean	(isolate) ³
Kusunda	(isolate (?), Nepal)

³ According to the SSWL Korean has verb-echo answers, but according to Sohn (1994) it does not.

Kuot	(isolate, Papua New Guinea)
Lao	(Tai-Kadai)
Mandarin	(Sinitic, Sino-Tibetan)
Malay	(Malayo-Polynesian, Austronesian)
Malayalam	(Dravidian)
Marathi	(Indo-Aryan, Indo-European)
Maonan	(Kam-Sui, Tai-Kadai, China)
Mauwake	(Trans-New Guinea)
Mualang	(Ibanic, Austronesian)
Nepali	((Indo-Aryan, Indo-European)
Polish	(Slavic, Indo-European)
Portuguese	(Romance Indo-European)
Russian	(Slavic, Indo-European)
Scots Gaelic	(Celtic, Indo-European)
Shan	(Tai-Kadai)
Sheko	(Omotiic, Afro-Asiatic) ⁴
Taiwanese	(Sinitic, Sino-Tibetan) – also called Southern Min CHECK) ⁵
Telugu	(Dravidian)
Thamil	(Dravidian)
Thai	(Tai-Kadai)
Tommo So	(Dogon, Niger-Congo, Mali)
Turkish	(Turkic)
Tunisian Arabic	(Semitic, Afro-Asiatic)
Wai Wai	(Cariban, Brazil)
Wari'	(Chapacuran, Brazil)
Welsh	(Celtic, Indo-European)
Western Armenian	(Indo-European)
West Greenlandic	(Inuit, Eskimo-Aleut)
Yan-nhangu	(Pama-Nyungan, Australia)

(62 languages)

Languages not employing verb-echo answers

Afrikaans (Germanic, Indo-European, South Africa)

⁴ Based only on a couple of examples in Hellenthal (2010). Status uncertain.

⁵ Also called Southern Min.

Alaaba	(Cushitic, Afro-Asiatic)
Bambara	(Niger-Congo, Mali)
Bardi	(Nyulnyulan, Australia)
Basaa	(Bantu, Cameroon)
Calabrian (Northern)	(Romance, Indo-European)
Canela-Krahô	(Ge, Brazil)
Chimariko	(Hokan, California; extinct) ⁶
Dutch	(Germanic, Indo-European)
English	(Germanic, Indo-European)
English, Singapore	(Germanic, Indo-European)
Faroese	(Germanic, Indo-European)
German	(Germanic, Indo-European)
Gungbe	(Porto-Novo, Niger-Congo)
French	(Romance, Indo-European)
Ga	(Kwa, Niger-Congo)
Galo	(Tani, Tibeto-Burman) ⁷
Haitian	(French-based Creole)
Hausa	(Chadic, Afro-Asiatic, Nigeria)
Hebrew	(Semitic, Afro-Asiatic))
=Hoan	(Khoisan, South Africa)
Ibibio	(Niger-Congo, Nigeria)
Icelandic	(Germanic, Indo-European)
Italian	(Romance, Indo-European)
Koromfe	(Gur, Niger-Congo)
Kurdish (Sorani)	(Iranian, Indo-European)
Khwarshi	(North-East Caucasian)
Laal	(Isolate, Chad)
Ma'adi	(Central Sudanic, Afro-Asiatic)
Maasai	(Nilo-Saharan, Kenya/Tanzania)
Malagasy	(Austronesian, Madagascar)
Maltese	(Arabic, Afro-Asiatic)
Maori	(Polynesian, Austronesian)

⁶ Genetic affiliation uncertain; Jany (2009).

⁷ See Post (2007: 437). The statement there could mean that the answers are always of the form 'Yes' or 'No' plus a sentence fragment including the predicate head.

Marshallese	(Micronesian, Austronesian)
Matses	(Panoan, South America)
Nahuatl	(Uto-Aztecan, Mexico) ⁸
Ndjébbana	(Non-Pama-Nyungan, Australia)
Ndyuka	(English-based Creole, Suriname)
Ngiyambaa	(or Wangaaybuwan, New South Wales) ⁹
Norwegian	(Germanic, Indo-European)
Nigerian Pidgin	(English-based creole, Africa)
Nkore-Kiga	(Bantu, Niger-Congo)
Nubi	(Arabic-based creole, Uganda and Kenya)
Nupe	(Niger-Congo, Nigeria)
Nweh	(Bantoid, Niger-Congo)
Odiya	(Indo-Aryan, Indo-European)
Old English	(Germanic, Indo-European, extinct)
Old French	(Romance, Indo-European, extinct)
Pashto	(Iranian, Indo-European)
Paumari	(Arauan, Peru and Brazil)
Persian	(Iranian, Indo-European)
Pichi	(English-based Creole, Africa)
Punjabi	(Indo-Aryan, Indo-European)
Puyuma	(Austronesian, Taiwan)
Retuarã	(Tucanoan, South America)
Shupamem	(Niger-Congo, Bantoid)
Sinhala	(Indo-Aryan, Indo-European)
Slave	(Na-Dene, North America)
Spanish	(Romance, Indo-European)
Syrian Arabic	(Semitic, Afro-Asiatic)
Vata	(Kwa, Niger-Congo)
Vietnamese	(Austroasiatic)
Western Dani	(Trans-New Guinea)
West Flemish	(Germanic, Indo-European)
Vitu	(Oceanic, Austronesian)

⁸ On SSWL Nahuatl of the Central Huasteca variety is listed as having Particle + V answers but not bare verb-echo answers. According to Tuggy (1977), the same is true of Tetelcingo Nahuatl.

⁹ The name Wangaaybuwan means: people with *wanggaay* for ‘no’; Donaldson 2009: 1-2),

Wolof (Niger-Congo, Senegal)
Yemeni Arabic (Semitic, Afro-Asiatic)
Zoque (Mixe-Zoquean)
(67 languages)

There are also languages where a combination of affirmative particle and echo of the verb (in that order) is reported as the standard affirmative answer strategy. They typically have bare verb-echo answers as an alternative. Those that have, have been included in the verb-echo list. On the SSWL database (see discussion of this database below in this section), of the 34 languages which are reported to have particle plus verb (Prt+V) answers, only three are reported to have Prt+V but not bare V (Maasai, Nahuatl and Old French). I have put those three languages in the non-verb-echo list. There may be many more languages in this category, though. In my own database, some varieties of Arabic belong there (Syrian Arabic, Yemeni Arabic) and some varieties of Indo-Aryan (Odia and Sinhala); these have been included in the non-verb-echo list. In some of the languages which have both, Prt+V appears to be the preferred alternative.¹⁰ These languages include most or all of the Indian languages in my database, Dravidian as well as Indo-Aryan. It seems to be the case that most languages which employ the bare V system for affirmative answers have one or more affirmative particles that can be used as an alternative, and perhaps sometimes have to be used, as when the question does not contain a verb (for instance in predicative sentences in languages that do not have a verbal copula). There are languages, though, which just do not have any designated affirmative particle, including Scots Gaelic (David Adger, p.c.), Thai (Yaisomanang 2012: passim), and Bunaq (Schapper 2009: 151).¹¹

Some comments on the data in Tables 1 and 2 are in order: First, the lists are not symmetric. Among the languages with verb-echo answers, many are reported to also have the alternative of using an affirmative particle, but the other list is defined to contain only languages reported not to employ (bare) verb-echo answers. It is not a 'balanced sample', in the sense of having a proportional representation from the different language families or geographical areas of the world (see Dryer 1992, Rijkhoff et al. 1993), although I have obviously made an effort to include representatives from all continents. The reason is mainly that collecting the required data turned

¹⁰ In the Arawakan language Terena, investigated by Fabio Bonfim Duarte, who kindly included answers to yes-no questions in his investigation, the informant provided Prt+V for all neutral yes-no questions, indicating that this is preferred over bare V, or possibly that bare V is not used at all. In his brief report on 'yes' and 'no' in some South Semitic languages, Leslau mentions Prt+V as the affirmative answer form, not mentioning the possibility of bare V.

¹¹ Thai has several kinds of non-verbal answers, including answers that employ a politeness particle to convey affirmation. There is no designated affirmative answer particle. There are presently eight languages listed on the SSWL database as not having answer particles.

out to be harder than in the case of many other features which have been subject to comparable typological investigation. How to answer a yes-no question, or any kind of question, is only rarely mentioned in descriptive grammars. For example, of 60 PhD dissertations presenting a descriptive grammar of a language which I have consulted (made available to me courtesy of Martin Haspelmath), all except two written between 2000 and 2011, only 14 made any mention at all of answers to yes-no questions, and fewer than half of the 14 included more than a fleeting mention. The main reason is, presumably, that the authors do not think of the form of answers as grammatically significant information. When the form of the answer is mentioned, it is typically when the answer is not just an affirmative or negative particle, but, typically, a bare verb or particle plus verb, i.e. different from the standard answer in English, German, French, Spanish, or other languages that the authors are familiar with, which may be why they point it out. Obviously we still cannot draw the conclusion that if nothing is said, the language employs answer particles, not bare V or V+Prt. It may be, nevertheless, that the sample is somewhat biased towards bare verb-echo answers for this reason.

A welcome exception to the generalization that answers are not mentioned in descriptive grammars is the series of descriptive grammars edited by Bernard Comrie (published first by Croom Helm, later by Routledge). They all include, as part of the section on interrogatives, a subsection on answers, which sometimes is quite detailed.

The SSWL [<http://sswl.railsplayground.net/>] is an online, free database where data are elicited from a set of language experts by means of questions posed by researchers. Together with Craig Sailor (and with much help by Hilda Koopman, the present director of SSWL) we have posted a set of questions on SSWL concerning the form of questions and answers, including a subset concerning whether the language uses verb-echo questions or not. At present the SSWL has data from 251 languages. However, for many of these languages there is data only for part of the questions that are posed. For our questions, there is presently data from 114 languages overall, but for some of the questions that we have posted the number of languages covered is considerably smaller. The database is entirely dependent on voluntary contributions by language experts. This means that the database is continuously growing but at a fairly slow and unsteady pace. Furthermore, many of the language experts are not native speakers of 'their language', and therefore, depending on the questions, they may not be able to provide the data asked for.

A quick look at the lists shows that both types of answers are geographically wide-spread. There are representatives of all the continents in both lists. By and large half of the world's languages use verb-echo answers. The lists include many languages that are closely related, including a set of Germanic and Romance languages, and even listing different varieties of Arabic. I

have made no effort to avoid genetic bias in the lists. This is motivated because it seems that neither genetic relatedness nor intense language contact are reliable predictors of answering systems, along the V-or-particle parameter.¹² If we do control for genetic bias by reduce the lists to genera, i.e. subfamilies of roughly the age of Germanic languages (Dryer 1992, Rijkhoff et.al. 1993), we still get roughly a fifty-fifty split: 45 genera in the verb-echo category against 40 in the non-verb-echo category.

A striking case where relatedness and contact both fail to predict convergence is Portuguese and Spanish, two neighbouring, very closely related languages, but with different answering systems: Portuguese has verb-echo answers as a widely used alternative to affirmative particle answers, Spanish does not (Martins 1994). Galician, spoken on the Spanish side of the border with Northern Portugal also has verb-echo answers (Ricardo Bermudez-Otero, p.c.).

(32) Q: Viste o João? [Portuguese]

saw.2SG the João
‘Did you see João?’

A: Vi.

saw.1SG
‘Yes.’

(33) Q: Viste á Juan? [Spanish]

saw-2SG Juan
‘Did you see Juan?’

A: *Vi

saw.1SG

A: Si.

yes

This is an indication that the relevant parameter, or more likely parameters (plural), are not very deeply embedded in the grammatical system. The variation need not therefore be random and unrelated to other grammatical properties. For example, Martins (1994) argues that the variation in answer forms between Portuguese and Spanish is an effect of a difference in the landing site of verb movement, with other surface effects in addition to answers to questions.¹³

¹² As will be discussed in chapter 4, genetic and geographical affinity are good predictors in the case of the other major parameter that I will deal with in this book, that is how negative questions are answered.

¹³ Martins (1994) argues that verb movement in Portuguese is to a higher position than in Spanish, which, given certain other assumptions explains why Portuguese but not Spanish allows verb-echo answers. . The

The case of Portuguese and Spanish aside, there are some genetically as well as geographically based generalisations visible in the data. Consider the Indo-European languages, apart from Romance, in more detail: The Germanic languages are all in the non-verb-echo category. The Slavic languages are all in the verb-echo category, as are the Celtic languages. The Iranian languages are all in the non-verb-echo category (with only three languages in the sample, though: Sorani Kurdish, Pashto and Persian), while the Indo-Aryan languages are all in the verb-echo category, except Punjabi, Odyia and Sinhala (the latter two reported to have 'yes+V'). A possible strategy for finding out what the structural conditions are for the verb-echo system would be to consider what makes the Germanic languages different from the Slavic languages, or the Iranian languages different from the Indo-Aryan languages. It would be premature to do this, though, before we have a clearer idea of how the two types of answer are syntactically derived. As will be demonstrated shortly, there is more than one way to derive verb-echo answers, and not implausibly, more than one way to derive a particle answer.

The geographic tendencies in the data include the following: Among the Sub-Saharan African languages 20 are in the non-verb-echo category, only 5 in the verb-echo category. The South East Asian languages, on the other hand, are most of them in the verb-echo group, including varieties of Chinese (Cantonese, Mandarin, Taiwanese), Indonesian, Lao, Maonan, Shan, Thai, and Vietnamese¹⁴, but not for example Puyuma, an Austronesian language of Taiwan. The languages of the Indian subcontinent are also all of them in the verb-echo group and/or the V+Prt group, while the South-East Asian languages seem typically not to have a Prt+V alternative.

There are no obvious typological generalisations visible in the data. For instance, with respect to the well-established (but still not uncontroversial) sentential word order parameters there are no correlations. Consider again the Indo-European languages. Among the languages in this phylum, there are SVO and SOV languages, and also some VSO languages (the Celtic ones). In the verb-echo group among the Indo-European languages we find SVO languages as well as some SOV languages (the Indo-Aryan languages and Western Armenian) and VSO languages. In the non-verb-echo group we also find SVO languages and SOV languages (the continental Germanic and the Iranian languages). Among the other languages we also don't see any correlation between word order type and answer type.

Before we try to draw any conclusions from these observations we need to have a clearer idea of the structure of these answers. As will be discussed in the following sections, verb-echo

main independent evidence is that subject clitics in Portuguese are enclitics, in some constructions, while they are proclitics in Spanish, explained if the verb moves past the clitics in Portuguese but not in Spanish. See Rouveret (2012) for a different explanation of this point of variation.

¹⁴ In SSWL Vietnamese is given as not using verb-echo answers. However, according to Duffield (2013) it does. This is also confirmed by Trang Phan Thi Huyen (p.c.).

answers across languages are not all syntactically alike, a fact which needs to be taken into account when considering the geographic and genetic distribution of the type.

Given the frequency of questions and answers in most kinds of spoken interaction, formal as well as informal, we might expect language contact to be an important factor for the distribution of the two main types of answers. Speakers of the less prestigious language or minority language in a bilingual community would be likely to pick up the system used in the more prestigious and/or bigger language. This may well be the story behind the prevalence of the verb-echo system in South-East Asia. The languages in the region belong to a variety of families, but nevertheless share many features (analytic syntax, radical pro-drop, noun classifiers, a rich system of honorifics, etc.), thus forming a Sprachbund. Verb-echo answers would be one of these shared features. As we shall see below, verb-echo answers are not syntactically derived in the same way across the languages, but this is probably not untypical in situations of convergence because of language contact. What is taken over from the donor language is the surface form of an expression, not necessarily its underlying structure.

Yet there are constraints on the spread of the answer forms across languages under language contact. Finland is a bilingual country with Finnish as the dominant, majority language and Swedish as the minority language. The variety of Swedish spoken in Finland is in general very noticeably influenced by Finnish. This is particularly striking in the case of colloquial Swedish spoken today in urban centres like Helsinki or Turku. However, I have never observed any tendency at all in Fenno-Swedish to use verb-echo answers, modelled after Finnish. Why that should be so, is an interesting question. What we do see instead, though, is the wide-spread use of particle-answers in Finnish, probably at least in part an effect of language contact with Swedish, dating back to a time when Swedish had more prestige than today. That this is so, is indicated by the fact that a very common affirmative particle in colloquial Finnish is *joo* or *juu* (see Sorjonen 2001), a cognate of the Swedish particles *jo* and *ja*. This suggests that particle answers are in some sense less marked than verb-echo answers, also indicated by the observation that most languages using verb-echo answers have particle-answers as an alternative. This is obviously something that we want to explain. I shall come back to it briefly at the end of section 3.9 with a suggestion, though not a properly argued answer.

3.7. The syntax of verb-echo answers: The significance of inflection

As we shall see, there is considerable variation regarding how verb-echo answers are derived. The claim is, however, that they are all elliptical constructions. As already mentioned, this is shown most clearly in languages where the verb is inflected for tense and agreement and possibly other

sentential categories. Take Finnish, for example. The affirmative answer in (28) is repeated in (34), now with more precise glosses:

- (34) Q: Ost -i -∅ -ko Jussi sen kirjan? [Finnish]
buy-PST-3SG Q Jussi that book
'Did Jussi buy that book?'
- A: Ost -i -∅
buy-PST-3SG
'Yes.'

Whatever tense or mood or subject person the question has, this will be reflected in the answer (CON = conditional mood; this mood marking neutralizes tense).

- (35) Q: Osta-isi -t -ko sen kirjan? [Finnish]
buy -CON-2SG Q that book
'Would you buy that book?'
- A: Osta-isi -n.
buy -CON-1SG
'Yes.' (literally 'I would buy.')

Tense and mood are sentential functional categories. Tense indicates the temporal relation of the event or state denoted by the sentence in relation to the time of utterance, and mood indicates (roughly) the epistemic status of the event or state denoted by the sentence (whether it is a real event or a hypothetical one, for example). So sentences, not verbs, have tense or mood, even though the verb is commonly the morphological host of tense and mood marking. The fact that the answer is marked for tense and mood indicates that it is a sentence, i. e. has sentential syntactic structure. Subject agreement, on the other hand, means that there is a subject DP (or NP) in the immediate vicinity of the inflected verb. This, too, indicates that the answer is a sentence.

How is this ellipsis derived? This is a complex issue, as we shall see. I will begin by discussing the possibility that the bare verb-echo answers are derived by subject pro-drop and object pro drop, or subject pro-drop and verb-stranding VP-ellipsis .

3.8 Pro-drop and VP-ellipsis or big ellipsis?

One possibility is that the bare-verb-echo answers are derived by subject and object pro-drop. Many languages allow subject pro-drop (see Biberauer et al. 2010) and many (although not quite as many)

languages allow object pro-drop. Thai is an example. The context of the dialogue in (36) is that Kim is looking for her necklace, which Nath knows (On-Usa Phimsawat, p.c.; [e] = null subject or object).

- (36) Nath: [e₁] hǎa [e₂] cəə yaŋ [Thai]
 you seek it find Q
 ‘Have you found it?’
 Kim: [e₁] yaŋ hǎa [e₂]. [e₁] mà y rúu [e₁] sà y [e₂] wáy thīinǎ y
 I still search it I NEG know I put it PERF where
 ‘I still can’t find it. I don’t know where I put it.’

Subject and object pro-drop are allowed in Thai basically when there is a close enough, or salient enough antecedent identifying the features of the dropped pronouns (see Phimsawat 2011). So, when the question in (37) is answered by a bare verb, how do we know this is not a case of subject and object pro-drop, licensed by the antecedents in the question (CLS = classifier)?

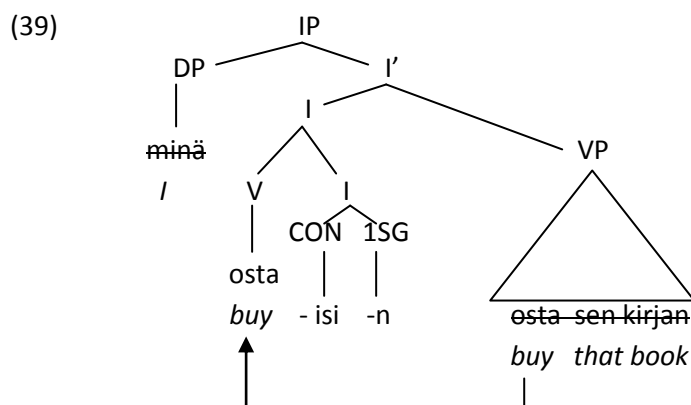
- (37) Q: taan àan nǎŋ-sǔu lêm ní mǎ y? [Thai]
 Taan read book CLS this Q
 ‘Did Taan read this book?’
 A: àan
 read
 ‘Yes.’

To rule out object pro-drop as a general mechanism behind bare verb-echo answers in Thai is easy. When the question contains an auxiliary verb and a main verb, the rule is that the answer will contain either just the auxiliary verb, or the auxiliary verb and the main verb.

- (38) Q: taan tŏŋ àan nǎŋ-sǔu lêm ní dŭay mǎ y? [Thai]
 Taan must read book CLS this also Q
 ‘Must Taan read this book, too?’
 A1: tŏŋ
 must
 A2: tŏŋ àan
 must read
 Both: ‘Yes.’

The answer (38A1) obviously cannot be the result of (just) subject and object pro-drop. The pattern in (38) appears to be common among the languages of the world. A check of SSWL gave the following result: Out of the 33 languages which at the time of writing (December 2014) are reported to have answers with auxiliary and/or auxiliary+verb, 19 are like Thai, allowing answers with a bare auxiliary or with auxiliary+verb, 5 allow answers with auxiliary but not with auxiliary+verb (more on this category later), while 9 allow answers with auxiliary+ verb but not with a bare auxiliary. Only in the last mentioned category may there be languages where verb-echo answers are (always) the result of object pro-drop, so that a bare auxiliary would not be an option. Another possible explanation, though, why they do not allow bare auxiliary answers is that they do not have the right kind of auxiliaries, namely, auxiliary verbs.¹⁵

Another possibility is that verb-echo answers are derived by subject pro-drop and verb-stranding VP-ellipsis. The latter operation has been reported to exist in many languages, even though the analysis remains controversial in some cases; cf. Huang (1991), Hoji (1998), Goldberg (2005), Gribanova (2013). It is derived by V-movement to I, or some functional head outside VP (or vP), and ellipsis of VP (or vP), leaving the moved verb stranded. If the language is also a null subject language (a subject pro-drop language) so that the subject pronoun can be null, then potentially all that is pronounced in the answer is the verb. Applied to the case of (18), the derivation would be as shown in (39) (where the structure is simplified for ease of exposition, in particular ignoring little v (Chomsky 1995: 333f.) and subject movement from vP to specIP).



The verb moves and adjoins to I. The VP is deleted under identity with the VP of the question, and the subject pronoun is deleted under identity with the person feature of I (assuming that subject pro-drop is, or at least can be, a matter of pronoun ellipsis, following Holmberg 2005 – not a crucial assumption in the present context). It is predicted that if the sentence contains an auxiliary, in particular a verbal auxiliary, it will move to I, so unless the verb moves, too, it will be deleted along

¹⁵ The languages in this category are Albanian, Garifuna, Iha, Imbabura Quichua, Kuot, Kusunda, Old French, Tommo-So, and Yan-nhañu.

with the VP, and the answer will consist of a bare auxiliary verb (an option in many languages, as noted above). It is slightly more complicated to derive answers consisting of auxiliary+verb under this analysis.

English has a form of verb-reply, somewhat marked in relation to the minimal answers *yes* and *no*, but widely used. (40) is an example.

- (40) Q: Would you buy this book?
A: (Yes,)I would./ (No,) I wouldn't.

The answer is derived by VP-ellipsis. This is not V-stranding VP-ellipsis, because English does not have V-movement to I, but VP-ellipsis leaving an auxiliary stranded in I. The subject has to be pronounced, as English does not have subject pro-drop. If the analysis in (39) is right, the Finnish verb-reply is essentially the same construction as the English one.¹⁶

As discussed in Holmberg (2001), Finnish has verb-stranding VP-ellipsis, so that part of the analysis is plausible enough. However, subject pro-drop cannot be invoked in the case of Finnish, as Finnish is only a partial pro-drop language. 1st and 2nd person subject pronouns can always be dropped (see the question in (35), for 2nd person), but 3rd person pronouns cannot, except under restricted conditions.¹⁷ This is illustrated in (41).

- (41) Liisa ei ole kotona. *(Hän) tulee pian takaisin [Finnish]
Liisa NEG is home she comes soon back
'Liisa isn't home. She will get back soon.'

The second sentence is ungrammatical without a pronounced subject. In answers to yes-no questions, on the other hand, there is no difference between 1st, 2nd and 3rd person.

- (42) Q: Tulee-ko Liisa pian takaisin? [Finnish]
comes-Q Liisa soon back
'Is Liisa coming back soon?'
A: Tulee.
comes

¹⁶ It is interesting to note that the English verb-reply does not have a close counterpart in the other Germanic languages. Venneman (2009) has argued, mainly on that basis, that it would be a substrate feature from Celtic, where verb-replies are the rule, in English.

¹⁷ A third person pronoun can be dropped when 'controlled' by an argument of the next higher clause, or when it is generic; see Holmberg (2010b), Holmberg and Sheehan (2010).

'Yes.'

Pronouncing the subject is, in fact, not natural in the answer to a question

(43) A: ??Hän tulee.
she comes

Much the same point can be made on the basis of Welsh, another language employing verb-replies, extensively discussed in Jones (1999). Jones demonstrates very clearly that there are two distinct types of verb-based replies in Welsh, namely bare verb-replies and replies formed by VP-ellipsis (Jones 1999: 149-184). One difference between them is that bare verb-replies typically do not have an overt subject, while answers derived by VP-ellipsis typically have an overt subject, and if they are negative, must have an overt subject.

(44) Q: oedd hi 'n oer? [Welsh, Jones 1999: 150]
was she PRED cold
'Was she cold?'
A: nac oedd.
NEG was
'No.'
A: d oedd *(hi) ddim
NEG was she NEG
'No, she wasn't.'

Note that Welsh is a VSO language, hence the position of the subject in the question and the answer. Another difference between the two forms of answer is that VP-ellipsis answers can have a preverbal particle *fe* or *mi* but bare verb-echo answers cannot; compare the answers in (45).

(45) Q: Fydd Sioned yn hwyr eto. [Welsh, Jones 1999: 172-173]
be.FUT.3SG Sioned PRED late again
'Will Sioned be late again?'
A: Bydd.
will.be
'Yes.'

A: Mi fydd hi.
PRT will.be she
'She will.'

Furthermore, the negation in bare verb-replies is different from the negation in VP-ellipsis replies.

- (46) a. **Na** fydd. [Welsh, based on Jones 1999: 168-172]
NEG will.be
'No.'
- b. Fydd hi **ddim**.
will.be she NEG
'She won't be.'

Yet another language which employs verb-echo answers as the standard answer form but does not have subject pro-drop is Kokama-Kokamilla, a Tupi-Guaraní language spoken in the Peruvian Amazon, described by Vallejos (2010).

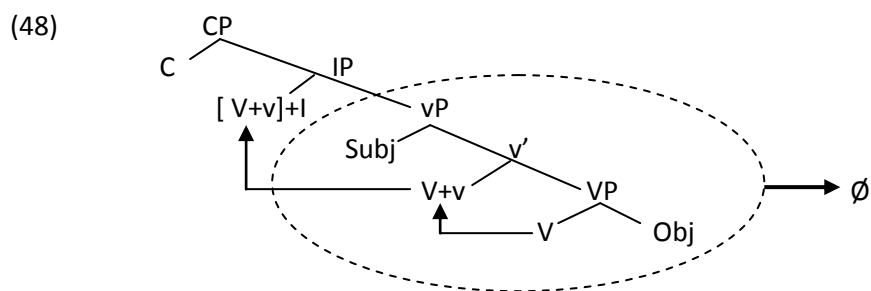
- (47) Q: na mimirakunia ikua kumitsa kukama? [Kokama-Kokamilla: Vallejos 2010: 542]
2SG daughter know speak Kokama
'Does your daughter know how to speak Kokama?'
- A: ikua
know
'Yes.'

Kokama-Kokamilla is clearly not a subject pro-drop language; Vallejos (2010: 466, 200-210 and passim).¹⁸

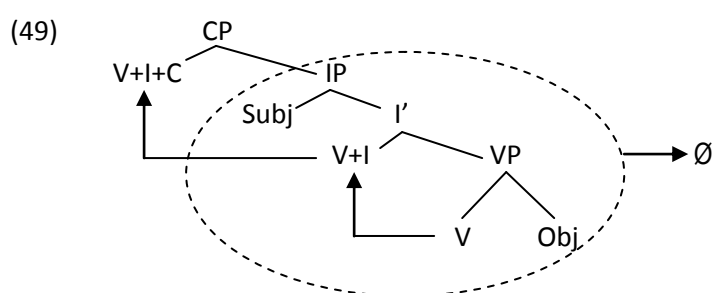
We may conclude, at least in the case of Finnish, Welsh, and Kokama-Kokamilla, that verb-replies are not derived by subject pro-drop and VP-ellipsis.

The alternative is that the verb moves higher than the subject, followed by ellipsis of the constituent containing the subject. This would be the case if the verb moves to I, as in (39) above, but the subject, by standard assumptions merged in vP (Hale & Kayser 1993, Chomsky 1995: Ch. 4), does not move, and gets deleted along with the vP.

¹⁸ Vallejos writes: "In only a few complement constructions, such as complement clauses, can equi-subjects be left out of the clause (...)." (Vallejos 2010: 466).



Alternatively the subject does move to specIP, but the verb moves all the way to C, with subsequent ellipsis of IP, as shown schematically in (49).



These analyses predict that it will make no difference whether the language is a pro-drop language or not, or what features the subject has: The subject is deleted as part of the ellipsis of IP in (48) and vP in (49). All that is spelled out at PF is the inflected verb moved out of the elided constituent. It also predicts that pronouncing the subject, as in (43), will not be an option.¹⁹

McCloskey (1991) in the first investigation of verb-echo answers in a generative framework argued that (48) is basically the right analysis of verb-echo answers in Irish. We will see later that that an analysis roughly as in (49) is right for Finnish, while an analysis more like (48) is right for Welsh. Let us refer to the analysis in (39) as the *pro-drop and VP-ellipsis* analysis and the ones in (48) and (49) together as the *big ellipsis* analysis. In the case of Finnish, Welsh, and Kokama-Kokamilla we can be quite certain that the big ellipsis analysis, either as in (48) or as in (49), is a better analysis than the pro-drop and VP-ellipsis analysis for bare verb-echo answers, because Finnish and Welsh are only partial pro-drop languages, and Kokama-Kokamilla is a non-pro-drop language. What about languages which have verb-echo answers and are consistent null-subject languages (in the sense of Biberauer, Holmberg, Roberts and Sheehan 2010)? How can we tell whether they derive their bare verb-echo answers as in (39), by pro-drop and VP-ellipsis, or by big

¹⁹ The reason why (43) is not outright impossible is, presumably, that the answer can be construed as a declarative SVO sentence with parts of the predicate not spelled out, which is not normally allowed.

ellipsis, as in (48) and (49)? The next section proposes a test to distinguish between the two derivations.

3.9 Testing for pro-drop: The indefinite subject test

The test is the following: Is a verb-echo answer possible when the question has an indefinite subject? If it is, then the reply cannot be derived by subject pro-drop and VP-ellipsis, because an indefinite pronoun cannot be pro-dropped, i.e. cannot be null by virtue of the usual rule deriving a null subject in pro-drop languages. Let us establish first that this is the case.

Consider (50).²⁰

- (50) Può controllare questo macchinario con una mano sola. [Italian]
can.3SG control this machine with one hand only
'He/she can control this machine with one hand.'

The null subject in (50) can only be interpreted as definite 3SG, i.e. 'he' or 'she'. The sentence cannot mean 'someone can control this machine with one hand', even though the 3SG agreement inflection on the verb would seem to allow that interpretation. Why not? Part of the explanation could be that a null subject needs a topic antecedent in the immediately preceding discourse (Grimshaw & Samek-Lodovici 1998, Frascarelli 2008, Cole 2010), and an indefinite pronoun cannot have an antecedent. But that cannot be the whole story. There are languages where a 3SG null subject can have inclusive generic meaning, a null counterpart of English generic *one*, in which case it needs no antecedent. Brazilian Portuguese is one such language (see Holmberg, Nayudu and Sheehan 2009, Holmberg 2010a,b).²¹

- (51) Esta máquina pode controlar com uma mão só. [Brazilian Portuguese]
this machine can.3SG control with one hand only
'One can control this machine with one hand.'

In Brazilian Portuguese, too, this sentence cannot mean 'someone can control this machine with one hand', with an existential indefinite subject. Among subject pro-drop languages with agreement the personal and the generic reading of the 3SG null subject have complementary distribution: In Italian it cannot be interpreted as generic, and in Brazilian Portuguese it cannot be interpreted as personal (Holmberg 2005, 2010a,b). There is no ambiguity. Among pro-drop languages without agreement,

²⁰ Thanks to Lucia Cavalli (p.c.) for the sentence.

²¹ Thanks to Sonia Cyrino (p.c.) for the data.

so called ‘radical pro-drop languages’, ambiguity is possible (Holmberg and Roberts 2013). The null subject [e] in (52) can be interpreted as personal 3SG if there is a 3SG antecedent in the local discourse context (which in this case there is: the subject of the main clause) or it can be interpreted as inclusive generic (Phimsawat 2011).

- (52) cim bɔ̀ɔk wâa khrɔ̀ɛ̀ɛ̀càk ní [e] bə̀ŋkhab dâaj dâaj mɛ̀ɛ̀ diiw [Thai]
 Jim say COMP machine DEM control able with hand one
 'Jim says that he/one can control this machine with one hand.'

But again it cannot mean ‘(Jim says that) someone can control this machine with one hand’.

For the present purposes it is sufficient to establish that an existential indefinite singular subject pronoun cannot be pro-dropped, in a range of languages representing different types of pro-drop. The reason why this would be the case is not essential. However, the following are two (compatible) explanations proposed in recent work, one for languages with subject agreement, one for languages without.

According to Holmberg (2010a, Roberts 2010) subject pro-drop in languages with subject agreement (including Italian, Brazilian Portuguese, Finnish, etc.) is a matter of the functional head I copying all the ϕ -feature values of the subject pronoun, which therefore can be deleted, being a copy of the features in I. The features in I are spelled out as agreement inflection on the finite verb or auxiliary. In the case of an existential indefinite subject pronoun, the existential quantifier feature does not have a counterpart in I, hence cannot be copied, hence the pronoun, even though some of its features (person and number) are copied by I, will not be a copy of I, hence cannot be deleted (see Holmberg 2010: 105-106).

As for radical pro-drop languages, Phimsawat (2011) shows that Thai has pro-drop when either (a) the pronoun has a local enough antecedent, or (b) it has inclusive generic reference. The reason why (b) holds is that inclusive generic is the least restricted reading (comprising everybody, the speaker, the hearer and everybody else) and therefore functions as the default reading (Phimsawat 2011: 75f.). An existential indefinite pronoun cannot have an antecedent, so it does not satisfy (a), and it does not have inclusive reading, so it does not satisfy (b).²² Therefore an existential indefinite pronoun cannot be null. I assume this holds true of radical pro-drop generally.²³

²² The range of an existential quantifier can include the speaker and the addressee, but does not have to, unlike an inclusive generic pronoun such as *one*, which necessarily includes the speaker and the addressee in its reference.

²³ On the complementarity of referential and generic pro-drop in Italian and Brazilian Portuguese, see Holmberg (2010a,b) and Fassi Fehri (2009).

Now let us test Finnish. The context is that a meeting was called last night, but there are reasons to believe that no-one showed up. The question is to find out if anyone at all showed up (not who came, or how many, but if anyone at all came).

(27) Q: Tuli-ko joku eilen? [Finnish]
came.3SG-Q someone yesterday
'Did anyone turn up yesterday?'

A: Tuli. (Meitä oli ainakin kymmenen.)
came.3SG of.us were at.least ten
'Yes.' '(There were at least ten of us.)'

The bare verb makes a perfectly acceptable affirmative reply, meaning that someone did turn up. Since in this case the subject cannot be null by virtue of pro-drop, the analysis of the bare verb answer in terms of pro-drop and VP-ellipsis is out of the question. The big ellipsis analyses in (42) and (43), with verb movement to a position higher than the subject, and deletion of the constituent containing the subject, remain viable options. In the case of Finnish we know for independent reasons that the verb-answer is not derived by pro-drop, so this case serves to corroborate the test.

In (53) the verb is unaccusative. It might be argued that this is a special case, since the subject of an unaccusative predicate can remain in the VP at least in some languages, and thus may get deleted with the VP in this case, even if it raises out of VP/vP and gets deleted by pro-drop with other verbs. Let us therefore test a sentence with a transitive verb. The context is a picnic or a potluck, where the participants are meant to each bring various food items so that a complete meal can be prepared. One participant asks the question (54Q), another one answers (54A).

(54) Q: Toi-ko joku sokeria? [Finnish]
brought-Q someone sugar
'Did someone bring sugar?'

A: Toi. (Se on tuossa.)
brought.3SG it is there
'Yes. (It's over there.)'

The meaning of the answer is ‘Yes, someone did bring sugar’. This is achieved with a bare verb-echoanswer, which cannot be derived by pro-drop and VP-ellipsis, since an indefinite subject cannot be pro-dropped. So the answer must be derived by big ellipsis.

Now consider Welsh.²⁴ We need to modify the context and the example slightly, because past tense questions cannot be answered with a bare verb (Jones 1999: 54-58). So the alternative context is that a meeting needs to be called, and the question is when. One interlocutor proposes the next day. The other interlocutor then asks the question in (55Q), and gets the answer shown.

- (55) Q: Ddaw unrhywyun [Welsh]
 come.FUT.3S anyone
 Will anyone come?
- A: Daw.
 come.FUT.3S
 ‘Yes.’

The bare verb-reply is acceptable. This means that pro-drop and VP-ellipsis cannot be the right analysis at least in this case.

Ideally, though, we should test a construction where we can tell that the indefinite subject has moved out of the predicate to a position where it could be pro-dropped if it were definite. This turns out not to be easy in Welsh, due to the VSO syntax. When using the present perfect, with the perfect aspect marker *wedi*, we know that the subject has moved out of VP, as it precedes the aspect marker.

- (56) a. Oes rhywun wedi dod â siwgr? [Welsh]
 is someone PERF come with sugar
 ‘Has someone brought sugar?’
- b. Oes.
 is
 ‘Yes.’

The verb-echo answer is, again, perfectly fine. Since the subject is indefinite, the answer cannot be derived by subject pro-drop. The evidence is still inconclusive, though, as the indefinite subject may have raised only as far as spec of AspP, and AspP is a possible target of ellipsis; see Jones (1999:

²⁴ Thanks to Maggie Tallerman and Bob Morris Jones for the data.

188-190). Definite subjects raise higher, to a position preceding the negation, if there is one. In principle it could therefore be the case that an indefinite subject is elided along with AspP, but a definite one is elided by pro-drop, were it not the case that Welsh (at least colloquial Welsh) does not have pro-drop, as Jones (1999) shows.

Now consider Portuguese.²⁵

- (57) a. Alguém veio ontem? [European Portuguese]
 someone came yesterday
 ‘Did someone come yesterday.’
- b. Veio.
 came-3SG
 ‘Yes.’

In European Portuguese, too, a bare verb-reply is an acceptable option. European Portuguese is a regular Romance pro-drop language (Barbosa 2009). Yet, for the reasons discussed, the bare verb in the answer in (57) cannot be derived by pro-drop and VP-ellipsis, as proposed in Martins (1994). The alternative is some version of the big ellipsis analysis, where a sentential projection big enough to contain the subject is elided (possibly as in Martins 2006, 2007).

(58) shows that we get the same result with a transitive predicate in the question and the answer.²⁶

- (58) a. Alguém trouxe açúcar? [European Portuguese]
 someone brought-3SG sugar
 ‘Did someone bring sugar?’
- b. Trouxe. (Está aí.)
 brought-3SG is there
 ‘Yes. (It’s over there.)’

Now consider Thai, a radical pro-drop language.²⁷

²⁵ Thanks to Ana-Maria Martins for the data.

²⁶ Thanks to Ana Maria Martins for discussion. An interesting fact is that the 3rd person plural form of the verb can be used in answers to indefinite subject questions, in Portuguese. In the case of (58) it would be (i)

(i) Trouxeram. [Portuguese]
 brought-3PL

A plural verb was also used by one Tunisian informant as an alternative answer (see below). More strikingly, it was used as the preferred alternative by informants in a range of Indian languages, in my fieldwork, including Kannada, Telugu, Tamil, and Marathi. This is discussed in the text below.

(59) Q: khray maa mǎy mĕa-waan ? [Thai]
who come Q yesterday
'Did somebody come yesterday?'

A: maa
come
'Yes.'

Again, a verb-reply is fine, ruling out an analysis where the answer is derived by subject pro-drop, in a language which otherwise makes use of extensive subject and object pro-drop.²⁸ (60) shows the same effect with a transitive predicate.

(60) Q: khray aw náam-taan maa mǎy [Thai]
who take sugar come Q
'Did somebody bring sugar?'

A: aw maa
take come
'Yes.'

Now consider Georgian.²⁹ As shown in (61), Georgian makes use of affirmative verb-replies, with or without the yes-word.

(61) Q: Gushin vano movida? [Georgian]
yesterday vano-NOM came-AOR
'Did Vano come yesterday?'

A: (xo) movida
(yes) came
'Yes.'

Now consider (62), where the question has an indefinite subject.

²⁷ Thanks to Somphob Yaisomanang for the data.

²⁸ Thanks to Somphob Yaisomanang for the data. See Phimsawat (2011) on pro-drop in Thai.

²⁹ Thanks to Léa Nash for the Georgian data.

- (62) Q: Gushin vinme movida ? [Georgian]
 yesterday anyone-NOM came-AOR
 'Did anyone come yesterday?'
- A: xo (*movida)
 yes (*came)
 'Yes.'

Here a verb answer with or without the yes-word is not an option, while a bare yes-word is fine. This follows if Georgian relies on pro-drop and VP-ellipsis for verb-answers and Prt+V answers. To make the derivation more explicit, I will analyse the answer in (63), a question-answer pair with a transitive verb.

- (63) Q: venom moiTana shakari?
 Vano.ERG bring3SG.AOR sugarABS
 'Did Vano bring sugar?'
- A: (xo,) moiTana
 yes bring3SG.AOR

The syntactic structure of the answer in (63) would be roughly (64).

- (64) $xo_{[+Pol]}$ Foc $[_{IP} [D, 3SG] [moiTana-I_{[D, 3SG, +Pol]} [_{VP} [D, 3SG] v [_{VP} <V> shakari]]]]$ → ∅
 yes brought sugar

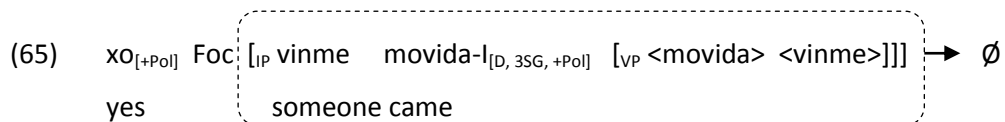
As sketched in the opening of this chapter, I assume the yes-word *xo* is merged as a [+Pol]-marked focused operator in the C-domain which assigns [+Pol] to the polarity feature in I. The verb is moved to I to support the tense and agreement inflections. The subject in this case is a definite pronoun made up of the features [D, 3SG], referring to Vano, the subject of the question. For reasons to be made clear directly, I assume the subject pronoun moves out of vP to specIP; an alternative would be that it lands in a position between I and vP. The subject pronoun can be null because Georgian is a subject pro-drop language with rich enough agreement features in I to copy the features of the pronoun, which is therefore deleted, as indicated (see Holmberg 2005, 2010, Roberts 2010).³⁰ Finally, the vP is deleted, as is possible because it is identical to the vP of the antecedent question. It

³⁰ This may not be the right analysis of pro-drop in Georgian. Léa Nash (p.c.) points out that the verb in (64) actually only agrees overtly in number with the subject. Georgian may be more correctly characterised as a partial pro-drop language, in Holmberg's 2005, 2010 and Robert's (2010b) terms.

must be the case that the subject moves out of vP, because we know it undergoes pro-drop. Staying in vP, it would get deleted along with the vP regardless whether it is definite or indefinite.

For the version of the answer without *xo* ‘yes’, the simple analysis is that it is like (63) but with polarity focus encoded as a feature in I. Crucially, the derivation involves pro-drop of the subject.

The answer in (62), on the other hand, has the following structure, assuming that the subject of the unaccusative verb is first merged inside VP but moves to specIP.



This is following the analysis of answers with answer particles as full sentences where the IP is identical to the IP of the question and therefore can be, and usually is, deleted. The subject is deleted here as part of a deleted IP, regardless what features it has (so long as they match the features of the IP in the question).

A hypothesis worth exploring is that even though bare verb-echo answers can be derived by big ellipsis, the PRT+V alternative is always, in any language, derived by pro-drop and V-stranding VP-ellipsis (thus corresponding closely to the English *Yes, I can* as an answer to *Can you speak French?*). Note, however, that Finnish has PRT+V as an alternative answer (conveying slightly more emphasis than bare V).

- (66) Q: Tuli-ko Jussi/joku?
 came Jussi/somebody
 Did Jussi/somebody come?
 A: Kyllä tuli.
 yes came
 ‘Yes.’

As discussed, Finnish does not have pro-drop of 3rd person pronouns, so the answer in (66) cannot be derived by pro-drop. See below section 3.12.3 for more details about the derivation of answers in Finnish.

Now consider Syrian Arabic. Compare (67) and (68).³¹

³¹ Thanks to Mais Sulaiman for the data.

(67) Q: Basem 'ja: nbareħ? [Syrian Arabic]
 Basem came yesterday
 'Did Basem come yesterday?'
 A: i: 'ja:
 yes came
 'Yes.'

(68) Q: ħada 'ja: nbareħ? [Syrian Arabic]
 anybody came yesterday
 'Did anybody come yesterday?'
 A1: i: (*'ja:)
 yes came
 A2: i:, 'ja: ħada.
 yes came somebody

Syrian Arabic, as mentioned, is a language where bare verb-echo answers are not used, but Prt+V is commonplace. Similar to Georgian, a Prt+V answer is not an option when the subject of the question is indefinite. Two well-formed alternatives, in that case, are the bare affirmative particle without the verb, as in (68A1)), or a full sentence with an indefinite subject, as in (68A2). This follows if the Prt+V answer in (67) is derived by subject pro-drop, not by big ellipsis.

We can see the same effect in a transitive sentence: Where the subject is definite, as in (69), the Prt+V answer is fine. Where the subject is indefinite, as in (70), it is not.

(69) Q: jab Basem skkar? [Syrian Arabic]
 brought Basem sugar
 'Did Basem bring sugar?'
 A1: i: jab.
 yes brought
 'Yes (he did).'

(70) Q: ħada jab skkar?
 someone brought sugar
 'Did someone bring sugar?'

A: i: (*jab).
 ‘Yes.’

Consider the structure of (67) and (68). Like many varieties of Arabic, Syrian Arabic is a VSO-type language, where V invariably moves to I, and where the subject can move to pre-verbal position if it is topicalized or focused and under certain other conditions; see Fassi Fehri (1993). For reasons to be made clear directly, I assume that the subject, even when it is postverbal, is moved out of vP. Let us say that it moves to the edge of a VoiceP (Roberts 2010a, Holmberg 2010b). The structure of the answer in (67), with a definite subject, is roughly (71).

(71) i: Foc [_{IP} ‘ja+I_[D, 3SG.M, +Pol] [_{VoiceP} [~~D, 3SG.M~~] Voice [_{vP} < D, 3SG.M > < ‘ja >]]]

The verb has moved to I, the subject has moved to specVoiceP. The feature values [D,3SG.M] of the subject are copied by the unvalued ϕ -features of I.³² Since the subject in this case is a definite pronoun, all the features of the subject pronoun are thereby represented in I. Thereby the pronoun is a copy of I, and is consequently deleted, i.e. not spelled out at PF (Holmberg 2010a,b, Roberts 2010b). I also has the feature [+Pol], assigned, I assume, by the focused affirmative particle (see chapter 2.8 and below). Finally, the vP, containing only copies of moved constituents, is not spelled out.

But if the question has an indefinite subject, as in (70), the answer cannot echo the verb. This now follows because the indefinite subject inherited from the question in the answer cannot be deleted by pro-drop, because the subject is not a copy of the features of T, containing as it does the indefinite pronoun *ħada* ‘somebody’. One alternative is to delete the entire IP, as in (72b), the structure of (68A1). Another alternative is to delete just the vP (or VP), as in (72c), the structure of (68A2). The affirmative particle *i:*, as before, assigns positive polarity to the polarity head in IP (as will be discussed in much more detail below and in chapter 4).

(72) a. i: Foc [_{IP} ‘ja+I_[D, 3SG.M, +Pol] [_{VoiceP} [D, 3SG.M, ħada] Voice [_{vP} < ħada > < ‘ja >]]]
 b. i: Foc [_{IP} ‘ja+I_[D, 3SG.M, +Pol] [~~_{VoiceP} [D, 3SG.M, ħada] Voice [_{vP} < ħada > < ‘ja >]]]]
 c. i: Foc [_{IP} ‘ja+I_[D, 3SG.M, +Pol] [_{VoiceP} [D, 3SG.M, ħada] Voice [~~_{vP} < ħada > < ‘ja >]]]]~~~~

Now consider Tunisian Arabic. As shown in (73), in this variety of Arabic bare verb-answers are used alongside Prt+V answers, as a common and unmarked alternative.

³² In most varieties of Arabic the verb agrees with the subject in person, number and gender.

- (73) Q: jab -shi ʕli sukkur? [Tunisian Arabic]
 brought Q Ali sugar
 ‘Did Ali bring sugar?’
 A: (i:ħ) jab
 yes brought
 ‘Yes.’

In an investigation carried out by Mohamed Jlassi by the help of a questionnaire with responses from 13 Tunisian Arabic speakers, about half gave bare V as their preferred affirmative response, half gave Prt+V.³³

Are the answers derived by pro-drop and VP-ellipsis or by big ellipsis? Consider (74):³⁴

- (74) jab shi waħed sukkur ? [Tunisian Arabic]
 brought Q one sugar
 ‘Did someone bring sugar?’

- (75) a. *jab.
 brought
 b. *i:ħ jab
 yes brought
 c. šiħ
 right
 d. i:ħ

³³ The questionnaire actually tested whether answers would vary depending on how the questions was formed: as in (75a) or as in (i) or (ii):

- (i) ʕli ja: l-bareħ?
 Ali came yesterday
 (ii) ja: ʕli l-bareħ?
 came Ali yesterday

There was no discernible pattern in the responses. Four informants preferred bare V as answer to all of them, four preferred Prt+V to all, and four informants varied between the two, but with no discernible pattern.

³⁴ Thanks to Mohamed Jlassi for data and judgments. When Mohamed Jlassi tested how 13 Tunisian Arabic speakers answered the question *ja: ji waħed lbareħ* ‘Did someone come yesterday?’ the majority of the answers contained an overt indefinite subject, but there were two speakers who answered with a bare verb. This could indicate that some speakers of Tunisian Arabic analyze verb-replies as derived by big ellipsis, in which case, Tunisian Arabic could be a case where there is real intra-linguistic variation in how verb-echo replies are derived. However, it could also be because the informants understood the question to be about a specific but unidentified person, and answered accordingly: ‘He came’. The test sentence in this section, therefore, is designed to control for this reading.

- yes
- e. famma shkun jab
 there who brought
 ‘There is someone who did.’

The contrast between (75a,b) on the one hand and (75c,d,e) on the other indicates that the verb-echo answers and *Prt+V* answers in Tunisian Arabic are derived by subject pro-drop. (75a,b) are then ruled out as answers in this context because the only way to derive them is with a definite 3SG null subject, but there is no antecedent for a definite null subject.

We may conclude that verb-echo answers in Tunisian Arabic are derived by subject pro-drop and VP-ellipsis (or vP-ellipsis). The same is true of Georgian and, for *Prt+V* answers, Syrian Arabic. In Finnish, Welsh, Portuguese, and Thai, on the other hand, they are derived by verb movement and ellipsis of a constituent large enough to contain the subject.

More generally, we can conclude that, among the languages in the verb answer list, there are some where verb-echo answers are derived by subject pro-drop and predicate ellipsis and some where they are derived by (some version of) big ellipsis. There may also be languages among them where bare verb-echo answers, where they occur, are derived by subject and object pro-drop. In the remainder of this chapter I will focus on derivation by big ellipsis. As we shall see, there is a good deal of variation also among the grammars making use of the big ellipsis strategy.

Unfortunately the indefinite subject test cannot always be used. As we saw in the case of Welsh, if there is no clear evidence that an indefinite subject ever leaves vP, while a definite subject does, and if vP can undergo ellipsis, then we cannot rule the possibility out that a verb-echo answer with an indefinite subject is derived by big ellipsis but a verb-echo answer with a definite subject is derived by pro-drop. Another problem for the test is that there are languages where an indefinite, arbitrary subject can be referred to by a 3rd person plural, definite pronoun ‘they’, as indeed it can in English in a case like (76), taken to mean ‘some unidentified person or persons have broken into my car’.

(76) Look! They’ve broken into my car.

This is the case in several, perhaps all, of the Dravidian languages (thanks to R. Amritavalli for bringing this to my attention and discussing it with me). The following example from Kannada was provided by R. Amritavalli (CON = conditional):

(77) Q: ii mane-li jaar-aadr-uu idd-aar -aa? [Kannada]
 this house-LOC who-COND-EMP be -3PL- Q
 'Does anyone live in this house?

A: huu idd-aar-e (aadre naanu avar-annu yaavatt-uu nooD-illa)
 yes be -3-PL but I they-ACC ever see -not
 'Yes (but I have never seen him/them).'³⁵

As long as the pronoun is formally definite it can be null, as a copy of the agreeing feature set in T, even though it is interpreted as arbitrary in reference. Consequently this test does not tell us whether verb-echo answers in Kannada are derived by subject pro-drop and predicate ellipsis or by big ellipsis.

The question whether a verb-echo answer with an indefinite understood subject is allowed has been posted on SSWL. At the time of writing (December 2014), there are answers from 33 languages. 17 reportedly allow verb-echo answers in this context, while 14 do not (2 are undecided). Among the 17, as many as 8 are Indo-European. Among the 14, two are Semitic and two are Chinese, the rest are all different families. Let us venture a guess that about half of the languages in the world that have verb-echo answers derive them by pro-drop and VP-ellipsis. This will drastically reduce the proportion of languages where answers to yes-no questions are derived by verb movement and big ellipsis (as before, taking verb movement in a broad sense, not excluding remnant VP or IP-movement). On this evidence, the particle answer is the preferred system, by far, among the languages of the world. As will be discussed below on the basis of three case studies, verb-echo answers do require a more complex derivation (with some variation among the languages employing them) than particle answers. This also tallies with the observation, discussed at the end of section 3.6, that Fenno-Swedish has not adopted the verb-echo answer strategy from Finnish, but instead, particle answers are common in colloquial Finnish.

3.10 Another parameter: One verb or a string of verbs

In the verb-echo answers we have seen so far, the answer has consisted of just a bare verb. In some of the languages which employ verb-echo answers, this is indeed the only option: The answer cannot contain more material than a single, finite verb. In other languages there is the option of including more than just a single finite verb, for instance a finite and a non-finite verb. For example, as already

³⁵ Note also how the 3PL form can very well be used with singular reference at least in British English, as in (i):
 (i) We don't know who the murderer is, but we know they are somebody known to their victim.

noted, the following question from Thai can be answered with one or two verbs, with no effect on the meaning.

- (78) Q: taan tɔŋ àan nǎŋ-sǔu lêm ní dŭay mǎy/ máy?
Taan must read book CLS this also Q
'Must Taan read this book, too?'
- A: tɔŋ (àan)
must

In the following Finnish example, the answer may consist of one, two, or three (or more) verbs (Holmberg 2001).

- (79) Q: Onko Marja voinut kantaa tuon kiven yksin rannalta? [Finnish]
has.Q Marja could carry that stone alone from.shore
'Could Marja have carried that stone from the shore alone.'
- A: On (voinut (kantaa)).
has could carry
'Yes.'

In Thai as well as in Finnish the alternative answers are synonymous, with only subtle pragmatic differences. In Thai as well as in Finnish the string of verbs appear in the same order as they have in the question and in the corresponding full declarative clause.

In Portuguese or Welsh, this is not an option: The answer can only ever consist of a single verb or auxiliary.

- (80) Q: Tens estudado muito recentemente? (E. Portuguese; M. Sheehan, p.c.)
have.2SG studied lots recently
'Have you studied much recently?'
- A: Tenho (* estudado).
have.1SG studied
'Yes.'
- (81) Q: All Mair aros? [Welsh: Jones 1999: 60]
can Mair stay

‘Can Mair stay?’
A: Gall (*aros).
can stay
‘Yes.’

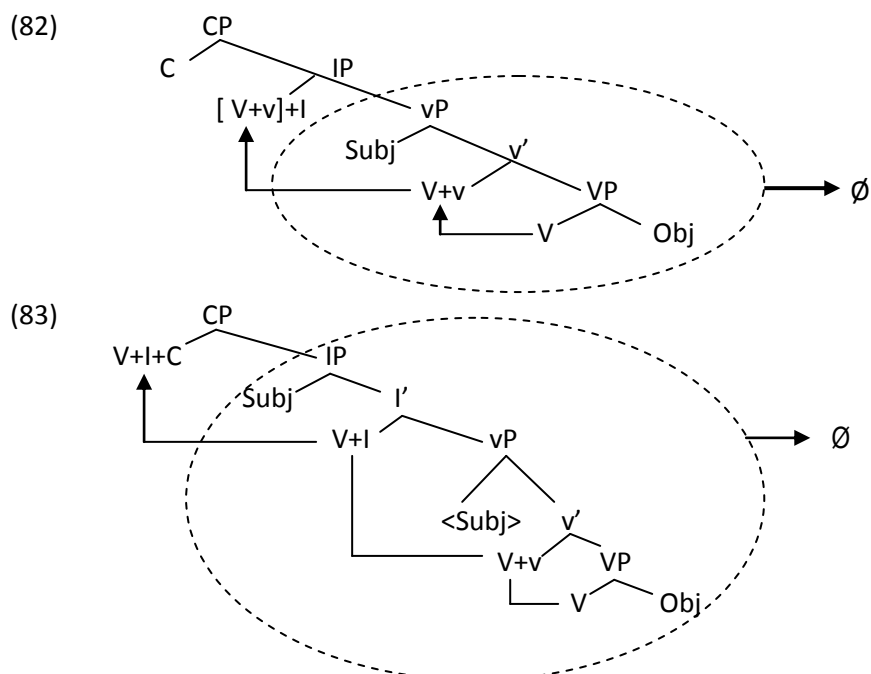
How common are these two systems? Checking with SSWL (in November 2014) yields the following results: From the 44 languages which have affirmative answers by verb (out of a total of 98 languages for which a value is assigned to this property), we remove 19 reported not to allow answers with a bare auxiliary (probably because they do not have auxiliaries of the right kind) and 2 for which this option is for some reason inapplicable. This leaves 23 languages. Out of these languages 17 are reported to allow Aux+V answers, 5 are reported not to, while one is undecided.³⁶ Two of the 5 languages reported not to allow Aux+V are Czech and Polish, two closely related West Slavic languages. However, a closer inspection of the data on SSWL reveals that Czech and Polish do allow auxiliary+verb as long as the auxiliary is an independent word, not a second-position clitic, as these are subject to special morphological requirements. So these languages can be removed from the list of languages with verb-echo answers but never Aux+V. One of the remaining two languages is Hebrew. This language does not allow verb-echo answers when the question has an indefinite subject (as verified by SSWL), which is to say, verb-echo answers are derived by subject pro-drop and (some variety of) predicate ellipsis. We can therefore remove it from the list as being a special case. The remaining languages are Cappadocian Greek, for which we do not yet know how their verb-echo answers are derived, and Portuguese. To this very short list we can add Welsh (Bob Morris Jones, Maggie Tallerman, p.c.), to be discussed in the next section.³⁷ Do these languages have anything in common that might explain the difference between them and the much larger group that allow Aux+V (see note 36)? At this point in time, unfortunately, the dataset is too small and the language involved are not well enough investigated to draw any conclusions.

3.11 A case study: Welsh

³⁶ The languages which do allow Aux+V are ASL, Amharic, Bandial, Burmese, Finnish, Greek, Medieval Greek, Korean, Lithuanian, Malayalam, Mandarin, Nepali, Skou, Tagalog, Taiwanese, Thai, Western Armenian. To this list we may add Kokama-Kokamilla (Vallejo 2010: 542), and also Czech and Polish, as discussed in the text. According to SSWL, five of these languages do not allow verb-echo answers with an indefinite subject, indicating that they are derived by pro-drop, putting them in a category of their own. They are Bandial, Mandarin, Tagalog, Taiwanese and Western Armenian.

³⁷ There are data on Welsh on SSWL, but not for the properties to do with answers to yes-no questions.

Recall that in section 3.2, two analyses were suggested of verb-echo answers, (48) and (49), repeated here. In (82), the verb moves to I, the subject remains in a low position and gets deleted along with vP. In (83) the verb moves to C, and IP, containing the subject, is deleted.



The claim is that verb-echo answers have a derivation very roughly along these lines. The verb moves out of a domain D which contains the subject and the (rest of the) predicate. Subsequently D is deleted, leaving only the verb stranded. However, our discussion in Chapter 2 of the semantics and syntax of questions and answers has consequences which entail that the structures (82) and (83) are both much too simple. As discussed, a yes-no question contains, by definition, a question variable which is a disjunction of two opposite polarity values. This disjunction is moved to the C-domain where it takes sentential scope to yield the yes-no question denotation: the disjunction of a proposition p and its negation $\neg p$. In the Chinese A-not-A question as well as in English and Finnish, the question variable was encoded as a disjunctive polarity feature in a head position of IP. In Thai, it was encoded as the disjunction of two PolPs, the second one of which was not spelled out at PF.

The answer is, in the unmarked case, made up of the same propositional content as the question, syntactically encoded as the same IP as the question, but the answer has a specified polarity feature in the sentential focus position assigning a value to the polarity head in IP or, in the case of Thai, selecting one of the PolPs (and deselecting the other). The IP/PolP in the answer is typically deleted under identity with the IP/PolP of the question, which yields, potentially, a PF with only a single word pronounced, encoding the focused polarity value, as we have seen.

The strategy to be followed in the section is as follows: I will start by a review of Jones's (1999) account of the structure of verb-echo answers in Welsh. His theory will be modified slightly to accommodate the syntactic properties we assume must be part of the syntax of answers, universally. Welsh will be shown to exhibit a version of (82). This will be followed by a discussion of the syntax of verb-echo answers in Finnish, based on Holmberg (2001) but differing from it in certain crucial respects. The section on Finnish will be considerably more detailed than the one on Welsh, being based on first hand knowledge of the language. The third case study will be Thai.

As we have seen, Welsh is among the languages of the world which employ verb-echo answers to yes-no questions, as an alternative to particle answers. The following account is heavily based on Jones (1999). Examples are all from Jones (1999) except where stated otherwise. Verb answers in Welsh have the following properties:

- Verb-echo answers are restricted to certain tenses: present and future. In other tenses an affirmative or negative particle is the only option.

(84) Q: Welist ti Sion neitiwr?
 see.PRF.2SG Sion last night
 'Did you see Sion last night?'
 A: Do. / Naddo.
 'Yes.' / 'No.'

- In the case of lexical verbs only a small group of verbs with irregular inflection can occur in verb-replies.

(85) Q: Eith he heno?
 go.FUT.3SG she tonight
 'Will she go tonight?'
 A: Eith. / Nac eith.
 go.FUT.3SG NEG go.FUT.3SG.
 'Yes.' / 'No.'

- With *bod* 'be' and modal auxiliaries, verb-replies are fine

(86) Q: All Mair aros?
 can Mair stay
 A: Gall. / Na all.
 can "Yes." NEG can.
 'Yes.' / 'No.'

- With all other verbs, the dummy verb *gnweud* 'do' is used.

(87) Q: Gytunith y prifathro?
 will.agree the headteacher
 'Will the headteacher agree?'
 A: Gneith. /Na neith.

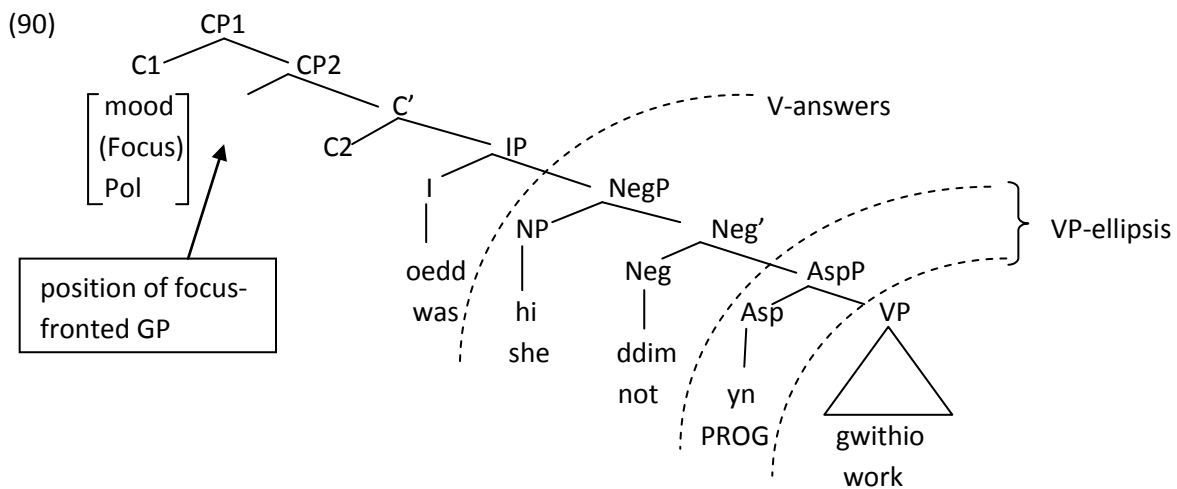
will.do NEG will.do
 'Yes.' /'No.'

- There can only be one finite verb or auxiliary in an affirmative verb-reply, and only a negation and a finite verb/auxiliary in a negative verb-reply.

(88) Q: Ga' i roi 'r llefrith yn yr oergell? [Welsh; B.M. Jones, p.c.)
 may.1s I put.INF the milk in the fridge
 'Can/may I put the milk in the fridge?'
 A: Cei (*rhoi).
 may.2SG put
 'Yes.'

(90) is Jones's analysis of the sentence (89), taken as a representative of finite sentences in general. The analysis is based on Tallerman (1996),

(89) Oedd hi ddim yn gwithio.
 was she not PROG work
 'She was not working.'



C1 is marked for mood: indicative, imperative, interrogative, and, interestingly, a mood Jones calls responsive, the mood of answers to yes-no questions. C1 also optionally encodes a focus feature and a polarity feature. Welsh has two negations: a preverbal negation *na*, hosted by C1, according to Jones (1999), and a postverbal negation *ddim*, heading a NegP between I and AspP. SpecC2 is the position of fronted sentential constituents. In this position they are assigned focus by C1. In the absence of a constituent in spec,C2, the focus-feature of C1, when present, will assign focus to the next constituent down the tree, that is the verb or auxiliary in I (the significance of this will become

clear below). C2 is also the position of the preverbal particles *fe/mi*, characteristic of affirmative declarative clauses.

The finite verb in Welsh is either moved from VP to I (if it is the main verb) or is base-generated in I (if it is an auxiliary verb). The subject is base-generated in VP (in more recent terminology it would presumably be vP, in transitive clauses), but moves out of VP (vP) to the spec of NegP, in sentences with the low negation *ddim*. Jones assumes that the low negation has an invisible affirmative counterpart. The projection would therefore more aptly be called PolP, the head of which is either negative or positive. To avoid confusion with “my” PolP, discussed below, I maintain Jones’s label NegP for the projection in question. The movement of the verb and the subject yields the V-S-O or Aux-S-V-O order characteristic of Welsh unmarked finite clauses. Jones (1999) does not discuss the syntax of questions specifically, but the idea is, as far as one can tell, that questions are marked by an interrogative feature in C1, where it can be realised as a particle at least in literary Welsh (Roberts 2005: 121).³⁸

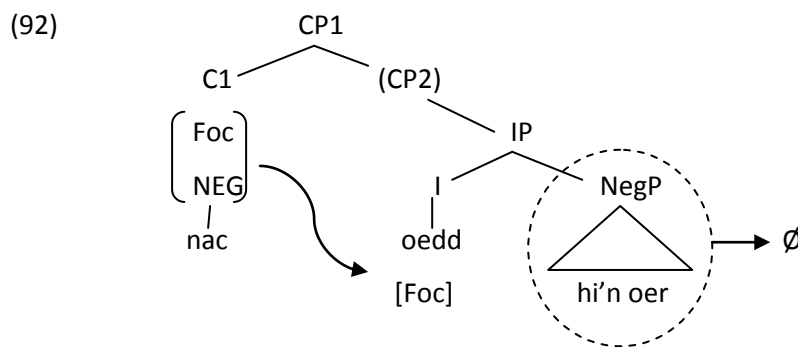
The derivation of answers in Jones (1999) is as follows: As shown in (85)-(88) yes-no questions in Welsh can be answered by a bare verb or auxiliary (affirmative) or negation plus a bare verb or auxiliary (negative), if the tense is right (present or future). Also recall from section 3.8 that yes-no questions in Welsh can always be answered by a reduced sentence derived by VP-ellipsis. The latter is derived by ellipsis of either VP or AspP, according to Jones, while bare verb-echo answers are derived by ellipsis of NegP, including the subject, as shown in (90). One of Jones’s examples illustrating the bare verb and the VP-ellipsis answers was (44), repeated here (slightly modified) as (91).

- (91) Q: oedd hi 'n oer? [Welsh, Jones 1999: 150]
 was she PRED cold
 ‘Was she cold?’
 A1: nac oedd.
 NEG was

³⁸ The theory of Welsh sentential structure in Roberts (2005) has essentially the same ingredients as Jones’s theory: The verb moves to a head in the IP-domain. Roberts argues that it is AgrS, a head postulated between C and T. The subject moves to an A-position between AgrS and vP/VP. Roberts argues that it is specTP (see Roberts 2005, chapter 1; in subsequent chapters this theory is modified slightly, with AgrS split into a person and a number head, the subject moving to the spec of NumP). In the spirit of Rizzi (1997), Roberts (2005) identifies C2 as Fin(iteness) and C1 as Force. Furthermore, he argues that, while other verbs and auxiliaries move only as high as AgrS, the auxiliary *bod* ‘be’ moves to Fin, shown by the fact that it has complementary distribution with the affirmative particles *fe/mi*, and consistent with the fact that it has richer inflection than other verbs, if the features in question are taken to be a property of Fin (Roberts 2005: 33-35). In the following I will employ Jones’s more theory-neutral labels C1 and C2.

‘No.’
 A2: d oedd hi ddim
 NEG was she NEG
 ‘No, she wasn’t.’

The bare verb answer employs the negation *na(c)*, hosted by C1, according to Jones, while the answer derived by VP-ellipsis employs the lower negation *ddim* and an overt subject. In the case of the verb answer, the Focus feature in C1 extends its scope to I, licensing the ellipsis of the complement of I, that is NegP; see (90). This is how verb-echo answers are derived. For instance (92) would be the structure of (91b), where the curved arrow represents assignment of focus to the verb in I, in the absence of any intervening fronted constituent, and Jones’s NegP is deleted. In this case the focus is combined with a negative feature, spelled out as the negation *na(c)*. In the case of affirmative answers, there is (we may assume) a corresponding affirmative feature in C1. Alternatively C1 is unmarked for polarity and the affirmative reading is a default.



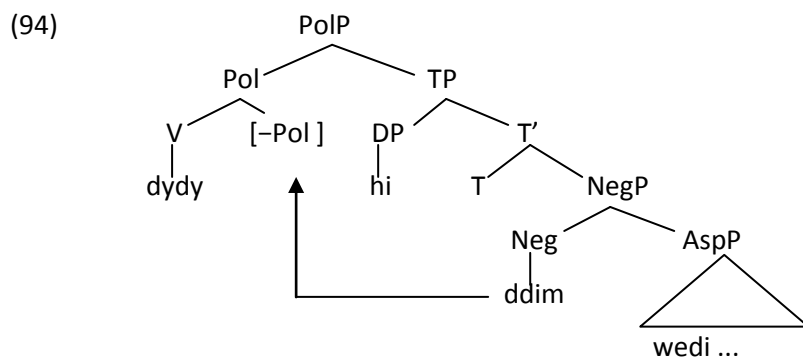
Jones’s (1999) theory of Welsh sentential structure would appear to fit the theory of yes-no questions and answers articulated in chapter 2 and the present chapter quite nicely. Recall that I argued that the standard form of yes-no questions has a polarity variable in the IP which is inherited by the answer along with the IP, and is assigned a value in the answer by a focused valued polarity feature, which can be realised as a bare verb, or a negation plus a bare verb, in some languages. Typically the inherited IP is deleted. Under Jones’s (1999) theory, the constituent containing the polarity variable would seem to be Jones’s NegP, which, as mentioned, should more aptly be called PolP, as he assumes that the low negation has an invisible positive counterpart.

However, other properties of the negation in Welsh, discussed in Borsley and Jones (2000) and Willis (2010) make it look unlikely that the low negation *ddim* would be an exponent of the sentential polarity feature discussed in chapter 2. It is much more likely that it functions like the

negation *not* in English as briefly described in section 2.8 (in connection with example (52)) and as will be discussed in much more detail in chapter 4: It is merged in a relatively low position, between T and vP, and assigns negative value to a higher polarity feature, as a special case of the Agree relation. Consider (93), a standard negative sentence in (colloquial) Welsh.

- (93) Dydy hi ddim wedi newid o gwbl. [Welsh: Borsley and Jones 2000]
 NEG-is she NEG after change at all
 ‘She has not changed at all.’

The sentence exhibits a distinctive negative form of the copula, which I have glossed as NEG-is.³⁹ I suggest that this ‘negative verb’ is an exponent of the sentential polarity feature. Let us assume that the polarity feature is a head high in the IP-domain, merged without a value, attracting the finite verb or auxiliary (the trajectory of the verb is not shown in (94)), assigned negative value by *ddim*, or by a negative adverb or pronoun, subject to locality requirements as discussed by Borsley and Jones (2000), or else, in the absence of an accessible negative feature, is assigned affirmative value by default.



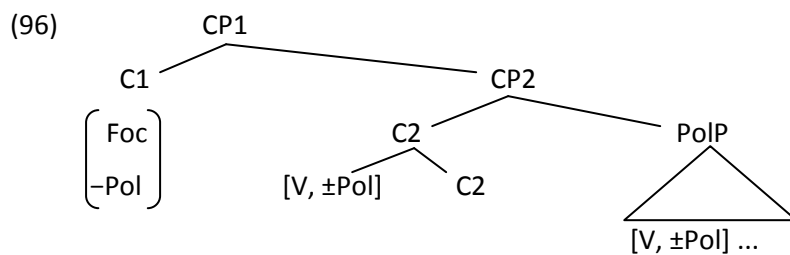
In questions the polarity is a variable [\pm Pol] moved to the C-domain, as we saw in the case of Chinese, English and Finnish, with a copy in PolP. The special interrogative form that the verb (or auxiliary) *bod* ‘be’ has in questions in Welsh, we can now take to be the spell-out of *bod* combined with [\pm Pol] (as discussed in section 2.8 positive as well as negative questions have a [\pm Pol]-feature).

- (95) Ydy o ddim yb darllen? [Welsh]
 ‘Isn’t he reading?’

³⁹ Borsley and Jones (2000) does not gloss the example this way, but their analysis, in the formal framework of HPSG, does postulate a negative feature as part of the make-up of the verb.

The answer is based on the PolP of the question, containing the unvalued [\pm Pol]-feature, but this PolP is merged with a specified, focused polarity feature which assigns a value to the unspecified polarity feature in PolP. The focused polarity feature must be phonologically realised, either by a particle or by a moved verb, while the PolP can be deleted (left unspelled-out), being identical with the PolP of the question.

Let us assume that the answer has the left periphery proposed by Jones (1999) (although without making use of the ‘responsive mood’ feature). Let us furthermore assume that the unspecified polarity feature inherited from the question can move to C2 under certain conditions, namely if it is accompanied by *bod* ‘be’, a modal auxiliary, or an irregular verb, all with the right tense. If the tense is right, but the verb is not right, the dummy auxiliary *gwneith* ‘do’ can accompany the polarity feature to C2. There, it will be assigned either positive or negative polarity value by C1, which value will be transmitted via the chain to the unvalued feature in PolP. In (96) the value is [-Pol].



As PolP is normally not spelled out, all that is spelled out is the verb in C2 (the affirmative case) or negation plus verb (the negative case). This is how the answers in (85), (86), (87) and (91A1) are derived.

For some reason past tenses do not allow V-movement to C2, not even with a dummy auxiliary. In this case I suggest that [\pm Pol] is covertly moved to C2, being assigned positive or negative value by a focused affirmative or negative feature in C1, spelled out as a polarity particle, *do* ‘yes’ or *naddo* ‘no’. This derives the answer of (84).

It is obviously interesting to think about reasons for the effect of tense and inflectional irregularity on V-movement. A not implausible hypothesis is that it is a locality issue. Say, if past tense is merged lower than present and future tense, this might preclude movement of the feature along with the verb to C2. Testing this idea in the present framework is somewhat complicated, though, and is therefore left for future research.

As discussed, and illustrated above in (88), Welsh has the property, shared by some of the languages employing verb-echo answers, that only a single verb or auxiliary may be spelled out in

the answer. Next I will discuss the syntax of answers in a language which does not have this property, namely Finnish.

3.12 The structure of Finnish answers

3.12.1 *Some basic facts. The syntax of clauses in Finnish*

Many of the observations in this section were first made in Holmberg (2001). The theory to be presented differs in some important respects from the theory proposed there, though. Some of the properties of verb-echo answers in Finnish which the theory needs to account for have already been noted, but are nevertheless summarized here:

(a) Affirmative answers to yes-no questions may consist of a bare verb, or a string of verbs, in the same order as in the question or the corresponding full declarative clauses, and inflected just like the corresponding verbs in the question and the corresponding full declarative clauses. Negative answers may consist of just the sentential negation, which in Finnish is an auxiliary verb, or the negation combined with one or more verbs. The negative answer to the question (97Q) can be any of the alternatives in (97A):

- (97) Q: Onko Liisa voinut kantaa tuon kiven tänne?
has.Q Liisa could carry that stone here
'Could Liisa have carried that boulder here?'
- A: Ei (ole (voinut (kantaa))).
not has could carry
'No (she hasn't).'

(b) Finnish is only a partial null subject language with no 3rd person pro-drop, but allows bare verb-echo answers in all persons, indicating that they are not derived by subject pro-drop. This was further confirmed by the fact that verb-echo answers could be employed when the subject is indefinite.

Another property which the analysis will take into account is the following:

(c) Negative questions cannot be answered by a bare verb or bare auxiliary, even when the answer is intended to confirm the positive alternative. Instead, in this case the answer has to contain additional material, which can be the subject, as in A2, or the main verb, as in A3. The modal

particle *-kaan* is an NPI added in order to force the reading that the question expects a negative answer, which is the relevant reading here.⁴⁰

(98) Q: Ei-kö Jussi ole-kaan lukenut sitä kirjaa?
 not-Q Jussi has-PRT read that book
 ‘Has Jussi not read that book, then?’

A1: *On.
 has
 Intended reading: ‘Yes he has.’

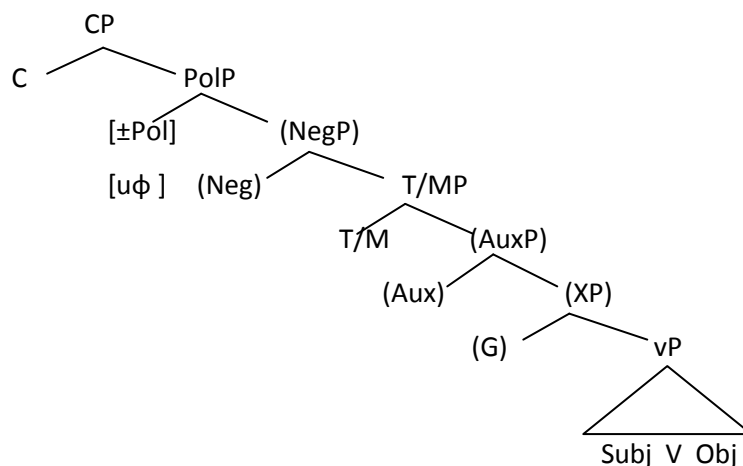
A2: On se.
 has he
 ‘Yes, he has.’

A3: On lukenut
 has read
 ‘Yes, he has.’

This observation will be important when choosing among alternative theories

I assume the basic structure of the Finnish clause in Holmberg and Nikanne (2002), henceforth referred to as H&N (which, in turn, is based on Holmberg et al. 1993), with some slight modifications.

(99)



⁴⁰ The comment on grammaticality judgments at the end of chapter 1.4.2 are relevant in connection with (98) (as in many other places). Informants typically do not assign (98A) a star, if they are given the choice of assigning just a ?. They do, however, all perceive a difference between (98A1) on the one hand, and (98A2,A3) on the other hand.

One modification is that H&N's head F(inite) is identified as encoding polarity. I assume the polarity feature is merged unvalued (hence '±Pol' in (99)).⁴¹ It is assigned negative value [-Pol] if the sentence contains a negation, and affirmative value as default in the absence of a negation, while in yes-no questions it remains unspecified. It also encodes subject agreement features (corresponding thereby to F(inite) in H&N). The polarity feature heading finite sentences will be seen to be an important component in the theory articulated in this book, assumed to be either universal or an important parametrised property. In Finnish, the Pol-head is always morphologically realised by the highest verb or auxiliary, moved there from their first-merged position (VP in the case of the main verb). In Finnish, the standard sentential negation is an auxiliary-like category, inflected for subject agreement (Holmberg et al. 1993). In negated sentences, therefore, the negation moves, by head-movement, and adjoins to Pol, where it carries the inflection for subject agreement, while the next verb down (an auxiliary verb or a main verb) moves to the T(ense)/M(ood) head. That the Pol-head also encodes ϕ -features and morphologically incorporates the negation is a language-specific property of Finnish.

Finnish has a fairly strict EPP-condition: Finite sentences have to have a constituent in the position preceding the finite verb or auxiliary in Pol (see H&N, Vilkuna 1995). In the unmarked case this constituent is the subject. However, if, for whatever reason, the subject does not move to that position, some other referential constituent has to move there, or else an expletive pronoun can be employed to fill the position (H&N, Holmberg and Nikanne 2008). The category moved there is typically interpreted as aboutness topic, a constituent referring to the entity which the sentence says something about (Vilkuna 1995, Frascarelli and Jiménez-Fernández 2008). More precisely, if the constituent moved there is not the subject, it must be interpretable as topic. The subject can move

⁴¹ Interestingly, Mitchell (1991) defines the corresponding head as a polarity head. In Holmberg et al. (1993), and H&N in their wake, one argument for postulating a head 'Finite', separate from Tense and not to be equated with AgrS, is that Finnish has an impersonal/passive finite verb form which combines with all tenses, and has complementary distribution with subject agreement.

- (i) Sinä ost -a -t kirjoja.
I buy-PRS-2SG books
'You buy books.'
- (ii) Kirjoja ost-et-a-an.
books buy-PASS-PST-FIN
'Books are bought (here).'

The suffix -Vn (V copying the value of the preceding vowel) fills the slot of the agreement suffix but is unmarked for agreement. It is identified as a 'pure' finiteness suffix in Holmberg et al. (1993) and H&N. Mitchell (1994) notes that it disappears when the passive sentence is negated.

- (iii) Kirjaa ei ost-et-a.
book NEG buy-PASS-PRS
'The book isn't bought.'

The negation in the 'highest head position' has the default form otherwise found with 3SG subjects with no trace of the finiteness suffix, which means that this suffix can be taken to encode affirmative value, in complementary distribution with the negation word.

there whether or not it is a topic. Consider (100), where the indeterminate pronominal subject cannot possibly be a topic, not being referential. (100b) shows that the subject can remain in a low position, in which case an expletive is required to satisfy the EPP. (100c,d) then show that the object can satisfy the EPP condition but only if it is interpretable as topic.⁴²

- (100) a. Kuka tahansa voi oppia ranskaa. [Finnish]
 who ever can learn French
- b. Sitä voi kuka tahansa oppia ranskaa.
 EXPL can who ever learn French
 Both: 'Anyone can learn French.'
- b. Ranskaa voi oppia Marja-kin.
 French can learn Marja-even
 'As for French, even Marja can learn it.'
- c. *Mitä tahansa kieltä voi oppia Marja-kin.
 what ever language can learn Marja-even

T/M is where the tense feature is merged, and likewise the features for conditional and (in literary Finnish) potential mood. Tense is neutralised in the conditional and potential mood (Holmberg et al. 1993).

The head G is a head attracting, optionally, the main verb out of vP. That the main verb can undergo such movement is shown by sentences such as (101) and (102), where the main verb optionally precedes constituents which are uncontroversially outside VP. The result is marginally more marked than the counterpart with the verb following the adverb.

- (101) a. Ne on kaikki **saanut** muistutuksen
 they have all got warning
- b. Ne on **saanut** kaikki muistutuksen.
 they have got all warning
 Both: 'They have all got a warning.'

- (102) a. Minä en ole koskaan **polttanut** tupakkaa.

⁴² One can imagine other formal accounts of these observations. One is that the head Pol has an EPP feature associated with its [uφ] features which attracts the subject, but if the subject for some reason is not available, a Topic head is merged to attract some other constituent, which in that case must be interpretable as topic.

- I NEG have ever smoked tobacco
- b. Minä en ole **polttanut** koskaan tupakkaa.
I NEG have smoked ever tobacco
Both: 'I have never smoked tobacco.'

In (101b) the non-finite past participial form of the transitive verb precedes the quantifier *kaikki* 'all', stranded by subject movement from vP (Sportiche 1988, H&N). In (102b) the verb precedes the aspectual adverb *koskaan* 'ever'.

What sort of head is G? In (101) and (102) the main verb is inflected for past perfect (the suffix *-nut*) but this is not crucial. In (103), it is infinitival, the complement of the deontic modal restructuring verb *saada* 'may, be allowed to'.

- (103) a. Sinä et saa koskaan **pestä** näitä ikkunoita.
you NEG may ever wash these windows
b. Sinä et saa **pestä** koskaan näitä ikkunoita.
Both: 'You must never wash these windows.'

The adverbs that the main verb can move over are the lower adverbs in Cinque's (1999) hierarchy, including aspectual adverbs, suggesting that the moved verb demarcates the Aspect phrase. I will refrain from trying to characterise its properties more precisely. By standard tests it does optionally move, though; this is an important parametrised property of Finnish, as we shall see.

3.12.2 The structure of answers to yes-no questions in Finnish

The main properties of yes-no questions in Finnish were presented already in Chapter 2. The following is a recapitulation, adding a few more relevant details.

- (a) There is a question particle *-ko/-kö* spelling out [\pm Pol] which in wide-scope questions is merged (we now postulate) as the highest head in the IP-domain, and moves along with the highest verb or auxiliary to the C-domain. The verb or auxiliary is inflected for the features it has passed through on its way from VP to the C-domain. (105) is the analysis of (104a). The question particle *-ko/-kö* will be glossed [\pm]. As will be discussed in chapter 5, it does not exclusively encode [\pm Pol], but is a more general 'polar particle'.

- (104) a. Tul -e -t **-ko** sinä pian ? [Finnish]
come-PRS-2SG [\pm] you soon

- ‘Are you coming soon?’
- b. Ol -e -t -ko sinä jo käynyt Lontoossa?
 have-PRS-2SG-[±] you already been London.INE
 ‘Have you already been to London?’

(105) [Q [CP [Pol tul-e -t -ko] C [PolP sinä [Pol t_{Pol} [T/M t_{T/M} [pian [VP t_V <sinä>]]]]]]
 V -PRS-2SG -[±]

The question is derived by successive head-movement of the verb from VP to *v* (not shown) to T/M to Pol, combining with the inflections along the way, while the subject moves from the unaccusative VP to specPolP. The movement from Pol to the C-domain in (104a,b) is head-movement in the sense that the moved category is Pol, a head. However, I assume it does not fall under classical head-movement, but is a form of A'-movement. As discussed in chapter 2, the effect is that of assigning clausal scope to the disjunction of negative and positive polarity. As discussed by Vilkuna (1988, 1995), H&N, and Holmberg & Nikanne (2008), the Finnish C-domain has room for one and only one constituent above the subject/topic position. In questions this constituent can be a whP, or, as we have now observed, a polarity variable. In declaratives, including answers to wh-questions, it can only contain a contrastive XP, or, as we have now observed, a valued polarity feature. (106) shows that movement of the Pol head cannot be combined with wh-movement. This is explained if, in a sense, they compete for the same position, even though one is a phrase and the other a head.

- (106) a. Milloin sinä tulet? [Finnish]
 when you come
 ‘When are you coming?’
- b. *Milloin tulet(-ko) sinä?
 when come-[±] you

The position they compete for is the Focus position, in the sense discussed in chapter 2.6: When the constituent merged there (by internal or external merge) is disjunctive, a whP or a disjunctive Pol head, the effect of the movement is that the disjunction gets sentential scope, which yields the interpretation of a disjunctive set of propositions. At the same time it places the disjunction in the position as CpA, subjacent to Q-Force (in direct questions) or the predicate defining an epistemic-evaluative attitude towards the disjunctive set on the part of the matrix subject (indirect questions). When the constituent merged there has a specified value, as in the answer to a wh-question or yes-

no question, the interpretation is that of classical focus: one out of the set of alternative propositions is presented as the true one to the exclusion of the others. Departing from standard X-bar-theoretic assumptions, I will represent the movement as merge with FocP (or ‘movement to spec,FocP’ in more traditional parlance) in the case of wh-movement as well as movement of the disjunctive polarity head. Following X-bar-theoretic conventions, the mother node of Focus will still be labelled Foc’, though. Postulating that movement of Pol is adjunction to a Foc head while wh-movement is merge with FocP, in accordance with standard X-bar-based movement theory, is an alternative, but one that has no theory-external motivation.

As mentioned –*ko/kö* also appears in narrow-focus questions, attached to the narrow-focused constituent fronted to the C-domain (see Holmberg 2014). I will return to this construction in Chapter 5.

Now for the answers to yes-no questions: Recall the theory of answers sketched in Chapter 2. The minimal answer to a yes-no question has a valued polarity feature in the C-domain, in the sentential focus position, merged with the PolP inherited from the question. This PolP contains the unvalued Polarity feature of the question which is now assigned a value by the focused valued Polarity feature, which yields an affirmative or negative declarative sentence. The PolP inherited from the question is typically deleted.

In the affirmative verb-echo answer, the focused, valued polarity feature is carried by a verb, in the negative answer by the sentential negation. The verb is inflected just like the finite verb in the question or a corresponding complete declarative sentence. The negation is inflected for subject agreement just like in the corresponding complete declarative sentence. To start with the affirmative case, how does the verb get to the focus position? The most straightforward answer is: by movement from PolP. What kind of movement, though? What about verb-echo answers made up of more than one verb, as in (107)?

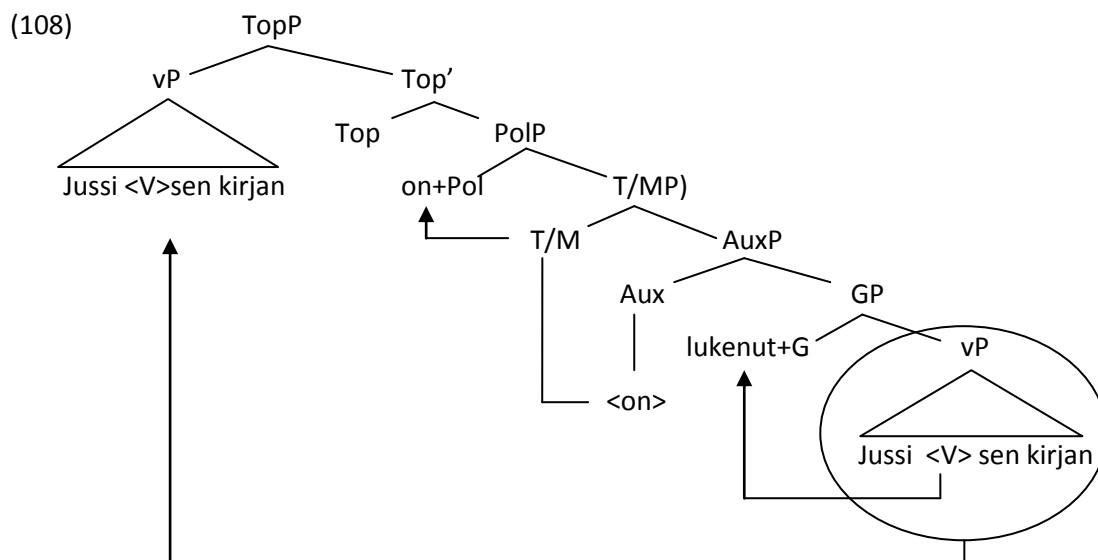
- (107) Q: On-ko Jussi lukenut sen kirjan?
 has-Q Jussi read that book
- A: On lukenut.
 has read
 ‘Yes (he has).’

In Holmberg (2001) I argued that this form of answer cannot be derived by head-movement of V to Pol, and Pol-movement to a focus position in the C-domain, but is derived by remnant PolP-

movement to specFocP, and I proposed that this is, in fact, the derivation of all verb-echo answers in Finnish. The derivation of, for example, the answer in (15) would proceed as follows:

- The first step, which is optional, is movement of the main verb out of vP to G (see (101-103)).
- Step two is movement of the auxiliary verb to Pol, via T/M (see (99)).
- Step 3 is movement of vP to spec,TopP.

The idea here is that the EPP condition in Finnish requires movement of a referential category to a designated topic position, the spec of a head Top(ic). Usually the subject moves there, but, as discussed above, there is the option of moving other topic-worthy constituents to this position. One option would be moving the entire vP. The derivation so far would be (108):



- Step 4 would be merge of Foc and movement of the now remnant PolP to spec,FocP.

If the main verb has moved to G, the remnant PolP will contain the auxiliary verb and the main verb, so the auxiliary and the main verb will move to spec,FocP. If the main verb has not moved out of vP, the main verb will move along with vP to spec,TopP, and only the auxiliary moves along with the remnant PolP to spec,FocP. When the sentence is spelled out, typically only the constituents in specFocP will be pronounced. The answer will then be either (109a) (if the main verb has not moved out of vP) or (109b) if the main verb has moved out of vP, thereby avoiding being topicalized along with the vP, moving instead with the remnant PolP to spec,FocP).

(109) a. On. [Finnish]
has

- b. On lukenut.
has read

The topicalized vP can be pronounced, though (with low, flat intonation), in which case the word order is (110a) if the main verb has moved out of vP, and (110b) if it has not.

- (110) a. On lukenut (Jussi sen kirjan). [Finnish]
has read Jussi that book
b. On (Jussi lukenut sen kirjan).
has Jussi read that book
Both: 'Yes he has.'

Despite the attraction of this theory, I will reject it here, and instead propose an alternative derivation, without remnant movement of PolP. The initial impetus in Holmberg (2001) to consider a remnant movement analysis was the observation that the elliptical verb-echo answers could consist of a string of auxiliaries and verbs, even with some added adverbs, but always in the same order as they would have in a complete sentence, including the antecedent question. This argued against a theory where the elliptical answers are derived by head movement of the various verbal heads and adverbs to the C-domain, since there is no well-established principled reason why they would then end up in the same order as before movement. Instead, it is consistent with the hypothesis that the answers are derived by remnant movement of PolP to the C-domain, as this would preserve the order of the verbal heads and the adverbs. There is a third possibility, though, which is that only the highest head moves at all, while the other verbal heads and adverbs remain in situ. This is the tack I will take here. Subsequently it will be shown that there are languages which do employ remnant movement to derive verb-echo answers. These are languages which do not have head movement at all, or only to a very limited degree. Finnish is not one of those.

The main reason for rejecting the remnant movement hypothesis in the case of Finnish is empirical: The remnant movement theory does not account well for the variety of answers to negative questions in Finnish. These will be discussed in more detail in chapter 4, though.⁴³ In this

⁴³ One of the arguments in Holmberg (2001) in favour of the derivation with topicalisation of vP followed by remnant focus-movement of IP was that this could account for the OV order allowed in Finnish, an SVO language, under certain conditions, as in (i).

- (i) Milloin Jussi sen kirjan olisi lukenut?
when Jussi that book would.have read
'When would Jussi have read that book?'

The condition is that the sentence should have 'initial focus', either a contrastively focused constituent or a whP or a focused remnant PolP, according to Holmberg (2001). One problem for this analysis is that adverbs can be interspersed between the constituents of the putative fronted vP.

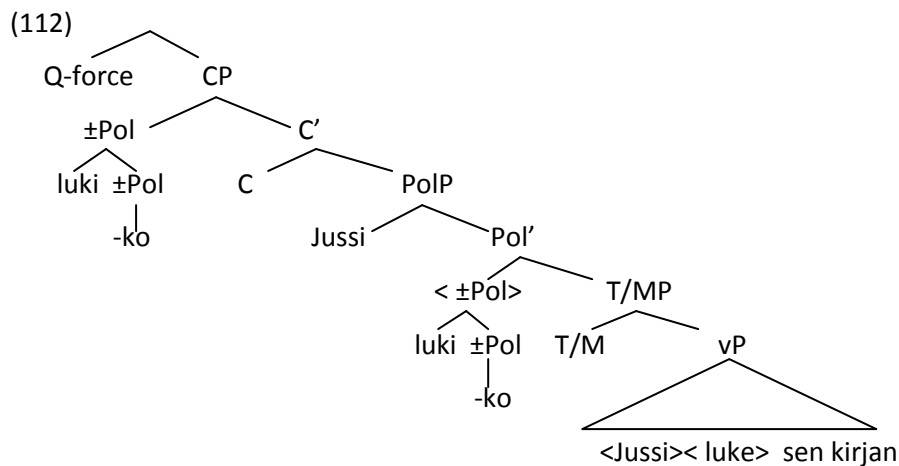
chapter I will show how the theory works in principle, leaving the details of negative questions to chapter 4.

3.12.3 Deriving verb-echo answers in Finnish without remnant movement

Consider first the case of the bare verb answer in (111).

- (111) Q: Luki-ko Jussi sen kirjan? [Finnish]
 read-Q Jussi that book
 A: Luki.
 read
 'Yes.'

Recall that the answer is supposed to be parasitic on the question, inheriting the (LF of the) IP of the question, which is then not pronounced. In this case the structure of the question is (112). I do not assume the TopP-projection of H&N, instead merging the subject directly with PolP.⁴⁴



The answer employs the same PolP as the question, but instead of the unvalued polarity feature moved to (internally merged) with CP, in the position governed by Q-Force, a valued polarity feature

- (ii) Kyllä Jussi (varmaan) sen kirjan (varmaan) lukenut on.
 indeed Jussi surely that book surely read has

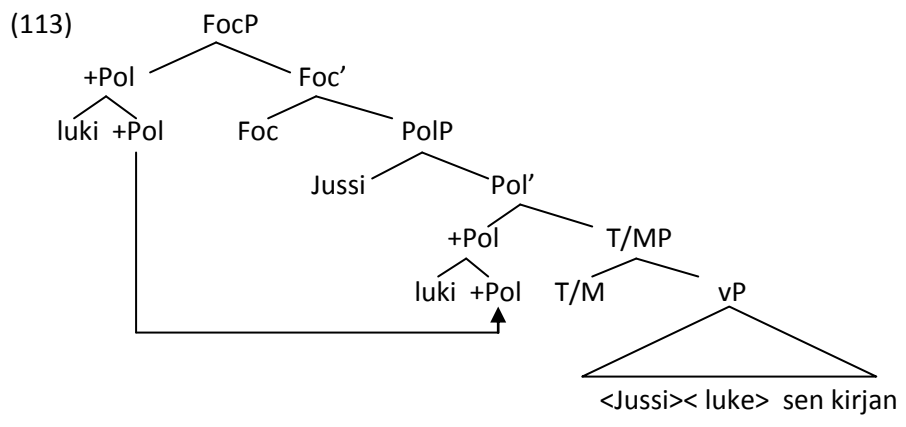
Another problem is that it cannot explain the Final-over-final constraint (FOFC) effect that OV order is subject to in Finnish, ruling out the order (iii); see Biberauer, Holmberg, and Roberts (2014).

- (iii) *Kyllä Jussi lukenut sen kirjan on.
 indeed Jussi read that book has

The theory in Holmberg (2001) predicts this order to be the result when the verb does not undergo the optional movement to G (see (99)).

⁴⁴ See chapter 2, note 2 on the label of direct questions.

is externally merged with FocP. Consider first the case when the externally merged polarity feature is affirmative, i.e [+Pol]. This polarity feature has no inherent phonological matrix. Instead, I assume, it comes with an empty phonological feature matrix which copies the phonological matrix of the next head down the tree which has one, that is the verb adjoined to Pol. This provides the features needed to pronounce the focused head: Focus must have PF expression. The focused polarity head assigns its value to the unspecified Pol head, which yields, in this case, an affirmative, declarative sentence, as answer to the question.



Typically the constituent inherited from the question is deleted/not spelled out at PF, which yields the answer in (111). The inherited constituent can be pronounced, though (with low, flat, deaccented intonation and pronouncing only the high copy of the verb), as in (114), an alternative answer to the question (111).

(114) A: Luki Jussi sen kirjan.
 read Jussi that book
 'Yes he did.'

In the negative answer (115), made up of just the sentential negation, a negative-marked polarity head is externally merged in the focus position. In Finnish, [-Pol] comes with a set of ϕ -features (person and number). These features get assigned values, I assume, by copying them from the sentential Pol head (although alternatively they could be valued directly by the subject); the example has a 1st person subject to make the ϕ -features of the negation more visible.

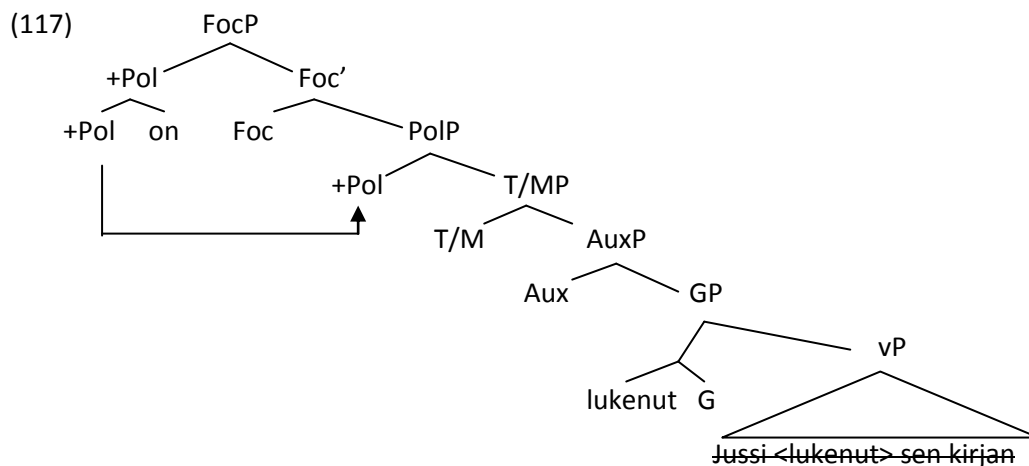
(115) Q: Luit-ko sinä sen kirjan? [Finnish]
 read-[-±] you that book

A: E-n.
 NEG-1SG
 'No.'

Now consider (116), a case where the question has an auxiliary verb and a main verb.

(116) Q: On-ko Jussi lukenut sen kirjan [Finnish]
 has-Q Jussi read that book
 A1: On.
 has
 A2: On lukenut.
 has read

A1 is straightforward: It has the same PolP as the question, the auxiliary verb moving to Pol via T/M, but a plus-marked Pol is externally merged in the focus position, attracting the auxiliary in order to provide it with a phonological matrix. The focused Pol values the unspecified head of PolP, and PolP gets deleted, leaving only the auxiliary to be spelled out. A2, the long answer, is like this except that (a) the main verb moves out of vP to G, and (b) only vP gets deleted, leaving the auxiliary as well as the main verb to be spelled out. The structure is (117) (the copies of the moved auxiliary are not shown).



The derivation differs in one important respect from that of the question: The subject does not need to move, and in fact cannot move to the EPP-position spec,PolP. (118) is not a grammatical answer:

(118) *On Jussi lukenut. [Finnish]

Instead, the subject remains in vP. Being identical to that of the question, the vP in the answer usually gets deleted. However, it can be pronounced, with deaccented intonation.

(119) A: On lukenut Jussi sen kirjan. [Finnish]
has read Jussi that book
'Yes, he has.'

Note the difference in word order in (119) and the question in (116), where the subject has to move to the EPP-position.⁴⁵ Compare (116) and (120).

(120) *On-ko lukenut Jussi sen kirjan? [Finnish]

There is one case, though, when the subject does move in the long answer, and in fact has to move: When the subject is a definite pronoun. (121) is an alternative answer to the same question as in (116) and (119). As shown, the subject pronoun cannot remain in vP. The same point is shown by (122), with a 3PL subject pronoun, and (123) with a 1SG pronoun.

(121) Q: Onko Jussi lukenut sen kirjan? [Finnish]
has.Q Jussi read that book
A1: On se lukenut.
has he read
'Yes he has.'
A2: *On lukenut se sen kirjan.
has read he that book

(122) Q: Onko lapset saanut ruokaa?⁴⁶

⁴⁵ To be precise, either the subject or some other constituent must move to the EPP-position (as discussed earlier in connection with the general structure of clauses). The latter is possible typically if the subject is focused and the fronted constituent is a topic.

(i) On-ko sen kirjan lukenut (vain) Jussi?
has-Q that book read only Jussi
'Has only Jussi read that book?'

⁴⁶ The use of these 3rd person pronouns to refer to humans is extremely common, but still considered colloquial. For this reason I also use the number-neutral 3rd person form of the verb and the past participle, as

have.Q children received food
'Have the children had something to eat?'

A1: On ne saanut.
have they received
'Yes they have.'

A2: *On saanut ne ruokaa.
have received they food

(123) Q: Oletko sinä nähnyt Marjan?
have.Q you seen Marja
'Have you seen Marja?'

A1: Olen minä nähnyt.
have I seen
'Yes I have.'

A2: ??Olen nähnyt minä Marjan.⁴⁷
have seen I Marja

While I have no clear idea why the usual subject movement to the EPP-position is avoided in long answers, the fact that definite pronouns differ from lexical DPs in undergoing this movement is

is characteristic of colloquial style, rather than the plural forms (*ovat tulleet*) used in written and formal Finnish.

⁴⁷ The first and second person pronouns are marginally more acceptable in the low position. This seems to be a phonological effect: These pronouns are disyllabic. If we use the monosyllabic forms of the pronouns which is common in many varieties of colloquial Finnish, they are less acceptable in the low position.

(i) Q: Oletko sä nähnyt Marjan?
have.Q you seen Marja
(ii) A: *Olen nähnyt mä Marjan.
have seen I Marja

The following is a curious observation in this connection: Finnish has two series of 3rd person pronouns: *se* (SG) and *ne* (PL), and *hän* (SG) and *he* (PL). The former set are used for inanimate objects as well as humans, although their use for humans is considered colloquial, while the latter set are used for humans only; see Holmberg and Nikanne (2008). For some reason *hän* and *he* are not good in long answers. Nor can they very well be left behind in vP, either.

(iii) A1: ?On hän lukenut.
A2: ??Ovat he saaneet.
A3: ?On lukenut hän sen kirjan.
A4: ??Ovat lukeneet he sen kirjan.

I have no explanation for this observation. The *se/ne* series has some other properties which sets them off from the other pronouns (see Holmberg & Nikanne 2008). However, these properties offer no obvious clue why they would differ from the *hän/he* series the way they do in answers.

consistent with what is found with definite pronominal arguments in very many languages: They are more prone to movement out of the predicate phrase than lexical and indefinite arguments. Consider, for example, object shift of pronouns in Germanic languages (Vikner 1995, Holmberg 1999).

Now consider negative answers consisting of the negation plus more verbal categories.

- (124) Q: Onko Jussi lukenut sen kirjan? [Finnish]
 has-Q Jussi read that book
 'Has Jussi read that book?'
- A1: Ei ole (Jussi lukenut sitä kirjaa).
 not has Jussi read that book
- A2: Ei ole lukenut (Jussi sitä kirjaa).
 not has read Jussi that book
- Both: 'No, he hasn't.'

Both of these are, by hypothesis, derived by external merge of [-Pol] in initial focus position, spelled out as the negation *e-* (with ϕ -features assigned values by the subject, down the tree), as in the case of (115), but now with deletion of vP, not PolP. The difference between A1 and A2 is that the main verb has moved out of vP in A2, and thus avoids getting deleted with the vP.

Other options exist. For affirmative answers, one is (125, 126), discussed in Holmberg (2001, 2005).

- (125) Q: Luki-ko Jussi sen kirjan? [Finnish]
 read-Q Jussi that book
 'Did Jussi read that book?'
- A: Luki se.
 read he
 'Yes he did.'
- (126) Q: On-ko Marja käynyt kaupassa?
 has-Q Marja been shop.INE
 'Has Marja been to the shop?'
- A1: On se.
 has she

A2: On se käynyt.
 has she been
 Both: 'Yes she has.'

I concur with Holmberg (2001, 2005) that they are derived by movement of the finite verb or auxiliary to the C-domain, with vP-deletion, which leaves the subject stranded, along with the main verb as in (125A2, 126A2) if the main verb has moved out of vP, or else without the main verb. The structure of (126A1), for example, is roughly (127):

(127) [_{FOCP} [_{Pol} on, +Pol] Foc [_{PolIP} se [_{Pol'} [+Pol] [_{T/MP} on [_{AUXP} on [_{vP} se käynyt kaupassa]]]]]]]

The negative counterpart of (126A1, A2) are (128), as expected, if they are derived by vP-ellipsis (the negation is the standard, inflected sentential negation).

(128) A3: Ei se ole. [Finnish]
 NEG she has
 A4: Ei se ole käynyt.
 NEG she has been
 Both: 'No she hasn't.'

Summarising, The following is a list of grammatical verb-echo answers to the same question, affirmative in (129), negative in (130) (the negation inflected for subject agreement throughout).

(129) Q: On-ko Jussi lukenut sen kirjan? [Finnish]
 'Has Jussi read that book?'
 A1: On.
 has
 A2: On lukenut.
 has read
 A3: On Jussi lukenut sen kirjan.
 has Jussi read that book
 A4: On lukenut Jussi sen kirjan.
 has read Jussi that book
 A5: On se.

- has he
- A6: On se lukenut.
has he read
- All: 'Yes (he has).'
- (130) Q: On-ko Jussi lukenut sen kirjan?
'Has Jussi read that book?'
- A1: Ei.
NEG
- A2: Ei ole.
NEG has
- A2: Ei ole lukenut.
NEG has read
- A3: Ei ole Jussi lukenut sitä kirjaa.
NEG has Jussi read that book
- A4: Ei ole lukenut Jussi sitä kirjaa.
NEG has read Jussi that book
- A5: Ei se ole.
NEG he has
- All: 'No (he hasn't).'

For example (131A1, A2) are correctly ruled out by the system, since (a) either the definite pronoun subject has not moved high enough, to the subject position merged with PolP, or (b) the auxiliary has moved improperly to the C-domain.

- (131) A1: *Ei ole se. [Finnish]
NEG has he
- A2: *Ei ole se lukenut.
NEG has he read

As mentioned, a property that we have to stipulate is that the usual movement of the subject to spec,PolP is ruled out in verb-echo answers except for definite pronouns, which must move. This accounts for why (132A1,A2) are not good answers.

- (132) Q: On-ko Jussi lukenut sen kirjan? [Finnish]
 'Has Jussi read that book?'
- A1: *On Jussi lukenut.
 has Jussi read
- A2: *Ei Jussi ole.
 NEG Jussi has

3.12.4 Affirmative particles in Finnish

This does not exhaust the possibilities. Finnish has an affirmative adverb *kyllä* corresponding to 'yes', which is commonly used as an alternative to verb-echo answers, and in some cases must be used, when the verb answer is grammatically impossible (including the case of coordinated questions, to be discussed below). The adverb can also be combined with a verb or auxiliary to form an affirmative answer. The following is a summary of the options, again as answer to the same question as above.⁴⁸

- (133) Q: On-ko Jussi lukenut sen kirjan? [Finnish]
 'Has Jussi read that book?'
- A1: Kyllä.
 yes
- A2: Kyllä on.
 yes has
- A3: ?Kyllä on lukenut.
 yes has read
- A4: Kyllä se on.
 yes he has
- A5: Kyllä se on lukenut.
 yes he has read

⁴⁸ I gloss *kyllä* as 'yes', although this is a simplification. *Kyllä* is often emphatic, translatable as 'yes indeed' (thanks to Liisa Berghäll for discussion). It also occurs frequently as an affirmative polarity-intensifying adverb, more or less corresponding to *indeed*. The following are two examples (see also Holmberg 2001).

- (i) Tämä on kyllä maailman kaunein paikka. [Finnish]
 this is indeed world's beautiful.SUP place
 'This really is the world's most beautiful place.'
- (ii) Kyllä minä tulen.
 indeed I come
 'I WILL come.'

- A6: *Kyllä Jussi on.
 yes Jussi has
- A7: *Kyllä se.
 yes he

If we analyse *kyllä* in these examples as the spell-out of [+Pol] externally merged in the focus position in the C-domain, then everything else follows from assumptions already made: A1 is derived by PolP-ellipsis. The other examples are derived by vP-ellipsis. As in the case of the verb-echo answers in (37), the subject does not move to the EPP-position but is elided along with the vP, except if it is a definite pronoun, as in A4 and A5. This is why A6 is ill-formed. The difference between A2 and A3 and between A4 and A5 is that the main verb has moved out of the vP in A3 and A5. A7 is ill-formed because PolP-ellipsis would not leave the subject behind, and vP-ellipsis would have to leave at least a finite verb or auxiliary behind, as in A4.

Colloquial Finnish also has an affirmative particle *joo* ‘yes’ (alternatively *juu*); see Sorjonen (2001). Its distribution is similar but not identical to *kyllä*. I leave it aside here.

3.13. The structure of answers in Thai

3.13.1 General properties of questions and answers

The following account of answers in Thai is heavily based on Yaisomanang (2012). As already mentioned, Thai is a language which relies on verb echo answers, although non-verbal answers are also used.

- (134) Q: nát cà súu nǎŋ-súu rǔu
 Nath will buy book Q/or
 ‘Will Nath buy a book?’
- A1: súu
 buy
 ‘Yes.’
- A2: mây súu
 NEG buy
 ‘No.’
- A3: khâ/ khráp/ chây
 HON HON right
 All: ‘Yes.’

A4: mây khâ / mây khráp/ mây chây/ plaaw
 NEG HON NEG HON NEG right NEG (lit. 'empty')
 All: 'No.'

Yaisomanang characterises A1 and A2 as the primary answer forms, and the forms A3 and A4 as secondary answers forms. The words *khâ* and *khráp* are elsewhere used as honorific particles (Iwasaki and Ingkaphirom 2005: 179). Thai does not have any designated affirmative particle corresponding to English *yes*. As demonstrated in (38) and (78) above, repeated here as (135) the answer can consist of more than a single verb.

(135) Q: taan tôŋ àan năŋ-sǔu lêm nī dúay măy?
 Taan must read book CLS this also Q
 'Must Taan read this book, too?'
 A: tôŋ (àan).
 must read
 'Yes.'

To understand the syntax of answers in Thai, it is crucial to understand the syntax of questions. The following is a recapitulation of the relevant properties of yes-no questions in Thai from chapter 2:

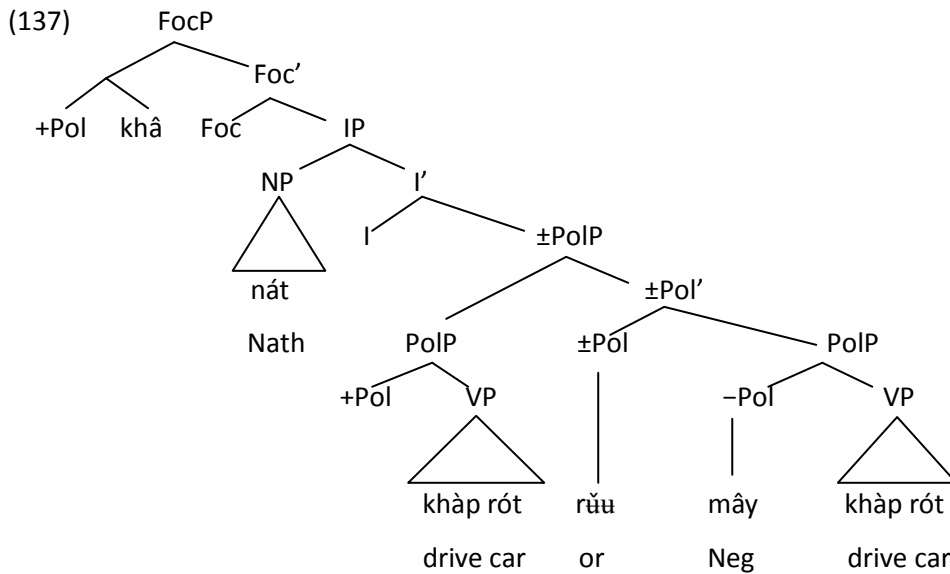
All the question particles have *rǔu* 'or' as their base component, although for some of them this is no longer morphologically visible. The question particles retain the function of a disjunction as well as a question particle; yes-no questions in Thai are alternative questions. Questions with Type 1 particles are made up of a disjunction of two PolPs, a positive and a negative one, with obligatory deletion of the second disjunct and movement of the disjunction to the C-domain. The Type 2 particles are reduced forms of a disjunctive predicate meaning literally 'right or not right'.

Consider first particle answers. The short verbal answers, affirmative and negative, to (136Q) are as shown in (136A1,A2). The underlying structure of the answers is (137) (here represented by the affirmative alternative), according to Yaisomanang (2012).

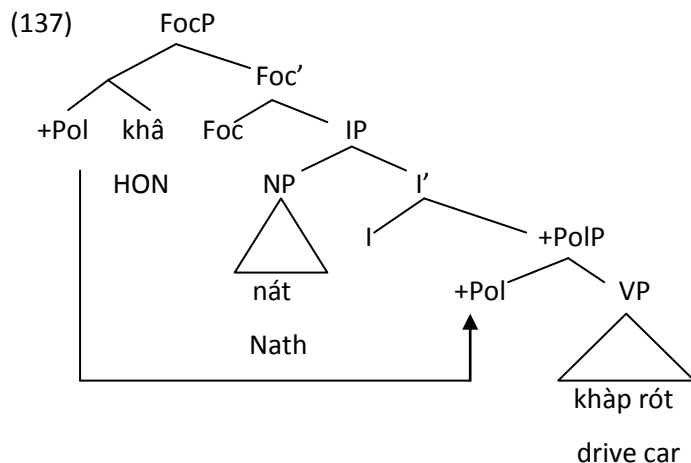
(136) Q: Nath khàp rót rǔu?
 Nat drive car [±]
 A1: khâ
 HON
 'Yes.'
 A2: mây khâ

NEG HON

'No.'



This is the same structure as in the question, except that there is a specified polarity feature merged with FocP in the C-domain, lexically supported by the honorific particle, and obviously no Q-Force. The negative answer has [-Pol] externally merged, spelled out as the negation *mây*, which needs the lexical support of an honorific particle. In earlier sections we have seen how a focused, valued polarity feature assigns value to a polarity variable in the sentence. Here, 'assigning value to the variable' means selecting one of the PolPs of the disjunction and deselecting the other. The outcome, in this case, is the structure (138). The relation between the focused polarity feature and the 'assigned value' is represented by an arrow, as before.



At PF only the focused particle is pronounced. The IP is elided under identity with the IP of the question. The condition was, in simple terms, that the IPs should be identical up to the valuation of variables (see section 3.2). The variable in (136Q) is the disjunctive DP *tea and coffee*. In the answer it is replaced with the single DP *tea*, i.e. it is ‘assigned the value’ *tea*, and consequently satisfies the identity condition on ellipsis.

Consider the verb-echo answer. The general idea is that the verb-echo answer works like the answer to an alternative question. In chapter 2.2 I discussed briefly the case of the alternative question *Does Mary want tea or coffee?* and the answer *Tea*. The structure was roughly as in (138).

- (138) Q: Does [_{IP} Mary want [_{DP} tea or coffee]]
 A: [_{FocP} tea Foc [_{IP} Mary want [_{DP} tea]]] → [[tea Foc [_{IP} Mary want [_{DP} tea]]]]

To recapitulate, the question has a variable with two values, the DP *tea or coffee*, which, after covert movement of the disjunction, yields a question set of two propositions, ‘Mary wants tea’ and ‘Mary wants coffee’. The IP in the answer is identical to the IP of the question except that instead of the disjunctive DP [*tea or coffee*] there is just one of the disjuncts, which is moved to initial focus position, the specifier position of an abstract Foc(us) head (following Merchant 2005). It was suggested in chapter 2.2, and is now made more explicit, that the IP of the answer is copied from the question. This means that there is an intermediate structure (139) in the derivation of (138A) (simplified for ease of exposition; the disjunction DP is labelled orP):

- (139) Foc [_{IP} Mary want [_{orP} [_{DP} tea] or [_{DP} coffee]]]

What happens next is that one of the disjoint DPs moves and merges with FocP. This movement is, on the face of it, illicit, violating the Coordinate Structure Constraint (Ross 1967). What happens, therefore, is that the coordination is dissolved: The second DP and the disjunction are eliminated, leaving only a copy of the moved DP, which yields (138A), a representation which obviously respects the Coordinate Structure Constraint. The IP of the answer is identical to that of the question, up to valuation of the variable, i.e. up to replacing the disjunctive DP *tea and coffee* with the single DP *tea*, and consequently satisfies Merchant's (2001) identity condition.

Coming back to the verb-echo answer to the question in (136), what we want to see is a derivation with an underlying structure like (136), except for the externally merged polarity feature, but a derivation like (138A). The derivation will have to be a bit more complicated, though, than the derivation of (138A), and will have the next section devoted to it.

3.13.2 *The derivation of answers in Thai*

One important property of Thai in this connection is that it does not appear to have any head movement of V. An indication that this is the case is that the verb never shows any inflections. Strong indication that the verb does not undergo head movement is that in transitive sentences the verb is always found immediately preceding the object, except in cases where the object has undergone movement.⁴⁹ A word order such as S-V-X-O, where X is, for example, an adverb or the negation or a fronted object is never well formed in Thai, unlike the situation in, for example, Finnish depicted in section 3.8., or French according to Pollock (1989).⁵⁰ The word order VSO, standard in Welsh and possible in Finnish, is also never well formed in Thai.

It follows that we can rule out an analysis of verb echo answers in Thai along the lines of Welsh or Finnish, as it relies on head movement of the verb. What about remnant PolP-movement? Initially this would seem appealing, as Thai allows more than a single verb in answers, as in (140) and (141).

⁴⁹ The following are two examples with a focused object (Somphob Yaisomanang, p.c.)

- (i) nǎŋ-sǎm lēm ní taan mây àan
 book CLS this Taan NEG read
 'It is this book that Taan doesn't read.'
- (ii) dǔŋk-máay nía mǎe-bāan càt yàaŋ-sǔay-ŋaam
 flower PRT maid arrange beautifully
 'It is these flowers that the maid arranged beautifully.'

⁵⁰ Yaisomanang (2012: 107) argues that the verb does not even move to *v*, shown by the distribution of negation. According to Yaisomanang the distribution of negation in Thai is governed by a simple rule: Negation can (left-) adjoin to any verbal category, including phrases which would be classified as APs or AdvPs in for example English. If so, we expect the negation to adjoin also to VP. If V-movement to *v* would occur, we would then expect to see the word order V-NEG-O as an option in negative transitive sentences. However, this word order is never well formed.

(140) Q: taan tŏŋ àan nǎŋ-sǔu lêm ní dŭay mǎy?
Taan must read book CLS this also [±Pol]
'Must Taan read this book, too?'

A: tŏŋ àan.
must read
'Yes.'

(141) Q: nát yaŋ khàp rŏt yùu rǔu
Nath still drive car IMPF [±Pol]
Does Nath still drive (or not anymore)?

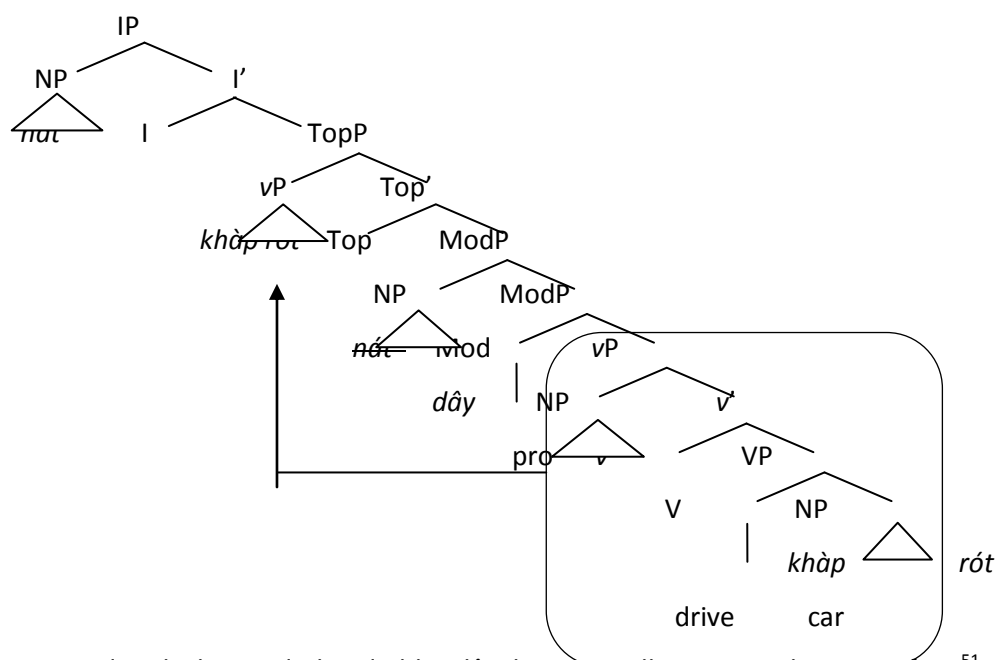
A: yaŋ khàp yùu
still drive IMPF
'Yes he does'

As discussed by Yaisomanang (2012: 104-108), following Simpson (2001), the sentential syntax of Thai shows evidence of movement of large verbal phrases. Although Thai is mainly a head-initial language, it has certain postverbal auxiliaries including three deontic modal verbs meaning 'can/be able to', *dây*, *pen*, and *wǎy*. Other modal verbs precede the main verb.

(142) nát khàp rŏt dŭay
Nath drive car can
'Nath can drive.'

Following Simpson (2001), Yaisomanang (2012) proposes the following analysis of (142):

(143)



The subject is merged with the ModP headed by *dây*, but controlling *pro* in the spec of vP.⁵¹ From this position it moves to spec,IP. The vP undergoes ‘light predicate raising’ to an IP-internal topic or background position. Simpson argues that the movement is, indeed, associated with an information structural effect, and is in some sense motivated by it, as (a) the object of a transitive verb may follow *dây*, in which case it receives focus, and (b) when *dây* is final, it always has focal stress (Simpson 2001: 106).

In this light, consider the question in (144) and the two forms of affirmative answer.

(144) Q: nát tôŋ khàp rót măy?

Nath must drive car [±Pol]

‘Must Nath drive a car?’

A1: tôŋ

must

A2: tôŋ khàp

must drive

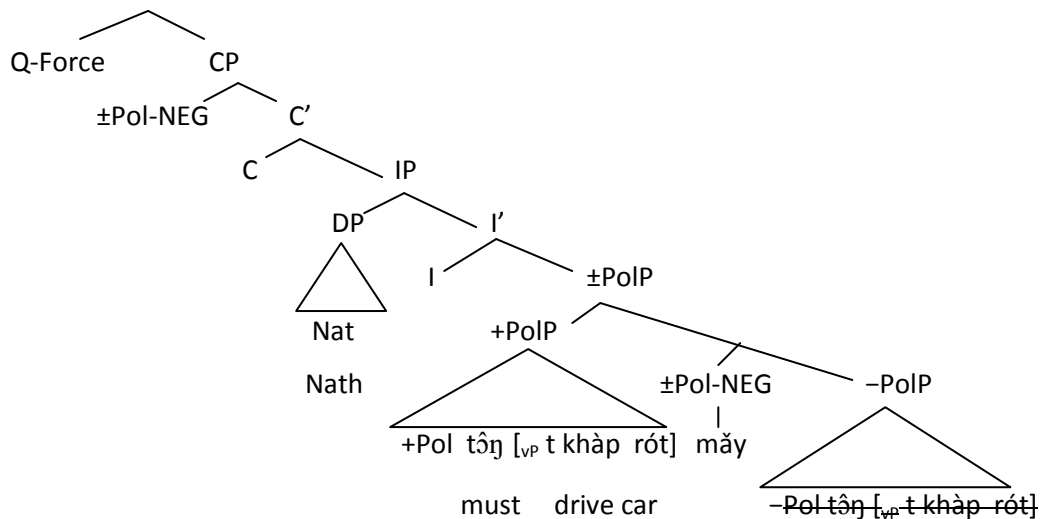
Both: ‘Yes.’

The derivation of the question follows the pattern of the derivation (62) in chapter 2.9. The question will have the structure (145). The question variable is a disjunction of a positive and a negative PolP. The negative PolP is elided, leaving the disjunction stranded, as a sentence final question particle.

⁵¹ I can see no compelling reason why the subject could not be merged with vP and moved to merge with ModP prior to (remnant) movement of vP.

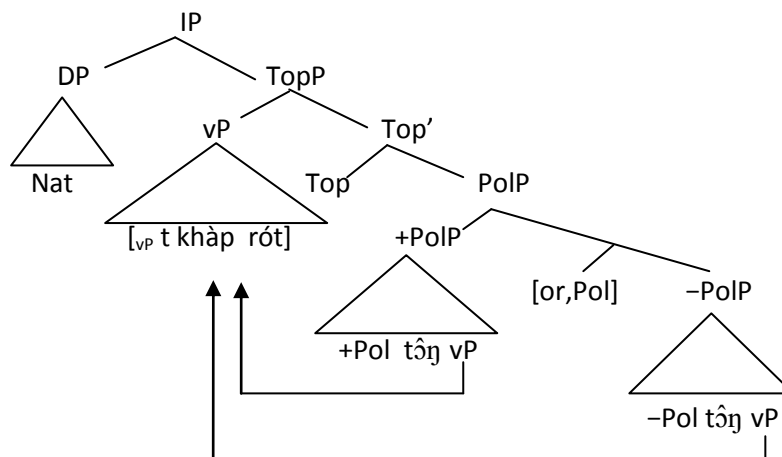
The NEG head of the second disjunct may be incorporated in the disjunction, as in the case of the particle *măy*. The subject is moved by ATB-movement to specIP. The disjunction is moved covertly to CP, taking sentential scope and being governed by Q-force, to yield the direct question interpretation.

(145)



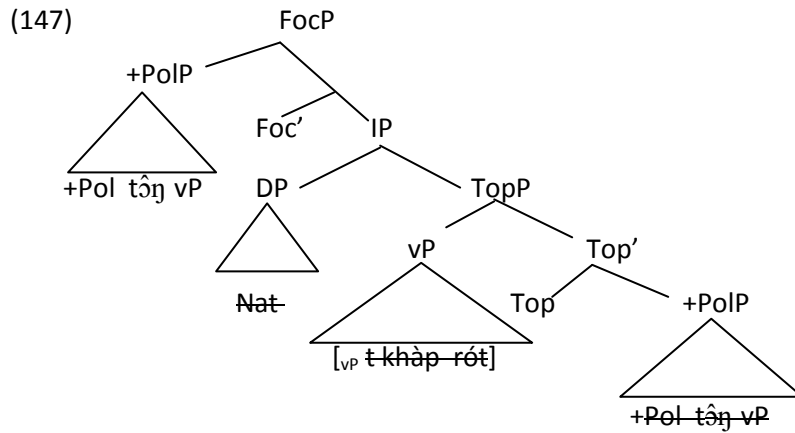
The answer A1 is derived as follows: First, the disjunctive PolP is copied from the question. Second, the vP of the two conjuncts is moved by ATB movement to a clause-internal topic or background position; compare the light predicate raising in (143).

(146)



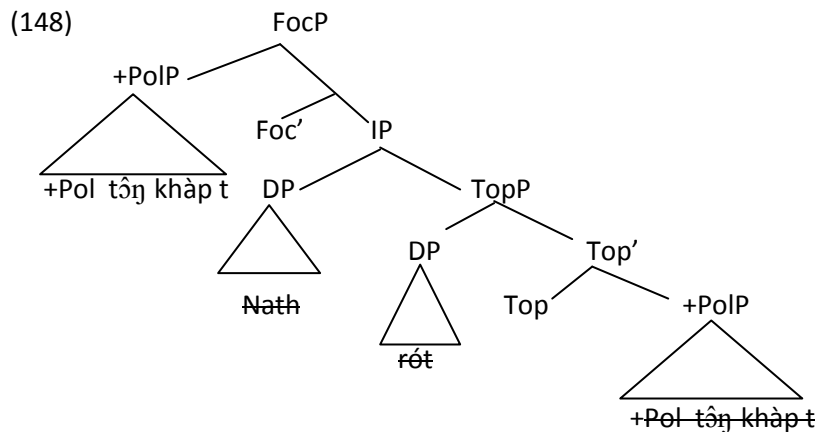
The subject also raises by ATB-movement from PolP to specIP (not shown in the tree). Subsequently the C-domain is constructed with a Focus head, and one of the PolPs moves to spec,FocP, which leads to the elimination of the other PolP and hence the disjunction (compare the derivation of the answer to the alternative question in (138)). That is to say, one of the PolPs is selected as the one

which yields a true proposition (in this case the affirmative one), the other is eliminated. Only the focused constituent *tôŋ* ‘must’ is spelled out in PF; the IP is elided. This derives (144A1).



The initial extraction of the vP from the PolPs is not exactly the same case as (142), as it is independent of which modal is used, or if any modal is present, but, as Simpson (2001) argues for the case of (142), it is a case of movement of a backgrounded constituent to a higher position in order to leave a remnant constituent focused, although in this case, there is additional movement and ellipsis to derive the final result.

The long answer (144A2) is derived by the same steps, with one difference: Only the object undergoes the movement to the clause-internal topic/background position. The PolP which is moved to the Focus position and gets spelled out in PF therefore contains both the modal auxiliary and the verb, *tôŋ khàp* ‘must drive’.



The negative answers to the question in (142) are (148):

(149) A1: màŋ tôŋ

NEG must
 A2: màỵ tồỵ khàp
 NEG must drive
 Both: ‘No.’
 A3: *màỵ
 NEG

The derivation is straightforward: This is when the negative PolP is selected for movement to specFocP and the positive PolP consequently gets eliminated. The negative polarity feature [-Pol] is spelled out as the negation *màỵ*. (149A1) is the result when the entire vP undergoes movement out of the PolP, (149A2) the result when only the complement of the verb undergoes the movement. (149A3), where the negation forms a negative answer on its own is not grammatical, and never is: The polarity head cannot be spelled out alone but must be left-adjacent to a verbal head, in Thai (Yaisomanang 2012: 44-50).

Consider the case when the answer is a bare verb, as in (150).

(150) Q: nat khàp rỏt mảỵ?
 Nath drive car [\pm Pol-NEG]
 ‘Does Nath drive?’
 A1: khàp
 drive
 ‘Yes.’
 A2: màỵ khàp
 NEG drive
 ‘No.’

The polarity head needs to be constructed with a verb in PF, so the biggest constituent that can undergo ATB-movement out of the disjunctive \pm PolP prior to focus-movement of one of the PolPs is the complement of the verb, in this case.

(151) [_{IP} nat I [_{TopP} rỏt Top [_{\pm PolP} [_{+PolP} khàp <rỏt>] [\pm Pol] [_{-PolP} khàp <rỏt>]]]
 Nath car drive

To derive (150A1), +PolP is moved to Focus position while –PolP gets eliminated. The IP is elided in its entirety. The topicalising/backgrounding movement does not affect the identity relation (see section 3.2, especially (13)). To derive (149A2), –PolP is moved to Focus position and +PolP gets eliminated.

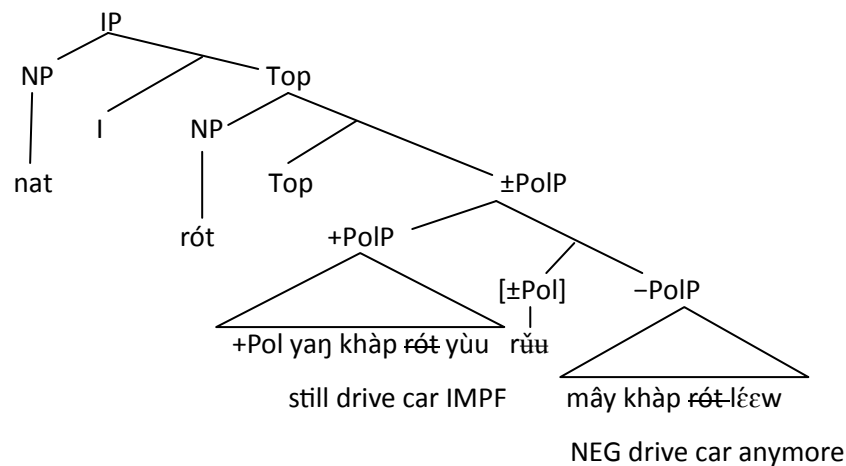
Consider the more complex case of (152) (also discussed in Yaisomanang 2012, who argues for a partly different analysis).

- (152) Q: nát yaŋ khàp rót yùu rǎu
 Nath still drive car IMPF [±Pol]
 ‘Does Nath still drive (or not anymore)?’
- A1: yaŋ khàp yùu
 still drive IMPF
 ‘Yes.’
- A2: mây khàp léew
 NEG drive anymore
 ‘No.’
- A2: *yaŋ
 still
- A3: *yùu
 IMPF
- A4: *yaŋ yùu
 still IMPF

The two aspectual heads *yaŋ* and *léew* are constituents of PolP: *yaŋ* is a positive polarity item and *léew* a negative polarity item, so they must be within the scope of polarity. The imperfect head *yùu* is situated between *yaŋ* and the vP in underlying structure (see Simpson 2001), so it, too, is a constituent of the PolP. Apparently the complement of the verb is the largest constituent that can undergo the clause-internal topicalisation in this case. In particular, the main verb cannot undergo the movement; if it did, the answers (A2, A3, A4) would be well formed. We can understand this if (a) the polarity head needs to merge with a verbal constituent, as we saw above, and (b) the particles *yaŋ/léew* and *yùu* are not verbal constituents (Yaisomanang 2012: 119). It follows that they cannot function as answers on their own, or the two together, without the verb. Consequently the complement of the verb is the biggest constituent that can move out of the PolP, prior to movement of the remnant PolP to the initial focus position. In fact, depending on one’s theoretical assumptions,

it is possible that the vP does move even in this case, but the lower copy of the verb must be spelled out, as a case of ‘distributed spell-out’, because the aspectual functional heads need to be constructed with a verbal lexical head in PF (see Sheehan 2010 on distributed spell-out).⁵² The structure of (152A1), after light predicate raising, but prior to focus-movement of the affirmative PolP and concomitant elimination of the other PolP, would be (153). The result following focus-movement, elimination of the negative PolP, and spell-out to PF is (152A1).

(153)



Yaisomanang (2012: 77-92) rejects a derivation of verb echo answers in Thai by means of remnant PolP movement, proposing instead an analysis in terms of feature-copying, assumed to be distinct from head-movement. His main argument against the movement analysis is that when the answer is spelled out in full, there is no sign of any movement having occurred; compare (154A2) and the Finnish answer (114), repeated here as (155).

- (154) Q: nát àan nặη-sừu rừu
 Nath read book [±Pol]
 Did Nath read a book?
- A1: àan (nát àan nặη-sừu)
 read (Nath read book)
 ‘Yes.’
- A2: *àan (nát nặη-sừu)
 read Nath book

⁵² The derivation of the PolP itself is complex, involving movement to derive the final imperfective marker, according to Simpson (2001). I ignore these complexities here.

- (155) Q: Luki-ko Jussi sen kirjan?
 read-[±] Jussi that book
- A: Luki (Jussi sen kirjan).
 read Jussi that book

A formal problem with Yaisomanang's (2012) theory of verb-echo answers is that the distinction between feature copying and head movement is not very clear. Both operations rely on the relation between a head H and the head H' of the complement of H, and both have the effect that H' is pronounced at the position of H. If there is head-to-head feature copying of the sort proposed by Yaisomanang in Thai, it is not clear why we do not see feature copying between v and V, v and I, and I and C, to yield word orders such as SVXO or VSO, orders that are never instantiated. I have chosen to take seriously the idea that Thai, probably along with other languages in the region, known to be typologically similar to Thai, including Chinese and Vietnamese, has no verb movement or verb copying, except possibly within vP (V-to-v movement; but see note 51). It follows that structures where the verb occurs in a position higher than its base position must be the result of phrasal movement of a (remnant) phrase containing the verb. By hypothesis, verb-echo answers are structures where the verb is moved to a focus position in the C-domain, in Thai derived by remnant PolP movement, the PolP minimally containing a polarity head (abstract in the case of affirmative polarity) and a verb.

3.13.3 Questions and answers with Type 2 particles

(156) is an example of a question with a Type 2 particle.

- (156) nát khàp rót chây-mǎy
 Nath drive car right-NEG
 'Does Nath drive?/ 'Nath drives, right?'

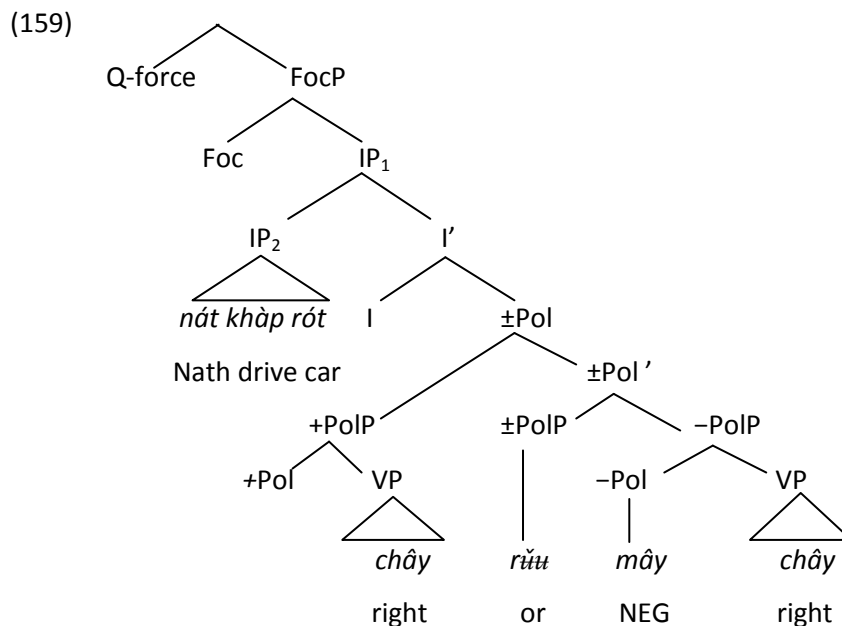
In Iwasaki and Ingkaphirom (2009) questions with Type 2 particles are referred to as 'tag-questions'. Yaisomanang (2012: 34-35) points out that this terminology is misleading. A characteristic of tag-questions in English (as also in French, Swedish, etc.) is that they cannot be embedded.

- (157) a. John is coming, isn't he?/right?
 b. *I wonder whether John is coming, isn't he/right.

The tag question is a declarative sentence with a question appended to it, loosely speaking (see chapter 4 for a more detailed analysis of tag questions), hence cannot occur in a context which requires a question (= a sentence with a free variable). Type 2 questions in Thai can perfectly well be indirect questions, though.⁵³

- (158) chǎn tōŋ-kaan rúu wāa nát khàp rót chây-mǎy
 I want know COMP Nath drive car Q/right-NEG
 ‘I want to know whether Nath drives.’

The literal meaning of *chây* is ‘right’. The Type 2 particles are all variants of the complex expression *chây-rǐu-mǎy-chây*, lit. ‘right-or-not-right’, derived by reduction, according to Yaisomanang (2012). Thus, like the Type 1 particles, they have the disjunction *rǐu* as a base component (in Yaisomanang’s terminology). He argues that this question particle is, in fact, a disjunctive predicate meaning ‘right or not right’, which takes the IP denoting a proposition as a subject. The structure of (156) is (159):



The PF representation is derived by incorporation of the negation in the disjunction and deletion of parts of the second disjunct, including deletion of the disjunction *rǐu* as one alternative. The incorporation of negation is overtly expressed in the form *chây mǎy*; note the tone of *mǎy*, by hypothesis a result of incorporation of the negation *mây* in the disjunction *rǐu*. Pronouncing the entire disjunction phrase is one of the options, though.

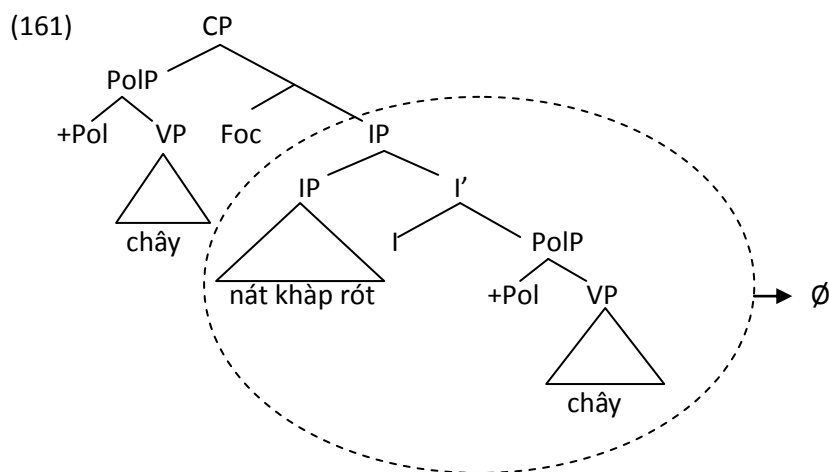
⁵³ The sentence is translated in Yaisomanang (2012: 35) as ‘I want to know whether it is right that Nath drives’. The simpler translation in the text is perfectly adequate, though (Yaisomanang, p.c.).

Since this is a question, the disjunction has sentential scope. The two alternative propositions posed by the question are ‘Nath drives a car is right’ and ‘Nath drives a car is not right’. I assume therefore, again, that the disjunction undergoes covert movement to the sentential focus position.

It follows that questions with Type 2 particles can be negative, while questions with Type 1 particles cannot (see chapter 2.9.3). One can ask whether a negative proposition is right or not right, just as one can an affirmative proposition.

- (160) Q: nát mây khàp rót chây-măy
 Nath NEG drive car Q/right-or-not-right
 ‘Does Nath not drive?’
- A1: chây
 right
 ‘Yes.’
- A2: mây chây
 not right
 ‘No.’

The syntax of the answers is straightforward, given the theory articulated in the sections on Type 1 particles: In the answer one of the PolPs posed by the question, and inherited with the IP of the question, is moved to spec,FocP, while the other one is eliminated. (160) shows the structure of the affirmative answer. The circled part is deleted.



The negative answer has [-Pol] as value, pronounced *mây*, hence the answer *mây chây* ‘no’.

3.14 Answering questions with coordination

Yaisomanang (2012: 69-73) notes and discusses the fact that Type 1 questions with a coordination as predicate cannot receive a verb answer. Intuitively, one verb cannot provide an answer to both conjuncts (Yaisomanang 2012: 71).

- (162) Q: náat khǎay rót kàw léεw (kô) súu rót mà̀y rǎu?
 Nath sell car old and then (LINK) buy car new or
 ‘Did Nath sell an old car and buy a new one?’
- A1: * khǎay /*mây khǎay
 sell/ NEG sell
 Intended: ‘Yes.’/‘No.’
- A2: khráp / mây khráp
 HON NEG HON
 ‘Yes.’ ‘No.’

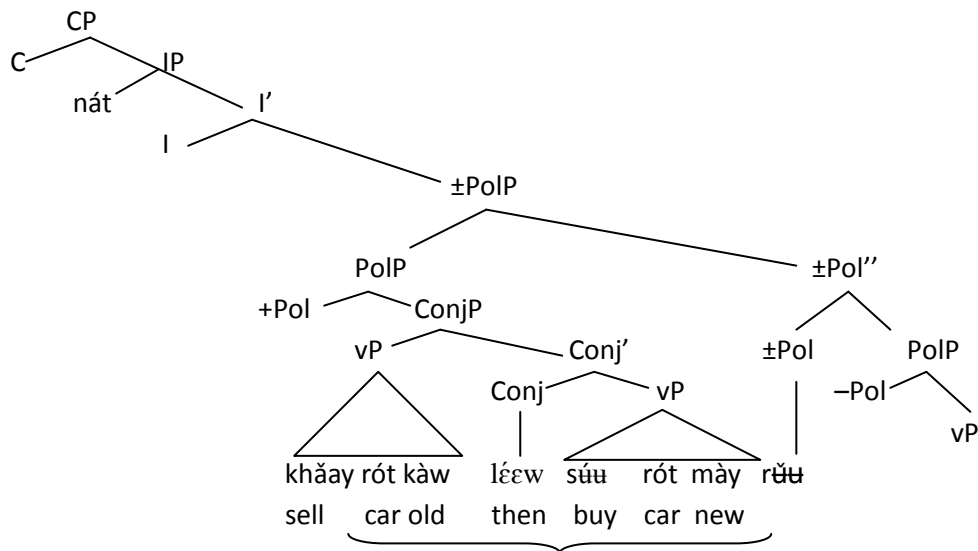
The only possibility, in this case, is to resort to using an answer particle, as in A2, where an honorific particle is used for the purpose.

We can construct an argument based on this observation in favour of the remnant movement analysis of answers above (although this is not the line that Yaisomanang takes). Note first that when the predicate is headed by an auxiliary scoping over the coordination, a verb answer is fine.

- (163) Q: náat khuan [khǎay rót kàw léεw súu rót mà̀y] rǎu?
 Nath should [sell car old then buy car new] [or, Pol]
 ‘Should Nath sell an old car, then buy a new one?’
- A: khuan/ mây khuan
 should/ NEG should
 ‘Yes/No.’

Consider first the structure of the question (161) (omitting the Q-force feature and the content of the second disjunct, for ease of exposition). The movement of the disjunction to the C-domain is also not indicated. The subject has undergone ATB-movement to specIP.

(164)



The answer, by hypothesis has the same structure, except that the second disjunct and the disjunction are eliminated. To derive the affirmative verb answer *khăay* 'sell', the rest of the affirmative PolP needs to be moved to the IP-internal topic position. But this is impossible since the rest of the PolP, indicated by the brace, is not a constituent. This explains why the verb answer is ill formed: The required remnant PolP cannot be constructed. This is the basis for the intuition that one verb cannot provide an answer to both conjuncts.

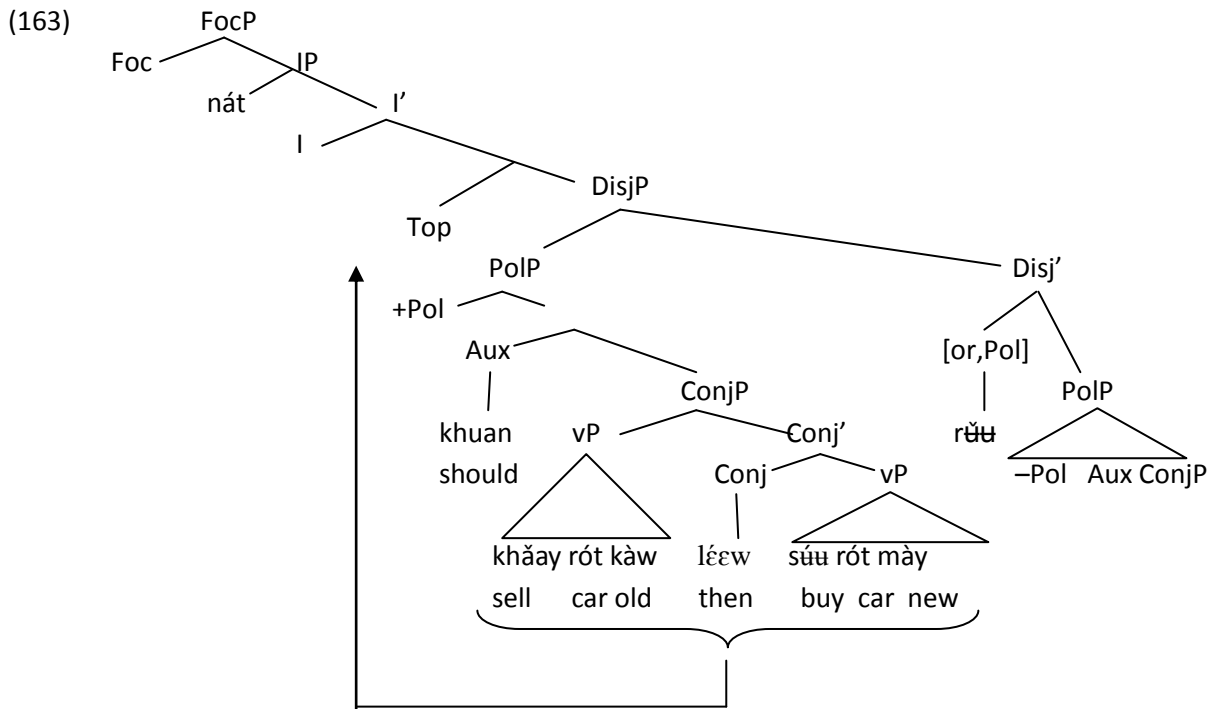
The particle answer does not have that problem: The particle is externally merged in spec,FocP with the valued polarity feature, [+Pol] in the case of (160), and 'selects' (by binding) the [+Pol] alternative in IP.⁵⁴

Compare the structure of (162), shown in (164):

⁵⁴ Yaisomanang notes (p. 70) that the alternative (i) is also not a well formed answer to the question ((162)).

(i) *khăay lɛɛw súu
sell then buy

Deriving this answer from (163) would require moving *rôt kàw* 'car old' from the first vP and *rôt mà* from the second vP to topic position, by separate movements, to derive the required remnant PolP. If this is not allowed, the ungrammaticality of (i) is explained.



Here, because the auxiliary scopes over both conjuncts, the ConjP can undergo movement to the IP-internal topic position, after which the PolP can undergo movement to spec,FocP, with deletion of IP, to form the verb answer (162), meaning that Nath should sell an old car and buy a new one. The negative alternative *mây khuan* ‘not should’ is derived in exactly the same way. In this case the remnant PolP has a minus-marked head, spelled out as *mây*, plus the auxiliary.

By contrast, Type 2 questions with coordination can be answered just like Type 2 questions in general (example from Yaisomanang (2012: 71).

- (165) Q: nát khǎay rôt kàw léew súu rôt màỵ (chây) rǎu (mây chây)?
 Nath sell car old then buy car new Q/right or NEG right
 ‘Did Nath sell an old car and buy a new one?’⁵⁵
- A: chây / mây chây
 right/ not right
 ‘Yes.’ ‘No.’

This is as predicted. In this question type there is no formation of a remnant verbal phrase that would be hampered by the coordination.

Now consider the situation in Finnish.

⁵⁵ Yaisomanang translates this sentence as ‘Is it right or not right that Nath sold an old car and bought a new one?’. However, in personal communication he confirms that the translation in the text is also possible.

(166) Q: Myi-kö Jussi vanhan auto-nsa ja osti uuden?
sold-Q Jussi old car-his and bought new
'Did Jussi sell his old car and buy a new one?'

A1: *Myi. / *Ei myynyt.
sold / NEG sold

A2: Kyllä./ Ei.
'Yes.' 'No.'

(167) Q: On-ko Jussi myynyt vanhan auto-nsa ja ostanut uuden?
has-Q Jussi sold old car-his and bought new
'Has Jussi sold his old car and bought a new one?'

A: On. / Ei ole.
has NEG has
'Yes.' 'No.'

This is the same configuration that we saw in Thai: a yes-no question with a coordinated predicate with a main verb in each conjunct as the only verbal head cannot receive a verb answer, but the corresponding yes-no question with an auxiliary scoping over both conjuncts can receive a verb answer. Intuitively, one main verb cannot provide an answer to both conjuncts, just as in the case of Thai. Using an answer particle as in (166A2) is a viable alternative.

There is an additional reason why this is interesting in the case of Finnish: Note that the main verb does move in the question in (166), serving as carrier of the Q-particle. How come the main verb can move in the question, but not in the answer? As we shall see directly, this is not because the nature of verb movement is different in the question and the answer, but because of a constraint on deletion holding for coordination in general.

Note first that the answer (168A3) is also not a well formed alternative answer to the question in (166), while the long answer (168A4) is well formed.

(168) A3: *Myi se.
sold he

A4: Myi se vanhan auto-nsa ja osti uuden.
sold he old car-his and bought new
'Yes, he did.'

The answer (168A3) was argued in 3.12.3 (see (127)) to be derived by head-movement just like the question, but with a [+]-marked polarity feature instead of [\pm Pol]. The contrast between (167A3) and (A4) indicates that the problem in (167A3) is that the ellipsis which would derive it is illicit.

Now consider echo-confirmation questions. This is questions such as in (168) and (169).

(169) Speaker 1: John sold his car.
Speaker 2: Did he?

(170) Speaker 1: Jussi myi autonsa. [Finnish]
Jussi sold car.his
'Jussi sold his car.'
Speaker 2: Myi-kö?
sold-Q
'Did he?'

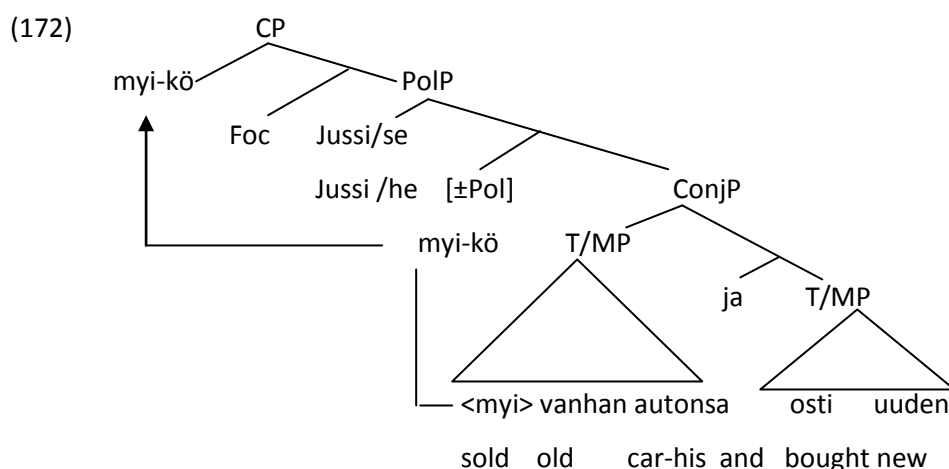
Consider echo-confirmation questions of statements with coordination:⁵⁶

(171) Speaker 1: Jussi myi vanhan autonsa ja osti uuden.
'Jussi sold his old car and bought a new one.'
Speaker 2: *?Myi-kö.
sold-Q
Intended: 'Did he?'

⁵⁶ A well formed echo confirmation in this case would be (i), using the confirmation particle *niin* 'so'.

(i) Niin-kö?
so-Q
'Did he?'

Let us assume the structure of the question in (165) is as in (171) (the subject has moved by ATB movement out of both T/MPs).



The echo-confirmation question (171) has the same structure. But in spite of the antecedent in the preceding utterance, deletion of the ConjP is, apparently, ruled out in (171) – apparently, as this is the only difference between the full question (166) and the echo-confirmation question. The reason why deletion is ruled out, I propose, is that the verb has moved out of one of the conjuncts. This movement is clearly possible, in spite of the apparent violation of the Coordinate Structure Constraint (Ross 1969/1978), but has the consequence that the ConjP cannot be deleted.

Now going back to (165) and (167), we can see the same effect in the answers in (167). They, too, have the structure (171), except that Pol has the value [+], not [±]. The structure is fine, hence (167A4) is fine, but the deletion which would derive (167A3) is illicit.

The reason, I suggest, has to do with the fact that the ConjP is unbalanced: as a result of the movement of the verb, the two conjuncts are not identical. Why this should have the effect that the whole construction must be phonologically spelled out is an interesting question which I will not attempt to answer here. It follows, however, that (166) is a well-formed answer. In this construction the ConjP is perfectly balanced, hence deletable.

As we would expect, this is not too different from the Thai counterpart. In Thai, the sentential portion to be moved to the IP-internal topic position (and subsequently deleted along with the IP) cannot undergo this operation because it is not a constituent, being made up of an incomplete conjunct (lacking a verb) and a complete conjunct.

3.15 Conclusions

A crucial assumption in this book is that answers to yes-no questions have the structure of sentences. They have a focused valued polarity feature, positive or negative, merged with FocP in

the C-domain. The focused polarity feature can be externally merged. In that case it is either spelled out as a particle, affirmative or negative, or (in some languages) it can attract a head from IP as lexical support, typically the finite verb. This yields a verb-echo answer. In some languages/constructions the focused polarity feature can be internally merged, by movement of a (remnant) PolP. This also yields a verb-echo answer. In either case, the focused polarity feature assigns a value, positive or negative, to the question variable, which is inherited from the question, in the answer. The focused feature is necessarily spelled out in PF, while the rest of the sentence can be, and often is elided. The result is an expression which may consist of a single word, but which expresses a proposition which is one of the two propositions p or $\neg p$ denoted by the question.

Verb-echo answers were discussed in some detail. A survey of 129 languages from different corners of the world indicates that about half of the world's languages use the verb-echo answer system. However, on closer inspection it turns out that there are two quite different derivations of verb-echo answers: either pro-drop combined with verb-stranding VP-ellipsis or what I have called big ellipsis, that is ellipsis of a constituent big enough to contain the subject. A test to tell the two structures apart was applied to a set of languages with verb-echo answers, based on the observation that existential indefinite pronouns cannot be pro-dropped. Three case studies of languages with big ellipsis were presented: Welsh, Finnish, and Thai. The derivation was partly different in the three of them. An important division, I proposed, is that Welsh and Finnish have verb movement but Thai does not. Therefore Welsh and Finnish can derive verb-echo answers by verb movement, while Thai must resort to remnant PolP-movement. It was argued, though, that the movement of the Finnish verb to the C-domain is not classical head movement. The remnant PolP minimally contains a verbal head but may contain more elements such as another verb or aspectual markers. Another division among the three languages is that the answer in Welsh can only contain a single auxiliary or verb, while it may contain more material in the other two languages. In Thai this is because it relies on remnant PolP movement to lexically support the externally merged focused polarity feature. In Finnish, I argued (*pace* Holmberg 2001) that it is because more of the IP can be spelled out in the answer, than in Welsh. But why is this? One difference between Welsh and Finnish is that Finnish allows movement of non-finite V out of vP. Thus when vP is elided, as it can be, even with polarity focused in CP, the main verb can be stranded along with the finite auxiliary.

This is only part of an explanation, though. A broader cross-linguistic comparison may offer some clues. The SSWL database contains a good deal of relevant information on the structure of answers for a wide range of languages. However, the dataset is still too small to allow drawing any quick conclusions as regards the one verb vs string of verbs parameter. The languages in the dataset which share with Welsh the property of allowing only a single verb or auxiliary in the answer is small

indeed, possibly only containing one language: Portuguese. We would need at least a few more to even begin propose generalisations.

The derivations proposed here of English, Welsh, Finnish, and Thai yes-no questions and answers are designed to account for a variety of language-specific properties, and are therefore not comparable, point by point. In other words, there are too many variables that are not controlled for to allow drawing conclusions with any confidence. There is hope, though, that investigation of question and answer pairs in more languages at the same level of detail as here will eventually make it possible to explain the variation observed among the languages in terms of well defined parameters.

Chapter 4 How to answer negative questions

4.1. The two systems for answering negative questions

As discussed in chapter 2.3.3, a negative yes-no question is still a question. Take the Swedish questions in (1) for example:

- (1) a. Är du inte trött?
are you not tired
'Aren't you tired?'
- b. De vill veta [om du inte är trött].
they want know if you not are tired
'They want to know whether you are not tired.'

The question puts two alternative propositions before the addressee, you are tired or you are not tired. In the case of the direct question, it asks the addressee which alternative proposition is true. In the case of the indirect question, a particular epistemic or evaluative attitude, typically on the part of the matrix subject, is conveyed towards the two alternative propositions. The negative question is pragmatically different from the neutral question, though, in intricate ways which will be discussed in the present chapter. I proposed in chapter 2 that this is fundamentally due to a difference in the disjunctive set of propositions denoted by the question: While the neutral question denotes the set p or $\neg p$, the negative question denotes the set $\neg p$ or $\neg(\neg p)$. The proposition $\neg(\neg p)$ is truth-conditionally equal to p , so the neutral and the negative question are in that sense semantically equivalent, as Hamblin (1958) noted. They are different, though, in that the neutral question has p as the primary alternative proposition, while the negative question has $\neg p$ as the primary proposition, where the primary proposition is the one which is negated by the other proposition, and which is, in this sense, the unmarked alternative. Note that this is the case specifically for negative questions with a negative bias (i.e. which expect a negative answer). Negative questions with a positive bias, including tag questions with a negative tag, have a somewhat more complex structure which I will come back to in section 4.10.

Focusing on direct questions, there are two systems to answer negative questions found among the languages of the world. One is exemplified in (2), from Japanese, the other in (3) and (4), from Swedish.¹

¹ The Japanese examples are all provided by Ayaka Sugawara (p.c.).

- (2) a. Q: Kimi tukarete? [Japanese]
 you tired
 A: Un./ Uun.
 yes no
- b. Q: Kimi tukarete nai?
 you tired NEG
 'Are you not tired?'
 A: Un (tukarete nai).
 yes tired NEG
 (Lit.) 'Yes, I'm not tired.'

In Japanese, when confirming the negative alternative of a negative question, as in (2b), the particle used for affirmative answers to neutral questions is used. The answer affirms, straightforwardly, that the negative proposition is true. Now compare Swedish yes-no questions and answers. (3Q) is a neutral question.

- (3) Q: Är du trött?
 are you tired
 'Are you tired?'
 A: Ja. / Nej
 yes no

(4Q) is a negative question. The particle that is used to 'affirm' that the negative proposition is true is the particle used for negative answers to neutral questions.

- (4) Q: Är du inte trött?
 are you not tired
 'Are you not tired?'
 A: Nej (jag är inte trött).
 no I am not tired
 'No (I'm not tired).'

As before, I will say, in the case of negative questions, that the answer ‘confirms’ (rather than ‘affirms’) one of the alternatives. Now compare how the positive alternative posed by a negative question is confirmed in Japanese.

- (5) Q: Kare-wa koohii-o noma nai no?
he-TOP coffee-ACC drink NEG Q
‘Does he not drink coffee?’
A: **Uun**, nomu yo.
no drink PRT
(Lit.) ‘No, he drinks (coffee).’

Compare this with how the positive alternative is standardly confirmed in English (although other options exist; we shall return to them below):

- (6) Q: Does he not drink coffee?
A: Yes he does.

The Japanese system has been referred to in the literature as the **truth-based system**, contrasting with the **polarity-based system** in Swedish and English (Jones 1999: 8-14). The logic behind the terminology (the way I use it) is that in the Japanese system the answer to a negative question confirms or disconfirms the truth of the negative proposition; ‘yes’ confirms it, ‘no’ disconfirms it, schematically as in (7) (with no implication that the parenthesised portion is actually syntactically represented).²

- (7) Q: Is John not tired?
A1: Yes (it’s true that) John is not tired.
A2: No (it’s not true that) John is not tired. → John is tired.

In the Swedish/English system, on the other hand, the answer particle *agrees* with the polarity of the proposition, schematically as in (8):

² Jones (1999) rationale for the notion ‘truth-based’ is that the answer “is determined by agreement with the truth value of the proposition which is implied by the question” (Jones 1999: 11).

- (8) Q: Is John not tired?
 A1: No, John is not tired.
 A2: Yes, John is [AFFIRM] tired.

Another, more common, name for the Japanese system is the **agree/disagree system** (Pope 1976: 111-130, Kuno 1978, Sadock and Zwicky 1985). The logic behind this term is that 'yes' in this system conveys agreement with the expectation of the person posing the question, while 'no' disagrees with the expectation of the person posing the question. This is, again, shown schematically in (9):

- (9) Q: 'Does John not drink coffee?' [expecting a negative answer]
 A1: 'Yes (I agree with your expectation), John does not drink coffee.'
 A2: 'No (I disagree with your expectation), John does drink coffee.'

The other system can then be called the **positive/negative-based system**:

- (10) Q: 'Does he not drink coffee?'
 A1: '**No**, he does **not** drink coffee.' (no = negative alternative is true)
 A2: '**Yes**, he does drink coffee.' (yes = positive alternative is true)

For reasons to be made clear later, I prefer using the terms truth-based and polarity-based. The idea that the answer agrees or disagrees with the speaker and that the variation between the two types can be characterised in these terms is, I shall claim, ultimately not explanatory.

The distinction between the two systems is a well-known learning problem for learners of English (and presumably other European languages) from the Far East (Japan, China, Korea, etc.), where the truth-based system is in force. Students from the Far East that I have met often report having been made aware of the distinction as part of their education at school, and sometimes report receiving training in answering negative questions. Obviously it may cause serious misunderstanding and embarrassment if a yes is mistaken for a no. It is interesting to observe how the distinction is characterised in non-theoretical contexts. There are scores of websites dealing with English grammar or language learning where the issue of how to answer negative questions is debated or taught. The following characterisation is representative of several of the web sources I have consulted: "When replying to a negative question, you answer a negative question the same as

a regular question. There is no difference.” (<http://www.englishspark.com/en/students/455-negative-questions>, viewed 6 July 2014). This characterisation works for the examples they cite, because the examples all use the long answer: ‘Yes, I am’, ‘No it doesn’t’, etc. , which usually have the same meaning when answering a neutral or a negative question. It is clearly false, though, as a characterisation of the English system once we consider short answers, and, in fact it is false even when we consider long answers. I will return to this point in section 4.3, on answering negative questions in English.

What is the source of this variation? We may consider the following three alternatives:

- (a) It is a matter of cultural conventions, comparable to cultural differences between how people greet each other when they meet: by a handshake, or a kiss (on one cheek or both cheeks), or a bow at safe distance.
- (b) It is a matter of the meaning of the words corresponding to ‘yes’ and ‘no; say, in the truth-based (or agree/disagree-based) system the meaning of ‘yes’ would be ‘I agree’ and the meaning of ‘no’ would be ‘I disagree’.³
- (c) It is a matter of syntactic structure

An interesting example of semantic variation in cultural conventions is the meaning of the hand wave with the arm stretched out in front of the body, palm down, flexing the wrist. In a wide geographic region, stretching at least from North Africa to India, it means ‘Come here!’, while in (most of) Europe and North America it rather means ‘Stay where you are!’/‘Don’t come here!’ In this sense it is reminiscent of the variation between the truth-based and the polarity-based systems, where ‘yes’ can have opposite meanings.

Speculating, the variation between the two systems could be related to variation in notions of politeness. Perhaps in some cultures expressions of disagreement with an interlocutor are avoided at all costs, and therefore the word ‘no’ is avoided?

I am going to argue, though, that the distinction is primarily a consequence of differences in syntactic structure, and more in particular, differences in the syntax of negation. I do allow for the possibility, though, that there may be an associated difference in the meaning of ‘no’ between the two types of systems. We may note, at this point already, that there is no correlation between the syntactic type of answer, by particle or by echoing the verb, and whether they follow the truth-based or the polarity-based systems. Languages which do not even have a word for ‘yes’ can follow the truth-based or the polarity-based system (for example Thai follows the truth-based system while Scots Gaelic follows the polarity-based system). This obviously argues against the idea that a systematic difference in the meaning of ‘yes’ would be the general explanation of the two systems.

³ See <https://www.youtube.com/watch?v=HFW7Ma1WhuY> for an articulation of this idea.

4.2. The global distribution of the two systems

The following data are based on information from SSWL, from the literature, and from a questionnaire-based data search.

Languages reported to follow the truth-based system

Afrikaans ⁴	(Germanic, South Africa)
Amele	(Trans-New Guinea)
Amharic	(South Semitic , Afro-Asiatic)
Bafut	(Grassfields Bantu, Niger-Congo)
Bandial	(Jola, Niger-Congo)
Basaa	(Bantoid, Niger-Congo)
Evenki	(Tungusic, North-East Asia)
Georgian	(Kartvelian, Caucasus)
(Greek) ⁵	(Indo-European)
Gua	(Tano, Niger-Congo, Ghana)
Hausa	(Chadic, Nigeria)
Harari	(South Semitic, Afro-Asiatic)
Ibibio	(Lower Cross, Niger-Congo)
Japanese	(Japonic)
Kashmiri	(Indo-Aryan, Indo-European)
K'iche'	(Mayan, Guatemala)
Kobon	(Trans-New Guinea)
Kom	(Grassfields Bantu, Cameroon)
Korean	(isolate, East Asia)
Kuot	(isolate, Papua New Guinea)
Lao	(Tai-Kadai)

⁴ Afrikaans may not be the most clearcut representative of a truth-based system. The language expert on SSWL (Theresa Biberauer) writes, in relation to the question-answer pair used as test example on SSWL: "Both 'Yes' (truth-based) and 'No' (polarity-based) answers are possible here, although speakers prefer 'No' where there is no continuation. In fact, the use of 'Yes' in isolation will almost certainly result in confusion if it isn't accompanied by some form of disambiguating intonation or other paratactic device which the hearer can draw on to expand 'Yes' in the required way.

⁵ According to the SSWL Greek is in this class of languages. No other Greek linguists that I have consulted agree with this judgement, which is why I have included the language within parentheses. As will become clear in the text below, it would be surprising if Greek was in this class.

Malagasy	(Austronesian)
Mandarin	(Chinese, Sino-Tibetan)
Matses	(Panoan, South America)
Mauwake	(Kumil, Trans-New Guinea)
Mualang	(Ibanic, Austronesian)
Muyang	(Chadic, North Cameroon)
Mwotlap	(Southern Oceanic, Austronesian)
Nahuatl ⁶	(Uto-Aztecan)
Navajo	(Athabaskan)
Nigerian Pidgin	(English-based creole)
Nkore-Kiga	(Bantu, Niger-Congo)
Nupe	(Nupe-Gbagyi, Niger Congo,)
Nweh	(Grassfields Bantu, Niger- Congo)
Shan	(Tai-Kadai)
Taiwanese	(Sinitic,Sino-Tibetan)
Thai	(Tai-Kadai)
Tuki	(Southern Bantoid, Cameroon)
Vata	(Kru, Niger-Congo)
Western Armenian	(Indo-European)
West Greenlandic	(Inuit, Eskimo-Aleut)
Yoruba	(Volta-Niger, Niger-Congo)
Zamboageño Chabacano	(Spanish-based creole, Philippines)

(44 languages)

Languages reported not to follow the truth-based system

Arabic (varieties of) (Semitic, Afro-Asiatic)⁷

Assamese (Indo-Aryan, Indo-European)

Bengali (Indo-Aryan, Indo-European)

Basque (isolate, Europe)

Calabrian (Romance, Indo-European)

Catalan (Romance, Indo-European)

⁶ Tuggy (1977) has one example from Tetecingo Nahuatl which is not truth-based. As will be discussed below, languages which accept truth-based answers, often also accept polarity-based answers.

⁷ Moroccan Arabic is reported to employ the truth-based system on SSWL. Other Arabic dialects I have data from are Gulf Arabic (SSWL), Syrian Arabic, Tunisian Arabic, and Yemeni Arabic. They are reported not to employ it.

Chickasaw	(Muscogean, North America)
Chol	(Mayan, Central America)
Croatian	(South Slavic, Indo-European)
Dutch	(Germanic, IE)
English	(Germanic, IE)
Faroese	(Germanic, IE)
Finnish	(Finnic, Uralic)
Galician	(Romance, Indo-European)
Gujarati	(Indo-Aryan, Indo-European)
Gungbe	(Porto-Novo, Niger-Congo)
Haitian	(French-based creole)
Hebrew	(Semitic)
Hindi	(Indo-Aryan, Indo-European)
Hungarian	(Ugric, Uralic)
Icelandic	(Germanic, IE)
Irish	(Celtic, Indo-European)
Imbabura Quechua	(Quechua)
Jamaican Creole	English
Kannada	(Dravidian, India)
Khwarshi	(North-East Caucasian)
Koromfe	(Gur, Niger Congo)
Kurdish (Sorani)	(Iranian, Indo-European)
Macushi	(Cariban, Brazil)
Malayalam	(Dravidian, India)
Maori	(Polynesian, Austronesian)
Marathi	((Indo-Aryan, Indo-European)
Nepali	(Indo-Aryan, Indo-European)
Norwegian	(Germanic, Indo-European)
Odiya	(Indo-Aryan, Indo-European)
Persian	(Iranian, Indo-European)
Polish	(Slavic, Indo-European)
Portuguese	(Romance, Indo-European)
Rapanui	(Polynesian, Austronesian)

Russian	(Slavic, Indo-European) ⁸
Shupamem	(Bantoid, Niger-Congo)
Spanish	(Romance, Indo-European)
Swedish	(Germanic, Indo-European)
Telugu	(Dravidian)
Tupi (Ancient)	(Tupi-Guarani, Brazil)
Turkish	(Turkic)
Twi	(Tano, Niger-Congo)
Wolof	(Senegambian, Niger-Congo)
Yemba	(Grassfields Bantu, Cameroon)
(49 languages)	

These lists include all the languages that I have data from regarding this parameter. The definition of the second table is negative (“not truth-based”). This is because among the languages in the truth-based table quite a few report also allowing polarity-based answers. For some of these languages this is probably related to the bias of the question, i.e. whether it expects a negative or a positive answer: If the bias is negative, the answer follows the truth-based system, but if it is positive, it follows the polarity-based system. There are reasons to think that this is often the case; I will return to this issue in some detail in section 4.3 below.⁹ Not surprisingly, it is rarely, if ever, pointed out in descriptive grammars whether the truth-based system is restricted to negative questions with negative bias. In fact, the choice between the two systems is very rarely mentioned at all in descriptive grammars. A welcome exception is, just as in the case of the particle vs. verb answer issue, the Routledge series (previously Croom Helm series) of descriptive grammars, edited by Bernard Comrie.

There are about as many languages in the two lists. However, there is a strong Indo-European presence in the non-truth-based list, particularly Germanic and Romance languages. It is standard practice, ever since Dryer (1992) and Rijkhoff et al. (1993) to count genera rather than languages in typological investigations, in order to avoid genetic bias, where a genus is a subfamily of languages of a time depth roughly like Germanic. If we reduce the lists to only genera, each language now representing a genus, we get the following picture:

⁸ Comrie (1984: 36-37) claims that Russian can use truth-based answers. According to SSWL and to some other Russian informants, Russian is polarity-based. Comrie’s discussion indicates that Russian may have a mixed system not unlike the English system, to be expounded in section 4.3.

⁹ This is the case in Japanese, for instance, as will be discussed below, and is, presumably, part of the rationale for the notion ‘agree/disagree system’. See also Comrie (1984: 36-37). It is not the case in all languages employing the truth-based answering system, though, as we shall see.

Languages/genera reported to follow the truth-based system

Afrikaans	(Germanic, Indo-European, South Africa)
Alaaba	(Cushitic, Afro-Asiatic)
Amele	(Gum, Trans-New Guinea)
Amharic	(South Semitic, Afro-Asiatic)
Bandial	(Jola, Niger-Congo)
Basaa	(Bantu, Niger-Congo)
Evenki	(Tungusic, North-East Asia)
Georgian	(Kartvelian)
(Greek) ¹⁰	(Indo-European)
Ibibio	(Lower Cross, Niger-Congo)
Japanese	(Japonic)
Kashmiri	(Indo-Aryan, Indo-European)
Kobon	(Kalam-Kobon, Trans-New Guinea)
Korean	(isolate, East Asia)
Kuot	(isolate, Papua New Guinea)
Lao	(Tai-Kadai)
Macushi	(Cariban, Brazil)
Malagasy	(Barito, Austronesian)
Mandarin	(Sinitic, Sino-Tibetan)
Matses	(Panoan, Peru and Brazil)
Mauwake	(Kumil, Trans-New Guinea)
Mualang	(Ibanic, Austronesian)
Mwotlap	(Oceanic, Austronesian)
Nahuatl ¹¹	(Uto-Aztecan)
Navajo	(Athabascan)
Nigerian Pidgin	(English-based creole)
Nupe	(Nupe-Gbagyi, Niger Congo,)
Nweh	(Grassfields Bantu, Niger- Congo)
Taiwanese	(Sinitic, Sino-Tibetan)

¹⁰ See note 5.

¹¹ Tuggy (1977) has one example from Tetecingo Nahuatl which is not truth-based. As will be discussed below, languages which accept truth-based answers, often also accept polarity-based answers.

Vata (Kru, Niger-Congo)
Western Armenian (Indo-European)
West Greenlandic (Inuktitut)
Yoruba (Volta-Niger, Niger-Congo)
Zamboageño Chabacano (Spanish-based creole, Philippines) (YES for both)
(34 genera)

Languages/genera reported not to follow the truth-based system

Arabic (Semitic, Afro-Asiatic)
Bengali (Indo-Aryan, Indo-European)
Basque (isolate, Europe)
Catalan (Romance, Indo-European)
Chol (Mayan, Mexico)
Croatian (Slavic, Indo-European)
Finnish (Finnic, Uralic)
Gungbe (Porto-Novo, Niger-Congo)
Hebrew (Semitic)
Haitian (French-based creole)
Hungarian (Ugric, Uralic)
Irish (Celtic, Indo-European)
Imbabura Quechua (Quechua, Equador))
Jamaican Creole English
Kannada (Dravidian, India)
Khwarshi (North-East Caucasian)
Koromfe (Gur, Niger Congo)
Maori (Polynesian, Austronesian)
Persian (Iranian, Indo-European)
Rapanui (Polynesian, Austronesian)
Shupamem (Grassfields Bantu, Niger-Congo)
Swedish (Germanic, Indo-European)
Turkish (Turkic)
Twi (Tano, Niger-Congo)
Wolof (Senegambian, Niger-Congo)
(25 genera)

There is now a slight preponderance of truth-based languages. As in the case of the distinction between particle answers and verb-echo answers, whether a language follows the truth-based or polarity-based system is probably more often mentioned when it differs from the system in the languages that the researcher speaks or is very familiar with, hence, since the researchers are usually European or North American, and the description is usually written in English, it is probably more often mentioned when the language follows the truth-based system. Taking this into account, the preponderance is possibly not significant.

Considering the interplay of the particle vs. verb-echo answer parameter and the truth vs. polarity-based parameter, we might expect to see a negative correlation between verb-echo answers and truth-based answers, for the following reason: In languages with verb-echo answers, affirmative short answers consist of just the finite verb or auxiliary (the highest verbal head). The analysis is that the verb moves to the C-domain either by head movement or by remnant PolP movement, while the rest of the clause is deleted. Negative short answers consist of either just the negation or (often) the negation plus the highest verb, again moved to the C-domain by head-movement or remnant PolP-movement, with the rest of the clause deleted. Now consider the case of a negative yes-no question where the answer should confirm the negative alternative. This would seem to presuppose that the answer contains a negation, but one which is in the scope of an affirmative polarity feature, so that we get the ‘confirmation of negation’ configuration. But if the sentence contains a negation, then, arguably, the verb cannot move to the C-domain across the negation by head-movement (if that is the strategy employed), or move to the C-domain by remnant PolP movement without pied-piping the negation.

This is particularly clear in Finnish, where the negation itself is an auxiliary.

- (11) Q: Ei-kö [Jussi <ei> juo kahvia]? [Finnish]
 NEG-[±] Jussi NEG drink coffee
 ‘Does Jussi not drink coffee?’
 A: *Juo Foc [Jussi <ei> juo kahvia].
 drinks Jussi NEG drinks coffee
 Intended: ‘Yes, Jussi does not drink coffee.’

A negative yes-no question in Finnish is formed by movement of the negation with the cliticised question-particle to the C-domain (or more correctly, movement of the question-particle to the C-domain, but carried by the negation). In the answer, then, there is no way that the main verb can

move to the c-domain across the negation, by head movement or by remnant PolP movement, as the negation is itself the highest verbal category in PolP. In Thai, as we saw in 3.14, negative questions have to employ the Type 2 structure, and therefore cannot employ verb-echo answers.

In fact there is no negative correlation between verb-echo answers and truth-based answers. The following is a list of languages reported as employing verb-echo answers and truth-based answers, drawn from the SSWL with the addition of a few other languages for which we have the information.

Languages with verb-echo answers and truth-based answers

Amharic	(South Semitic, Afro-Asiatic)
Bandial	(Jola, Niger-Congo)
Evenki	(Tungusic)
Georgian	(Kartvelian)
(Greek) ¹²	(Hellenic, Indo-European)
Japanese	(Japonic)
Kobon	(Kalam-Kobon, Trans-New Guinea)
K'iche'	(Mayan, Mexico)
Kuot	(isolate, Papua New Guinea)
Lao	(Tai-Kadai)
Mandarin	(Sinitic, Sino-Tibetan)
Mauwake	(Kumil, Trans-New Guinea)
Mualang	(Ibanic, Austronesian)
Shan	(Tai-Kadai)
Taiwanese	(Sinitic, Sino-Tibetan)
Thai	(Tai-Kadai)

The way they manage it, in the languages I have details from, is to use an alternative form of answer when it is intended to confirm the negative alternative of a negative question. We will see some examples of this later on.

As a comparison, the following is a list of languages which employ verb-echo answers but not truth-based answers (drawn from the SSWL plus some other languages for which we have the relevant data).

¹² See note 5.

Languages with verb-echo answers but not truth-based answers

Arabic, Gulf	(Semitic, Afro-Asiatic)
Arabic ,Tunisian	(Semitic, Afro-Asiatic)
Assamese	(Indo-Aryan , Indo-European)
Chickasaw	(Muscogean)
Chol	(Mayan)
Finnish	(Finnish, Uralic)
Galician	(Romance, Indo-European)
Hindi	(Indo-Aryan, Indo-European)
Hungarian	(Ugric, Uralic)
Imbabura Quichua	(Quechua, Equador)
Irish	(Celtic, Indo-European)
Kannada ¹³	(Dravidian, India)
Malayalam	(Dravidian, India)
Marathi	(Indo-Aryan, Indo-European)
Nepalese	(Indo-Aryan, Indo-European)
Odyia	(Indo-Aryan, Indo-European)
Portuguese	(Romance, Indo-European)
Russian	(Slavic, Indo-European)
Sicilian	(Romance, Indo-European)
Telugu	(Dravidian)
Thamil	(Dravidian)
Turkish	(Turkic)
Welsh	(Celtic, Indo-European)

No obvious generalisation suggests itself , in typological terms, as to which verb-answer languages employ the truth-based system and which do not. It does not, for example, correlate with whether the language employs pro-drop and VP-ellipsis or big ellipsis (see Chapter 3.8); in (12). Among the languages in the verb-echo and truth-based answers list, Bandial, Georgian, Kuot, Mandarin, and

¹³ Sridhar (1990) writes: “Answers to negative questions are based on whether the speaker agrees with the proposition underlying the question and *not* by the positive/negative polarity /.../ [original emphasis]”. However, the book gives no example of an answer confirming the negative alternative of a negative question, only several examples which disconfirm the negative alternative of a negative question using ‘no’. As discussed, this is an option in English, and even Finnish, with its firmly polarity-based system. My two informants (R. Amritavalli and H.S. Sindhu) did not employ the truth-based system for confirming the negative alternative of sa negative question.

Taiwanese belong to the pro-drop and VP-ellipsis category (based on SSWL).¹⁴ In the verb-echo but not truth-based answers list, varieties of Arabic, Chickasaw and Sicilian belong in the pro-drop and VP ellipsis category. Some or even all of the Indian languages may also belong in this group.

Unlike the situation discussed in chapter 3 in relation to the particles or verb-echo answers distinction, in the case of the truth-based vs. polarity-based distinction there is quite a striking generalisation regarding the geographical distribution of the two systems: All languages to the east of India but one, in my sample, use the truth-based system. This is the list.

Languages east of India using the truth-based system

Amele	(Gum, Trans-New Guinea)
Cantonese	(Sinitic, Sino-Tibetan)
Evenki	(Tungusic, North East Asia)
Japanese	(Japonic)
Kobon	(Kalam-Kobon, Trans-New Guinea)
Korean	(isolate, East Asia)
Kuot	(isolate, Papua New Guinea)
Lao	(Tai-Kadai)
Mandarin	(Chinese, Sino-Tibetan)
Mauwake	(Kumil, Trans-New Guinea)
Mualang	(Ibanic, Austronesian)
Mwotlap	(Oceanic, Austronesian)
Shan	(Tai-Kadai)
Taiwanese	(Sinitic, Sino-Tibetan)
Thai	(Tai-Kadai)
Zamboageño Chabacano	(Spanish-based creole, Philippines)

(16 languages, 10 genera¹⁵)

Maori is an exception (Bauer 2010), another is Rapanui (Du Feu 1996: 34) the language of the Easter Island (much further east). A more cautious generalisation would be that languages east of India but only as far as, say, New Guinea follow the truth-based system. From Australia I have not managed to get any data. On the other hand, among Eurasian languages from India westwards very few are in the truth-based category. The following is the list based on my data; since I have fairly large numbers

¹⁴ This is based on whether the language does or does not allow verb-echo answers with an understood indefinite subject (see chapter 3.8 for discussion).

¹⁵ The Tai-Kadai languages Thai, Shan, and Lao are closely related, belonging to the same genus.

of languages belonging to the same genera from the part of the world, and since there is strong genus-internal correlation with regard to the truth vs polarity-based distinction, this is a list of genera only.

Genera in Eurasia from India westwards not using the truth-based system

Arabic	(Semitic, Afro-Asiatic)
Basque	(isolate, Europe)
Bengali	(Indo-Aryan, Indo-European)
Finnish	(Finnic, Uralic)
German	(Germanic, Indo-European)
(Greek) ¹⁶	(Hellenic, Indo-European)
Hungarian	(Ugric, Uralic)
Kannada	(Dravidian, India)
Persian	(Iranian, Indo-European)
Turkish	(Turkic)
Polish	(Slavic, Indo-European)
Italian	(Romance, Indo-European)
Irish	(Celtic, Indo-European)
(13 genera)	

The only clear exceptions I am aware of are Georgian and Western Armenian (based on SSWL) and Kashmiri (Wali and Koul 1997). We have also found that English can employ truth-based answers given the right format of questions, and Comrie (1984) indicates that this may also be true of Russian. The big picture is clear enough, though.

Africa presents a mixed picture, but with a clear strong preponderance for truth-based answering.

African truth-based languages/genera

Afrikaans ¹⁷	(Germanic, South Africa)
Alaaba	(Cushitic, Afro-Asiatic)
Amharic	(South Semitic, Afro-Asiatic)
Bafut	(Eastern Grassfields Bantu, Niger-Congo, Cameroon)
Bandial	(Jola, Niger-Congo, Senegal)

¹⁶ See note 5.

¹⁷ See note 4.

Basaa (Bantu, Niger-Congo, Cameroon)
 Gua (Tano, Niger-Congo , Ghana)
 Harari (South Semitic, Afro-Asiatic)
 Hausa (Chadic, Afro-Asiatic, Nigeria)
 Ibibio (Lower Cross, Niger-Congo)
 Kom (Ring Grassfields Bantu, Niger-Congo, Cameroon)
 Malagasy (Barito, Austronesian)
 Muyang (Chadic, Afro-Asiatic , North Cameroon)
 Nigerian Pidgin (English-based creole)
 Nkore-Kiga (Bantu, Niger-Congo))
 Nupe (Nupe-Gbagyi, Niger Congo,)
 Nweh (Eastern Grassfields Bantu, Niger- Congo)
 Vata (Kru, Niger-Congo)
 Yoruba (Volta-Niger, Niger-Congo)
 (19 languages, 17 genera)

African non-truth-based languages/genera

Arabic (varieties of) (Semitic, Afro-Asiatic)
 Gungbe (Porto-Novo, Niger-Congo)
 Koromfe (Gur, Niger-Congo)
 Shupamem (Eastern Grassfields Bantu, Niger-Congo, Cameroon))
 Twi (Tano, Niger-Congo, Ghana)
 Wolof (Senegambian, Niger-Congo)
 Yemba (Eastern Grassfields Bantu, Niger- Congo, Cameroon)
 (7 languages, 6 genera)

One may question whether Arabic should be included, as it straddles the African-Asian boundary. There are related languages spoken in the same broad region in both groups, the truth-based and the non-truth-based group. For instance, Vata, a language of the Kwa family spoken in the Ivory Coast and Gua, of the Tano subfamily of Kwa, spoken in Ghana are in the truth-based group, while Twi (Akan), also of the Tano subfamily of Kwa and spoken in Ghana and the Ivory Coast, is in the non-truth-based group. More strikingly, the two very closely related languages Nweh and Shupamem, belonging to the Bamileke (sub-)genus of Eastern Grassfields languages) are reported as

being in different groups.^{18 19} There are also American languages in both groups, but they are too few to warrant any generalisations.²⁰

The strong geographical factor, cutting across language families, suggests that the truth-based vs. polarity-based parameter is easily affected by language contact (apparently unlike the particle vs verb-echo answer parameter). This would seem to favour the hypothesis that it is a matter of cultural conventions, on the assumption that cultural conventions like eating habits tend to spread easily. This is not a necessary conclusion, though. It is well known by now that grammatical properties can spread over very wide areas, even whole continents, and across genetic boundaries, with language contact as the only reasonable explanation (see Nichols 1992, Dryer 1988, 1998). I will argue that this is the case here: the truth-based vs. polarity-based distinction is a syntactic matter.

4.3 The English answering system

A particularly clear argument against the idea that the distinction is a matter of cultural conventions is that there are languages where both systems are used. English happens to be a clear example. Consider the following negative question and the answers to it.

- (12) Q: Does he not drink coffee? [said when observing John decline the offer of cup of coffee]
- A1: Yes. ('He does not drink coffee.')
- A2: No. ('He does not drink coffee.')

Note that the negative question is formed using *not*, rather than *n't*. As observed and discussed in Kramer & Rawlins (2011), for many speakers of English the short affirmative answer A1 means that John does not drink coffee. This looks like the truth-based answering system in, for example, Japanese. However, English is still different from Japanese, since, for the same speakers, the answer *no* also means, unambiguously, that John does not drink coffee, unlike Japanese or other canonical

¹⁸ The data in the case of both languages comes from SSWL. It is not always easy to determine which system is used in a language, shown by the fact that even the correct classification of English is not evident, as discussed in section 4.3. The data, therefore, should be regarded with caution. Closer investigation may be warranted.

¹⁹ Leslau's (1962) brief report on 'yes' and 'no' in some South Semitic languages indicates that while Amharic and Harari are truth-based, Tigrinya is not.

²⁰ The American languages for which I have information regarding the truth-based vs. polarity-based contrast are Matses (Panoan), Nahuatl (Uto-Aztecan), Navajo (Athabaskan), West Greenlandic (Inuktitut) (if classified as American), Chol (Mayan) and K'iche' (Mayan). All except Chol are reported to follow the truth-based system.

truth-based languages, where a negative answer here would rather mean that he does drink coffee. Consider, for example, the following example from Cantonese:²¹

- (13) Q: John m jam gaafe? [Cantonese]
John not drink coffee
'Does John not drink coffee?'
- A1: hai
yes ('John does not drink coffee.')
- A2: m hai
not yes ('John does drink coffee.')

Kramer & Rawlins (2011) refer to the English situation as *negative neutralization*: The positive and the negative answer mean the same thing, while in the truth-based system proper, 'yes' and 'no' are expected to have opposite meanings, 'yes' meaning that John does not drink coffee, 'no' meaning that John does drink coffee.

Interestingly, for other speakers of English A1 does not mean that John does not drink coffee. For these speakers, the short answer *yes* in this context is not a well formed answer at all. The long version A3 in (14) is a well formed alternative, but means that John does drink coffee, for all speakers.

- (14) A3: Yes, he does.

This dichotomy, some speakers accepting A1 as confirmation of the negative alternative while other speakers reject it, is confirmed in a more recent investigation by Ruth Kramer and Kyle Rawlins (Kramer and Rawlins 2012), which unfortunately is still not reported in published form.

The use of *not* in questions, and the effect it has on answers appears not to be recognised in standard grammars of English. Consider the following quote from Hewings (2005):

²¹ Thanks to Patrick Chi-Wai Lee for the example and discussion. This is not the whole story of answers in Cantonese. Being a verb-echo-answer language, an alternative way to answer the question (13) is (i):

- (i) A1: jam
drink
'Yes.'
- A2: m jam
not drink
'No.'

We usually make a negative yes/no or wh-question with an auxiliary verb /.../ + **n't** to suggest, persuade, criticise, etc. /.../ In formal contexts, or when we want to give some special emphasis to the negative (perhaps to show that we are angry, very surprised, or to strongly persuade someone), we can use *not* after the subject in negative questions. /.../

- **Did** she **not** realise that she'd broken it? (*less emphatically Didn't* she realise that...?)
- **Can** you **not** get there a bit earlier? (*less emphatically Can't* you...?)

This is misleading at best, or wrong. The use of *not* in English yes-no questions is not restricted to formal or emphatic negative contexts, but is systematically used to convey an expected negative answer.

There is some variation in English regarding negative questions, though, which is also not recognised in the standard literature. Consider (15) and (16).

- (15) a. Isn't John coming?
b. Don't you speak French?
c. Isn't this cake good?

- (16) a. Is John not coming?
b. Do you not speak French?
c. Is this cake not good?

Assume that the context for (15a, 16a) is that the speaker thought John was coming, but now sees evidence that John is not coming, and wants to confirm that this impression is right. Assume similar contexts for (14b,c) and (15b,c): the speaker has recently become aware that the negative alternative is true, and wants to confirm that this is indeed the case. In this context the questions expect a negative answer. For many speakers the questions in (15) unambiguously convey expectation of a positive answer. For these speakers, to convey expectation of a negative answer, the forms in (16), with *not* instead of *n't*, have to be used.²² For now, let's call this variety of English the 'restrictive variety'. For other speakers of English the questions in (15) can convey an expectation of a negative answer. Call this variety the 'tolerant variety'. For all speakers of English, (16) conveys expectation of a negative answer. The distinction between the two varieties can be brought out by adding the negative polarity item *either* to the question formed with *-n't*. In the

²² I'm grateful to Craig Sailor for bringing this to my attention.

restrictive variety the sentences in (17) are ungrammatical, in the tolerant variety they are grammatical, conveying an expectation of a negative answer (Ladd 1981, Sailor 2013).

- (17) a. %Isn't John coming, either?
b. %Don't you speak French, either?
c. %Is this cake not good, either?

Ladd (1981) discusses the syntax and semantics of negative questions in the tolerant variety (although not recognising that this is a particular variety of English). He argues that *n't* is scope-ambiguous (in this variety, which he refers to as 'English'): It can have sentence-internal scope, in which case it licenses the negative polarity item *either*, and conveys expectation of a negative answer, or it can have scope outside the sentence/predicate, in which case it does not license *either*, and conveys expectation of a positive answer. The distinction between the two varieties seems to overlap with the distinction between American and British English, with the restrictive variety being more common among American English speakers and the tolerant variety more common among British English speakers. But Robert Ladd is an American English speaker, and I have encountered British English speakers who reject sentences like (17), so the pattern of variation is more complicated.²³

A phenomenon, observed and discussed in Holmberg (2013), is that insertion of an adverb scoping over *not* in the question has an interesting effect on the answer:

- (18) Q: Does John sometimes not show up on time for work?
A1: Yes. ('John sometimes does not show up on time for work.')
- A2: No. ('John does not sometimes not show up on time for work, i.e. he is always on time.')

In this case there is no doubt or ambiguity as regards the meaning of the short answer *yes*: It can only mean that John does not sometimes show up on time for work. That is to say, the affirmative particle confirms the negative alternative. The negative short answer is a bit harder to process, but, on a moment's reflection, the preferred meaning is that John does not sometimes not show up on time for work, in other words, John always shows up on time.

²³ Matters are also complicated by the fact, observed by Craig Sailor, that many (or even all) speakers who allow *n't* in questions with *either* nevertheless reject *n't* in questions with other NPIs, unexpected if the negation *n't* in questions can take scope outside the sentence; see Sailor (2013).

That is to say, with the adverb *sometimes* scoping over *not* in the question, the answer follows the truth-based system, for all speakers (as far as I have been able to determine). (19) and (20) are two other, similar examples:

- (19) Q: Did you purposely not dress up for that occasion?
A1: Yes. ('I purposely did not dress up for that occasion.')
- A2: No. ('I did not purposely not dress up for that occasion; it was by accident.')
- (20) Q: Do cats typically not like rotten food?
A1: Yes. ('Cats typically don't like rotten food.')
- A2: No. ('Cats do not typically not like rotten food; most cats are happy to eat rotten meat.')

In the case of (18), there is generally no doubt among native speakers of English: *Yes* confirms the alternative that I didn't dress up on purpose, and the short answer *no* (although this usually takes a moment's reflection to verify) denies that I did not dress up on purpose, i.e. it implies that I dressed up by mistake, perhaps because I didn't know there was a dress code.

Likewise in the case of (19), the preferred interpretation of *yes* is that it confirms that cats typically don't like rotten food, while the preferred interpretation of *no* is that it is not typical of cats not to like rotten food, i.e. cats typically don't mind rotten food. In this case the judgments are less clear, though. In particular, the short answer *no* can be taken to mean that cats typically don't like rotten food.

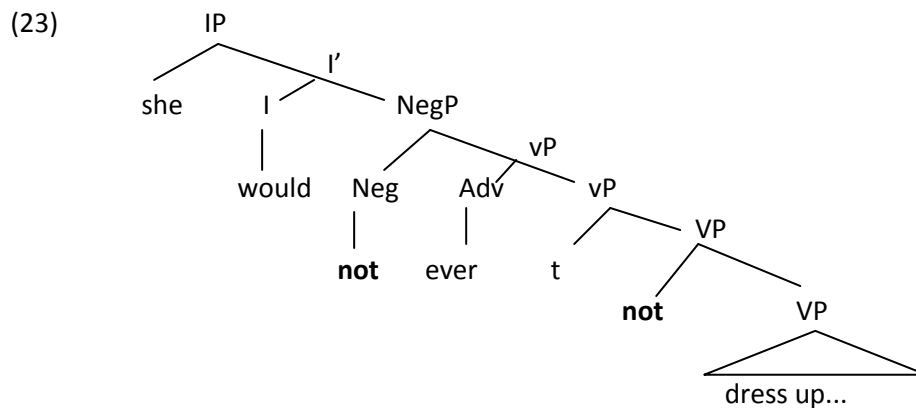
Part of the explanation for this effect is that English has several negations, or, depending on one's theoretical assumptions, has several positions for the negation. This is clearly seen in examples such as (21):

- (21) a. You can't not like her.
b. I wouldn't ever not dress up for an occasion like that.

This does not depend on the distinction between *n't* and *not*; although (20a,b) arguably sound more natural with *n't* ... *not*, they are grammatical with *not*...*not*, as well.

- (22) a. You cannot not like her.
b. She would (definitely)not ever not dress up for an occasion like that.

I assume the structure is as in (23).



I will refer to the higher *not* as *middle not* (implying that there is a still higher one, to be discussed below) and the other *not* as *low not*. Middle *not* has sentential scope; I will return below to how this scope is established. Low *not* has scope over VP only. An obvious difference between them is that middle *not* can be substituted by *n't*, low *not* cannot.

- (24) a. She wouldn't ever not dress up for an occasion like that.
 b. *Shewould not evern't dress up for an occasion like that.

Note also that when the sentence contains two interpretable negations, *-n't* or *not*, the second one (the lower one) must be vP-internal.

- (25) a. *Cats **don't not** typically like rotten food.
 b. *She wouldn't **not** ever dress up for an occasion like that.

In (25a,b) the position of the second negation before the adverb ensures that it is outside vP. This is clearly impossible. There cannot be two negations taking sentential scope.

Now consider again the question (26) and the variation between those for whom the answer is well-formed and means that John is not coming and those for whom it is not a well-formed answer.

- (26) Q: Is John not coming?
 A: %Yes. ('John is not coming.')

Following Holmberg (2013), I put forward the linked hypotheses in (27):

- (27) a. When the question is analyzed (parsed) as having low negation, the answer *Yes* means ‘John is not coming’, and
 b. when the question is analyzed (parsed) as having middle negation, the answer *Yes* is not a well formed expression.

The speaker variation can now be understood as follows: Some speakers of English assign a low negation reading to *not* in a polar question as their default reading (or preferred reading), other speakers assign a middle negation reading to it. This works as follows:

Recall the analysis of sentential negation introduced in chapter 2.8 (around example (52)) and again in chapter 3.11 (around (93,94)): Every finite sentence has a polarity feature merged unvalued as a head high in the IP-domain. If the sentence contains an interpretable (valued) negation merged in the c-command domain of the polarity feature, close enough to it, the negation will assign negative value to the polarity feature. In the absence of a negation or any other interpretable negative constituent, the polarity feature gets positive value by default. The structure of (28a) is (b). The highest IP-projection is now identified as PolP.

- (28) a. John is coming.
 b. C [_{PolP} John [_{TP} T [_{NegP} Neg [_{VP} is coming]]]]
-

Various aspects of the structure are ignored, for ease of exposition, including complications to do with the exact derivation of the auxiliary, particularly complicated if it ends up spelled out as *isn't*. The point is, the polarity feature is merged with TP, but unvalued, as [\pm Pol]. The negation in the structure is the middle variety, merged, I assume, as member of a NegP. I avoid the question whether it is merged as a head or as the specifier of a null negative head (see Haegeman 1995); this is not crucial at this point. The unvalued polarity feature acts as a probe in Chomsky's (2001) sense: It probes its c-command domain for a matching valued feature, it finds the negation, which assigns [-]-value to the polarity feature. As this is the middle negation it may get spelled out as a clitic *-n't* on the auxiliary, ignoring the details of the syntactic and morphological operations that lead to this result (see Cormack and Smith 2002). If the sentence contains no negation, and no other interpretable negative feature accessible to the probing [\pm Pol] (such as the negative adverb *never*), the polarity feature is assigned positive value as a default.

As detailed in chapter 2.8, in a yes-no question the unvalued polarity head moves to the C-domain (along with an auxiliary, in English direct questions). Crucially, it moves unvalued, even when

the structure contains a negation which in a declarative sentence would assign value to it. The movement pre-empts assignment of value to the polarity head by the negation.²⁴ Finally, if the sentence is a direct question, the feature Q-Force is merged with CP.

(29)a. Is John not coming?

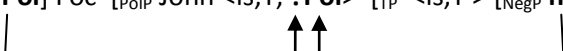
b. [Q-Force [_{CP} [is,T, ±Pol] C [_{PolP} John <is,T, ±Pol> [_{TP} <is,T > [_{NegP} Neg [_{VP} <is> coming]]]]]]

The option exists of realising the middle negation as *–n’t*, cliticised to the auxiliary, moving along to the C-domain. The syntactic relation between negation and polarity remains the same: the polarity feature remains unvalued, to be assigned a value only in the answer to the question.

In the answer, what happens minimally is that the PolP of the question is recycled, but now a valued polarity feature is merged with it. More precisely, a focus feature is merged with the PolP, and a valued polarity feature is merged with the resulting phrase. The focused valued polarity feature assigns value to the unvalued polarity head of PolP, positive value in affirmative answers, negative value in negative answers. In English, the focused valued polarity feature is spelled out *yes*, the focused negative one is spelled out *no*. The recycled PolP can be, and often is, left un-spelled out.

If the question contains a negation, the answer will necessarily contain the same negation. More precisely, if the PolP is elided in the answer, then we know that the elided structure contains negation, because elision requires identity (see chapter 3.2). If the answer is fully or partially spelled out, other possibilities obtain, as will be discussed in due course. Consider first the case where the question, and hence the answer, contains middle negation. As just described, what happens in negative declaratives is that the negation assigns negative value to the unvalued head of PolP. What happens in an affirmative answer to a yes-no question is that the focused polarity feature assign positive value to the unvalued head of PolP. This leads to a feature conflict. This is depicted in (30).

(30) [_{FocP} [yes, **+Pol**] Foc [_{PolP} John <is,T, **?Pol**> [_{TP} <is,T > [_{NegP} **not** [_{VP} <is> coming]]]]]




This explains the intuition which many speakers of English have, in certain situations, that answering plain ‘yes’ to a negative question does not yield a well formed answer. The situation is that the negative question is constructed with middle negation, and therefore expects a negative answer (the

²⁴ If this is right, it has consequences for how derivation works: It means that assignment of value to polarity has to wait until the relevant part of the C-domain is constructed, in a bottom-up derivational theory of phrase structure.

other case, when the question is constructed with high negation and therefore expects a positive answer will be detailed below).

What if the question contains low negation, adjoined to VP? In this case, I contend, the negation is distant enough from the unvalued sentential polarity head *not* to assign value to it, meaning that the affirmative particle can assign positive value to [\pm Pol] uncontested.

(31) [_{FoCP} [yes, +Pol] Foc [_{PolP} John [is,T, +Pol] [_{TP} <[is, T]> [_{VP} <is> [_{VP} **not** [coming]]]]]]



The interpretation is the truth-based interpretation: ‘Yes , he is not coming’.

The difference, then, between the speakers who readily answer *yes* to a negative question with *not* to confirm the negative alternative and those who find this answer not well formed is that the former speakers assign a low negation reading to *not* as their default (or preferred) reading in polar questions, while the latter speakers assign a middle negation reading to *not* as default. As discussed above (following Holmberg 2013), for all speakers of English the low reading of *not* can be forced by insertion of a low adverb preceding the negation, with the predictable consequence that all speakers will interpret the answer to a question containing such an adverb as having the truth-based interpretation.

As was illustrated in (15,16), a subset of native speakers of English can use a question with *n’t*, such as (32), to convey expectation of a negative answer. The reading is forced in (32) by the NPI; for other speakers (32) with the forced negative expectation reading is ungrammatical.

(32) %Isn’t John coming either?

This can now be understood as follows: In the variety of English which accepts (32), *n’t* is moved from IP, more precisely, from the middle negation position in IP, to the C-domain. The negative chain can be interpreted as having the interpretable link inside IP, in the middle negation position (negative chains and interpretability will be discussed below in section 4.4 in more detail).²⁵ In that case, the sentence licenses an NPI in IP and conveys a negative expectation. Alternatively, only the higher link is interpretable negative, in which case the sentence excludes an NPI in IP and conveys a positive expectation. For a subset of English speakers this is the only alternative. Effectively, in this variety, *n’t* in polar questions is externally merged in the C-domain. I will refer to the high reading of *n’t* as *high negation*, contrasting with middle and low negation, already discussed.

²⁵ See Zeijlstra (2004, 2007) on negative chains, articulating the idea that a negative chain, as created by negative concord for example, has one interpretable link and one or more uninterpretable links.

The negative neutralization which Kramer and Rawlins (2011) observed and discussed, illustrated above in (12), illustrated again in (33), can now be understood as follows:

- (33) Q: Is he not coming?
 A1: Yes. ('He is not coming.')

A2: No. ('He s not coming.')

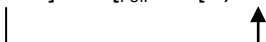
The answer *yes* means 'John is not coming' when the question is taken to have low *not*. The answer *no* means 'John is not coming' when the question is taken to have middle negation and the polarity-based system is applied (I will discuss how this works, below). What happens if the negation in the question is interpreted low, and the answer is *no*? The interpretation ought to be that John is coming. This is exactly what we see in the answer (34A1) (Kramer and Rawlins 2011, Krifka 2012):²⁶

- (34) Q: Is he not coming?

A1: No, he is.

A2: Yes, he is.

Both answers confirm the marked positive alternative that John is coming – so this would be another, though different, case of negative neutralisation, where *yes* and *no* apparently mean the same thing. I have argued (in chapter 3.3) that (34A2) is just what it looks like, an affirmative sentence with a focused [+Pol] particle, with VP elided under identity with the VP in the preceding question. (34A1) would have a more complex structure: It consists of two collocated sentences, one spelled out *no*, with ellipsis of PolP, the other one spelled out (in this case) *he is*, with ellipsis of VP. The first one, would have the structure (35): The negation is analysed as low, and the negation particle assigns negative value to Pol.

- (35) [CP [no, -Pol] Foc [PolP he [is, -Pol] [VP <is> [VP not coming]]]]
- 

The interpretation is 'he is not not coming', i.e. 'he is coming'. The PolP is elided under identity with the PolP of the question. The second part of the answer is just the CP (36), an affirmative sentence with VP deleted under identity with the VP of the question.

- (36) [CP C [PolP he [is, +Pol] [VP <is> [VP coming]]]]

²⁶ See also Jones (1999:12), although he specifically mentions responses to negative statements, to be discussed in chapter 5.1 below.

The (34A1)-type answer is possible only when the negative question expects a negative answer, while (34A2) is just as fine if it expects a positive answer. Compare (37), where the question, by assumption, expects a positive answer.

- (37) Q: Isn't this cake delicious?
A1: *No, it is.
A2: Yes, it is.

See section 4.8 on the syntax of high negation questions.

As will also be discussed below, this is probably not the whole story, because the (34A1)-type of answer can be found in languages which do not have a low negation (strictly polarity-based languages). This means that there is another derivation available for (34A1), to be discussed below. Still, the prediction is that we will find this type of answer freely available in languages employing the truth-based system, which is the case, as far as I know.

For reasons that are not entirely clear, the truncated sentence following *no* in (34A1) is compulsory. At least in English, the bare negative particle as answer to the negative question, as in (38), can only be taken to confirm the negative alternative.

- (38) Q: Is John not coming.
A: No. ('John is not coming.')

Not implausibly this is because the parser (the human linguistic processing system) prefers simple negation over double negation. If so, the answer *no* in (38) is ambiguous in terms of the grammar, but the parser will always go for the simpler derivation leading to confirmation of the unmarked negative alternative, over the more complex double negation one, leading to confirmation of the marked, positive alternative.

There is also a prediction that the answer (34A1) will be more highly preferred in the variety of English where *not* is preferably analysed low, i.e. where *yes* in (34) would mean that John is not coming. It remains to be investigated whether there is any such correlation.

4.4 Negation in the polarity-based system

How does the polarity-based system work? Recall that the polarity-based system is now defined as the system which lacks low negation. The difference shows in negative answers to negative questions. Consider, again, (39):

- (39) Q: Is John not coming?
 A: No.
 [_{CP} **no** Foc [_{IP} John is **not** [_{VP} coming]]]

The question, by assumption, has middle *not*, since with low *not* the result would be confirmation of the negative alternative, as in (34A1). In this case there are two negative elements in the sentence, yet the result is not double negation; with double negation, the sentence would mean that John is coming. This can be taken to mean that only one of the negative elements is interpretable negative, in terms of Chomsky's (1995: ch. 4) distinction between interpretable and uninterpretable features, and more specifically in terms of Zeijlstra's (2004, 2007) theory of negative concord, according to which negative concord, as in (40), is the result when an uninterpretable negative feature enters an agreement relation with an interpretable negative feature.

- (40) Nunca devi nada a ninguém. [Portuguese]
 not owe.1SG nothing to nobody
 'I don't owe anyone anything.'

Semantically there is a single negation in (40), as evident in the English translation. According to Zeijlstra (2004,2007) this means that only one of the links of the negative concord chain has an interpretable negative feature. The other links are uninterpretable negative features, agreeing with the negative interpretable one.

If (39A) is an instance of negative concord, the question is which negation is interpretable? We know that the PolP-internal negation in the answer is interpretable, because it is identical to the negation in the question, or else it could not be elided. We also know that the answer particle *no* can be interpretable negative because it assigns negative value in answers to neutral questions – but does it have to be? If we take the identity requirement on ellipsis as an axiom, then we have to acknowledge that there are two versions of the answer particle in polarity-based languages: an interpretable and an uninterpretable one. The interpretable one is used with neutral questions, the uninterpretable one with negative questions.

If this is right, the structure of the negative answer (39) is more precisely (41), where *uNeg* stands for ‘uninterpretable negation’ and *iNeg* for ‘interpretable negation’:

(41) [CP [no, **uNeg**] FOC [PolP he [is, **-Pol**] [**not**, *iNeg*] [VP coming]]]

Here, the arrow signifies an assignment relation, the negation assigning negative value to [\pm Pol] inherited from the question, while the line signifies an agreement relation, [*uNeg*] in the C-domain agreeing with [$-$ Pol] in PolP. There is thus only one inherently interpretable negative feature in the CP, namely that of the negation *not*; the other negative features are interpreted negative by virtue of their relation with *not*.

Making a distinction between interpretable and uninterpretable negation is not an innocuous assumption, in the model assumed in this book or in linguistic theory in general. The other features that we have been operating with are ontologically attributes with values. For instance polarity is an attribute which has two values, plus or minus, positive or negative, nominal number is an attribute which typically has two values, singular and plural (but may have a few more; see Corbett 2006), tense is an attribute which has two or three values, etc. By hypothesis (assuming Chomsky’s 1995: ch. 4, 2001 theory) these features/attributes have an uninterpretable version, where the attribute has not been assigned any value. But ‘negative’ is not an attribute which has a value; it is a value of polarity. The idea that there are uninterpretable versions of values has far-reaching consequences, which are not necessarily all that attractive. Do all feature values have uninterpretable counterparts? If not, which of them do? I will nevertheless adopt this theoretical device here. One good reason is that it offers an account of the answer type (34A1), repeated here as (42), within the polarity-based system (understood as a system without low negation).

(42) Q: Is John not coming?
A: No, he is.

The following are two more examples.

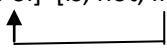
(43) Q: Did you not recognise me?
A1: No, I did.

(44) Q: Doesn’t Mary speak Russian at all? (tolerant version of English)
A1: No, she does.

Above, I showed that this type of answer is to be expected in languages or constructions where negation is, or can be, low, so that it does not compete with the answer particle for assignment of value to $[\pm\text{Pol}]$. In these languages/constructions the answer yields double negation, and therefore confirms the marked positive alternative. However, anticipating the discussion in section 4.7, we find this type of answer also in at least one language which clearly lacks low negation: Finnish.

- (45) Q: Ei-kö Jussi tule-kaan mukaan? [Finnish]
 NEG-Q Jussi comes-after.all along
 'Isn't Jussi coming, after all?'
- A: Ei, kyllä se tulee.
 no indeed he comes
 'No, he is.'

The intuition is that *no* in (42-44) and (45) means 'your supposition is wrong', while the second part (*it is, he does, etc.*) confirms the positive Hamblin-alternative. I propose that *no* in (42)-(44) and (45) is the interpretable version of *no*. Furthermore I propose, as above, that the answer is composed of two collocated sentences, both derived by ellipsis, the first one with PolP ellipsis, the other one with VP-ellipsis. The structure of the answer in (44), for example, is (46a,b), where (46a) is the first sentence, (46b) the second one. *Not* is interpretable middle negation, and therefore assigns negative value to $[\pm\text{Pol}]$ inherited from the question.

- (46) a. $[_{CP} [\text{no, iNeg}]_{[PolP \text{ John } [-Pol]} [\text{is, not, iNeg}]_{[VP <is> [VP \text{ coming }]]]]$

- b. $[_{CP} C_{[PolP \text{ he } [is, +Pol]} [VP <is> [VP \text{ coming }]]]]$

(46a) contains two interpretable negative features, which consequently cancel each other out (effectively 'not John is not coming', although the first 'not' is spelled out *no*). This answer thus disconfirms the negative Hamblin-alternative, the primary, unmarked alternative of this negative question. Hence the intuition that it means "your supposition is wrong". The second part of the answer then adds further confirmation that the positive Hamblin-alternative is true. In less formal terms, the answer means 'Not John is not coming; he is coming'. This is the same reading as under the low negation analysis above, but derived without low negation. The possibility of this analysis/this reading follows without any additional assumptions, given the possibility of two versions of the negative answer particle, an interpretable and an uninterpretable one. This might

then be an additional necessary property of the answering system which, following Jones (1999), I have called the polarity-based system.

In section 4.1 I posed the question whether the distinction between the truth-based and the polarity-based answering system is a matter of syntax or lexicon (the meaning of ‘yes’ and ‘no’) or cultural conventions? The mere fact that English employs both systems, depending on the scope of the negation in the question, makes it apparent that we are dealing with a syntactic, structure-dependent phenomenon. I will pursue the hypothesis that this is, in fact, the explanation of the cross-linguistic variation between these two systems. To put it simply, languages with a consistently truth-based system only have a low negation (in a sense to be defined), languages with a consistently polarity-based system only have middle or high negation, while languages with a mix are like English in having variation between a high and a low negation. We have also seen evidence, though, that the lexical properties of the lexical particles, specifically ‘no’, may vary in ways that affect how negative questions are answered.

I will now discuss three other language, Swedish and Finnish, both of which are consistently polarity-based, and Thai, which is consistently truth-based.

4.5 Swedish: a language without low negation

Swedish has a robustly polarity-based answering system.

(47) Q: Har Johan kommit? [Swedish]
has Johan come
‘Has Johan arrived?’

A1: Ja.
yes (‘Johan has arrived.’)

A2: Nej.
no (‘Johan has not arrived.’)

(48) Q: Har Johan inte kommit?
has Johan not come
‘Has Johan not arrived?’

A1: *Ja.
yes

A2: Nej.
no ('Johan has not arrived.')

There is no ambiguity or (as far as I know) any speaker variation regarding the affirmative answer in (44): It cannot confirm the negative alternative, nor can it confirm the positive alternative. This follows if the Swedish negation is exclusively a middle negation. As a middle negation it will clash with the feature of the affirmative particle, the situation depicted in (27), for the variety of English which has middle negation as the default analysis of *not*. That Swedish does not have low negation is further confirmed by the observation that double negation is not possible; compare (49a) and English (21,22).

- (49) a. *Du kan **inte inte** gå i kyrkan, ... [Swedish]
you can not not go to Church
b. Du kan inte **avstå från** att gå i kyrkan, ...
you can not refrain from going to Church

Swedish does not have a negation with VP-scope. To express negation with VP-scope, Swedish has to use a verb with lexical negative meaning, such as *avstå* 'refrain'.

In this light, it may seem surprising that inserting an adverb in the question has the same effect on the answer as in English; compare (50) and (18).

- (50) Q: Har Johan **nångång** inte kommit i tid? [Swedish]
has Johan any time not come on time
A1: Ja.
yes ('He has sometimes not come on time.')
- A2: Nej. ('He has not sometimes not come on time, i.e. he has always been on time.')

Following Holmberg (2013) this is explained as follows: The effect of the adverb preceding, i.e. c-commanding, the middle negation in the question, and thus also in the answer (even though it is usually not spelled out), is that the negation is prevented from valueing [\pm Pol]. This can be characterised as a Relativized Minimality effect, of sorts (Rizzi 1990): The scope-taking adverb prevents the negation from widening its scope by valueing the polarity head.

(51) [CP [ja, +Pol] Foc [POIP Johan [har, +Pol] [nångång [inte [kommit i tid]]]]]

The structure is simplified for ease of exposition, ignoring the issue of verb second in particular; this will be taken up in section 4.X. However, the result is that the focused answer particle can assign plus-value to [±Pol]. If the particle is affirmative, the effect is confirmation of the negative alternative, i.e. that Johan is sometimes not coming on time. If the answer particle is negative, the result is double negation, i.e. that Johan is not sometimes not coming, which in this case means that he is always coming on time, the marked positive Hamblin-alternative.

The effect of the lack of a low, VP-internal negation in Swedish, apart from the fact that it must resort to negative lexical verbs to express VP-negation, as in (49), is that the affirmative answer particle can never confirm the negative alternative of a negative question, the way it can in English, except when an adverb precedes the negation, thus intervening between the negation and the unvalued polarity head. In Kramer and Rawlins's (2011) terms, Swedish does not have negative neutralisation.

To confirm the positive alternative of a negative question, Swedish uses a special affirmative particle.

(52) Q: Har Johan inte kommit? [Swedish]
 has Johan not come
 'Has Johan not arrived?'

A: Jo.
 yes.REV
 'Yes, he is coming.'

The particle is glossed as 'yes.REV', short for 'affirmative polarity-reversing' (see Holmberg 2003 and especially Farkas and Bruce 2009). The effect of the particle is to neutralize the negative feature of the negation in the answer, or, in slightly different formal terms, reverse the negative polarity caused by the negation in the answer. The structure of the answer (48A) is (49), where the effect of the REV feature is depicted as elimination of the negation (not just the form but the feature content of the negation).

(53) [CP [jo, +Pol, REV] Foc [IP Johan [har, +Pol] [inte [kommit]]]]

Recall that English resorted to VP-ellipsis to resolve the same problem, namely, how to confirm the marked positive Hamblin-alternative of a negative question, especially when the negation in the question is not the low but the middle negation. As shown in Holmberg (2001), and as will be discussed below, Finnish is like English in this respect.²⁷

The following is a list of other languages which have a reversing affirmative particle (data mainly from SSWL):

Languages with a reversing affirmative particle²⁸

Albanian

Arabic (Standard)

French

Georgian

German

Greek

Hungarian

Icelandic

(Kurdish (Sorani))²⁹

Norwegian

Old English

Shupamem

Swedish

Wolof

(14 languages, 10 genera)

There are no languages clearly employing the truth-based system among these languages. This is expected, because the truth-based languages can always use 'no to disconfirm the negative alternative of a negative question. It is a feature of the Germanic languages, clearly: most Germanic languages appear to have it, although not Modern English. Quite plausibly there is a connection between the English lack of a reverse particle and its readiness to use 'yes' to confirm the negative

²⁷ See Wallage and van der Wurff (2013) on the particle *gyse*, the ancestor of *yes*, in early Old English, and the syntax of polarity reversal.

²⁸ In SSWL Basaa and Bandial, two African languages, are reported as having a polarity-reversing answer particle. The examples given show, however, that the (same) expert has misunderstood what is at issue.

²⁹ In SSWL Sorani Kurdish is reported as having a reversing affirmative particle, although no example is given. Two Sorani-speaking informants, both linguists, have independently reported no knowledge of such a particle. The language is therefore included within parentheses.

alternative of a negative question. Afrikaans is another Germanic language not in the list, which is expected in view of the fact that Afrikaans shows up in the truth-based systems list.

There are some languages that have a reverse particle in the form of an affirmative particle plus an additional particle. Dutch is one of them.

- (54) Q: Is je broer niet naar Parijs gegaan? [Dutch: from SSWL]
is your brother not to Paris gone
'Did your brother not go to Paris?'
- A: Jawel.
yes.WEL
'Yes he did.'

Two other languages reported on SSWL to have this system are the African languages Nupe and Nweh. Both of them are on the list of truth-based systems, which somewhat complicates the generalisation just made that truth-based systems do not have reverse particles, because they do not need them.

4.6 Finnish: another language without low negation

The answering system in Finnish is robustly polarity-based. Finnish clearly conforms to the prediction that there is no low negation.

- (55) Q: On-ko Jussi tullut?
has-Q Jussi come
'Has Jussi arrived?'
- A1: On.
has
- A2: Kyllä.
yes
Both: 'Yes.'
- A3: Ei.
NEG.3SG
- A4: Ei ole.
NEG3SG have

Both: 'No.'

(56) Q: Ei-kö Jussi ole vielä tullut?

NEG-Q Jussi has yet come

'Has Jussi not arrived yet?'

A1: *On.

has

A2: *Kyllä.

yes

A3: Ei.

NEG.3SG

A4: Ei ole.

NEG.3SG has

Both: 'No.'

A5: On se.

has he

A6: On tullut.

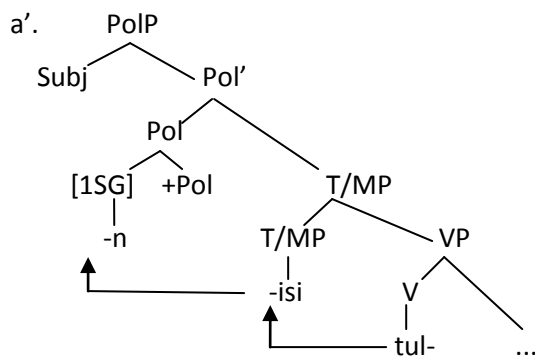
has come

Both: 'Yes, he has.'

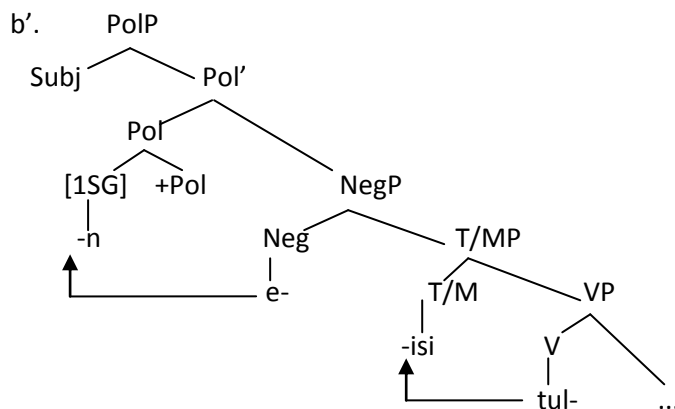
The examples show that neither the short verb answer nor the short particle answer used to confirm the positive alternative of the neutral question can be used to confirm the negative alternative of the negative question; this takes a negative answer. To confirm the marked positive alternative of a negative question, a 'long answer' including a subject pronoun or the main verb can be used. The NPI *vielä* 'yet' is added in (56) in order to ensure that the interpretation is the negatively biased one. As described in section 3.12.1. the standard negation particle in Finnish is an auxiliary-like head with the root form *e-*, inflected for subject agreement just like the finite verb or auxiliary; see Holmberg et al. (1993). There is morphological as well as syntactic (word order) evidence that the negation is a high head in the IP-domain, higher than tense and mood. This is shown by the fact that (a) agreement inflection is outside tense inflection on the finite verb, (b) in negated sentences the negation precedes the verb or auxiliary verb, and (c) the negation is inflected for agreement while the verb is inflected for tense and mood (with some complications which need not detain us here; see Julien 2003). Compare, for example, (57a,b) (CON = conditional mood) . In (57a) the finite verb carries the conditional mood suffix (in complementary distribution with tense) and outside it, the

subject agreement suffix, consistent with the analysis that the verb first moves to the head hosting tense and mood, called T/M in Holmberg et al. (1993), and then this complex head moves to the head hosting subject agreement, called AgrS in Holmberg et al. (1993), but which we identify as Pol, following Holmberg (2003); see above section 3.12.1.

- (57) a. Minä tul-isi-n mukaan.
 I come-CON-1SG along
 'I would come along.'



- b. Minä e-n tul -isi mukaan.
 I NEG-1SG come-CON along
 'I wouldn't come along.'



The negation, when present, does not just value Pol negative, but moves to Pol. I assume (following Holmberg 2003) that Pol hosts finite subject-agreement (formally a set of unvalued f-features), in Finnish. The auxiliary, or in the absence of an auxiliary, the main verb moves to T. The subject originates in VP since the verb is unaccusative, but this is of no consequence here.

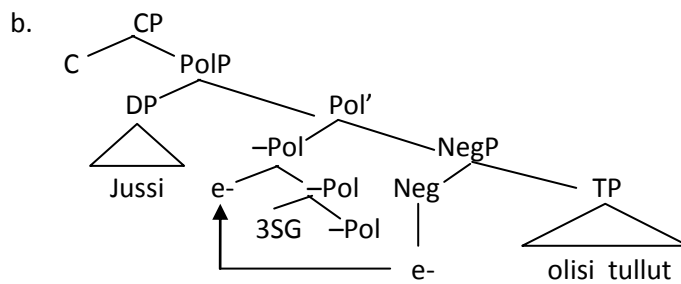
In unmarked polar questions the highest head in the IP-domain, i.e. PolP-domain in our framework, undergoes movement to the C-domain together with [\pm Pol] realised as the question

clitic *-ko*. When present, the negation is the highest head, hence always undergoes the movement. Compare (58a,b,c), showing that the auxiliary cannot move across the negation (whatever the distribution of inflections over the heads is).

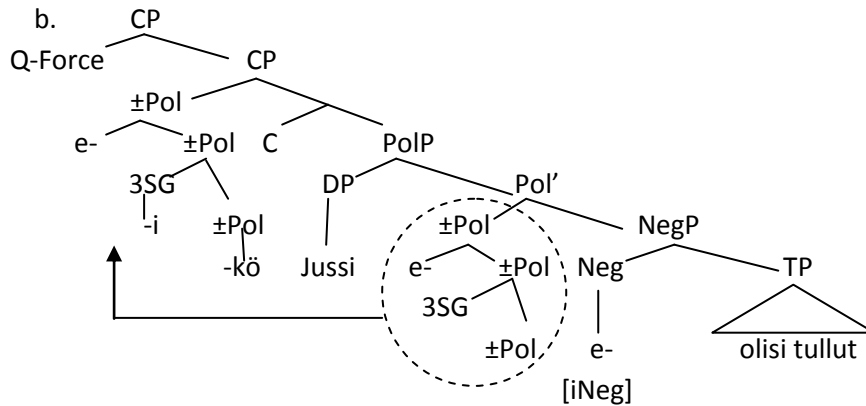
- (58) a. Olen-ko minä tullut?
 have- $[\pm\text{Pol}]$ I come
 'Have I come?'
 b. En-kö minä ole tullut?
 NEG- $[\pm\text{Pol}]$ I have come
 'Haven't I come?'
 c. *Ole-ko minä en tullut?
 have- $[\pm\text{Pol}]$ I NEG come

I assume the structure of the declarative negative sentence (59a) is (b). The structure of the corresponding question (60a) is (60b).

- (59) a. Jussi ei olisi tullut.
 Jussi NEG would.have come
 'Jussi wouldn't have come.'



- (60) a. Ei-kö Jussi olisi tullut?
 NEG-[±Pol] Jussi have-CON come
 'Wouldn't Jussi have come?'



In yes-no questions Pol is marked as a disjunction of positive or negative polarity (the question variable), and undergoes movement to the C-domain, as described many times above, assigning sentential scope to the disjunction, and placing it in the CoA position subjacent to Q-Force. As I have assumed for English, Swedish, and indeed universally, the negation of a negative yes-no question does not value Pol negative; only in the answer is Pol assigned a specified value.³⁰ The negation still moves to Pol in Finnish questions, though. This may look like a paradox, but the way to see it is that the negation merges with polarity for morphological reasons, in order (a) to host the agreement (with 3SG value in (59) and (60)), and (b) in order to host the question clitic under movement to the C-domain, because it is the highest morphologically realised head. The interpretable negation feature remains in PolP (in negatively biased questions), as indicated in (60), even though a copy of the negation moves with Pol to the C-domain.

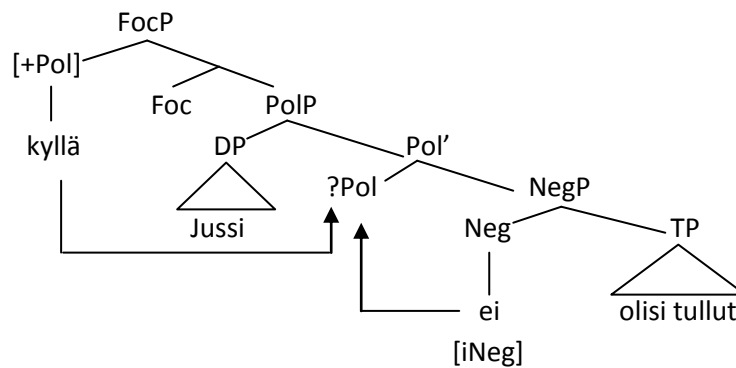
If by high negation we mean negation which is interpretable in the C-domain, then the Finnish sentential negation is still middle negation, albeit a higher variety of middle negation than what we saw in Swedish. Being merged with Pol, including subject-verb agreement, it is restricted to finite clauses. Non-finite clauses have to resort to the Abessive case (roughly meaning 'without') to express negation.

- (61) Jussi lupasi [olla naura-matta]
 Jussi promised be laugh-ABE
 'Jussi promised not to laugh.'

³⁰ This would hold universally if a negative yes-no question by definition has a [±Pol] variable if it is a question. We will see a particular twist of this condition below, in the discussion of Thai.

It follows that the answering system will be polarity-based. An affirmative particle in the focus position as answer to the question (60), with the structure (62), will always clash with the middle negation (which will want to not just value Pol, but raise to Pol).

(62)



Since the negation is a head with a fixed place between Pol (hosting agreement) and T, double negation is out of the question, except with the help of the Abessive case (*ei* in (63a) is the 3SG form of the negation, also used as default form, but not here).

- (63) a. Minä en voinut (*en / *ei) nauraa.
 I NEG.1SG could NEG.1SG/ NEG laugh
 Intended: 'I couldn't not laugh.'
- b. Minä en voinut olla naura-matta.
 I NEG.1SG could be laugh-ABE
 'I couldn't help laughing.'

It is also not possible to get the adverb effect we saw above in English and Swedish. English has a low negation, as described, and Swedish, too, although it does not have an inherently low negation, has a middle negation which is 'mobile' in that it can occur in various positions in the Mittelfeld. In particular, it can be 'pushed down the tree' by a low adverb, as shown in (46), which, when the adverb and negation are combined in a question, gives the effect of a truth-based answering system. This is not possible in Finnish; no adverb can intervene between Pol and the negation as the negation always moves to Pol.

- (64) *Jussi on joskus ei tullut ajoissa töihin.
 Jussi has sometimes not come in.time for.work
 Intended: 'Jussi has sometimes not arrived on time for work.'

(62) exemplifies the positive particle answer, which is an option in Finnish. A positive polarity feature is externally merged in Focus position in the C-domain, and is spelled out as a particle (although, for other reasons, the result is ungrammatical in (62)). The alternative strategy is the verb-echo answer: the polarity feature merged with the FocP attracts the highest lexically realised (or realisable) head in PolP to provide morphological expression of the polarity feature. This is not an alternative in (62), since the highest lexically realised head is the negation, which, quite uncontroversially, cannot be attracted by [+Pol].

Consider again answers to negative questions which contradict the negative alternative:

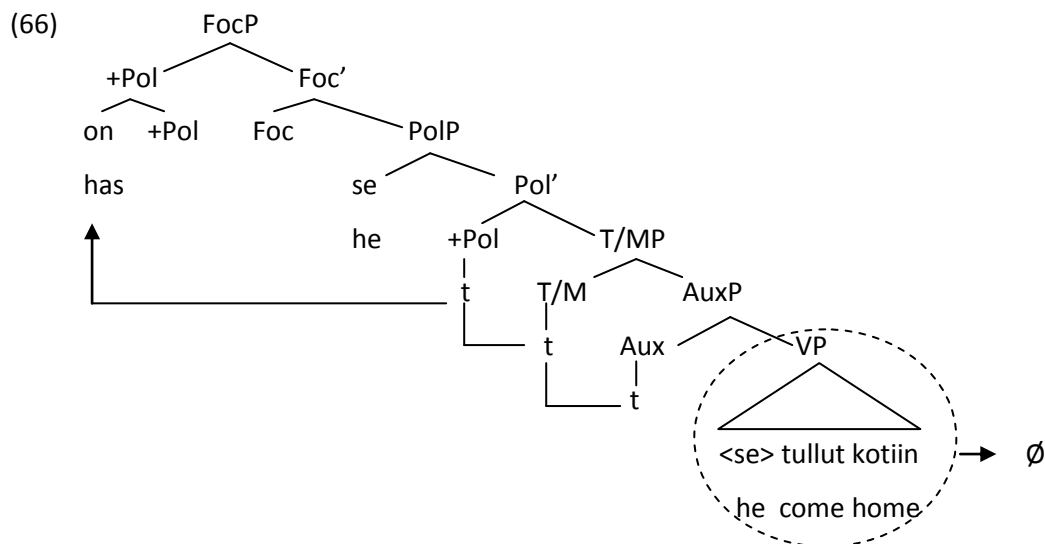
- (65) Q: Ei-kö Jussi ole vielä tullut kotiin?
 NEG-Q Jussi has yet come home
 ‘Has Jussi not come home yet?’
- A1: *On.
 has
- A2: *Kyllä.
 yes
- A3: On se.
 has he
- A4: On tullut.
 has come
- Both: ‘Yes he has.’

The reason why the short affirmative answers are ill formed is familiar by now: The IP/PolP of the question contains a negation, and this IP/PolP is inherited by the answer, which we know because this is a condition on the ellipsis of the IP/PolP.³¹ This leads to a problem in both A1 and A2, but different problems, partly. Take A2 first. Here a feature clash ensues just as we have seen in English and Swedish, as the negation will assign negative value to the polarity variable also inherited along with the PolP of the question, and the focused positive polarity feature realised by the particle *kyllä* will assign positive value to it, leading to a feature clash. In A1 inheriting the negation along with the PolP of the question means that the auxiliary cannot be copied by the positive polarity feature

³¹ The short answers are not sharply deviant. I still assign them * rather than ? or ?? in order to make a theoretical point. The claim is that they are indeed ungrammatical. As discussed in the text, (64A1) is underivable and (64A2) instantiates a feature clash leaving it without interpretation. The reason why they can, perhaps, still be used and interpreted in the right context is that they can be interpreted by a repair strategy, such as reinterpreting the question as a neutral one.

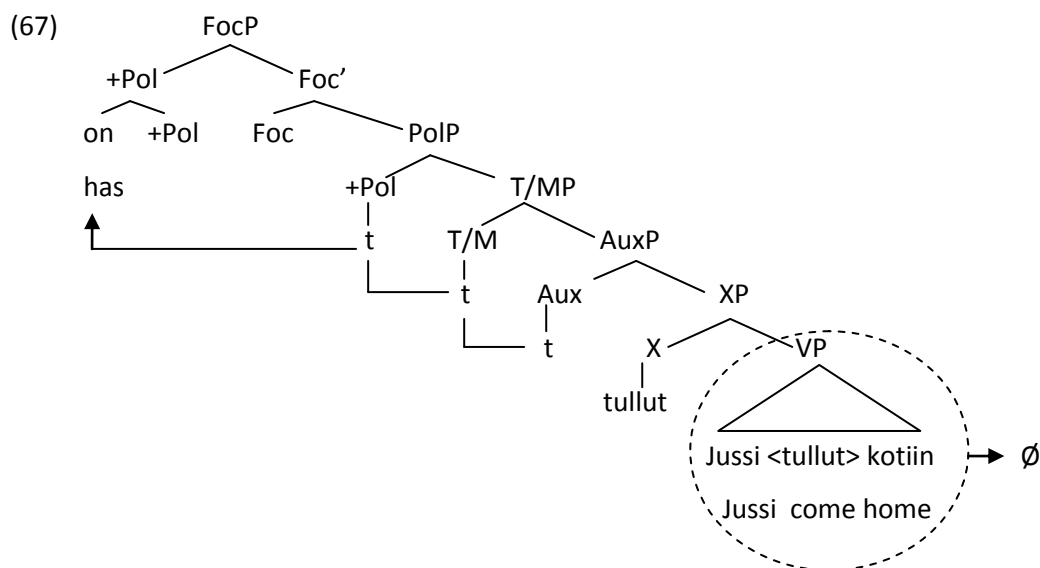
merged with FocP, as required to derive a verb answer in Finnish, because the negation, as the highest auxiliary in IP, is in the way. So this answer is undervivable.

The long answers do not have this problem, as they are derived by VP-ellipsis (see Holmberg 2001), and therefore are not dependent on inheriting the IP of the question. The structure of (65A3) is (66), where the copies of the successive head movement are represented as 't', for ease of exposition.



Only the VP is elided, hence only the VP needs to be identical with that of the question (the verb is unaccusative in this example so we have less structure in the predicate; if the verb was transitive, the elision would target vP). Above the VP, the sentence has a polarity head, inherited as [\pm Pol] from the question, but once linked by head movement with the focused affirmative polarity feature in the C-domain it will inherit positive value from this feature. The subject pronoun in VP merges a second time with PolP (i.e. it moves to spec,PolP in traditional parlance).

The alternative answer (65A4) is also derived by VP-ellipsis, but in this case the main verb is moved out of VP to the mystery head X (see chapter 3.12.1, (108)) while the subject does not move, but is elided along with the VP.



We may want to know why the bare auxiliary, as in (65A1), would not do as an answer, if it has the same derivation as (66) except that the main verb is not moved out of VP (recall that this is an optional movement) and therefore is elided along with the VP. The answer is, I propose, that derivational economy dictates that an answer consisting of just a bare, focused auxiliary will be analysed as derived by PolP-ellipsis, the maximal ellipsis allowed (this would be a special case of the MaxElide condition; see Merchant 2010), and this, as just discussed, is impossible because the question contains a negation. That is to say, in order to eliminate the PolP-ellipsis option, the sentence needs to contain some other PolP-internal material than the finite auxiliary, such as a moved subject or a moved main verb. Consider also the exchange in (68):

- (68) Q: Ei-kö Jussi ole-kaan tullut kotiin?
 NEG-[±Pol] Jussi has-even come home
 ‘Has Jussi not come home, after all?’
- A: On, on.
 has has
 ‘Yes, he has.’

Martins (2006) contains a detailed discussion of answers like (68A) in Portuguese, where they constitute a common form of answer to negative questions to disconfirm the negative alternative. In the present theory, the derivation is straightforward: They are derived like the bare auxiliary answer *On* in, for example chapter 3.12.3, (117), with one exception: The copy of the movement of the head of PolP to the Focus position leaves a spelled out copy. This is sufficient to rule out analysing it as PolP-ellipsis, leaving VP/vP-ellipsis as a viable analysis, provided it is the radical ellipsis which elides the subject along with the VP/vP, as in (67).

As mentioned in chapter 3.12, the derivation of answers in Finnish articulated there, and again here, differs from the theory articulated in Holmberg (2001, 2005) and also Holmberg and Roberts (2014) in not assuming that the answers are derived by remnant PolP movement. One reason is that that theory, whatever other attractions it may have, does not have any easy account of the contrast between (65A1 and A4). In that theory, both answers (*On* ‘has’ and *On tullut* ‘has come’) would be derived by remnant PolP-movement. This is fine when the question is neutral; in that context both expressions are equivalent, well-formed affirmative answers. The derivation would proceed roughly in the following steps: (a) Move the auxiliary to Pol, (b) move the entire VP (or vP if it is a transitive verb) to a sentence-initial topic position, spec,TopP, (c) move the remnant PolP to spec,FocP, (d) delete TopP. This would derive the answer *On*. The alternative *On tullut* has the same derivation except that the main verb moves to X, and thereby is moved along with the remnant PolP to spec,FocP, hence gets spelled out. But this does not explain the contrast between them when answering a negative question: The bare auxiliary is correctly ruled out as underivable when the PolP of the answer contains a negation, as it does when the question contains one. But then Aux+V is also ruled out, as it is derived in the same way as bare Aux, except having V-movement out of VP.

Consider again (65A2), repeated here as (69A1) with a preceding question.

- (69) Q: Eikö Jussi ole vielä tullut kotiin?
 ‘Hasn’t Jusi come home yet?’
- A1: *Kyllä.
 yes
- A2: Kyllä on.
 yes has
- A3: Kyllä se on.
 yes he has

In the present theory the contrast between A1 on the one hand and A2 and A3 on the other is expected. The bare particle presupposes an elided PolP identical to that of the question, but that would lead to a feature clash between the affirmative particle and the negation in the PolP. A2 and A3 are derived by VP-ellipsis, so the negation in the question is not inherited in the answer. In the remnant-movement-based theory, the contrast between A1 and A2 is unexpected. Whatever the exact derivation of A2, it would be derived by remnant movement with ellipsis of PolP, and is therefore predicted to be at least as bad as A1, whether A1 is derived as above, by external merge of

the particle, or by remnant movement. If it is external merge, it will lead to a feature clash with the negation inherited from the question. If it is remnant movement, A2 would be underivable, since the PolP would contain a negation inherited from the question. Instead, the remnant-movement – theory predicts a contrast between A2, which requires PolP-ellipsis and A3, which manages with VP-ellipsis. But there is no contrast between A2 and A3.

Possible negative answers include the following; here it makes no difference if the question is neutral or negative.

- (70) Q: Eikö Jussi ole vielä tullut kotiin?
'Hasn't Jussi come home yes?'
- A1: Ei.
NEG
- A2: Ei ole.
NEG has
- A3: Ei ole tullut.
NEG has come
- All: 'No (he hasn't).'

In the present theory, they are all derived by head movement of the negation to support the externally merged focused negative polarity feature. A1 is then derived by ellipsis of PolP, while A2 is derived by VP-ellipsis, and A3 by VP-ellipsis but only after the main verb has moved out of VP. In the remnant movement theory, the expected answers are A2 and A3, derived by remnant PolP movement after topicalising VP, the difference being whether the main verb stays in VP or moves out to the PolP domain. How to derive the bare negation is less clear. It would be derived if the entire AuxP can be topicalised, leaving just the negation in the PolP, to be moved to spec,FocP.

A possible objection against the present, head-movement based theory is that it presupposes that Finnish can do without EPP-driven movement to spec,IP or spec,TopP, or spec,PolP in the present model, in verb-echo answers, even though such movement is otherwise generally compulsory in Finnish (see Holmberg and Nikanne 2002, 2008). In the remnant-movement based theory of Holmberg (2001, 2007), movement of the vP/VP to spec,TopP counts as satisfying the EPP. But in the present theory the derivation of (64A4) shown in (67) crucially has no movement to spec,PolP. It is as if the focused polarity feature can satisfy the EPP, or somehow substitute for the EPP-driven movement. I have no clear idea how to explain this. Still, when comparing the two theories, the head-movement-based theory has the empirical edge over the

remnant-movement-based theory, when a wider variety of facts from answers to negative questions are taken into account than in Holmberg (2001).

We may conclude that, with respect to answers to yes-no questions, Finnish behaves as we would expect from a language with a negation fixed in a high position, still technically a middle negation position, but without the mobility in the Mittelfeld characteristic of the Swedish negation and English *not*. An additional significant difference between Finnish on the one hand, English and Swedish on the other, is that Finnish has recourse to the verb-echo strategy.

4.7 Thai and the (in-)significance of low negation

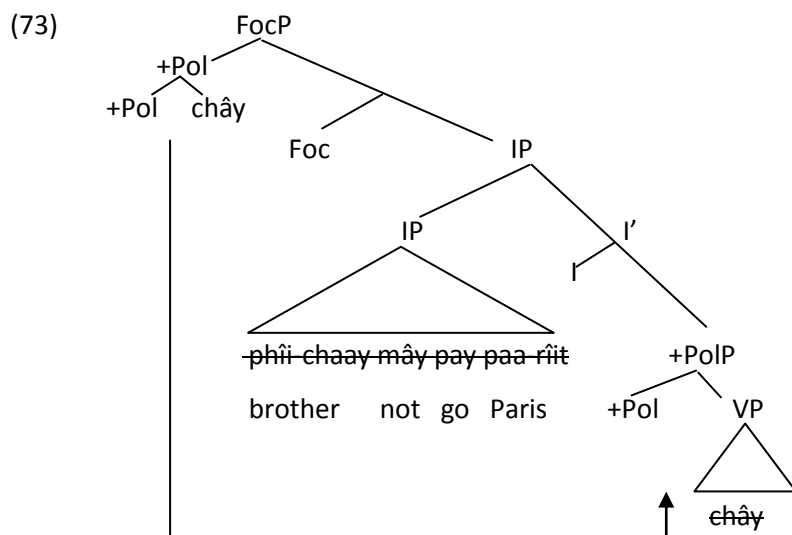
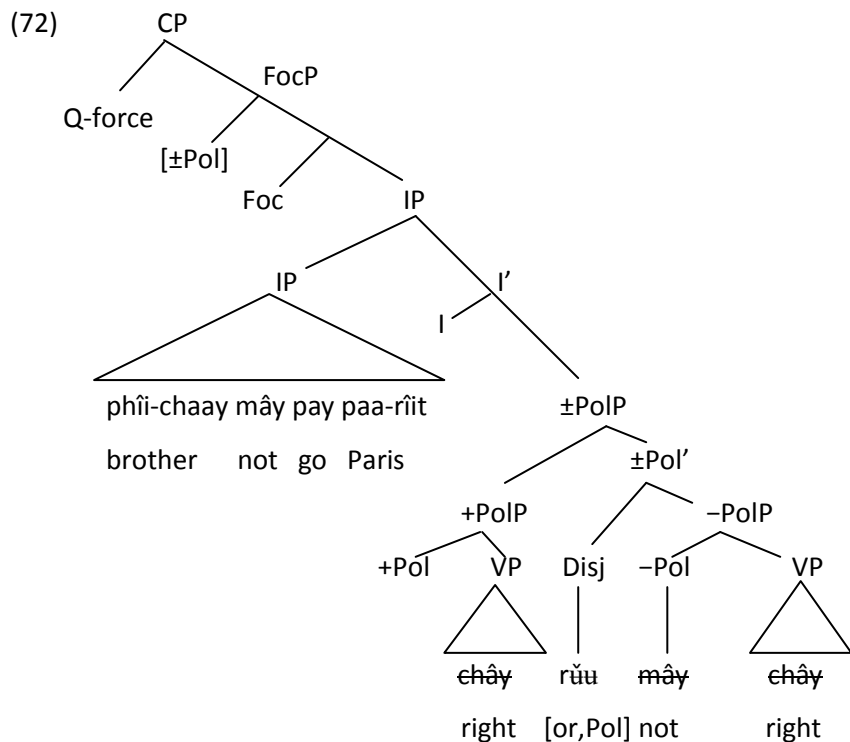
As discussed in chapter 3, Thai has a truth-based answering system. As also discussed, only so called Type 2 questions can be negative.³² These are the questions formed with the Q-particle *chây-măy* or some other derivative of *chây-rǎu-măy-chây*, literally ‘right-or-not-right, and which are standardly answered *chây* ‘right/yes’ or *mây chây* ‘not right’ (see section 2.9.3). According to Yaisomanang (2012) the ‘Q-particle’ is a predicate which takes the proposition questioned as subject. That is to say, the question variable is a disjunctive predicate. The structure of the Type 2 question in (71) is (72), and the structure of the answer is (73).

- (71) Q: phîi-chaay mây pay paa-rîit rǎu
 older-brother NEG go Paris Q
 ‘Did your brother not go to Paris?’
- A: chây
 right/ yes (‘He didn’t go.’)

³² There is an apparent exception to this generalisation discussed in Yaisomanang (2012).

(1) Nát mây khàp rôt rǎu-plaw?
 Nat NEG drive car Q
 ‘Is it right that Nath doesn't drive?’

Somphob Yaisomanang (p.c.) suggests that there is some omitted but understood element in the sentence. It could be ‘because’, so that it means ‘Is it because Nat doesn’t drive?’ If so, the negation would not be in the scope of the question.



The answer is based on the IP of the question, but with a positive polarity feature merged in the focus position, which selects the positive alternative of the question variable and deselects the other. Only the focused polarity feature is spelled out, as *chây*. Since the subject of the predicate is a negative sentence, the result is a truth-based answer to a negative question, paraphrasable as ‘The alternative that your brother didn’t go to Paris is true’ or more succinctly ‘Yes, your brother didn’t go to Paris’.

Note how in this case the height of the negation inside the IP embedded as subject of the question is irrelevant. The reason why the height of the negation can be a crucial factor in negative questions, as we saw most clearly in the discussion of English, is that the negation may get so close

to the polarity variable that it will assign negative value to it, clashing with the value assigned by a focused positive polarity feature. But this will not be a problem in the case of Thai because there is no c-command relation between the negation and the polarity variable.

This shows that the height of the negation (its structural position in the clausal spine) is not crucial as such. The crucial question is whether the negation in the question, and therefore in the answer (because the IP of the question is inherited by the answer) is in a position to assign value to the polarity variable, or not. If the negation is low enough, say, within vP, it cannot assign a value to the polarity variable high in the IP-domain, because of the distance. In a phase-based theory (Chomsky 2000, 2001), the reason would be that the negation is inaccessible to the polarity variable because it is in a lower phase. The result is a truth-based answer: the affirmative answer will confirm the negative Hamblin-alternative. If the negation is separated from the polarity variable by an adverbial of the right kind, as we saw in English and particularly in Swedish, it will be inaccessible to the polarity variable by virtue of Relativized Minimality (see section 4.5). Again the result is a truth-based answer. And obviously, if the negation is not even c-commanded by the polarity variable, as in the Thai case, it will not be accessible to the variable, and the result is a truth-based answer.

It is also predicted that there will be no difference in Thai between answers to negative and positive questions analogous to the difference that we have seen in the other languages discussed so far: English, Swedish, and Finnish. It is exactly the same answers in the two cases, except with opposite meanings.

(74) Q: phîi-chaay pay paa-rîit rǎu
 older-brother go Paris Q
 ‘Did your brother go to Paris?’

A1:: chây
 right/ yes (‘He did.’)

A2: mây chây
 not right (‘He didn’t go.’)

(75) Q: phîi-chaay mây pay paa-rîit rǎu
 older-brother NEG go Paris Q
 ‘Did your brother not go to Paris?’

A1: chây
 right/ yes (‘He didn’t go.’)

- (77) a. Is this not the road to Lund?
 b. Isn't this the road to Lund?

Probably for all speakers (77a) has the negative bias reading, by preference or even necessarily, although in the very formal variety of English where the negation form *n't* is not used at all, (77a) must, presumably, be used to convey the positively biased reading as well as the negatively biased one. But for speakers of what I have called the strict variety of English (see section 4.3), (77b) can only have the positive bias reading, while for other speakers, the so called the tolerant variety, it is ambiguous. For the latter category of speakers it may have what Ladd (1981) called the inner negation reading or the outer negation reading. The inner negation reading is the negatively biased one, the outer negation reading is the positively biased one. The English contrast between (77a,b) gives a clue to a syntactic difference between the two readings, which may be crucial: The negatively biased one has the negation interpreted within PolP, while the positively biased one has the negation interpreted outside PolP. I will come back to this point below.

In terms of answers, the generalization is that positive-bias negative questions (as I will call them from now on) can be answered like neutral questions, while negative-bias negative questions require something special in the case of answers confirming the positive alternative. Thus in Swedish, if the question (76) is understood as having positive bias, the answer confirming the positive alternative can be *ja* 'yes', which would also be the standard answer to a neutral question whether this is the road to Lund. If the question is understood as having negative bias, the short answer confirming the positive alternative cannot be *ja*, but must be *jo*, the polarity-reversing affirmative particle (see section 4.5).³³ In English, the short answer to (77b) confirming the positive alternative under the positive bias reading can be just *yes*, but the short answer to (77a), or (77b) under the negative bias reading, confirming the positive alternative, cannot be just plain *yes*, but can be *yes it is* or *no it is*; see section 4.3.

There is a difference, though, between answers to neutral questions and answers to positive-bias negative questions seen in (78) and (79)

- (78) Q: Is this the road to Lund?
 A1: *So it is.
 A2: *That's right.

³³ To complicate matters, the answer confirming the positive alternative of any yes-no question can be *jo*, in colloquial Swedish (at least in many dialects). The answer to (76) when confirming the positive alternative is very naturally *jo*. The point is, however, that it can be *ja*, which makes it clearly different from its negatively biased counterpart, where the answer can only be *jo*, when confirming the positive alternative.

- (79) Q: Isn't this the road to Lund? ('I believe it is, but I still want to double-check.')
- A1: ?So it is.
- A2: ?That's right.

The answers in (79) may be less than perfect, but the contrast between (78) and (79) seems clear enough. This is an observation which we want to account for.

In terms of alternative propositions, a simple idea is that positively biased negative questions are negative questions which have the positive alternative as the primary one. But if so, how are they different from neutral questions?

4.8.2 *Tag questions*

At this point, consider the syntax and semantics of English tag-questions, compared with positive-bias negative questions.

- (80) Q: This is the road to Lund, isn't it?

The meaning of the tag question (80a) and the positive-bias negative question (79Q) is similar. Both can be paraphrased as 'I believe this is the road to Lund, but I still want to double-check'. This is the case with the positive-negative type of tag question (positive content clause, negative tag), which is the one that we focus on here. Consider the possible answers to the tag question, when confirming the positive alternative.

- (81) A1: Yes.
- A2: So it is.
- A3: That's right.

The answers (81A2,A3) are perfectly natural as answers to the tag question. In the case of (79) they were OK, but less than perfectly natural. This is an observation we also want to account for.

The English tag question shows the semantic components of a yes-no question quite explicitly. A yes-no question, as discussed, puts two alternative propositions before the addressee, one the negation of the other, combined with an instruction to the addressee to indicate which one is true. The content clause of the tag question presents one alternative in the form of a positively specified sentence (in the case of the positive-negative variety of tag-questions). The tag supplies the negative counterpart as well as, arguably, a mark of Q-force. The primary alternative is clearly

the positive one. The tag question is different from a neutral question, though, in that the positively specified alternative is presented as such, as a [+Pol]-marked clause, which can be agreed with; consider in particular the options *so it is* and *that's right* in (81). In the case of a neutral question the positive alternative does not exist as a syntactic entity but as a potentiality: a potential value of a clause with unspecified polarity. It can be confirmed, by assigning a value to polarity. It cannot be agreed with.

As further evidence that the content clause has positive polarity, consider the fact that it cannot contain a negative polarity item, unlike a neutral question.

- (82) Q1: This is reasonable (*at all), isn't it?
Q2: Is this reasonable at all?

Negative polarity items cannot be in the scope of positive polarity; this is why they can occur in yes-no questions and negative sentences, and this is why they cannot occur in the content clause of the tag question.³⁴

The content clause does seem to make an assertion, although the tag then immediately adds the polar alternative for consideration. I would not go as far as saying that the content clause has declarative illocutionary force, though; the tag question is still, arguably, a single illocutionary act, which is a question (see Asher and Reese (2005,2007) discussed below). This is indicated by the contrast between the tag question and the superficially very similar expression in (83):

- (83) Q: This is the road to Lund, or isn't it?
A1: ?Yes.
A2: No.
A3: *So it is.
A4: *That's right.
A5: Yes it is.

The difference is that (83) includes an overt disjunction. The short answer *yes* appears not entirely appropriate, and the agreement-indicators *so it is* and *that's right* are impossible. I claim that (83Q), unlike the tag-question counterpart, is two illocutionary acts, a declarative sentence (dis)joined with a negative question. The reason why (83A3,A4) are impossible is that the response, apparently, can only target the question, presumably because it is the final, 'ultimate' illocutionary act.

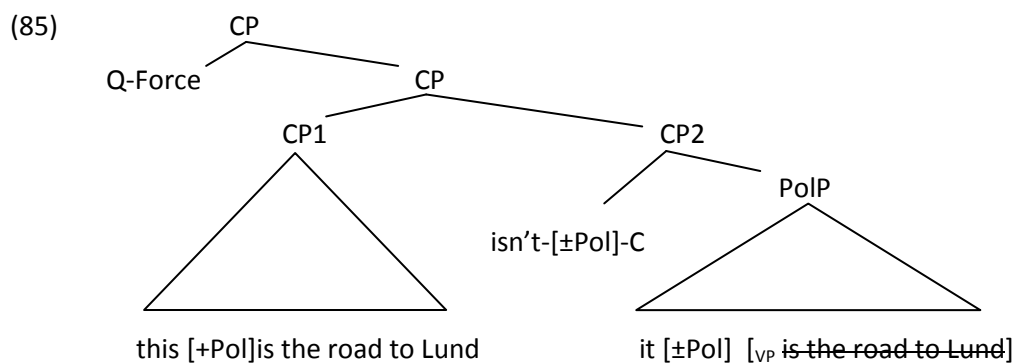
³⁴ This is a simplification. Negative polarity items are not just licit in negative contexts; Giannakidou (2012).

Furthermore, if the question is a negative-bias question this will explain why bare *yes* is not quite a good answer, while the long answer *yes it is* is fine (see section 4.3). If so, then the contrast between (83) and the tag question (80Q1) as regards the range of possible answers can be understood if the tag question, although it, too, consists of a positive-polarity clause joined with a question-indicator, is one illocutionary act, a CP made up of the content clause and a tag providing Q-force.

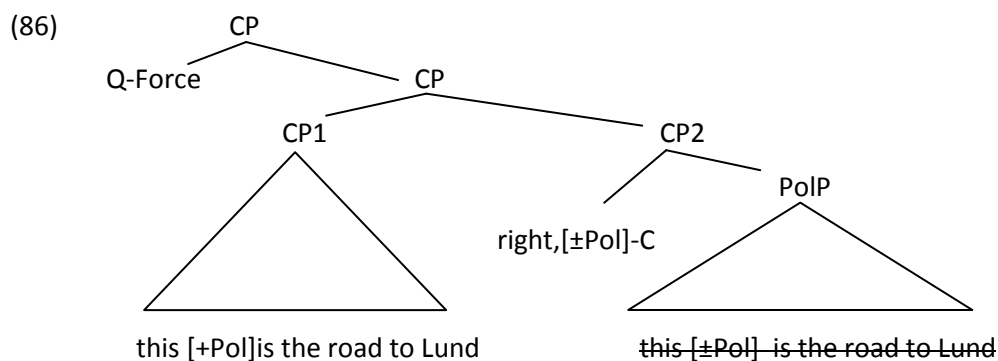
Recall, however, from the discussion in chapter 2.1, that for the answers *yes* and *no* to be applicable, it is typically not sufficient to have two alternative propositions and a Q-force indicator asking for a choice between the two alternatives. What is needed is a polarity variable, [\pm Pol]. In the case of tag questions the variable is clearly provided by the tag. This suggests that the negation of the tag is not a negation so much as a [\pm Pol]-marker, like a question-particle. In the case of the standard English positive-negative tag question, the tag does include a negation, but this is by no means always the case. (84) exemplifies just two other tags, one from colloquial English, one from Swedish, neither of which exhibits any overt negation.

- (84) Q1: This is the road to Lund, right?
 Q2: Det här är vägen till Lund, eller hur? [Swedish]
 this here is the.road to Lund or how

These tags, I submit, spell out the question variable [\pm Pol]. The answers *yes* and *no* assign a value to this variable. The structure of the standard English tag question is (85); the tag is a proper clause derived by VP-ellipsis.



I assume the structure of the tag question (84Q1) is basically the same.



It is a moot point whether we need to assume that the tag in the case of (103) is actually articulated as a clause in the syntax. What we do know is that the tag is a propositional operator, where the proposition is identical to that of the content clause except for the polarity value.

In terms of alternative propositions put before the addressee by the tag question, I propose they are as follows:

- (87)
1. This is the road to Lund OR
 2. a. this is the road to Lund OR
b. this is not the road to Lund.

That is to say the meaning can be paraphrased as ‘This is the road to Lund or there is a question, where the two alternatives are that it is or that it isn’t the road to Lund’. Q-Force asks for a choice among the alternatives, where the unmarked alternative is that it is the road to Lund and there is no question. The fact that the answer can be *so it is/that’s right* or *yes* or *no*, as shown in (80) and (81), means that the answer can select the PolP of either CP1 or CP2 in (86) as its antecedent. We know this because *so it is/that’s right* cannot assign value to [±Pol], but need a positively specified clause as antecedent, as shown by (88):³⁵

- (88)
- Q: Is this the road to Lund?
- A1: *So it is.
- A2: *That’s right.

³⁵ As pointed out a few times already the answer in (105) is not ungrammatical to the extent that it is incomprehensible or even misleading, in the right context, and answers like this may well occur from time to time in ordinary conversation. The claim is, though, that this requires some ‘repair’, which would involve reanalysis of the question as a positively biased question.

We also know it because bare *no* cannot function as response to a positive-valued sentence (see Holmberg 2013):

- (89) S: This is the road to Lund.
A1: Yes.
A2: *No.

Yes can be an agreement-indicator agreeing with the positive polarity of a statement (see section 4.8.3 and chapter 5). Bare *no* can agree with a negative-polarity statement but not with a positive-polarity one. As an interpretable negative operator it can assign negative value to [\pm Pol], but the statement (106S) does not provide any [\pm Pol]. Since the tag question can be answered by bare *no* (even though this may be unpreferred for pragmatic reasons), it must be the case that the answer can select the PolP of CP2 as its antecedent.

The analysis of tag questions and as disjunction of a polarity-valued proposition with a question is similar to the theory in Asher and Reese (2005,2007) and Reese (2006). They argue that “biased questions /.../ “*simultaneously* express an assertion and a question” (their italics) (Asher and Reese 2005: 32). Note that they talk about biased questions in general including tag questions; I will deal with other biased questions below. They apply a set of tests proposed by Sadock (1971, 1974) to biased questions to determine their speech act type. For example, prefixing *after all* to a sentence (in English) distinguishes assertions from neutral questions.

- (90) a. After all, this is the road to Lund.
b. *After all, is this the road to Lund?

On the other hand, prefixing a sentence with *tell me* distinguishes questions (not surprisingly, as it is an overt expression of Q-force).

- (91) a. Tell me, is this the road to Lund?
b. *Tell me, this is the road to Lund.

Tag questions pass the test for assertionhood as well as questionhood:

- (92) a. After all, this is the road to Lund, isn't it?
b. Tell me, this is the road to Lund, isn't it?

It is still debatable whether Asher and Reeses' (2005, 2007) conclusion that the biased questions are simultaneously assertions and questions is right, if by that we mean that they perform two illocutionary acts. The way I prefer to see it is that the tag-question includes an assertion as one of the alternatives put before the addressee, meaning that the entire expression is in the scope of Q-force.

4.8.3 *Positive-bias negative questions*

What about positive-bias negative questions? The best way to understand the syntax and semantics of positive-bias negative questions is to compare them with negative-bias negative questions.

Consider therefore, again, the following example:

- (93) Is this not the road to Lund? (I thought it was, but now I have seen evidence that it isn't; please confirm that this is true.)

I have argued, in chapter 2.8, that the key to the meaning of negative-bias negative questions is

- (a) they are yes-no questions, so they put two alternatives before the addressee, one the negation of the other, but
- (b) because the PolP already contains a negation, the two alternatives are $\neg p$ and $\neg(\neg p)$, that is a negative proposition and its negation.
- (c) The negative bias is an effect of the fact that $\neg p$ is simpler than $\neg(\neg p)$; it has one negation less, and therefore requires one less computation. Interpretation of $\neg(\neg p)$ involves elimination of the negatives to yield p .

In terms of syntactic structure, we get this effect when $[\pm\text{Pol}]$ scopes over the negation, meaning that both alternative propositions contain the negation. This implies that the crucial difference between the two types of negative questions is that in the positive-bias negative questions $[\pm\text{Pol}]$ does not scope over negation, but instead the negation scopes over $[\pm\text{Pol}]$, as indeed also indicated by its surface position in English, in the C-domain. What does it mean, though, that negation scopes over $[\pm\text{Pol}]$? Does it negate that there is a question, i.e. that there are two alternatives? That cannot quite be the case, since the positive-bias negative question can still be answered *yes* or *no*. This is the basis for the intuition, which most scholars who have worked on

these questions seem to share, that the high negation, and its counterparts in other languages, is not the ordinary propositional negation; see below section 4.13.

The following is a summary of the properties of positive-bias negative questions:

- (a) they are yes-no questions, so they put two alternative propositions before the addressee, one the negation of the other;
- (b) they contain a negation, but the negation is not in the scope of $[\pm\text{Pol}]$, so the alternatives are p and $\neg p$ (this is why they are answered like neutral questions and also explains why they can contain positive polarity items);
- (c) the negation questions the negative alternative, meaning that there is a higher order alternative which is p ('there is no question: p is true').

An alternative formulation of (c) is that the negation negates the negative alternative. That is to say it does not negate the proposition, but negates the validity of part of the denotation of the question. The meaning of the positive-bias negative question (94Q) can therefore be informally rendered as 'Either there is a question whether this is the road to Lund or not, or there is no question: This is the road to Lund.' A bit more formally, the denotation is as shown in (94):

- (94) Q: Isn't this the road to Lund?
- 1. p or $\neg p$ (this is the road to Lund or this isn't the road to Lund), or
 - 2. $\neg(p$ or $\neg p)$ There is no question because there is no negative alternative: This is the road to Lund.

(94.2) should be read as indicated (not as a formula of propositional logic). The high negation supplies the outer negation which eliminates the negative alternative.

The similarity with the denotation of the tag question above in (87) is now obvious. However, they are still formally different in that 'the third alternative' is encoded as a clause with valued (positive) polarity in the tag question, but is derived by application of the high negation to the question variable in the positive-bias negative question.

The answer *yes*, therefore, merges with a FocP whose head takes the PolP of the question, headed by the question variable $[\pm\text{Pol}]$, as complement, and assigns positive value to the variable. The PolP itself contains no (interpretable) negation. The answer *no* also merges in the same manner and assigns negative value to the inherited question variable. The answers *so it is* and *that's right* pick the higher order alternative that there is no question but a positive assertion. We can even

explain why *so it is* and *that's right* are more marked as answers to positive-bias negative questions than to tag questions: In the case of tag questions answering this way just takes picking one of two equally accessible PolPs as antecedent for the answer. In the case of positive-bias negative questions it takes deriving a positive proposition by elimination of the negative alternative of [\pm Pol], and picking that as the antecedent.

What is the more precise syntactic structure, though, of positive-bias negative questions? In earlier chapters I have insisted that the question variable [\pm Pol] undergoes movement to the C-domain, needed in order to assign it sentential scope and to put it in the CoA position subjacent to Q-force. If so, and as high negation is also in the C-domain, we may assume that they form a constituent [NEG, \pm Pol] already in PolP, in which case they move together to CP (this is what we clearly see happening in Finnish; see below). Alternatively the negation is merged with CP after [\pm Pol] movement. In that case the structure would be (95):

(95) [_{CP} Q-force [_{CP} Neg [_{CP} [\pm Pol] C [_{PolP} ...< \pm Pol> ...]]]]

It is crucial that the PolP of the question does not contain an interpretable negation, since that negation would be inherited by the answer, predicting that the answer pattern would be that of a negative-bias negative question, which is not the case.

This theory is complicated by the fact that in some languages, possibly many languages, the negation in the positive-bias negative question appears to remain in PolP-internal position. Consider Swedish.

(96) Är det här inte vägen till Lund? [Swedish]
 is this here not road.DEF to Lund
 'Isn't this the road to Lund.'
 'Is this not the road to Lund.'

Out of context, the question is ambiguous; it may have positive or negative bias. There is an alternative question form where the negation precedes the subject, which can only have positive bias.

(97) Är inte det här vägen till Lund? [Swedish]
 is not this here road.DEF to Lund
 'Isn't this the road to Lund?'

NOT: 'Is this not the road to Lund?'

In this construction, too, the negation may still be PolP-internal as it follows the verb in C.

How can we account for this discrepancy in the linear position of the negation in Swedish and English positive-bias negative questions? Semantically, the questions are exactly alike in English and Swedish. We therefore maintain that [\pm Pol] takes scope over the negation in negative-bias negative questions, but the negation takes scope over [\pm Pol] in positive-bias negative questions, in Swedish as well as in English. In the case of (97) this is uncontroversial, given our syntactic analysis of questions: the negation is overtly higher than [\pm Pol] since it precedes (hence c-commands) the subject, and the subject, by assumption, precedes (hence c-commands) [\pm Pol]. The prediction is, therefore, that the positive-bias reading should be possible. In fact it is not just a possible reading but the only possible reading. But (96), where the negation is lower in the structure also has the positive-bias reading as an option. The received view is that the unmarked position of the negation in Swedish, and Scandinavian more generally, is relatively low, below T, as in (98) (Holmberg and Platzack 1995, Vikner 1995).

(98) [_{CP} är-C [_{PolP} det här [\pm Pol] [_{TP} T [_{VP} inte [_{VP} <är> [_{DP} vägen till Lund]]]]]]

If we maintain that the spelled-out form of the negation in (96) is in this position under both readings, then it must be the case that it undergoes covert movement in the case of the positive-bias question, to a position where it c-commands [\pm Pol].

We have, as it were, the opposite problem in the case of Finnish, where the negation always precedes, hence c-commands, [\pm Pol] in yes-no questions. In fact, as argued in chapter 2.5 and chapter 3.12, it forms a constituent with [\pm Pol] as a result of head-movement.

(99) Ei-kö tämä ole tie Lundiin? [Finnish]
NEG- \pm Pol] this is road Lund.to
'Isn't this the road to Lund?'
'Is this not the road to Lund.'

Here, the negation is adjoined to [\pm Pol], realised as *-kö*. This complex head has moved to CP and is spelled out there. The question is ambiguous, though: It can have positive or negative bias. Maintaining that the negative-bias reading is the effect when [\pm Pol] takes scope over the negation,

and taking as an axiom that scope presupposes c-command, the negation must be inside PolP, c-commanded by [\pm Pol] at the relevant level of representation. Assume that the structure is (100).

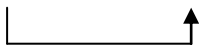
(100) [_{CP} [_{Pol} NEG, \pm Pol] C [_{PolP} t_{ämä} <NEG, \pm Pol> [_{NegP} <NEG> [_{TP} ole tie Lundiin]]]]

Under the negative-bias reading, the first-merged copy of the negation must be the interpretable one. The copy adjoined to the polarity head, and the copy moved to CP along with the polarity head must be uninterpretable, not affecting the interpretation. Under the positive-bias reading, on the other hand, the first-merged copy must be uninterpretable, so the copy which determines the scope relation between negation and polarity is one of the two higher copies.

4.9 Chinese negative questions and their answers

The generalisation that emerged especially from the discussion of the English answering system was that the so called truth-based answers to negative questions occurred when the question had a low negation, inherited by the answer. In this case the answer will have basically the structure in (101), the focused polarity feature assigning a value, say affirmative, to the sentential polarity head, which in conjunction with a low negation yields the characteristic ‘affirmation of negation’ reading.

(101) [_{CP} [+Pol] FOC [_{PolP} ...[+Pol] ... [_{VP} ...NEG ...V...]]]



The negation in Chinese can occur in more than one position, a low position and a higher position, which, in terms of the theory expounded in section 4.3, can be classified as middle. They can be exemplified by (2a,b) (from Wu, in preparation):

- (102) a. Lao Cheng keyi **bu** qu. [Mandarin]
 Lao Cheng can not go
 'Lao Cheng is allowed not to go.'
- b. Lao Cheng **bu** keyi qu.
 Lao Cheng not can go
 'Lao Cheng can't/isn't allowed to go.'

Ernst (1994) argues that low negation in Chinese is a specifier of VP, while high (what we have called middle) negation is a specifier of AuxP.³⁶ It is characteristic of the negation *bu* that it cliticises to the following head. Huang (1988) argues that the negation is not only morphologically cliticised to the right-adjacent verbal head, but forms a constituent with it in the syntax, thus taking narrow scope over the verb in the case of low negation. The middle negation, which is in construction with an auxiliary, would have scope at least over the predicate. Huang's theory of Chinese negation is criticised and somewhat modified by Ernst (1994), though.

Consider negative questions and their answers. The following account of Mandarin Chinese is heavily based on work by Hofsa Meng Jung Wu. Mandarin has a variety of different yes-no question forms. We discussed A-not-A questions in chapter 2. There are no negative A-not-A questions. Like the Type 1 questions in Thai, the A-not-A questions encode the positive and the negative alternative overtly in the question, leaving no room for a negation which would somehow scope over both alternatives. Another common form of question employs the clause-final particle *ma*, which I will gloss as QPrt. (103) is a *ma*-question applied to a proposition with a low negation.

- (103) Q: Lao Cheng keyi **bu** qu ma? [Mandarin]
 Lao Cheng can not go QPrt
 'Is Lao Cheng allowed not to go.'
- A1: shi ((ta) keyi bu qu).
 yes he can not go
 'Yes (he is allowed not to go).'
- A2: bu, ta bu keyi bu qu.
 no he not can not go
 'No he isn't allowed not to go.' (= He must go.)
- A3: keyi a.
 can PRT
 'Yes (he is allowed not to go).'
- A4: bu keyi oh
 not can PRT
 'No he isn't allowed not to go.' (= He must go.)

The effect of the low negation on the answer pattern seems clear enough. Assume that the question has an abstract polarity head [\pm Pol] in the usual position in the left periphery of IP, which is inherited

³⁶ Ernst (1994) predates the v/VP distinction; in the following I will assume that Ernst's specVP corresponds to specvP.

by the answer. In the answer A1 a focused [+Pol] feature is externally merged in the C-domain and is spelled out as *shi*. The negation in vP is too distant to compete with the focused polarity feature, which therefore assigns plus-value to the head of PolP. We get the configuration in (101), and the resulting truth-based reading. If the focused polarity feature is negative, the head of PolP gets assigned negative value, which, when combined with the negation in vP, yields the double negation reading in A2.

Shi is a multifunctional item. The literal meaning is ‘be’. In answers to yes-no questions in which *shi* is the highest predicate head, the answer *shi* will be a verb-echo answer. In answers to yes-no questions with other verb or auxiliary as the highest predicate head, *shi* functions as a general affirmative particle ‘yes’. *Shi* can also be a focus marker (Wu, in preparation).

(103A3) is a verb-echo answer. It was concluded in chapter 3 that Mandarin verb-echo answers are derived by pro-drop and VP-ellipsis. The answer thus has a vP containing a negation, inherited from the question, combined with a plus-marked Pol head and an elided subject pronoun (which can be pronounced: *ta keyi a*, literally ‘He can PRT.’). This yields the affirmation of negation reading. The negative answer (103A4) has a negation preceding the auxiliary, assigning negative value to the sentential head Pol. The vP inherited from the question is elided, which it can be if it contains a negation. This yields the double negation reading.

Matters are complicated when we consider questions with middle negation.

- (104) Q: Lao Cheng **bu** keyi qu ma? [Mandarin]
 Lao Cheng can not go QPrt
 ‘Can Lao Cheng not go/Is LaoCheng not allowed to go?’
- A1: shi ((ta) bu keyi qu).
 yes he not can go
 ‘Yes (he can’t go).’
- A2: bu, ta bu keyi qu.
 no he not can go
 ‘No he can’t go.’
- A3: bu, ta keyi qu.
 no he can go
 ‘No, he can go.’
- A4: bu keyi (qu)
 not can go
 ‘No.’

A5: keyi (qu)
 can go
 'Yes he can.'

What we might expect to see, given what was found in English answers to negative questions with middle negation as well as the facts in Finnish, Swedish, and Thai, is that the truth-based answer pattern would not work in this case. But it does, at least in part, namely in the case of affirmative answers: *shi* 'yes' confirms the negative alternative here as in (103). On the other hand A2, with *bu* followed by a clause, can also confirm the negative alternative. That is to say, there is negative neutralisation. To contradict the negative alternative, there is A5.

I would argue (as does Wu, in preparation) that the reason for this is that the *ma*-question is not an open question, but rather like a tag question, consists of a PolP with valued polarity, but merged with a [\pm Pol]-marked particle, spelled out as *ma*. This shows in that the question can also be answered *dui* 'correct, that's right'.

(105) Q: Lao Cheng bu keyi qu ma? [Mandarin]
 Lao Cheng not can go QPrt
 'Can Lao Cheng not go/Is Lai Cheng not allowed to go?'
 A: dui.
 correct
 'That's right./ Correct.' (= 'He can't go.')

An open question cannot be answered *dui* 'that's right, since it does not assert anything that could be correct or right. An A-not-A question cannot be answered *dui* (unless the A-not-A constituent is *dui-bu-dui*, literally 'correct or not correct').³⁷

The structure of (105Q) is (106):

(106) [Q-force [_{CP} C [_{PolP} Lao Cheng [-Pol] bu keyi qu] [\pm Pol]]]]
 Lao Cheng not can go


Since it is perceived as a yes-no question, there is a [\pm Pol] feature with sentential scope. In (106) it is externally merged in the C-domain. Since it is a direct question calling for an answer, there is a Q-force feature. The particle *ma* may be a spell-out of the question variable (which is why it is

³⁷ Thanks to Hofa Meng Jung Wu for data and discussion.

represented in the right periphery in (106)). On the other hand, a *ma*-question can only be a direct question (another property it shares with tag questions). This suggests that *ma* is a spell-out of Q-force – or both Q-force and [\pm Pol], by a morphological operation which spells out two heads as single word (it could be ‘spanning’; Svenonius 2012)³⁸ But importantly, the PolP is valued, in this case valued negative by the (middle) negation. I take it that this yields the following denotation:

- (107) 1. Lao Cheng can’t go,
or there is a question:
2.a. Lao Cheng can’t go, or
2.b. –Lao Cheng can’t go → He can go.

The answer may take PolP in (106) as base, denoting the proposition ‘Lao Cheng can’t go’, in which case the affirmative answer (or more properly, rejoinder) may be *dui* ‘that’s right’ as in (105) or may be *shi* ‘yes’ as in (104A1), since *shi* can always be used as rejoinder to indicate agreement, just as *yes* can in English (see chapter 5.1). The answer can also take CP in (106) as base. In that case *shi* ‘yes’ may, again, be used as affirmation, but now focused, assigning value to a variable and thereby selecting one proposition out of the question set as the true one (see chapter 5 for discussion of the syntax of answers to questions vs rejoinders to statements).

- (108) [_{FocP} [+Pol] Foc [_{CP} [+Pol] C [_{PolP} ...[-Pol]...]]]
- 

The focused [+Pol] is spelled out as *shi*. The interpretation is as predicted, affirmation that Lao Cheng can’t go. Whether PolP has middle or low negation makes no difference, because the polarity variable is higher up, outside PolP; compare (104A1) and (103A1).

Consider answers/rejoinders to (103Q) and (104Q) with *bu* ‘no, not’. The answer can take the PolP as base. In that case the negation does not assign value, as PolP is already valued, but merely agrees with the [-Pol] head of PolP. Consider first the case of (104), with middle negation, repeated here as (109):


- (109) Q: Lao Cheng bu keyi qu ma? [Mandarin]
Lao Cheng not can go QPr
‘Can Lao Cheng not go.’
A1: bu, ta bu keyi qu.

³⁸ But see Li (2006) who argues that *ma* is not a question particle but an ‘insistence marker’.

no he not can go
 'No he can't go.'

The interpretation is, as predicted, confirmation of the negative proposition. This explains the negative neutralisation in (104A1,A2): *shi* 'yes' applied to the CP containing a polarity variable and a negative PolP yields the same meaning as when *bu* is applied directly to the PolP, agreeing with its negative polarity.

Assume that the answer takes CP as base. In that case *bu*, i.e. the [-Pol] feature, is focused, assigning negative value to the polarity variable in specCP.

(110) $[_{FOCP} [-Pol] \text{ Foc } [_{CP} [-Pol] \text{ C } [_{PolP} \dots [-Pol] \dots]]]$


combined with the negatively valued PolP, this yields double negation, that is an answer disconfirming the negative alternative, which is the reading of (111A2) as answer to (109Q).

(111) A2: bu, ta keyi qu. [Mandarin]
 no he can go
 'No, he can go.'

Now consider again the case of (103Q), repeated here as (112Q), the question with low negation.

(112) Q: Lao Cheng keyi bu qu ma? [Mandarin]
 Lao Cheng can not go QPrt
 'Is Lao Cheng allowed not to go.'
 A: bu, ta bu keyi bu qu.
 no he not can not go
 'No he isn't allowed not to go.' (= He must go.)


According to Wu (in preparation), the only reading the *bu*-answer has in this case is the double negation reading, disconfirming the negative alternative. This will follow if low negation in Chinese cannot take wide scope, but instead takes scope over the predicate, following Ernst (1994), or even narrower scope, according to Huang (1988). In the context of the present theory, this means that a

sentence in Mandarin with low negation has a polarity head which is assigned plus-value by default, as shown schematically in (113).

(113) [_{PolP} ...[+Pol]...[_{vP} ...NEG...]]

This, in turn, means that the option of taking PolP as base for the answer/rejoinder yields a feature clash: *bu* cannot agree with [+Pol]. So effectively this is not an option in this case. The only option is taking the CP as base, with a focused [-Pol] feature assigning negative value to the polarity variable inherited from the question. In combination with the negation in vP this yields double negation, as shown schematically in (114), which is the reading of (112A).

(114) [_{FocP} [-Pol] Foc [_{CP} [-Pol] C [_{PolP} ...[+Pol]...[_{vP} ...NEG...]]



Verb-echo answers are also possible. For instance (104Q can be answered) (104A5). The two are repeated here as (115):

(115) Q: Lao Cheng bu keyi qu ma? [Mandarin]
 'Can Lao Cheng not go?'
 A: keyi (qu).
 can go
 'Yes he can.'

Given that the answer is derived by vP-ellipsis and subject pro-drop, as argued in chapter 3, there is no issue here (see chapter 5.1 for verb-echo answers as rejoinders to statements). Only the vP is (optionally) copied from the question, so the negation in the question has no effect on the answer. The issue of taking PolP or CP as the base does not arise.

In (103Q/112Q), repeated here as (116), with low negation, copying the vP of the question means copying the negation (in other words, vP-ellipsis elides vP containing negation). The verb-echo answer then predictably has the confirmation of negation reading.

(116) Q: Lao Cheng keyi bu qu ma? [Mandarin]
 Lao Cheng can not go QPrt
 'Is Lao Cheng allowed not to go?'
 A: Keyi a.

can PRT

'Yes (he is allowed not to go).'

In conclusion, the answer pattern for *ma*-questions in Mandarin Chinese turn out to be as predicted under the present theory, under the hypothesis that *ma*-questions are not open questions, but instead have in common with tag questions that they combine a valued proposition with a question variable, which yields the complex denotation (117):

(117) p or $(p$ or $\neg p)$

or in prose 'either p is true or there is a question whether p is true or not'.

The difference between the truth-based and polarity-based answering systems is sometimes said to be a matter of the meaning of 'yes'. The following is a quotation from Hinds (1986), discussing Japanese questions and answers: "It is well documented that a single word response to a negative question may be misleading to an English speaker /.../ Explanations for this boil down to the fact that the Japanese terms *hai* and *iie* do not actually mean 'yes' and 'no' but rather 'that's correct' and 'that's incorrect'." (Hinds 1986: 45). We may conclude from the discussion above that this is true in the case of Chinese *ma*-questions. *Shi* 'yes' can mean, 'that's right, I agree with the proposition in the question'. However, this is also true for English. If the question contains a proposition with valued polarity as part of its denotation, as tag-questions or positive-bias negative questions do, then *yes* can mean 'that's right, I agree with the proposition in the question' (see also chapter 5.1). If the question is an open question with unvalued polarity, *yes* cannot mean 'that's right, I agree', because there is nothing to agree with. Any difference between Chinese and English in this regard is not about the meaning of 'yes', but about the syntax of the question. When the syntax of the question is the same, the answer is the same.

4.10 Japanese positive-bias questions

Consider again the data from Japanese that we started this chapter with.

(118) Q: Kimi tukarete nai?
you tired NEG
'Are you not tired?'

A: **Un**, tukarete nai.
 yes tired NEG
 (Lit.)‘Yes, I’m not tired.’

This exemplifies the truth-based system of answering a negative-bias question. The prediction is that the Japanese negation in the question is low in the structure, or more precisely, the negation need not assign a value to the abstract [\pm Pol] head, which may be because it is low in the structure, say, adjoined to VP; compare the account of Thai and Chinese in sections 4.7 and 4.8, and English in section 4.3. Yabushita (1998) has argued that this is, indeed, the case. According to him, the standard Japanese negation is not a propositional operator but a predicate operator, so that (119) should be interpreted as ‘Taro had the property of not running’, rather than ‘It is the case that Taro was running’.

(119) Taro wa hashitte-i-nai.
 Taro TOP running-be-NEG

Yabushita (1998) furthermore argues, as I would do, that this explains the Japanese truth-based answering system, although the details of the theory of questions he articulates are partly different from the ones assumed here.³⁹

Consider now the question (120).

(120) Q: Kore oisiku nai?
 this delicious NEG
 ‘Isn’t this delicious?’
 A: Un, oisii.
 yes delicious
 ‘Yes, it is.’

³⁹ The independent evidence that Yabushita (1998) adduces for the analysis of negation is questionable, though. It is based on the observation that the Japanese sentence corresponding to *Many arrows did not hit the target* is unambiguous, with ‘many’ scoping over the negation, as opposed to English where the sentence has a (marginal) second reading with negation scoping over *many*. This would be explained if the negation cannot take sentential scope in Japanese. However, the corresponding sentence in Finnish is unambiguous, too, in the same way as in Japanese, but, as demonstrated in section 4.8, standard negation in Finnish must take sentential scope. There is considerable controversy regarding the scope of negation in Japanese; see Han, Storoshenko and Sakurai (2008) for a review. There seems to be a consensus that the standard negation *-na* at least can have VP-scope, the issue being whether it must do.

The intonation should be different here than in (118). In (118) there is a drop in pitch on the negation, while in (120) high pitch is retained on the negation. Given this, the answer does not follow the truth-based pattern: *un* ‘yes’ confirms the positive alternative instead of the negative alternative, as in (118). This is predicted if the negation in (120) is high, scoping over the polarity variable, instead of the other way around. There is good reason to think that this is the case.

Compare (121, 122):

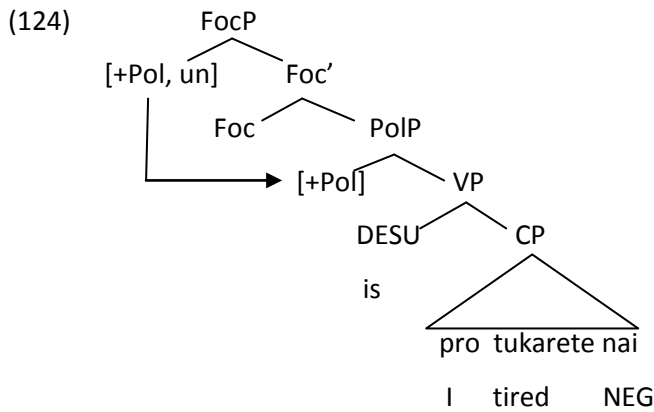
- (121) Q: Kimi tukarete nai (**no**)?
 you tired NEG Prt
 A: Un, tukarete nai.
 yes tired NEG
- (122) Q: Kore oisiku nai (***no**)?
 this delicious NEG Prt
 A: Un, oisii.
 yes delicious

The question in the truth-based question-answer pair can optionally have a final question particle *Q*. The question in the (seemingly) polarity-based answer cannot. In other words, if (122Q) has the final particle, the answer will not confirm the positive alternative. This follows straightforwardly if the particle encodes $[\pm\text{Pol}]$, and c-commands the negation in (121, 122) in a head-final structure $[[\dots\text{NEG}] \text{Q}]$. This will block the high negation reading in (122).

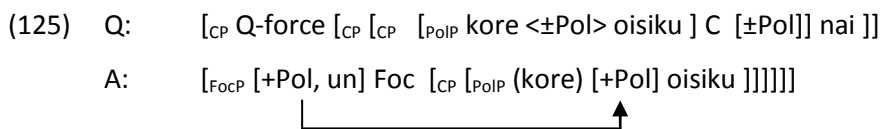
This is a simplification, though. Kuwabara (2013) argues that *no* in, for example, (121) is not a question particle but a complementiser heading a question embedded under a silent copula and a question particle *ka*, which may also be silent.

- (123) Kimi tukarete nai no DESU KA
 you tired NEG C COP QPrt
 lit. ‘Is it that you are not tired?’

Obviously this means that the negation is deeply embedded, and means that the answer (118A) will have basically the structure of ‘Yes it is that I’m not tired’. In terms of the theory expounded in this book, especially this chapter, this suggests that the structure of the answer would be (124) (represented here as a right-branching tree, without making any theoretical commitments).



It also means that the question and answer pair in (120, 122) cannot be derived this way, hence cannot be constructed with *no*. I assume, for the time being without any other independent evidence, that the structure of the question is (125Q), a close counterpart of the English high negation question (112), and the structure of the answer is (125A)



4.11 Another type of biased question

As discussed in section 4.8, Thai has negative-bias negative questions, even though they are restricted to Type 2 questions (following Yaisomanang's 2012 theory of question formation in Thai). An interesting observation is that Thai does not have positive-bias negative questions, corresponding to *Isn't John coming?* in the sense 'I think he is, but I still want to double-check', or *Isn't this delicious?* in the previous section. It seems to be the case that the negation is embedded in questions in Thai in a way that precludes high negation construal. Recall that the IP of Type 2 questions, with or without negation, is embedded as subject of a predicate which provides the question variable in the form of 'right-or-not-right'. I concluded in section 4.10 that the seemingly low negation in Swedish can undergo covert movement to take scope over the question variable in positive-bias negative questions. It is predicted, under the assumed analysis of Type 2 questions in Thai, that such movement will not be possible there, since subjects are islands for movement.

Matters are a bit more complicated than this, though, because Thai does have positive-bias negative questions of a certain kind. Consider (126). Imagine that the question is posed by a mother

This is, then, a positive-bias negative question in that it expects the positive alternative to be confirmed ('She is clever'), but the positive alternative in this case is the negation of the negative alternative ('She is not not clever'). The positive bias is therefore not a high-negation effect. The high-negation positive bias reading remains unavailable in Thai.

4.12 Other accounts of positive-bias questions

There has been a fair amount of interest in negative questions in recent times, although rather more in positive-bias questions than in negative bias-questions. The reason for this imbalance could be that the positive-bias questions look more intriguing, with a negation paradoxically, as it were, having the effect of positive bias. I agree that the positive-bias questions pose a tough challenge for syntactic and semantic theory. It is usually a good strategy, though, to start with the simpler case, namely the negative-bias negative question, and work out a credible analysis of it, and then tackle the more complex case on that basis. This is the strategy I have followed here. As already mentioned, the theory articulated above concurs with some other proposals in the literature (Asher and Reese (2005, 2007) and Reese (2006) were mentioned) that positive-bias negative questions have a complex semantic structure combining properties of assertions and questions. More precisely, in the version articulated above, they combine the denotation of a positive-valued PolP with the denotation of a question.

Romero and Han (2004) argue that preposed negation in questions is not the standard propositional negation. Instead it always comes with an "epistemic, conversational operator" VERUM (following Höhle 1992, who discusses predicate focus). This operator modifies the degree of certainty by which a proposition should be added to the common ground (CG; Stalnaker 1978, 2004). The structure *VERUM p* means that the proposition *p* is added 'for sure' to the common ground. They discuss the two preposed negation readings that Ladd (1981) discusses, what he called the outer and the inner negation readings. For the outer negation reading, the effect of the preposed negation in (129a) is the question set in (129b), using the alternative name FOR-SURE-CG for the VERUM operator also used by Romero and Han (2004). The inner negation reading of preposed negation (for those speakers who accept it all; Romero and Han do not acknowledge any speaker variation, though) has the question set (129c).

- (129) a. Isn't John coming?
 b. FOR-SURE-CG_x (John is coming) or ¬FOR-SURE-CG_x (John is coming)
 c. FOR-SURE-CG_x ¬ (John is coming) or ¬FOR-SURE-CG_x ¬ (John is coming)

They acknowledge that they have no clear idea why preposing negation would call forth this operator, but they maintain that the hypothesis makes the right predictions. As discussed by Krifka (2012), it does not seem right, though, that the preposed negation in general has the effect of questioning the strength of belief that a proposition should be added to the common ground. He mentions the following example:

- (130) They say that it's raining, but I don't quite believe that.
- a. Is it sure that it's raining?
 - b. #Isn't it raining?

Clearly (130a,b) are not synonymous questions. In fact, (130b) does not make sense in this context, neither under the outer nor the inner negation reading.

An important part of Romero and Han's (2004) account is that low negation questions (as opposed to questions with preposed negation with inner reading) do not have any inherent bias; see note 15 in chapter 2. On the other hand, low negation questions can have, and typically do have, a negatively biased reading, just like the inner negation reading of (129). In Romero and Han (2004) this would appear to be a coincidence.

In a comparative syntax perspective, we would also like to see a spelled-out expression of the VERUM operator appear systematically in negative questions in at least some languages. I have not seen any evidence of this. Obviously, if such languages can be found, we may need to revise our verdict of Romero and Han (2004).⁴¹

Krifka (2012, 2013) presents an account of negated yes-no questions in the framework of a highly articulated theory of conversation as development of 'commitment states' added to the common ground. The positive-bias negative questions are analysed as 'denegation of assertion'. The structure of (131a) would be (131b) ('ActP' is labelled 'ForceP' in Krifka 2012).

- (131) a. Isn't John coming?
- b. [_{ActP} is-REQUEST [_{NegP} not [_{ActP} ASSERT [_{TP} John t_{is} coming]]]]

⁴¹ See also Krifka's (2012) review of Repp (2012). Repp proposes that the negation in high negation questions spell out an operator FALSUM, also a 'common ground managing operator', which states that the degree of strength with which a proposition should be added to the common ground is zero. Krifka argues that this theory suffers from the same problem as Romero and Han's, which is that the idea that biased questions are about the strength of answerhood conditions is mistaken.

Informally, (131a) would be paraphrasable as ‘I request that you not assert that John is coming’. It is based on the idea that while neutral questions can have the more simple form [QUESTION TP], where the effect of the operator is to map TP onto the disjunctive set p or $\neg p$ where p is the denotation of TP (if Hamblin’s theory of questions is adopted), biased questions have a more complex structure combining REQUEST with ASSERT and, in the case of positive-bias negative questions, NEG. While (131b) looks like a rather unintuitive rendering of the meaning of the question, the idea is, according to Krifka (2013), that the denegation of assertion “can be performed, for example, when the speaker is inclined to believe that Ede stole some cookies, and wants to check whether the addressee would comply with this by eliminating any reason to assert the opposite”. It is essential to this analysis that the high negation is not the standard propositional negation, but is a speech act operator: It operates at the level of speech acts. This is not entirely unlike the theory articulated in section 4.8, but according to that theory the high negation operates on the polarity variable, effectively negating that there is a question, or more precisely, putting the alternative that there is no question, just an assertion, before the addressee as a higher-order Hamblin- alternative.

4.13 Conclusions and some typological implications

The two principal systems for answering negative questions, the truth-based system and the polarity-based system are investigated. In the former, the negative question is answered ‘yes’, in the latter it is answered ‘no’, when confirming the negative alternative of a negative question. The distribution of the two systems among the languages of the world is examined. I have relevant data from 92 languages/57 genera. Of those, 34 genera are reported to follow the truth-based system, 24 genera are reported not to. Another point of variation is whether the language has a polarity-reversing particle such as German *doch*. This is a minority phenomenon: on SSWL, only 14 languages (10 genera) out of 70 for which a value has been given for this particularly property are reported as having this strategy. As expected, there is a correlation between having such a particle and not following the truth-based system, as ‘no’ can unambiguously disconfirm the negative alternative of a negative question in the truth-based system.

There is a clear geographical distribution of the two systems in that all languages in my database east of India at least as far as, and including, New Guinea follow the truth-based system, while nearly all languages in Eurasia from India westwards principally follow the polarity-based pattern, although systematic variation can also occur within a language, as discussed in detail in relation to English.

The question was discussed whether the dichotomy is a matter of cultural conventions, the meaning of the answer particles, or syntactic structure. Based primarily on a detailed study of English (following Holmberg 2013) it was concluded that it is a matter of syntax.

Languages/constructions with a low negation, that is negation which takes VP-scope only, have truth-based answers. The low negation cannot compete with the focused affirmative answer particle for assignment of polarity to the sentence. Consideration of negative questions and answers in Thai revealed that the 'height' of the negation is not the crucial factor as such, but whether the negation is in a local enough c-command relation to the sentential polarity feature.

This all applies to negative questions which are typically negatively biased, that is questions where the two Hamblin-alternatives are $\neg p$ and $\neg(\neg p)$. There are other types of negative questions. In particular there are positively biased negative questions. A subtype of these are characterised by a high negation (*Isn't this cake delicious?*). In these questions the negation scopes over $[\pm\text{Pol}]$, not vice versa. Tag questions and positive-biased negative questions were discussed. What they have in common is that they contain a valued PolP as part of their syntactic structure, combined with a $[\pm\text{Pol}]$ feature, which makes them questions. The alternatives that the question puts before the addressee therefore includes a polarity-valued statement p . This shows in the range of answers these questions permit; they can be answered 'yes' or 'no', but also 'that's true'. It was argued that the Chinese *ma*-questions (in fact all Chinese yes-no questions except disjunctive questions, including A-not-A questions) fall into this class of questions as well. The differences between Chinese and, for example, Swedish and English as regards answers to negative question are due to variation with regard to the syntax of negation, hence the truth-or- polarity-based variation, but also with regard to how negative questions are formed: the Chinese ones are most closely related to tag questions in Swedish and English.

If it is true that the truth-based vs polarity-based variation is dependent on the syntax of negation, this makes the prediction that languages east of India, including South-East Asia, China, Mongolia, and New Guinea will have in common a syntactic structure which supports truth-based answers. We can be a bit more precise regarding what they should have in common. The discussion so far implies that there are two syntactic configurations which support truth-based answers:

- (a) a low, VP-internal negation (as in English when truth-based answers are used);
- (b) a final question particle (as in Thai and Mandarin Chinese).

There are two varieties of the configuration (b):

- (b') The final particle is a question tag, meaning that the question includes a statement, that is a polarity-valued CP, as part of its denotation (as in the Mandarin Chinese *ma*-question);
- (b'') The final particle is a predicate taking the negative PolP as subject (Thai Type 2 questions).

What they all have in common is that the negation inherited from the question in the answer cannot value the polarity variable, being structurally too distant from it, hence allows a focused affirmative answer particle to assign plus-value to the variable, which yields the characteristic ‘affirmation of negation’ reading of truth-based answers confirming the negative alternative, and the characteristic double negation in answers confirming the positive alternative.

This prediction is testable, in principle: Truth-based languages should have a low negation or a final question particle. As for final question particles we know which languages have those; see Dryer (2013a) and SSWL. The problem is, though, that the implication is not bi-directional. There is no reason to think that all languages with final question particles have a truth-based answering system. Some of them, presumably, have a final particle which spells out the polarity variable but is not a tag (as Mandarin *ma*) or a predicate (as the final particle in Thai Type 2 questions), and have a negation which is accessible to the variable, making polarity-based answers the only option. As for scope of sentential negation, this can be surprisingly difficult to establish (see note 34 on the Japanese negation). It would be excellent if we could find some diagnostic that would be salient enough to be mentioned in standard descriptive grammars; this would make testing the predictions a much easier task. The WALS database now includes, thanks mainly to Matthew Dryer, a rich set of features concerning negation, in particular the interplay of negation and word order (position of negation in languages with SVO order, SOV order, VSO order, etc.). Ideally, it should be possible to use this rich information as a shortcut to determining the position of the negation in the clause, and then compare this with information about the answer system. Unfortunately, as well known, just inspecting surface word order does not give much information about structure, in part because verb movement is common, and may target different head positions in the sentence (as we have seen examples of even in this book); see Holmberg (1998). Therefore, knowing that the unmarked word order in a language is, for example, S-NEG-V-O or S-V-NEG-O does not tell us much about the scope of the negation without further detailed investigation. Furthermore, the critical question is what the position is of the negation in yes-no questions, since that is the structure which is directly relevant to the syntax of answers. Still, it seems reasonably certain that languages which exhibit the order NEG-S-V-O as their unmarked order do not have a low negation. According to Dryer (2013b), 19 out of 421 languages exhibit this word order (the majority of which are VSO languages which employ Neg S V O in negative clauses). The prediction is that these languages should not follow the truth-based pattern. Unfortunately none of the languages are among the 92 in my sample. They are situated in East Africa, the Amazon, Australia and some Pacific Islands, regions that I have very few languages or no languages from, in the sample. Still, this indicates a possible way to test the prediction about the relation between negation and answering system.

SSWL, although it covers a much smaller number of languages than WALS, is more promising as a source of information in this case, as it includes at least some information about the structural/categorical properties of the negation, and includes information about the answering system in at least some languages. It seems reasonable to assume that in languages where the negation is classified as an auxiliary verb, it will not be a low, VP-internal negation. The prediction is, then, that those languages will not have truth-based answers, except possibly if they have a final question particle. There are 60 languages in SSWL which has values assigned for both properties ‘negation is an auxiliary verb’ (Neg Aux) and ‘truth-based answers’. Crossing these two properties yields the following result:

Neg Aux	Truth-based	
No	No	26
No	Yes	23
Yes	No	5
Yes	Yes	6

The interesting class here is the yes-yes class, which has a negation classified as an auxiliary verb, yet has a truth-based answering system. The six languages in this class are Mandarin, Taiwanese, Nkore-Kiga, Nweh, Vata, and Western Armenian. As for Mandarin and Taiwanese, the standard sentential negation is not an auxiliary verb, and is not high; see the discussion in section 4.9. They are classified as Neg Aux presumably because they have other negation forms which are auxiliary-like, such as the existential negation *mei you* in Mandarin.⁴² Nweh and Vata are two African languages with a final question particle (Nkemnji 1995). Western Armenian is an East European language with a final question particle (a rare occurrence among European languages). That leaves Nkore-Kiga, a Bantu language, as the only clear counterexample.

In fact, Bantu languages in general are a challenge for the theory articulated here. The list of African languages employing truth-based answers includes some Bantu languages, and I have anecdotal evidence that it occurs in some other Bantu languages too. They are a challenge because in most Bantu languages the negation is almost undoubtedly a high functional category, as shown by its position in the set of verbal prefixes. The example here is Bembe, a Bantu language in the eastern Democratic Republic of Congo.

(132) Ta -ba -a -yak-a ngyoʔa. [Bembe: Iorio 2014]

⁴² Thanks to Hofa Wu for discussion of this point.

'They have not killed the snake.'

If the order of verbal prefixes in Bantu directly reflects their hierarchic position, as argued by Julien (2001), following Myers (1990), then the negation in Bembe is high, c-commanding Tense. And even though there are Bantu languages which have clause-final negation (Devos and van der Auwera 2013), Nkore-Kiga is not one of them.⁴³ If I am right that the choice between the two answering systems is a matter of syntax, there ought to be some other syntactic reason why Nkore-Kiga uses the truth-based system. Bantu languages will probably need some particular attention if the hypothesis articulated in this book is to be upheld as a general hypothesis of answering systems.

I have noted, at various points, that there can be variation within a language as regards answers. Berghäll (2010) notes that the system in Mauwake, a New Guinean language that she has described, is in the process of change: "Traditionally an answer to a [negative –AH] question affirmed or negated the affirmative or negative *polarity* of the question or statement: /.../ But Mauwake is changing to become more like English in that the negative answer stands for a negative statement regardless of the polarity of the question or statement that it is a reply to (Berghäll 2010: 259). That is to say, it is changing from a truth-based system to a polarity-based system. Liisa Berghäll (p.c.) tells me that this change was an issue that they were aware of in the community, as an example of language change among young people under influence from English.

Does this mean that their grammar of negation is undergoing change as well? Sentential negation in Mauwake as described in Berghäll (2010) is not inconsistent with an analysis where negation is, or at least can be, low, taking VP-scope. The standard negation in this SOV language is an adverb which seems to be generally placed immediately before the verb, and is also used as constituent negation, as we would expect from a low negation; Berghäll (2010: 255-258). Do we predict that the scope of the negation would be different in the I-language of the young Mauwake speakers? Probably not. More likely they are employing a pattern which is a calque of the English pattern but which is not supported, yet, by the grammar of negation. What we would expect in that case is that they do not use the new system consistently. The prediction would be, though, that the syntax of negation will undergo some change in the next generation, or the generation after next, who acquire the truth-based answering system as part of their L1 on the basis of primary data. We would expect to see some adjustments of the negation system to support these primary data.

If I am right about Mauwake, this suggests how a grammatical property that we would think of as fairly deep-seated in the grammatical system, such as negation, can nevertheless spread over

⁴³ Thanks to Jenneke van der Wal for discussion of this question.

large geographical areas, namely, as a consequence of the spread of a particular answering system. The distinction between the truth-based and the polarity-based answering system is apparently salient enough, and easily enough observable, for the system in a language to be subject to borrowing and change, as in Mauwake. If the new system is used frequently enough, it may provide crucial input data for a new generation to acquire a new system of negation.

Let me finish with an anecdote: My son, growing up in Sweden until he was ten, with Swedish as his mother tongue, used the truth-based answer system at least until he was eight, old enough to argue against his parents when they tried to correct him. He maintained that he was using the logically correct system. I have heard other anecdotal evidence of children using 'the wrong system'. Sohn (1994: 16-17) mentions that this can be sometimes observed among Korean children (where the deviation would be in the opposite direction from Swedish). If I am right, that the truth-based system is characteristic of a grammar with low negation, the implication is that my son's internal grammar was different from that of his parents and most other Swedish speakers as regards negation. How plausible is this? It is not entirely implausible, especially as Swedish has a fairly mobile negation, as demonstrated in section 4.5. It would have been testable, in principle, but unfortunately, at the time I was not aware of the implications his answer pattern had for the syntax of negation. At some point my son gave up his idiosyncratic truth-based answering system. He is thirty years old now, and does not employ it anymore, as I have verified.

5. Some further issues

5.1 Yes and no as rejoinders expressing agreement or disagreement with statements

The words *yes* and *no* and their counterparts in other languages are not only used to answer questions, but are also used as reactions to statements in discourse, expressing agreement or disagreement with the statements of an interlocutor, as in (1) and (2), for example. In the following St stands for 'statement' while R stands for 'rejoinder' (Halliday and Hasan's 1978 terminology).

- (1) St: John speaks French really well.
R: Yes.
- (2) St: John doesn't speak French very well.
R: No.

In terms of what they mean, and their conversational effect, there is some overlap between this use of *yes* and *no* and their use to answer questions. However, there are also some important differences. I would claim that the differences fundamentally derive from the fact that *yes* in (1), and *no* in (2), do not assign a value to a polarity variable, because there is no polarity variable in the preceding statement.

The syntactic nature of this difference is seen clearly in languages with verb -echo answers.

- (3) St: Jussi puhuu ranskaa hyvin.
Jussi speaks French well
R: *Puhuu.
speaks
Intended: 'Yes.'

The bare verb just cannot be used as confirmation of a statement. This can be understood if the bare verb is used strictly to support a focused positive-valued polarity feature in the C-domain, required to assign a value to a polarity variable inherited from the question. In the discourse in (3) there is no polarity variable, hence no need for a focused polarity feature, hence no need for verb movement or remnant PolP movement, hence these movements are not even an option. This will be the case in languages where verb-echo answers are derived by verb movement or remnant PolP movement to the C-domain. In languages where verb-echo answers are derived by VP-ellipsis and subject pro-drop

responding with a bare verb is perfectly possible – which is another criterion for distinguishing the two answer forms.¹

Consider also the many different ways there are to express agreement with a statement in for example English, which do not work as answers to the corresponding yes-no question.

(4) St: John speaks French really well.

R1: True.

R2: Right.

R3: That's right.

R4: So he does.

(5) Q: Does John speak French?

A1: *True.

A2: *Right.

A3: *That's right.

A4: *So he does.

The reason why these expressions do not work as answers is, I claim, that they cannot function as operators assigning polarity value to the variable inherited from the question. *True* and *right* are adjectival predicates which take a polarity-valued sentence as argument, as in *That John speaks French really well is true*. Without going into details, I assume that R1 and R2 in (4) instantiate these predicates, and that the derivation of them involves ellipsis of the sentential argument under identity with (4St). A1 and A2 in (5) are then ill formed because there is no statement as antecedent for the ellipsis (where a statement, by definition, has a polarity value; as discussed in chapter 4.10.2 the crucial condition is that there should be an antecedent with valued polarity). All there is, is a yes-no question, but a question cannot be true or right. That is basically the problem in (5A3) as well: The pronoun (or 'pro-sentence') *that* can have a question as antecedent (as in *Did John leave? I would like to know that.*), but in that case it cannot be the argument of *right*.

¹ In Mandarin Chinese, a language which we have found to rely on VP ellipsis and pro-drop to derive verb-echo answers, the statement by A can have the rejoinder shown, as predicted (thanks to Hofa Meng Jung Wu).

(i) A: John neng ba Fayu shuo de hen- hao.
John can BA French speak DE very well
'John can speak French very well.'
B: (ta) neng
he can
'So he can.'

So how come the rejoinder *yes* in (1) is possible at all? One possibility is that this is a different *yes* than in answers, one which shares properties with the adjectives *true* and *right*, taking a valued sentence as argument. Another possibility is that it is the same *yes*, encoding positive polarity, but it has a different function. In answers to yes-no questions it is focus, assigning value to a polarity variable and thereby picking one out of a focus set of two propositions as the true one. In rejoinders to statements *yes* does not do that. In fact, it conveys no new information, adds nothing to the common ground (Stalnaker 2002) apart from indicating agreement on the part of the speaker with the preceding statement.

The following are some observations about rejoinders expressing agreement or disagreement compared with answers to yes-no questions. First, compare the following conversations:

- (6) Q: Is John coming?
A1: Yes.
A2: No.
- (7) St: John is coming.
R1: Yes.
R2: *No.
R3: Yes he is.
R4: No he isn't.

While a short affirmative, agreeing rejoinder is fine, a short negative, disagreeing rejoinder is not.² As I noted in Holmberg (2013), this is explained if the short rejoinder is derived by PolP-ellipsis. The affirmative rejoinder would then be well-formed because, although there is no variable for it to assign a value to, there is also no feature clash. This would be the syntactic basis for the interpretation that the rejoinder conveys agreement with the preceding statement. The short negative rejoinder is ill-formed because it clashes with the positive polarity of the PolP inherited from the preceding statement. It is not incomprehensible; it will be interpreted as signalling disagreement, but the contrast with R1 is stark, and can be explained if the short rejoinders are co-constructed with the PolP of the preceding statement, most often not spelled out, and if they enter a relation with the valued polarity head of that PolP, on the condition that the features are compatible. The long affirmative and negative rejoinders are both fine, because they do not require

²² Farkas and Bruce (2009) in a careful account of the semantics and pragmatics of rejoinders and answers do not mention this observation. The negative rejoinders they discuss invariably have the long form, as in (7R4).

identity with the polarity of the preceding statement. As we shall see directly, this theory will need some qualification, though.

Consider negative statements.

- (8) St1: John is not coming.
St2: John isn't coming.
R1: Yes. ('John is not coming.')R2: No. ('John is not coming.')

As in the case of negative-bias negative questions, it appears that the positive and the negative short answers can both be used, with the same meaning, which here is to agree with the preceding statement. It appears to make no difference in the case of agreeing rejoinders whether the negation is low (as potentially in (8St1) or middle (as in (8St2)).

Krifka (2013) observes that the long rejoinder R1 below can be used to agree with a negative statement, as can the long negative rejoinder.

- (9) S1: John is not coming.
R1: ?Yes he isn't.
R2: No he isn't.

R1 may not be the most common way to react to S1, but does not appear ungrammatical (the question mark is my addition, not Krifka's). By contrast, the same reaction is quite impossible as answer to a negative question.

- (10) Q: Is John not coming?
A1: *Yes he isn't.
A2: No he isn't.

The intuition is that (10A1) is ungrammatical because it is contradictory. Recall that answering yes-no questions is a matter of assigning value to a polarity variable. The short answer *yes* is possible here, because, as discussed in chapter 4.3, with a low negation in the question, *yes* can assign positive polarity to the variable inherited from the question (but elided along with the PolP), which when combined with the low negation yields the 'confirmation of negation' reading. But in (10A1), the positive value that *yes* assigns to the polarity variable clashes with the negative value assigned

by the negation. By contrast, *no* in (10A2) can agree with the negative PolP. In chapter 4.3 this was formally captured by postulating an unvalued [uNeg] variety of *no*.

But that raises the question how *yes* can be combined with a negative PolP in (9R1) and in the rejoinder (8R1) to (8St2), where the negation is of the middle variety? A simple answer is that this is a different *yes*. It is not the spell-out of a focused polarity feature, but is an item with the properties of *true* and *right* as used in rejoinders to statements (*Right, he is coming*): It combines with a valued PolP to express agreement with a preceding statement, but it does not necessarily enter any kind of head-head relation with the head of that PolP, since if it did there would be a feature clash.³ This, in turn, means that the rejoinder *no* behaves differently, and does enter a head-head relation with the PolP it is co-constructed with – or we lose the explanation proposed above of the contrast between (7R1 and R2). For speakers who reject (9R1), this could be explained if for these speakers rejoinder-*yes* does form a head-head relation with the co-constructed PolP.

Finnish is a language which has an answer particle encoding [+Pol] which is used in answers to questions but not in rejoinders to statements.

(11) St: Tulee-ko Jussi?
comes-[±Pol] Jussi
'Is Jussi coming?.'

R: Kyllä.
yes

(12) St: Jussi tulee.
Jussi comes
'Jussi is coming.'

R1: *Kyllä.
yes

R2: Joo.
yes

R3: Niin tulee.
so comes
'So he does.'

³ Several native English speakers have pointed out that the particle *yeah* is better than *yes* in (9R1). This may be significant. Possibly, for these speakers *yes* enters a head-head relation with the head of PolP, but *yeah* does not (necessarily) do so.

A way to express this property of *kyllä* formally is to postulate that it can only merge with FocP. The more colloquial answer particle *joo* can function both as answer particle and as rejoinder particle indicating agreement, much like English *yes* (or *yeah*, see note 2). Very common in Finnish is use of the designated agreement particle *niin*, as in (12R3), often, but not always, corresponding closely to English *so*.

Krifka (2012, 2013) discusses data of the sort discussed here, including (9), in the context of a theory of *yes* and *no* which treats them as clausal substitutes, not involving any ellipsis. He compares *yes* and *no* to propositional anaphors such as *that* in (13).

(13) Ede stole the cookies. I know that.

What *that* does is pick up a discourse referent introduced by the first clause. Krifka (2012, 2013) argues that *yes* and *no* are also propositional anaphors. What they do, is pick up a salient propositional discourse referent and assert it (in the case of *yes*) or assert its negation (in the case of *no*). The rejoinders *yes* and *no* are therefore close counterparts of rejoinders like *that's right* and *that's not true*. The rejoinder *in*, for example, (14) is, then, just what it looks like: There is no syntactic structure; it is an assertion on its own, asserting a discourse referent introduced by the preceding statement.

(14) St: John is coming.
R: Yes.

Krifka (2012) and especially (2013) then argues that the distinct syntactic layers in a clause, vP, TP, and CP, introduce different types of discourse referents: referents anchored to events, propositions, and speech acts. On this basis he discusses a variety of data involving *yes* and *no*, including cases like (9), where *yes* and *no* seemingly mean the same thing, which can be explained in terms of interpretation by recourse to different types of discourse referents.

Krifka (2013) discusses mainly *yes* and *no* as rejoinders to statements. The idea seems to be, though, that the theory also accounts for *yes* and *no* as answers to questions. It is far from obvious, to me anyway, that the theory applies to questions and answers just as well as to statements and their rejoinders. In the perspective of Hamblin's theory of questions, they do not introduce a propositional discourse referent. That is why you cannot answer a yes-no question with *that's right*.

(15) Q: Is John coming?

A: *That's right.

The parallel with the nominal propositional anaphors breaks down. *Yes* and *no* in answers do not assert, but make a choice between two alternative propositions. In the theory articulated here, they do so by assigning a value to a polar variable inherited from the question as part of a PolP which is typically elided. Another general argument in favour of the ellipsis-based theory of *yes* and *no* as answers to questions advocated in this book is (a) that there are answers to yes-no questions which unmistakably employ ellipsis, namely verb-echo answers (and other polar echo-answers; see next section), and (b) in a number of respects, answers employing *yes* and *no* exhibit properties analogous to those of verb-echo answers.

5.2 Answering yes-no questions with narrow focus

5.2.1 Some cross-linguistic observations

Consider the following question-and-answer sets in Finnish; first an unmarked question with two standard affirmative answers, the short verb-echo answer and the short particle answer. For reasons to be made clear directly, I gloss the question particle simply as $[\pm]$

- (16) Q: Haluaa-ko Marja kahvia?
wants- $[\pm]$ Marja coffee
'Does Marja want coffee?'
- A1: Haluaa.
wants
- A2: Kyllä.
yes
- Both: 'Yes.'

Now consider two versions of the same question with narrow focus.

- (17) Q: Marja-ko kahvia haluaa?
Marja- $[\pm]$ coffee wants
'Is it Marja that wants coffee?'
- A1: *Haluaa.
wants
- A2: Kyllä.

- yes
- A3: Marja.
Both: 'Yes.'
- (18) Q: Kahvia-ko Marja haluaa?
coffee-[±] Marja wants
'Is it coffee that Marja wants?'
- A1: *Haluaa.
wants
- A2: Kyllä.
yes
- A3: Kahvia.
coffee
'Yes.'

The way to form questions with narrow focus in Finnish is to cliticise the question particle *-ko* to the narrowly focused constituent and move it to the C-domain. See Holmberg (2014) for arguments that this is basically the derivation of these questions.⁴ In the case of the narrow-focus questions (17) and (18), the verb-echo answer is not a well-formed affirmative answer. The affirmative particle is an option, as in the case of the unmarked question. Another option is echoing the narrowly focused constituent (as noted by Jones 1999: 24-25).

Not allowing verb-echo answers for narrow focus questions is not a peculiarity of Finnish. Consider Turkish, for example, first an unmarked question and its answers in (19), then a narrow focus question with answers in (20).⁵ The particle *mu/mi* is a question particle which shares the property with Finnish *-ko* that it tracks focus. In (20) it marks the object *kahve* immediately preceding it, as narrow focus. I gloss *mu/mi* as [±], as above in the case of Finnish.

- (19) Q: Mary kahve isti-yor mu?
Mary coffee want-IMPFV [±]
'Does Mary want coffee?'
- A1: Isti-yor.

⁴ An alternative (assumed in some earlier work, including Holmberg 2001) is that the question clitic *-ko* is a (spell-out of) a Q(uestion)-marked C which attracts the focused constituent. There are good reasons to reject this analysis; see Holmberg (to appear).

⁵ Thanks to Kadri Kuram and Selçuk İşsever for the examples and discussion.

want-IMPFV

A2: Evet.

yes

Both: 'Yes.'

(20) Q: Mary kahve mi isti-yor?
Mary coffee [±] want-IMPFV
'Is it coffee that Mary wants?'

A1: *Isti-yor.

want-IMPFV

A2: Evet.

yes

'Yes.'

A3: *Kahve .

coffee

The verb-echo answer which is fine in the case of the unmarked question is bad in the case of the narrow-focus question. The answer particle is fine in both. Unlike Finnish, echoing the focused constituent is not an option as an answer to the narrow-focus question, though .⁶

Consider also Thai,⁷ first the unmarked (wide-focus) question and its answers in (21), then a narrow-focus question with answers in (22).

(21) Q: khǎw rian phaa-sǎa-yîi-pùn rǎu? [Thai]

he study Japanese Q/or

'Did he study Japanese?'

A1: rian / mây-rian

study/NEG-study

A2: chây/ mây-chây

right/ NEG-right

A3: khà/ mây khà

⁶ The affirmative answer particle plus the focused constituent is a possible answer to (x). Combining the answer particle with the verb is not an option, though:

(i) Evet, kahve.

yes coffee

(ii) *Evet, istiyor.

yes wants

⁷ Thanks to Somphob Yaisomanang for examples and discussion.

HON/NEG HON

'Yes/ No.'

(22) Q: phaa-sǎa-yîi-pùn rǎu thîi khǎw rian
Japanese Q that he study
'Was it Japanese that he studied?'

A1: *rian/ *mây-rian
study/ NEG-study
Intended: 'Yes/No.'

A2: chây/ mây-chây
right/ NEG-right

A3: khà/ mây khà
HON/NEG HON
'Yes/ No.'

A4: *phaa-sǎa-yîi-pùn
Japanese
Intended: 'Yes.'

Again, the verb answer which is fine in the case of the unmarked question is not an option in the case of the narrow-focus question. The answer particle which is otherwise used as an answer particle in Type 2 questions (see chapter 2.9.3) can be used in both cases. Likewise, the honorific particle can be used as an answer particle in both cases; see chapter 3.13.1. Like Turkish, but unlike Finnish, Thai cannot echo the narrowly focused constituent as affirmative answer.

A language in which echoing the narrowly focused constituent is possible is Hungarian. As in the other languages, even though Hungarian is a verb-echo answer language, a verb-echo answer is not an option in the case of narrow-focus questions. (23) is the unmarked question, (24) the narrow-focus question.⁸

(23) Q: Mari kér kávé?
Mary wants coffee
'Does Mary want coffee?'

A1: Kér.
wants

⁸ Thanks to Anikó Lipták and Orsolya Tánczos for discussion and examples.

- A2: Igen.
yes
'Yes.'
- (24) Q: KÁVÉT kér Mari?
coffee.ACC wants Mari
'Is it coffee that Mary wants?'
- A1: *Kér.
wants
- A2: Igen.
yes
- A3: Kávét.
coffee.ACC
'Yes.'

Among the questions that we might want to want to answer are: Why is the verb answer not an option in the case of narrow-focus questions in Finnish, Turkish, Thai, or Hungarian? Another question is, what is special about Finnish and Hungarian, allowing them to use echo of the narrowly focused constituent as affirmative answer? Why is this not an option Turkish or Thai, or in English, for that matter?

- (25) Q: Is it coffee that Mary wants? /Is coffee what Mary wants?
A1: Yes.
A2: *Coffee.

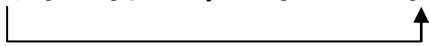
In the following I will first present an analysis of the Finnish narrow-focus questions and their answers. I will then compare this with the other languages.

5.2.2 *The derivation of narrow-focus questions and their answers in Finnish*

The meaning of the question particle *-ko* in Finnish can be characterised as 'A or not A' (see chapter 2.5). In the unmarked question (16) 'A' is positive polarity, so we have the usual configuration in unmarked yes-no questions where positive or negative polarity, i.e. [\pm Pol], carried by the finite verb, moves (overtly) to the C-domain to get sentential scope, to yield the sentential disjunction 'Mary wants coffee or Mary does not want coffee'. In the answer, an externally merged focused polarity

- (29) Q: Kahvia-ko Marja haluaa?
 A: Kyllä.
 yes
 ‘Yes.’

How come it can be answered by the answer particle which is otherwise used to assign value to the unvalued sentential polarity feature? I propose this is because the Finnish answer particle *kyllä* is a generalized affirmative focus particle, a plus-value assigner to polar variables in questions. When the question has [\pm Pol] as question variable, *kyllä*, just like its English counterpart *yes*, can assign positive value to it. When the question has a disjunction of values of, for example, an object as question variable (coffee or non-coffee in our example), *kyllä* can assign positive value to this variable, too. Instead of (28), the answer in Finnish would then have the structure (30):

- (30) [_{CP} [kyllä, +] Foc [_{PolP} Marja Pol [_{VP} haluaa [+kahvia]]]]
- 

Why is the verb-echo answer not an option in Finnish, Hungarian, Turkish, or Thai, in narrow-focus questions? The verb-echo answer apparently cannot function as a generalized plus-value assigner, the way the affirmative answer particle can. The reason why it cannot is that the verb-echo answer always involves movement of the finite verb to the head of PolP. Consider first the big-ellipsis variety of verb-echo answers, characteristic of Finnish among many other languages (as articulated in chapter 3.12.3):

The focused valued polarity feature in the C-domain binds the polarity variable in the head of PolP, and attracts the verb moved to the head of PolP in order for it to function as its lexical support. The attraction of the verb can be achieved by verb movement or remnant PolP-movement, subject to parametric variation; see chapter 3. This means that in the absence of a focused polarity feature in the C-domain there will be no verb movement, hence no verb-echo answer. The highly simplified structure of the Finnish verb-echo answer (31A) is (32):

- (31) Q: Haluaa-ko Marja kahvia?
 ‘Does Marja want coffee?’
 A: Haluaa.
 wants
 ‘Yes.’

(32) [_{FoCP} [[*haluaa*,Pol] +Pol] Foc [_{PolP} ...<*haluaa*,Pol>...[_{VP} ...<*haluaa*>...]]

Applying this derivation to construct an answer to (26a) would leave the object variable [\pm *kahvia*] open, hence yield an uninterpretable sentence (ruled out by Full Interpretation, in more technical terms; Chomsky 1986, 1993).

The problem is basically the same in the other derivation of verb-echo answers, by verb-stranding VP-ellipsis and subject pro-drop: The verb moves to the head of PolP, to provide lexical support for a focus feature. The vP/VP is elided, as is (typically) the subject. If the VP, or any part of the sentence, contains a narrow-focus variable, this variable remains unvalued, and the sentence is ruled out.

What is special about Finnish and Hungarian, allowing them to answer a narrow-focus question affirmatively by echoing the focused constituent? Why is this not an option in Turkish or Thai, or English, for that matter?

Consider the derivation of cleft questions in English. (33) is an English declarative pseudo-cleft. (34) is the yes-no question version and the affirmative answer.

(33) What Mary wants is coffee.

(34) Q: Is coffee what Mary wants?

A1: Yes.

A2: *Coffee.

I will put aside a proper discussion of the syntax of (pseudo-) clefts in this context (see Akmajian 1970, Heycock and Kroch 1999). However, a simple reason why (34A2) is not a well formed answer is that the pseudo-cleft does not ask for the 'value' of what he wants (coffee or something else) but whether the value assignment 'what he wants is = coffee' is true.

In Finnish, the same message can be conveyed by, as it looks, a more direct route. The variable [\pm *coffee*] is derived by merging the question clitic with the DP *coffee*. Then this constituent is moved to the main clause C-domain, with a Q-force feature finally merged with CP.⁹ The answer

⁹ In Finnish the narrow focus question in fact must be combined with Q-force. A question focusing polarity can be embedded, a narrow-focus question cannot.

(i) Minä en tiedä haluaa-ko Marja kahvia.
I NEG know wants-Q Marja coffee
'I don't know if Marja wants coffee.'

(ii) *Minä en tiedä kahvia-ko Marja haluaa.
I NEG know coffee-Q Marja wants
Intended: I don't know whether coffee is what Marja wants.'

I do not have a ready explanation for this.

then assigns a value directly to this variable, either by echoing the narrow-focused constituent, or by using the affirmative particle.

I assume the derivation of the Hungarian narrow focus question is essentially the same as in Finnish. There is no question particle, but the question is the result of moving the focused constituent to the focus position in the C-domain, deriving a structure with a variable [$\pm A$], where A = coffee in the case discussed, and where the answer can assign a value directly to this variable.

Why do Turkish or Thai not allow assignment of a value directly to the variable? As for Turkish, the facts are a bit more complicated than indicated above. If the narrowly focused object is definite, the affirmative answer may be an echo of this object.

- (35) Q: John bu fotoğrafi mi çekti?
John this photo [$\pm Pol$] took
'Was it this photo that John took?'
- A1: Bu fotoğrafi.
this photo
- A2: Evet.
yes
Both 'Yes.'

This suggests a reason for variation in the form of narrow-focus answers across languages: Turkish does not allow focus movement of a bare, indefinite noun such as *kahve* 'coffee', but does for a definite DP.

- (36) a. (Does Jack play the guitar?)
*Hayır, PİYANO John çal-ar, gitar değil
no piano John.NOM play-REP. guitar not
- b. (Did John take that photo?)
Hayır, BU FOTOĞRAFI John çekti, o-nu değil.
No this photo.ACC John.NOM took, that-ACC not
'No, it's this photo that Jack took, not that one.'

Finnish allows focus movement of either.

- (37) a. Piana se soittaa, eikä kitaraa.

piano he plays not guitar
 'It's piano he plays, not guitar.'

- b. Tämän kuvan se otti, eikä tuota.
 this photo he took not that
 'It's this photo he took, not that one.'

If answers to narrow-focus yes-no questions are derived by focus movement of the valued object, then this could explain the difference between Finnish (18) and Turkish (20). In Hungarian, too, indefinite and definite DPs alike can be focused.¹⁰ As for Thai, the question (22) is formed with a relative clause, indicating that it would be a cleft, perhaps with a silent copula, as indicated in (38), where the exact relation between the two terms, the copular clause and the relative, is left vague.

- (38) [COP phaa-sǎa-yîi-pùn rǎu] [thîi khǎw rian]
 Japanese or/Q that he study
 'Was it Japanese that he studied?'

If so, the reason why A4 is not well formed would be the same as in English: The question does not ask for the value of 'Japanese or not Japanese'. In fact, we can also suggest an explanation why A1, the verb-echo answer *rian* 'study', is ill-formed: The highest verb of the sentence is the silent copula, which cannot serve as a verb-echo answer, being silent.

5.2.3 Negative answers to narrow-focus questions

Until now I have discussed affirmative answers to narrow-focus questions. In the case of languages like English, where the narrow-focused constituent cannot be questioned directly, there is nothing special to say about negative answers; the affirmative answer assigns plus-value to [\pm Pol], thereby confirming that the value-assignment 'what Mary wants= coffee' expressed by the pseudo-cleft is true, and the negative answer assigns negative value to [\pm Pol], thereby confirming that the value-assignment is false.

¹⁰ The Hungarian answers to the questions in (36) are (i) and (ii) (thanks to Orsolya Táncczos). The focus is preposed to the verb, with the topic preceding the focus.

- (i) Nem, ő/János ZONGORÁN játszik, (nem gitáron).
 no, he/John PIANO plays (not guitar)
 (ii) Nem, ő/ János AZT A FOTÓT készítette, (nem ezt).
 no, he/John THAT PHOTO took (not this one)

- (20) Q: Is coffee what Mary wants?
A: No.

In Finnish, where the narrow-focused constituent is questioned directly, negative answers complicate the picture. Consider first the unmarked question, then the narrow-focus variety.

- (21) Q: Haluat-ko sinä kahvia?
want-Q you coffee
'Do you want some coffee?'
- A1: En.
NEG.1SG
'No.'
- A2: En halua.
NEG.1SG want
'No.'

- (22) Q: Kahvia-ko sinä haluat?
coffee-Q you want
'Is it coffee you want?'
- A1: En.
NEG.1SG
- A2: En halua.
NEG.1SG want
'No.'

It looks like the narrow-focus question is answered just like the unmarked question. The example has a second person subject in order to highlight the fact that the negation is inflected for agreement in the narrow-focus case as well as in the unmarked case. Above I proposed that verb-echo answers are ruled out as affirmative answers to narrow-focus questions because they are derived by movement of V to Pol, and, in the big-ellipsis answers, movement of [V, Pol] to focus position in the C-domain. As such they can only value sentential polarity, leaving any narrow-focus [\pm A]-variable open. Answering with an affirmative particle avoids this problem, since the particle is externally merged, and even though in the unmarked case it values the polarity variable, it can in fact value any [\pm A]-variable (which is local enough). In chapter 3.12 I argued that negative answers

to yes-no questions in Finnish are derived by movement of the negation to the head of PolP, and subsequent Pol-movement to the focus position in the C-domain to support the focused (negative) polarity feature, just like verb-echo answers. The focused negative feature assigns negative value to the head of PolP. The prediction is that the negation should not be able to value any other variable than polarity. It looks like the prediction is violated in (22). What we might expect to see is a lexical exponent of [-coffee] in the focus position in the answer to (22), assigning negative value to the variable in VP. Note also that the negation in (22) is inflected for agreement, indicating that it is derived in the same manner as in answers to wide-focus questions, and generally in Finnish finite clauses.

The most straightforward interpretation of these observations is that the negative answer to the narrow-focus question ignores the narrow focus of the question, and answers it as if it was an unmarked question, with [\pm Pol] as question variable. The syntactic structure of the question (22) has a plus-valued Pol (see below) and a variable [\pm coffee] in object position. The syntactic structure of the negative answer to the question has a minus-valued Pol, assigned its value by the focused negative PolP, and a constant *kahvia* 'coffee' as object.

But iff this is possible in the case of the negative answer, why is it not possible in the positive answer, making the verb-echo answer an option, after all? One reason could be that there is a viable alternative in the case of the positive answer, namely, the externally merged affirmative particle *kyllä*, functioning as a generalised plus-value assigner to polar variables, but at least in Finnish, there is no externally merged general minus-value assigner.¹¹

If this analysis is right, it makes the prediction that the negative answer to the narrow-focus question (22Q) can mean that I don't want coffee with no presupposition that I want something else instead, just like the answer of the corresponding neutral question, while the answer *kyllä* or *kahvia* in the case of (22Q) necessarily convey the presupposition that there is something else (some other beverage) that I don't want. This appears to be a correct prediction. Compare the positive and the negative answers (23a,b) as answers to (22Q), repeated here. Assume that the context is that there just coffee and tea to choose between.

- (23) Q: Kahviako sinä haluat?
'Is it coffee that you want?'
- A1: Kahvia.

¹¹ Typically my Finnish informants assign a question mark rather than an asterisk to verb answers to narrow+focus questions, which might be taken as an indication that this is, in fact, an option, but degraded since (a) it presupposes ignoring part of the structure of the question, and (b) there is an easily accessible alternative, that is to use the affirmative particle.

coffee

'Yes.'

A2: En halua.

NEG want

'No.'

A1 entails, given the context and the question, that I don't want tea, or at least, that tea is a less preferred choice. A2 does not entail that I want tea, or even prefer tea; the person asking (23Q) cannot take my answer as a request for a cup of tea.

The syntax of narrow-focus questions and their answers in a cross-linguistic perspective is obviously worthy of a much more detailed study than the one reported here. What I have done here is really just offer some suggestions which I hope may inspire more research.

6. Conclusions

Probably the most controversial idea in this book is that all finite sentences, including yes-no questions, have a polarity head high in the IP-domain, which is mostly abstract. This head is not realised as negation in negative sentences (it is thereby different from the polarity head postulated in Laka 1994). Instead, it is typically abstract, but assigned negative value by the negation in negative declarative sentences, and positive value as default in non-negative declarative sentences.

Obviously, there is reason to be suspicious of a theory which postulates a head in all declarative sentences which is hardly ever morphologically realised. However, the reality of this polarity head is argued to be almost inescapable when we consider the syntax of yes-no questions, if we take Hamblin's (1958, 1973) theory of the semantics of questions seriously as part of a theory of the syntax of questions. According to Hamblin, a yes-no question denotes a disjunctive set of proposition, p and its negation $\neg p$, corresponding to the two possible answers to the yes-no question. The question puts these two propositions before the addressee and invites them to say which one is true. If the question is (1), the two propositions are (2).

- (1) Is John coming?
- (2) John is coming or John is not coming.

The answer can just name one of the propositions, as in (3), for example.

- (3) John is coming.

But this is not the most common form of answer. Much more common is answering by using an answer particle, in English *yes*, when the intention is to convey that the positive alternative proposition is true, and *no* when the negative alternative is true.

- (4) Yes.

How does the question encode the meaning of two alternative propositions p and $\neg p$? And how does the answer particle (4) convey the same meaning as (3), that p is true? If the syntactic structure of the question (1) includes a polarity feature with open value, $[\pm\text{Pol}]$, what I have called a polarity variable, then (1) will map onto two propositions, one with positive value one with negative value. And if *yes* is a sentential operator which applies to a question with an open polarity feature and

assigns positive value to it, with *no* correspondingly assigning negative value to it, then things fall into place. The structure of (4) is more precisely (5):

(5) $[_{FocP} \text{yes Foc } [_{PolP} \text{John } [+Pol] \text{ is coming }]]$

Often the PolP is elided, leaving only the focused answer particle spelled out. That means that answers to yes-no questions fall into the category of fragment answers (Merchant 2004). The PolP can be elided because it is identical to the PolP of the question, up to assignment of value to the variable. I have modelled this as the answer inheriting, or recycling, the PolP of the question. A question, by definition, includes a variable. In yes-no questions the variable is $[\pm Pol]$. The answer provides a value for the variable, and thereby picks one of the alternative propositions denoted by the question as the one presented as true.

An integral part of the syntax of questions is that the question variable, or minimally the disjunction relating the alternative values, moves to the C-domain. The best known representative of this movement is *wh*-movement. However, along with Jayaseelan (2012) I contend that the polarity variable $[\pm Pol]$, the disjunction of $[+Pol]$ and $[-Pol]$, also undergoes movement to the C-domain in yes-no questions. The reason for the movement is for the disjunction to have sentential scope. Without it, the sentence will not denote a disjunction of propositions.

As mentioned, in direct yes-no questions the choice between the two alternatives is put before the addressee, who is asked to say which of the two alternatives is true. I have proposed that this is encoded in the syntax as a Q-force feature, merged with the CP whose specifier is the fronted disjunction. Indirect questions also denote a set of alternative propositions but instead of requesting that the addressee make a choice between them, they typically express a particular epistemic or evaluative attitude on the part of the matrix clause subject towards the set of alternatives. The movement of the disjunctive variable has the effect of placing it in a position immediately subjacent to the force feature (direct questions) or the matrix predicate (embedded questions). I have suggested that this is not accidental: The movement assigns sentential scope to the disjunction and puts the variable in the position I have called the Centre of Attention (CoA), subjacent to Q-force (in direct questions) and to the matrix predicate (in embedded questions).

If the polarity feature is mostly abstract in declaratives, it is often visible in questions, as a question particle or a special intonation curve. Typically the question particle is in the clausal periphery, final, initial, or second position (see Dryer 2013a). This is consistent with the hypothesis that the polarity variable $[\pm Pol]$ undergoes movement to the C-domain. There are question particles

which only appear in direct questions (see Bailey 2012); this will be the case if they spell out the Q-force feature.

These are the basic theoretical assumptions. From this, almost everything else follows. A variety of superficially quite different yes-no question types are discussed, from Chinese, Finnish, English and Thai. An important observation is that many languages employ verb-echo answers instead of particle answers to yes-no questions. Since these answers are quite uncontroversially derived by ellipsis, they provide a plausibility argument in favour of the claim that all answers, including particle answers, are derived by ellipsis. Insofar as it can be shown that verb-echo answers and particle answers share properties which, in the case of verb-echo answers can be explained in terms of conditions on ellipsis, then this provides strong support for the claim that particle answers, too, are derived by ellipsis, as indicated above in connection with (5). A case in point is the parallel behaviour of verb-echo answers in for example Finnish and particle answers in for example English as answers to a negative question when the answer is intended to confirm the positive alternative ([±] is the gloss for the question particle).

- (6) Q: Ei-kö Jussi puhu ranskaa ollenkaan? [Finnish]
not-[±] Jussi speak French at.all
'Does Jussi not speak French at all?'
- A1: *Puhuu.
speaks
- A2: Puhuu se.
speaks he
'Yes he does.'

- (7) Q: Does John not speak French at all?
- A1: *Yes.
- A2: Yes he does.

In both systems a bare affirmative answer word is ungrammatical (or marginal or infelicitous; in the context of this work I define it as a grammaticality issue), when the intention is to disconfirm the negative alternative. In both systems the longer answer is well formed. This follows from the hypothesis that (a) short answers are all derived by IP-ellipsis (more precisely PolP ellipsis); (b) because the questions are negative, the elided identical IP contains a negation in (6) and (7); (c) this leads to a feature clash because the focused polarity feature is affirmative. In the long answer only

the VP is elided, hence only the VP needs to be identical with that of the question, meaning that whether the question includes a negation or not is of no consequence.

The distribution of the two systems across the languages of the world is discussed, based on data from 132 languages drawn from the literature, the SSWL database, and fieldwork. About half of the world's languages employ the verb-echo system, often as an alternative to particle answers. It turns out, though, that there are two quite distinct forms of verb-echo answers, superficially similar but quite differently derived. One is derived by movement of the finite verb, either by head movement or by remnant PolP-movement, to a focus position in the C-domain, with ellipsis of the rest of the sentence, leaving just the verb spelled out, or ellipsis of a large chunk of the sentence, typically including the subject, but not all of the sentence. I refer to this as the big ellipsis derivation. The other type of verb-echo answer is derived by VP-ellipsis and pro-drop of the subject, often leaving just the finite verb spelled out. A test is proposed to distinguish between the two derivations, based on the observation that indefinite subjects cannot be pro-dropped. The test is applied to a range of languages, mainly with the help of the SSWL database. About half of the verb-echo languages turn out to employ the big ellipsis derivation. Among the languages that do employ this system there is still some significant variation. In particular, some languages employ verb-movement, other languages remnant PolP movement, as a means to put a valued polarity feature in the focus position in the C-domain, or lexically support a valued polarity feature merged in that position. Three languages are discussed in some detail, representing different varieties of the big ellipsis derivation of verb-echo answers, Welsh and Finnish, representing languages with verb movement, and Thai, representing languages without verb movement. It turns out, then, that the variation between languages with verb-echo answers and languages without them is not due to one parameter, but the interplay of a variety of parameters. Some of the relevant factors have been identified, by detailed analysis of individual languages, but much work remains to be done. In particular we need detailed investigation of syntax of answers in individual languages of different types.

Negative questions and how to answer them is an important theme in this book. First, the mere existence of negative yes-no questions implies that polarity is distinct from negation. Yes-no questions, by definition, have open polarity. But yes-no questions can contain a negation. The effect of the negation is to bias the question, towards either a positive or a negative answer depending on the syntax of the question, yet they are questions calling for an answer picking one of the alternative propositions as the true one. This can be understood if the negation in the question does not value the polarity feature heading the sentence, but instead, the disjunctive polarity head undergoes movement to the C-domain, just as in neutral questions, to yield the typical question

interpretation. The bias is then an effect of the negation, which partly depends on the syntactic position, hence scope, of the negation.

There is an important division between two answering systems distributed among the languages of the world. In one system, which, following Jones (1999) I call the truth-based system, a negative question is answered 'yes' when the intention is to confirm the negative alternative. In the other system, called the polarity-based system, the corresponding negative question is answered 'no' to confirm the negative alternative. It is argued, building on Holmberg (2013), that this variation is correlated with the syntax of the negation in the question. Basically, when the PolP of the question, which is inherited by the answer, has a negation which is not in position to assign negative value to the polarity variable [\pm Pol], then the focused affirmation particle will assign positive value to the polarity variable, which yields the 'affirmation of negation' characteristic of the truth-based system. This will be the case when the negation is in a structurally low enough position, as when the negation is in VP. This is, or at least can be the case in Japanese and Mandarin Chinese and also in English, when the question has a low negation *not*. It can also be because the negation is embedded in the specifier of the projection headed by the polarity variable, so that there is no c-command relation between the negation and the polarity variable, as in negative questions in Thai and *ma*-questions in Mandarin Chinese (the latter are a form of tag-questions). When the negation is close enough so that valuing of the polarity head cannot be avoided in the answer, the answer particle must be (the counterpart of) *no*, which can agree with the negative-marked polarity head. This is the polarity-based system.

The question whether the variation between the two systems is a matter of social-cultural conventions or a syntactic matter was discussed. The fact that English has a mixed system (as first noted and discussed by Kramer and Rawlins 2011), is an obvious argument against the idea that it would be a cultural matter independent of syntax. There are other languages with mixed systems; the case of Japanese was discussed briefly.

The cross-linguistic distribution of the two systems has been investigated. Slightly more than half of the world's genera are reported to use the truth-based system. No correlation was found between the verb-echo vs particle parameter and the truth-based vs polarity-based parameter, somewhat unexpectedly. A correlation was found between the truth-based vs polarity-based parameter and the occurrence of a reversing particle (like German *doch*): Languages employing the truth-based system do not need this particle and typically do not have one. The two systems have a clear geographical distribution: In my database, languages east of India are truth-based, while languages in Eurasia from India westwards are predominantly polarity-based. The truth-based system is dominant in Africa. The implication is that the syntax of negation and/or the syntax of

questions will also have crucial features in common over these large areas. This issue was briefly discussed at the end of chapter 4, together with some discussion of language change and answering systems.

In many languages, but not all, there is a sharp division among negative questions between those that are biased towards a positive answer and those that are biased towards a negative answer. This division correlates with the position of the negation, clearly in some languages (including English), much less clearly in other languages (including Finnish): Positively biased questions have a high negation, negatively biased questions a low negation. The strategy to use the form of answers as a diagnostic for the analysis of the questions is employed at various points in the book, and is used again in connection with biased questions. Negatively biased questions differ systematically from answers to positively biased questions in the way they are answered. Answer particles, or at least some of them, do double duty as answers to questions and as rejoinders to statements, indicating agreement or disagreement with a statement. This is discussed in chapters 4 and 5. There is overlap between answers to positively biased questions and rejoinders to positive statements (‘that’s right’ is a possible response to both), which can be understood if positively biased negative questions include a positively valued assertion as part of their denotation, i.e. as one of the alternatives put forward by the question. The common impression that answers to yes-no questions are different in for example Chinese and English, the Chinese answers indicating agreement/disagreement while the English answers indicate polarity value (see Hinds 1986: 45 on Japanese) is at least in part due to the fact that negative questions in Chinese contain a positively valued assertion as part of their denotation.

The important difference between ‘yes’ and ‘no’ as responses indicating agreement with statements and the same words as answers to questions is discussed in chapter 5. The differences are explained by the fact that statements do not include a polarity variable needing a value, but polar questions do.

Finally, yes-no questions with narrow focus are discussed in chapter 5, though rather briefly, on the basis of a comparison of Finnish, Hungarian, Turkish, and Thai. In some languages any substantive constituent can be a polar question variable, so that the question which in English is expressed as *Is it coffee that you want?* is expressed in a way that can be paraphrased as ‘Do you want coffee or non-coffee?’ (‘non-coffee’ being, for example, another beverage). The positive answer to the question in these languages is, therefore, ‘Coffee’. Finnish, Hungarian, and Turkish use this system, English and Thai do not. This is much more to say about narrow-focus questions and their answers, though, than I have said in chapter 5. There are many issues relevant to questions

and answers that I have not dealt with, or even mentioned in this book. I leave it for future research, by me and, I hope, other linguists.

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