

# THE SYNTAX OF NEGATIVE QUESTIONS AND THEIR ANSWERS\*

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## 1. Introduction

There is a well-known distinction among the languages of the world regarding how negative polar questions (yes/no-questions) are answered. This can be illustrated by the following examples, from Japanese and English, respectively (Q = question, A = answer):

- (1) Q: Kimi tukarete nai? [Japanese]  
you tired NEG  
'Are you not tired?'  
A: **Un**, tukarete nai.  
yes tired NEG  
(Lit.) 'Yes, I'm not tired.'
- (2) Q: Are you not tired? [English]  
A: **No**, I'm not tired.

When confirming the negative alternative (I'm not tired), Japanese speakers use the particle which is used for affirmative answers to neutral questions, while English speakers use the particle used for negative answers to neutral questions. Correspondingly, when confirming the positive alternative of a negative question (denying the negative alternative), Japanese speakers use the particle otherwise used for negative answers to neutral questions, while English speakers use the particle otherwise used for affirmative answers to neutral questions.

- (3) Q: Kare-wa koohii-o noma nai no? [Japanese]  
he-TOP coffee-ACC drink NEG Q  
'Does he not drink coffee?'  
A: **Uun**, nomu yo.  
no drink PRT  
(Lit.) 'No, he drinks (coffee).'
- (4) Q: Does he not drink coffee?  
A: **Yes**, he does.

This is the simple picture, to be modified in the course of this paper (see Kuno 1978, Pope 1976, Jones 1999: 4-14), Holmberg, in press). The two answering systems have been referred to in the literature as *the truth-based* and the *polarity-based* answering systems (Jones 1999). The truth-based system is what we see in Japanese. The logic of the nomenclature is that the

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negative question is, as it were, about the truth of the negative proposition (‘Is it true that you are not tired?’), and the answer particle confirms or disconfirms it: ‘Yes, it’s true that I’m not tired’, or ‘No, it’s not true that I’m not tired.’ (i.e. ‘I am tired’). In the polarity-based system, on the other hand, the answer particle reflects, or agrees with, the polarity of the proposition in the answer. If the proposition is negative (confirming the alternative that I’m not tired), the answer particle is the negative *no*, if the proposition is positive, the particle is the positive *yes*.

Another nomenclature is that the Japanese system is an *agree/disagree system*: The answer conveys whether the respondent agrees or disagrees with the negative expectation conveyed by the negative question (cf. Pope (176: 73), Kuno 1978). *Un* in (1) would mean ‘I agree with your expectation that I’m not tired’. Neither nomenclature is ideal. However, for reasons to be made clear later I prefer the truth-based/polarity-based alternative.

The distinction seems to be generally regarded as a matter of cultural conventions, comparable to, say, the distinction between shaking hands or making a bow when greeting a new acquaintance. The alternative is that it is a matter of syntax: something about the syntactic rules of a language dictates whether it will employ the truth-based or the polarity-based answering system. In other words, it would be a case of parametric variation. There are some indications that the cultural convention hypothesis may be right. One of them is that there appears to be some intra-linguistic, possibly idiolectal variation in the use of ‘yes’ and ‘no’. Nevertheless, I will argue in this paper that the choice of ‘yes’ or ‘no’ when answering a negative question is fundamentally a syntactic matter, determined by the syntax of negation in the question, which is subject to parametric syntactic variation. English turns out to be a particularly interesting language in this connection. It has several syntactically distinct negations, and exhibits systematic variation with regard to answers to negative questions which correlates with the choice of negation in the question. The theory constructed on the basis of English will be shown to make predictions for other languages which do receive some cross-linguistic confirmation.

## 2. The Cross-linguistic Distribution of the Two Systems

The following is a list of languages reported to employ the truth-based system and languages reported to employ the polarity-based system. The list is based on descriptive grammars, on data gathered with the help of *Syntactic Structures of the World’s Languages* (SSWL), and from fieldwork. Each class includes only languages from different genera. The genus is named within the brackets as well as the family/phylum in cases where there are several languages from the same family/phylum. The location is mentioned where relevant.

### Truth-based

Afrikaans	(Germanic, South Africa)
Amele	(Gum, Trans-New Guinea)
Amharic	(South Semitic, Afro-Asiatic)
Mandarin	(Chinese, Sino-Tibetan)
Evenki	(Tungusic)
Georgian	(Kartvelian)
Ibibio	(Lower Cross, Niger Congo)
Japanese	(Japonic)
Kashmiri	(Dardic, Indo-European)
Kobon	(Kalam-Kobon, Trans-New Guinea)
Korean	(isolate, East Asia)
Kuot	(isolate, Papua New Guinea)
Lao	(Lao-Putai, Tai-Kadai)
Malagasy	(Barito, Austronesian)

Matses	(Panoan, South America)
Mauwake	(Kumil, Trans-New Guinea)
Mualang	(Ibanic, Austronesian)
Mwotlap	(East Vanuatu, Austronesian)
Nahuatl	(Uto-Aztecan)
Nigerian Pidgin	(English-based creole)
Nkore-Kiga	(Bantu, Niger-Congo)
Nupe	(Nupe-Gbagyi, Niger Congo,)
Nweh	(Grassfields Bantu, Niger Congo)
Shan	(Northwestern, Tai-Kadai)
Taiwanese Southern Min	(Min, Sino-Tibetan)
Thai	(Thai, Tai-Kadai)
Yoruba	(Volta-Niger, Niger-Congo,)

### **Polarity-based**

Arabic (varieties of)	(Semitic, Afro-Asiatic)
Bengali	(Assamese-Bengali, Indo-European)
Basque	(isolate, Europe)
Catalan	(Romance, Indo-European)
Croatian	(South Slavic, Indo-European)
Finnish	(Finnic, Finno-Ugric)
Gujarati	(Western Indo-Aryan, Indo-European)
Haitian	(French-based creole)
Hungarian	(Ugric, Finno-Ugric)
Irish	(Celtic, Indo-European)
Jamaican Creole English	
Kannada	(Kannada-Badaga, Dravidian)
Khwarshi	(North-East Caucasian)
Koromfe	(Gur, Niger Congo)
Malayalam	(Tamil-Malayalam, Dravidian)
Persian	(Iranian, Indo-European)
Polish	(Slavic, Indo-European)
Shupamem	(Grassfields Bantu, Niger-Congo)
Swedish	(Germanic, Indo-European)
Turkish	(Turkic)
West Greenlandic (Inuktitut)	
Wolof	(Senegambian, Niger-Congo)

The two classes are not strictly parallel. The truth-based class includes some languages reported to allow both types of answers, while the polarity-based class includes only languages which are reported not to allow truth-based answers.<sup>1</sup> Some areal effects are prominent in the list: There are no European languages in the truth-based class. East Asian languages are all in the truth-based class. Papua-New-Guinean languages are also all in the

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<sup>1</sup> Of the 33 languages in the SSWL with data about answering systems (at the time of writing), 16 are reported as allowing polarity-based answers only, 6 are reported as allowing truth-based answers only. 7 languages are reported as allowing both types. They are Afrikaans, Ibibio, Japanese, Mandarin, Nweh, Taiwanese Southern Min, and Georgian. Kashmiri is reported to allow both types in Wali and Koul (1997), as is Mauwake, in Berghäll (2006). For some languages I have contradictory results. Hausa (Chadic, Afro-Asiatic) is reported to follow the truth-based system in SSWL, but to follow the polarity-based system in my own fieldwork with an informant.

truth-based class, while African languages are found in both classes. This does not have any clear implications for the choice between the ‘cultural hypothesis’ and the ‘syntactic hypothesis’. Cultural traits obviously spread through contact between peoples, but so do syntactic features. One of the most important findings of linguistic typological research from the last twenty years is that linguistic features can be geographically distributed over surprisingly large, even continent-wide areas, across family lines (Dryer 1998). I will not say more about the typological aspect of answering systems in this paper.

### 3. A Language which Allows both Options: English

One language which appears to allow both the truth-based and the polarity-based option is English. Consider (4) and (5). The question in (5) should be read as conveying an expectation that John is coming. For example, imagine that Bill says to Liz and Mary “Do you know who is coming along on this trip”. Mary then turns to Liz and asks (5). The answer *Yes* then means ‘John is coming’, while *No* means he is not coming; the polarity-based system.<sup>2</sup>

- (5) Q: Isn't John coming?  
 A: Yes. ('John is coming.')

A: No. ('John is not coming.')

The question in (6) would normally convey the expectation that John is not coming. Imagine, for example, that Bill eyes the group of people who have turned up for the trip, and notices that John is not among them, at which point he asks the question in (6).

- (6) Q: Is John not coming?  
 A: Yes. ('John is not coming.')

A: No. ('John is not coming.')

For many speakers of English the answer *yes* now conveys confirmation that John is not coming. This looks like the truth-based system. The answer *no* also conveys confirmation that John is not coming, though, which is not characteristic of the truth-based system. This means that *yes* and *no* mean the same thing in the context of (6). Kramer and Rawlins (2011, 2012) refer to this as *negative neutralization*. So in this case English is half-way truth-based, as it were. Below it will be shown that there are contexts where English replicates the truth-based system exactly.

(5) and (6) imply that choice of negation in the question determines what the answer *yes* means. Judging by just (5) and (6), choice of *n't* means that *yes* confirms the positive alternative, while choice of *not* means that *yes* confirms the negative alternative. In the following I will argue for the following hypothesis, call it Hypothesis 1.

- (7) Hypothesis 1: The choice of answering system in a language, depends on the syntax of polarity, including the syntax of negation.

It will be shown that Hypothesis 1 can best be understood if Hypothesis 2 holds true (see Kramer and Rawlins (2011, 2012), Holmberg (in press)):

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<sup>2</sup> For a subset of native English speakers this is the only reading (2) can have, while for the other speakers it can, in the right context, convey expectation of a negative answer. I will return to this distinction below in section 4.

- (8) Hypothesis 2: Answers like ‘yes’ and ‘no’ are complete sentential expressions, where the IP is elided (not spelled out), under identity with the IP of the question.

Even though many native speakers of English agree that *yes* in the context of (6) means that John is coming, there are also many who do not agree with this interpretation. For these speakers the bare answer ‘yes’ in (6) is not a well formed answer. The intuition of these speakers is that it is indeterminate: Is he coming or isn’t he?<sup>3</sup>

- (9) Q: Is John not coming?  
A: #Yes. [some speakers of English]  
A: Yes he is.

An unquestionably well-formed alternative is the longer version *Yes he is*, accepted by all English speakers as unambiguously meaning (in this case) that he is coming, disconfirming the negative alternative.

Yet another complication is that we also find (10), where the answer disconfirms the negative alternative, just like *Yes he is* in (9).<sup>4</sup>

- (10) Q: Is John not coming?  
A: No, he is.

We can summarise the various alternatives for answering negative questions in English as follows:

- (11) Q: Is John not coming?  
A: Yes.  
Some speakers: ‘John is not coming.’  
Other speakers: Not a well formed answer.  
A: Yes he is.  
All speakers: ‘John is coming.’  
A: No.  
All speakers: ‘John is not coming.’  
A: No, he is.  
Some (or all) speakers: ‘John is coming.’

The upshot is that English does exhibit the conjunction of the possibilities allowed by the truth-based system and the polarity-based system, if we include all the varieties of English discussed above. We may note that we do not, at present, know how the two or three different varieties are distinguished in social or regional terms.

There is another point where there is variation among speakers of English. For many speakers, (5) (*Isn’t John coming?*) unambiguously conveys expectation of a positive answer, while for other speakers it is ambiguous out of the blue: Depending on the context, it may convey a positive or a negative expectation. Ladd (1981), discussing the ambiguity of

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<sup>3</sup> Kramer and Rawlins (2012) reported a carefully made experiment demonstrating this variation among speakers of English in relation to negative questions with *not*.

<sup>4</sup> *No, he is* in (9) is spelled with a comma, while *Yes he is* in (89) is spelled without one. This reflects the observation that *Yes he is* can be, and perhaps typically is, pronounced as a single intonation unit, while *No, he is* in (8) is typically pronounced as two intonation units.

negative questions such as (5) in the latter variety of English observes that the reading can be controlled for by polarity items.<sup>5</sup>

- (12) a. Isn't John coming, too?  
 b. %Isn't John coming, either?

(12a) can only convey a positive expectation, while (12b), for the speakers who accept it at all (the 'ambiguous variety' for whom (5) is ambiguous), it conveys a negative expectation. For the other speakers (the unambiguous variety) it is plain ungrammatical. Ladd (1981) argues that this is explained by the scope of the negation: For the ambiguous variety, *n't* moved to C may have low scope, licensing the negative polarity item either. This point will become clearer below after discussing the structure of questions and answers in more detail. Now, in the ambiguous variety, plain *yes* is not a well-formed answer in a question with *n't* where *n't* has low scope, while *yes+V* and (at least for many speakers *no+V*) is a well formed answer.

- (13) Q: Isn't John coming, either?  
 A: #Yes.  
 A: Yes he is.  
 A: (% )No, he is.

#### 4. The Three Negations of English

Consider the following question-answer triplet (discussed in Holmberg, in press).

- (14) Q: Does John **sometimes** not show up on time for work?  
 A: Yes. ('John sometimes does not show up on time for work.')
- A: No. ('John does not sometimes not show up on time for work', i.e. 'He is always on time'.)

In this case, where an adverb is inserted before the negation in the question, the answer *yes* unambiguously, and for all speakers of English, confirms the negation, i.e. means that John sometimes does not show up for work.

The answer *no* is a bit harder to process, but once processed, the meaning is the one given within brackets, denial of the negative alternative, meaning that John is always on time. The reason why it is harder to process is, quite clearly, the (understood) double negation.

So in this case English conforms strictly to the truth-based system. (15) and (16) are two additional examples illustrating the same point: insertion of an adverb before the negation forces a truth-based reading of *yes* and *no*.

- (15) Q: Did you **purposely** not dress up for this occasion?  
 A: Yes. ('I purposely did not dress up.')
- A: No. ('I did not purposely not dress up; I just didn't know the dress code.')
- (16) Q: Do cats **typically** not like rotten food?  
 A: Yes. ('They typically don't like rotten food.')

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<sup>5</sup> Ladd is apparently not aware that he is describing a restricted variety of English. I have the impression that the 'unambiguous variety' is more common in the USA than in Great Britain. But Robert Ladd himself is American, and I have encountered speakers of British English who consider (5) to be unambiguous.

A: No. ('They don't typically not like rotten food; typically they don't mind if the meat is a bit rotten.')

In (17) I have summarized the findings up to now with regard to the meaning of *yes* and *no* as answers to negative questions in English. The focus particle *too* is added in the question (17a) to force the positive expectation reading.

(17)a. Q: Isn't John coming, too?

Aa: Yes.

No speaker variation: 'John is coming.'

b. Q: Is John not coming?

A: Yes.

Speaker variation: 'John is not coming' or an indeterminate, infelicitous answer.

c. Q: Is John **usually** not coming?

A: Yes.

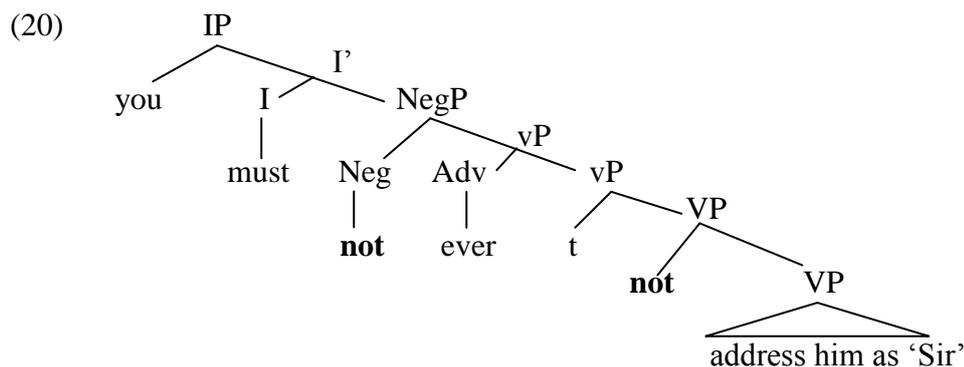
No speaker variation: 'John is usually not coming.'

It is well known that there is a syntactic difference between the negations *n't* and *not* in English, most clearly seen under subject-auxiliary inversion (T-to-C), where *n't* follows the moved auxiliary but *not* does not. But there are also two negations *not*. This is, basically, the reason behind the variation in the meaning of the answers *yes* and *no* to negative questions. The existence of two negations is uncontroversial (see Cormack and Smith 2002): They can co-occur in the same sentence.

(18) You **cannot not** go to Church, and still call yourself a good Christian.

(19) You must **not** ever **not** address him as 'Sir'.

I assume the structure is as in (20).



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.

(21) a. You mustn't ever not address him as 'Sir'.

b. \*You must not evern't address him as 'Sir'.

Now consider again the question *Is John not coming?*. Following Holmberg (in press), I put forward the linked hypotheses in (22):

- (22) 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.

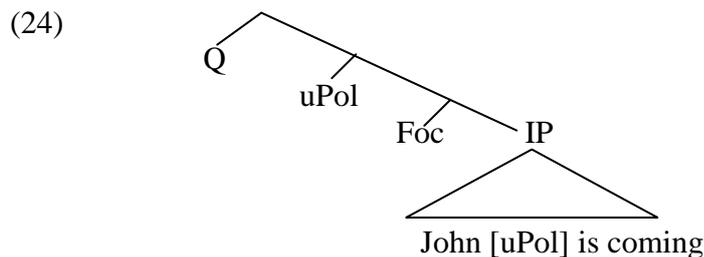
To understand how this works we need to first discuss the syntax of questions.

## 6. The Syntactic Structure of Questions and Answers

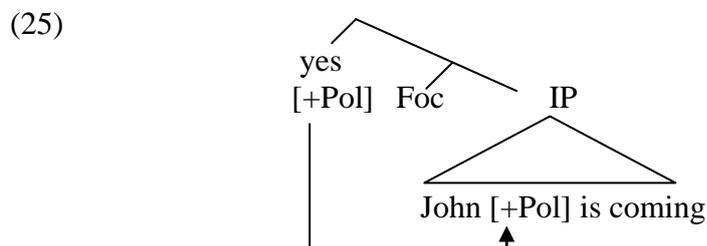
I assume that all questions have the basic structure (23):

- (23) [Q [ x Foc [IP ... x ... ]]

There is a free variable which is the focus of the question, the focusing derived by movement of the variable to specFocP. In direct questions there is, in addition, an illocutionary force feature Q which encodes a request to the addressee to provide a value for the variable such that the resulting proposition is true. In *wh*-questions the variable is a *wh*-phrase, overtly moved to specFocP in English and other languages with *wh*-movement. The answer provides a value for the variable. In *yes/no*-questions the variable is polarity. The basic structure of *Is John coming?* is (24).



The variable is a formally unvalued feature [uPol] which has two possible values, [+Pol] and [-Pol]. The answer, either *Yes* or *No*, provides a value for the variable.<sup>6</sup> The structure of the answer is (25).



The IP of the answer is identical to that of the question except that the polarity variable is assigned a value by the particle merged in spec of Foc. This is just the notion of identity

<sup>6</sup> See Bailey (2012) on the difference between questions with and questions without illocutionary question force, including (most) embedded questions. The hypothesis argued for by Bailey is that the formal difference is the presence of the Q-feature.

required for ellipsis. It is well known that strict referential identity is not required for ellipsis; compare a case like (26), exemplifying VP-ellipsis.

(26) John<sub>i</sub> doesn't hate himself<sub>i</sub>, but Bill<sub>k</sub> does (hate himself<sub>k</sub>).

The VP in the second conjunct is identical to the VP in the first conjunct except that the referential value of the reflexive, a referentially variable item, is different. Following Holmberg (in press) I postulate (27).

(27) A syntactic constituent  $\alpha$  can be elided if it has a discourse-local antecedent which is identical with  $\alpha$  at LF, up to assignment of values to variables.<sup>7</sup>

Typically the antecedent is found in a higher clause, or in the preceding independent sentence in a discourse. I leave the precise meaning of 'discourse-local' open.

Being identical up to the assignment of values to variables with an antecedent in the immediately preceding question, the IP of the answer (25) can be, and usually is elided, i.e. not pronounced. Alternatively the merged, focused particle is *no*, encoding [-Pol], assigning negative value to [uPol] in IP. Again, the IP is typically not spelled out. If it is spelled out it will be *No*, *John is not coming* or *No, John isn't coming*, with [-Pol] spelled out as *not* or *n't*.

Consider the structure of a question with low negation (28a), where the adverb is included to force the low reading of the negation; by hypothesis the negation can be merged low regardless whether there is an adverb, though. The affirmative answer in this case gets the truth-based interpretation, (28b).

(28) a. Is John sometimes not coming (to work)?  
b. Yes. ('John is sometimes not coming.')

The structure of the question is (29a), and the structure of the affirmative answer is (29b), where most often all that is pronounced is the focused affirmative particle.

(29) a. [is, **uPol**] Foc [IP John [is, **uPol**] [sometimes [VP **not** coming ]]]  
b. [yes, **+Pol**] Foc [IP John [is, **+Pol**] [sometimes [VP **not** coming ]]]

The answer affirms the negative alternative (that John is sometimes not coming). This is the truth-based type of answer.

The negative answer will have the structure (30), the polarity variable assigned negative value by the focused negative particle.

(30) [no **-Pol**] Foc [IP John [is, **-Pol**] [sometimes [VP **not** coming ]]]

Since the negation is inherently valued [-Pol], the sentence will have double negation. The IP is normally elided, leaving just the focused negative particle spelled out. The interpretation is 'No, John is not sometimes not coming', i.e. 'No, he is always coming (to work)', the truth-based reading.

This explains (22a). Now consider the answer of a negative question with middle negation. As stated in (22b), in this case (bare) *yes* is not a well formed answer. The general idea is that this is because middle negation in the IP of the answer clashes with the positive

<sup>7</sup> See Merchant (2001). See Krifka (2012) and Holmberg (in press) for an argument that just semantic identity (mutual entailment) is not a sufficient condition for ellipsis in question-answer pairs (hence the qualification "identical with  $\alpha$  at LF").

polarity value of the focused polarity particle *yes*; they are, as it were, too close to one another. To work this out formally, we need to consider the more precise role of the polarity head in IP.

I assume that a declarative sentence, for instance *John is coming*, has the (simplified) structure (31): There is a polarity head, by assumption the highest head in the IP-domain, which is always merged unvalued. If the sentence does not contain a negation or any other constituent with inherent negative polarity value, the polarity head is valued positive by default. I continue using the label ‘IP’, although it is by assumption headed by Pol, hence a PolP. The auxiliary is adjoined to [uPol] through head-movement.

(31) C [IP John [is, **uPol**] [VP coming ]] → C [IP John [is, **+Pol**] [VP coming ]]

If, however, the sentence contains a negation close enough to the unvalued polarity head, it will assign negative value to it. This is the case of middle negation, as in *John is not actually coming*, where the adverb is included to ensure a middle negation reading. The derivation is as depicted in (32).

(32) C [IP John [is, **uPol**] [**not** [actually [VP coming ]]]] → C [IP John [is, **-Pol**] [**not** ... ]]

[Pol] and middle negation form a chain sharing an interpretable [-Pol] feature (so this is not a case of double negation).

In a yes/no-question, the sentential polarity head is unvalued, as discussed earlier, and focused, by movement to the spec of Foc in the C-domain. This is, by hypothesis, the case whether or not there is a negation in the sentence. We thus assume that focusing of polarity precludes internal valuation of [uPol] by an inherently valued negative item. The structure of a negative question (33a) with middle *not* is (33b):

(33) a. Is John not actually coming?  
 b. [ [is, **uPol**] Foc [IP John [is, **uPol**] [**not** [actually [coming ]]]]]]

In the answer, a declarative sentence with a focused polarity particle, there are two items with inherent polarity value competing to assign a value to [uPol] in IP, the middle negation and the affirmative polarity particle.

(34) [CP [yes, **+Pol**] Foc [IP John [is, **uPol**] [**not** [actually [coming ]]]]]]



The result is the indeterminate reading seen in (11) and (17b).

The speaker variation in (17b) (also illustrated in (11) and (13)) 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). A low, VP-internal negation is distant enough from the sentential polarity head not to assign value to it, meaning that the affirmative particle can assign positive value to [uPol] uncontested.

(35) [CP [yes, **+Pol**] Foc [IP John [is, **+Pol**] [VP **not** [coming ]]]]]]



These speakers readily answer *yes* to a negative sentence with *not*, even out of context, to confirm the negative alternative. Other speakers assign a middle negation reading to *not* as their default (or preferred) reading in polar questions, hence cannot answer with *yes* to confirm the negative alternative of a negative question.

As was illustrated in (13), a subset of native speakers of English can use (and understand) a question with *n't*, such as (36), to convey expectation of a negative answer. The reading is forced in (36) by the NPI; for other speakers (36) with the forced negative expectation reading is ungrammatical.

(36) Isn't John coming (either)?

This can be understood as follows: In the variety of English which accepts (36), *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. 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 conveys a positive expectation, and excludes an NPI in IP. For a subset of English speakers this is the only alternative. Effectively, in this variety, *n't* is externally merged in the C-domain in polar questions. I will refer to the high reading of *n't* as high negation (contrasting with middle and low negation, already discussed).

As shown in (11), repeated here as (37), all speakers of English can answer a negative question with *yes* followed by a subject and an auxiliary but with elided VP.

(37) Q: Is John not coming?  
 A: Yes he is.  
 All speakers: 'John is coming.'

This is because in this case only the VP is elided, hence only the VP needs to have an identical antecedent in the question, so the fact that the question contains a middle negation does not constrain the answer, which is just a plain affirmative sentence confirming the positive alternative, contradicting the negative alternative posed by the question.<sup>8</sup>

(38) [CP [yes, +Pol] Foc [IP he [is, +Pol] [VP coming ]]]

The negative neutralization which Kramer and Rawlins (2011) observed and discussed, shown in (6), repeated here, can now be understood as follows:

(6) Q: Is John not coming?  
 A: Yes. ('John is not coming.')

A: No. ('John is 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.

How does the polarity-based system work? The difference shows in negative answers to negative questions. Consider, again, (39):

(39) a. Is John not coming?  
 b. No. ('John is not coming?')

c. [CP [no, -Pol] Foc [IP he [is, -Pol] not [VP coming ]]]

The question, by hypothesis, has middle *not* (since with low *not* the result is affirmation of the negative alternative, the truth-based answer). The focused negative particle in the answer

<sup>8</sup> This was discussed in Holmberg (2001) in relation to Finnish.

assigns [-] value to the polarity feature in IP. In this case, although there is another interpretable negation in the sentence the result is not double negation. We know the 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* is interpretable negative because it assigns negative value in answers to neutral questions. What we seem to get is a sharing of an interpretable negative feature between Pol and the middle negation. This, then, seems to be a property characteristic of the polarity-based system, present in some languages but not others.

So is the distinction between the truth-based and the polarity-based answering system a matter of syntax 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, 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. I will now discuss two other language, Swedish, which is consistently polarity-based, and Thai, which is consistently truth-based.

## 7. Swedish: a Language without Low Negation

Swedish has a robustly polarity-based answering system.

- (40) a. Q: Har Johan kommit? [Swedish]  
has Johan come  
A: Ja./Nej.  
yes / no
- b. Q: Har Johan inte kommit?  
has Johan not come  
A: \*Ja./Nej. ('Johan has not come.')

There is no ambiguity or (as far as we know) any speaker variation regarding the affirmative answer in (40): It cannot affirm the negative 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 (35), for English. That Swedish does not have low negation is further confirmed by the observation that double negation is not possible; compare (41a) and English (18).

- (41) 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 (42) and (14).

- (42) Q: Har Johan **nångång** inte kommit i tid? [Swedish]  
has Johan any time not come on time

- A: Ja.  
yes ('He has sometimes not been on time.')
- A: Nej. ('He has not sometimes not been on time, i.e. he has always been on time.')

Following Holmberg (in press) this is explained as follows: The effect of the adverb preceding, i.e. c-commanding, the middle negation in the question, and thus, by hypothesis, also in the answer (even though it is usually not spelled out) is that the negation is prevented from valuing [uPol].

- (43) [CP [ja, +Pol] FOC [IP Johan [har, +Pol] [nångång [inte [kommit i tid ]]]]]
- 

The result is that the focused answer particle values [uPol]. 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, i.e. he is always coming on time. The latter reading is harder to process, due to the double negation.

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 (41), 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 neutralization.

To confirm the positive alternative of a negative question, Swedish uses a special affirmative particle.

- (44) Q: Har Johan inte kommit? [Swedish]  
has Johan not come
- A: Jo.  
yes.REV  
'Yes he is coming.'

The particle is glossed as 'yes.REV', short for 'affirmative polarity-reversing' (see Farkas and Bruce 2009, Holmberg 2003). 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. Recall that English resorted to VP-ellipsis to resolve the same problem, namely, how to disconfirm (deny, negate) the negation inherited from a question with middle negation. As shown in Holmberg (2001), Finnish is like English in this respect. Like Swedish are the other Scandinavian languages, as well as German, Dutch, French, and Standard Arabic.

## 8. Thai: a Language with Low Negation Only

The standard polar question form in Thai employs the question particle *mǎy* (or *máy*).

- (45) Q: phii-chaay pay paa-rít mǎy [Thai]  
older-brother go Paris Q  
'Did your brother go to Paris?'
- A: pay  
go

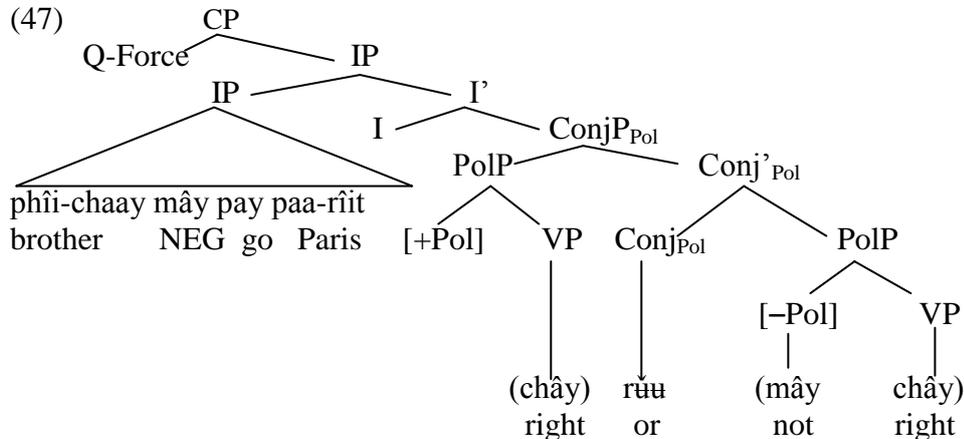
‘Yes.’  
 A:   mây pay  
       NEG go  
       ‘No.’

The affirmative answer in this case is expressed by echoing the verb of the question (Yaisomanang 2012; see Jones (1999), Holmberg (2001, 2007) for the syntax of this form of answer). This question particle cannot be used with a negative question. The reason for this has to do with the fact that the question particle *măy* is closely related to the negation *mây*. According to Yaisomanang (2012) *măy* is the spellout of *rǎu mây* ‘or not’, and is therefore incompatible with a negation in the question (compare *\*Is John not coming, or not*). To express a negative question Thai will use another question particle.

(46) Q:   phii-chaay      mây   pay   paa-rít   rǎu      [Thai]  
           older-brother   NEG go   Paris      Q  
           ‘Didn’t you brother go to Paris?’  
       A:   chây  
           right/ yes  
           ‘No.’ (‘He didn’t go.’)

Here the affirmative particle *chây* unambiguously confirms the negative alternative of the question: the truth-based system.<sup>9</sup>

According to Yaisomanang (2012), the question particle *rǎu* is one of several spell-outs of *chây rǎu mây* lit. ‘right or not’.<sup>10</sup> The structure of a negative question employing this particle is (47).



That is to say, the propositional content of the question is the subject of a predicate made up of the disjunction of a positive and a negative polarity phrase. The question particle is the spell out of a disjunctive predicate. This disjunctive predicate makes up the question variable:

<sup>9</sup> Another way of confirming the negative alternative is by echoing the negation and the verb of the question.

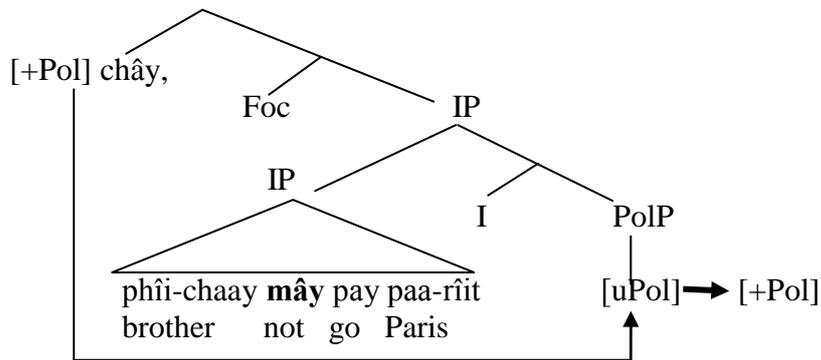
A:   mây pay  
       NEG go  
       ‘No.’ (‘He didn’t go.’)

This type of answer falls outside of the dichotomy between truth-based and polarity-based answering system.

<sup>10</sup> Other spell-outs are *chây rǎu*, *rǎu mây*, and *chây rǎu mây* (Yaisomanang 2012).

see (23) and (24). Q-Force tells the addressee to select the conjunct which, when predicated of the sentential subject yields a true proposition. The answer has the following structure:<sup>11</sup>

(48)



The focused positive polarity feature, lexicalized by *chây*, assigns positive value to the polarity head in IP. The sentential subject is normally elided, under identity with the subject of the question. The negative answer would be (49), with  $[-\text{Pol}, \text{chây}]$ , spelled out *mây chây*, in the focus position, assigning negative value to  $[\text{uPol}]$  in the (elided) matrix IP.

(49) *mây chây*.  
not right ('He went to Paris.')

This is 'low negation' in the sense that there is no c-command between NEG and  $[\text{uPol}]$ , the polarity variable, consequently there can be no feature valuation of  $[\text{uPol}]$  by the negation, and as a consequence of this, the answer is strictly truth-based.

## 9. Back to Japanese

Consider once more the Japanese example in (1), repeated here.

- (1) Q: Kimi tukarete nai? [Japanese]  
you tired NEG  
'Are you not tired?'  
A: **Un**, tukarete nai.  
yes tired NEG  
(Lit.) 'Yes, I'm not tired.'

If the theory up to now is right, the negation in the question, and therefore also in the answer, is low enough not to assign negative value to the  $[\text{uPol}]$  feature, assumed to universally head a finite sentence. The structure of the question would, very roughly, be (50a), and the structure of the answer, (50b), which should be compared with English (35): The negation is embedded within the predicate and as such does not (at least not necessarily) assign value to the sentential Pol head. .

- (50) a. [Q-Force [  $[\text{uPol}]$  Foc [<sub>IP</sub> DP<sub>i</sub> [<sub>AP</sub> tukarete nai] [ $[\text{uPol}]$ ]]]]  
          you tired NEG  
      b. [ [<sub>un</sub>, +Pol] Foc [<sub>IP</sub> DP<sub>i</sub> [<sub>AP</sub> tukarete nai] [ $[\text{uPol}]$ ]]]  
          yes I tired NEG

<sup>11</sup> Here I am simplifying Yaisomanang's analysis, for ease of exposition.



An interesting observation is that expected answer does not appear to affect the answer strategy in Thai. Consider the following example (provided by Somphob Yaisomanang, p.c.):

- (53) Q: thə mây cha-làat rǔu [Thai]  
 she NEG clever  
 ‘Isn’t she clever?’ (said by a mother about her daughter)  
 A: chây (thə mây cha-làat)  
 yes she NEG clever  
 ‘No, she is not clever.’
- A: plàaw (thə cha-làat)  
 NEG she clever  
 Lit: No (she is clever).  
 i.e. ‘Yes, she’s clever.’

This is a context where the expected answer is clearly confirmation of the positive alternative. Nevertheless, the answer follows the truth-based pattern. This follows if the analysis of the question in (53) is the same as the analysis of the question (46): the negation in the question remains out of reach of the sentential polarity head, regardless of what the speaker expects. In Japanese, on the other hand, as in English, the position of the negation is variable.

## 10. Conclusions and Consequences

I have argued in this paper that the distinction between the truth-based and the polarity-based answering systems visible in answers to negative polar questions is a matter of syntax, not cultural conventions (Hypothesis 1 in section 3). It depends on the position and scope of the negation in the question, which is crucial in answers, because the answer copies the IP of the question (although it is typically not spelled out; see Hypothesis 2 in section 3). The position of negation is subject to parametric variation. The languages which have the truth-based alternative have a negation which is low, in the sense that it is not accessible to the sentential Polarity head in answers to polar questions at all (as in Thai question and answer pairs), or is distant enough from the sentential unvalued polarity head to be trumped by the answer particle (as in English and Japanese, when the low negation is selected). The advantage, so to speak, of the truth-based system is that negative questions can be answered with the same answer particles that are used in answers to neutral questions. The polarity-based system has a negation which is high enough to interact with the Polarity head in answers to negative questions. In answers which are meant to confirm the positive alternative this leads to a feature conflict problem which is resolved in different ways; VP-ellipsis or a polarity-reversing affirmative particle are two solutions. In answers meant to confirm the negative alternative, feature-sharing between the negative particle and the negation is required to avoid double negation, in the polarity-based system.

The predictions that this makes for the two classes of languages listed in section 2 are clear: The languages which follow the truth-based system strictly have a negation which is always low (in the sense just described), while the languages which allow either system have more freedom as regards the scope of negation. The languages which follow the polarity-based system strictly do not have low negation, but a middle negation always accessible to the unvalued sentential polarity head (unless an adverb can intervene), or a high, IP-external negation. Testing these predictions will require considerable work. Simple inspection of word order in declarative or interrogative negative sentences can give clues, but is probably not sufficient, in most cases, to determine the scope of negation.

It was mentioned in the introduction that there are some indications that something more, or something other than syntax is involved. Informants speaking the same language sometimes disagree over how to answer negative questions, as I have found in my fieldwork. There are also anecdotal reports by parents that young children sometimes appear to follow the wrong system. For example, my own son followed the truth-based system when speaking his mother tongue Swedish at least until he was seven. Do these children really misanalyse the scope of negation in their language? If the theory articulated in this paper is right, that is what they do.

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