

How to say no in English and Chinese

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1. Introduction

The expressions in (1) and (2) exemplify a well-known difference between English and Chinese, and more generally between European languages, and East Asian languages (Kuno 1973, Pope 1976, Jones 1999, Holmberg 2016, Wu 2016): In English, if the question is negative and the answer is meant to confirm that the negative alternative is true, the answer can be ‘no’, while if the answer is meant to confirm that the positive alternative is true, it can be ‘yes’ (supplemented by a clause reduced by VP-ellipsis).

- (1) Q(uestion): John doesn’t drink coffee, does he? [English]
A(nswer) 1: No. (= He doesn’t drink coffee.)
A(nswer) 2: Yes, he does. (=He does drink coffee.)

In Chinese, represented by Taiwanese Southern Min (henceforth Taiwanese) in most of this paper, if the question is negative and the answer is meant to confirm that the negative alternative is true, the answer must be ‘yes’, while if the answer is meant to confirm that the positive alternative is true, it must be ‘no’.

- (2) Q: Lauong bô lim ka-pi nih? [Taiwanese]
Lauong not drink coffee Q
‘Doesn’t Lauong drink coffee?’
A1: si a.
yes (= He doesn’t drink coffee.)
A2: m-si, i u (lim ka-pi).
no he have drink coffee (= He does drink coffee.)

The following is another, less often noted difference between English and at least some varieties of Chinese, including Taiwanese: In English the answer to a yes-no question may consist of a bare answer particle, affirmative or negative.

- (3) Q: Is John coming?
 A1: Yes (he is coming).
 A2: No (he's not coming).

In Taiwanese, the answer may consist of a bare affirmative particle, but the negative particle must be supplemented with a spelled-out clause, full or reduced by VP-ellipsis.

- (4) Q: Lauong e lai nih?
 Lauong will come Q
 A1: si a (i e lai)
 yes he will come
 A2: m-si *(i be lai)
 no he not.will come

In this paper we will address and explain these two differences, which will turn out to be related. Both are due to a difference in the contribution of the negative answer particle, ultimately due to its feature-composition: *No* in English can agree with the polarity of the associated sentence, derived from the question, while *m-si* in Taiwanese will always disconfirm the polarity of the associated sentence, derived from the question.

This will be shown also to have interesting consequences for the syntactic and semantic analysis of yes-no questions. The issue concerns the nature and function of the 'question operator' in yes-no questions: Does it operate on sentences with fixed polarity, positive or negative, deriving the alternative proposition which makes the sentence a question, or is it a polarity variable, as argued by Holmberg (2016)? We will show that the former is true of a class of yes-no questions in Taiwanese, while the latter is true of a large class of yes-no questions in English.

The example sentences are English or Taiwanese, unless indicated otherwise.

2. The syntax of questions

We start from the theory of questions put forward in Hamblin (1958, 1972). According to Hamblin, the denotation of a question is the set of propositions which constitute possible answers to the question. What a question does is put a set of propositions before the addressee and call on the addressee to say which one of the propositions is true. In the case of a yes-no question, there will be two alternative propositions differing only in polarity, one positive, one negative (see Holmberg

2016: 17-22 for discussion of other question types). The meaning of the question (5) can then be rendered as in (5'):

(5) Does Mary speak Arabic?

(5') Tell me which proposition is true: Mary speaks Arabic or Mary does not speak Arabic.

We submit that (5') is an accurate paraphrase of (5), representing in more explicit form the meaning of the direct question (5). The question is answered, in a strict sense, when the addressee states which of the two proposition is true. We make a formal distinction between answers and responses; a yes-no question can have an infinite range of responses, including 'I don't know', 'That depends', 'Why do you ask?' and so on, but there are only two answers, that is some version of 'yes' and 'no', meaning (in the case at hand) 'Mary speaks Arabic' and 'Mary does not speak Arabic'.¹ The question is, how does the syntax of yes-no questions yield this interpretation?

The following hypothesis combines Hamblin's theory of the semantics of questions with the old idea going back to Katz and Postal (1964) that the crucial syntactic component distinguishing a question from a declarative is a question operator in the C-domain:

(6) A yes-no question is made up of an IP denoting a proposition p , merged with a question operator Q, where the effect of Q is to map IP onto p and its negation $\neg p$.

See Biezma and Rawlins (2012) for some recent discussion. If the syntactic structure also contains a category or feature merged with [Q IP], supplying the component 'tell me which proposition is true', a property of direct questions, call it QF for 'Question Force', then the syntactic structure of (5), very roughly represented in (7), will map fully onto (5').²

(7) [QF [Q [_{IP} Mary I speak Arabic]]]

An alternative theory is articulated in Holmberg (2016). According to this theory, the crucial property of questions is that they contain a free variable, which is assigned a value by the answer. In the case of yes-no questions the variable is polarity. A finite sentence in this theory is a Polarity Phrase (PolP), headed by a polarity feature (Pol) which is assigned negative value by a negation in negative

¹ For qualified answers such as 'Maybe so', 'Probably not', see Holmberg (2016: 54), Kramer and Rawlins (2011).

² Representing the question force as a syntactic feature is not the only possible way to account for this meaning component, and is not crucial for what follows.

declaratives, and assigned positive value by default in the absence of a negation in positive declaratives. In yes-no questions Pol is unspecified, [\pm Pol]. A sentence with a variable denotes a set of propositions, as many as there are values of the variable. In the case of sentences with [\pm Pol] as the only variable, they denote a set of two propositions, identical but for their polarity, positive or negative. Holmberg (2016) argues that the question variable always undergoes movement to the C-domain, either overtly or covertly, for reasons of scope. In wh-questions the variable is the wh-phrase, in yes-no questions it is [\pm Pol]. In English movement of [\pm Pol] is effected, in direct questions, by so called T-to-C, which would be more appropriately termed Pol-to-C. With the addition of a question force feature supplying the ‘tell me which alternative is true’ component, the structure of the English yes-no question (5) under Holmberg’s (2016) theory is (8), which yields the meaning (5’).

(8) [QF [[\pm Pol] C [_{PolP} Mary <[\pm Pol]> [_{VP} speak Arabic]]]]

Before discussing and comparing the two theories of the syntax of questions, we will establish that answers to yes-no questions have full sentential structure even when they consist of just one word (following Holmberg 2016). Consider the following a priori plausible hypothesis regarding the form and meaning of answers to yes-no questions: We have established that a yes-no question puts two alternative propositions before the addressee, identical except that one is positive and the other a negative, and tells the addressee to say which one is true. Given this, (9) could be an adequate characterisation of the syntax and semantics of ‘yes’ and ‘no’.

(9) The answer particle ‘yes’ selects the positive proposition of the denotation of the question, the answer particle ‘no’ selects the negative proposition of the denotation of the question, as the true one .

Now consider the fact that (5’), repeated in (10Q), is an exact paraphrase of (5). If so, how come ‘yes’ and ‘no’ cannot be used to select one of the propositions as the true one in the conversation (10)?

(10) Q: Tell me which proposition is true: Mary speaks Arabic or Mary does not speak Arabic.

A1: #Yes.

A2: #No.

In this context the bare answer particles are incomprehensible. There is something about the syntactic structure of yes-no questions, which is not present in the paraphrase (10Q) which makes ‘yes’ and ‘no’ viable answers. We conclude that (9) is not an adequate characterisation of the syntax and semantics of answer particles.

3. The syntax of answers according to Holmberg (2016)

Consider first the theory where (8) is the structure of the yes-no question (5). Holmberg (2016) proposes the following derivation for the affirmative answer to (5), in English:

- (11) 1. Copy the PolP of the question:
 $[_{\text{PolP}} \text{Mary} \langle [\pm\text{Pol}] \rangle [_{\text{VP}} \text{ speak Arabic}]]]$
2. Merge a Focus head, and merge a positive polarity feature [+Pol] with the projected FocP; the focused [+Pol] will be spelled out *yes*.
3. Assign the value of focused [+Pol] to the polarity variable $[\pm\text{Pol}]$ in PolP.
 $[_{\text{FocP}} [\text{+Pol}] [_{\text{Foc}'} \text{ FOC } [_{\text{PolP}} \text{ Mary} \langle [\text{+Pol}] \rangle [_{\text{VP}} \text{ speak Arabic}]]]]]$
- 
4. Delete PolP (i.e. do not spell out the phonological features of PolP), on account of being identical with the PolP of the question. Spell out focused [+Pol] as *yes*.
 $[_{\text{FocP}} \text{ yes } [_{\text{Foc}'} \text{ FOC } [_{\text{PolP}} \text{ Mary} \langle [\text{+Pol}] \rangle [_{\text{VP}} \text{ speak Arabic}]]]]]$

The negative answer *no* has the same derivation, except that the polarity feature merged in the focus position has negative value. The identity required for deletion of the entire PolP, leaving just a bare answer particle to be spelled out, is ensured by copying the entire PolP of the question as the base of the answer. The formal identity condition which licenses the deletion is Merchant’s (2001) condition on deletion. Since the identity condition will be crucial for the comparison of English and Taiwanese below, it is given here in full.

- (12) 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.

The structure of the question is (13a) (= 8), the structure of the answer is (13b).

- (13) a. [QF [[±Pol] C [_{PolP} Mary <±Pol> [_{VP} speak Arabic]]]]
b. [_{FocP} [+Pol] Foc [[_{PolP} Mary [+Pol] [_{VP} speak Arabic]]]]

The constituent to be deleted (the α) in (13b) is the PolP. The antecedent is the PolP of the question (10a). The F-marked part of the PolP in (13b) is Pol, assigned its value by the focused polarity feature in the C-domain. Replace this Pol with a variable, that is [±Pol], and the PolP in (13a) and (13b) will mutually entail each other (type-shifting is vacuous, since the constituent to be deleted is already of type <t>). Hence deletion is legitimate.

As discussed by Holmberg (2016: 57-58), following Krifka (2017), Lipták (2012), Schoorlemmer and Temmermann (2012), and Gribanova (2013), mutual entailment is too weak a condition for the kind of ellipsis seen in question-answer pairs. For the purposes of this paper this is not crucial, though.

This theory can account for the observation in (14), repeated here: A neutral (non-negative) yes-no question can be answered by a bare answer particle, positive or negative.

- (14) Q: Is John coming?
A1: Yes.
A2: No.

The claim is that the bare-particle answers are derived by ellipsis from full sentential structure, where the answer particles spell out focused features which assign a value to a polarity variable in a PolP inherited from the question.³

³ On the basis of observations similar to the one in (8), but couched in terms of a comparison of alternative questions and yes-no questions, Biezma and Rawlins (2012) propose a different theory of the semantics and syntax of yes-no questions, where these do not denote two, but one proposition, same as the corresponding declarative. What the question operator does, they argue, is 'raise an issue' regarding the truth of the proposition. We take it that this means that the answer 'yes' does not assign a value to a variable, but agrees with the proposition of the question, the way 'yes' can be used to agree with a statement (St = statement, R = response).

- (i) St: It's cold out, today.
R: Yes.

One immediate problem that this theory encounters is that a bare 'no' is not a felicitous response to a positive statement (as noted by Holmberg 2013; we will return to this observation in section 8.4), while it is to a yes-no question, even a question which is biased towards a positive answer.

- (ii) St: It's cold out, today.
R: #No.

We demonstrated in the introduction that this is only partly true of Taiwanese, as the negative answer has to be accompanied by a spelled out sentence. Before addressing this issue, we will show how Holmberg's (2016) theory deals with negative questions in English.

4. Negative questions

There are two kinds of negative questions in English: those with positive bias, expecting a positive answer, exemplified by (15), and those with negative bias, expecting a negative answer, exemplified by (16).

(15) Isn't this cake good?

(16) Does she not speak English?

In English there is a correlation between bias and the syntax of the question: Positive bias is associated with 'high' or 'outer' negation, that is the negation *-n't*, moved along with the auxiliary to C. Negative bias is associated with the negation *not*. For many speakers of English high negation is incompatible with negative bias, for other speakers high negation is ambiguous, between positive and negative bias, although in practice contextual cues and intonation presumably generally disambiguate between the two readings. We will focus here on questions with negative bias, and we will consistently employ the negation *not*, in order to avoid ambiguity. One reason for leaving positive-bias questions out in this paper is that Taiwanese, and probably Chinese more generally, does not have a counterpart to negative questions with positive bias, such as (15). They do have negative questions with negative bias; this may well be a universal feature of language.

Holmberg (2016) proposes that the negative declarative (17a) has the underlying structure (17b).

(17) a. Mary does not speak Arabic.

b. [_{CP} C [_{PolP} Mary [_{±Pol}] [_{NegP} not [_{VP} <Mary> v [_{VP} speak Arabic]]]]]

The highest head in the IP-domain is Pol. This category always merges unvalued, being assigned a value in the course of the derivation. If there is a negation close enough, Pol is valued by the

(iii) Q: Is it cold out today?
R: No.

It is unclear how Biezma and Rawlins's (2012) theory would account for the cross-linguistic facts discussed in this paper, and we therefore leave their theory aside.

negation. If there is no negation, or other negative category such as the negative adverb ‘never’, Pol gets positive value by default. In yes-no questions Pol does not, however, get assigned negative value, but undergoes movement to the C-domain, together with the auxiliary, to take sentential scope. The question (18a) has the structure (18b). The context of the question can be that the speaker was under the impression that Mary spoke Arabic, but has recently seen evidence that this is not the case, and is now looking for confirmation that she doesn’t, indeed, speak Arabic.

- (18) a. Does Mary not speak Arabic?
 b. $[_{CP} [_{does, \pm Pol}, C [_{PolP} \text{ Mary } <\pm Pol> [_{NegP} \text{ not } [_{VP} <Mary> v [_{VP} \text{ speak Arabic}]]]]]]]$

The semantic difference between the negative question (18) and the neutral question (5) is that where the neutral question denotes a positive proposition and its negation, a negative proposition, the negative question denotes a negative proposition and the negation of the negative proposition, that is a positive proposition. The negative bias then follows from the fact that the negative alternative is the unmarked one; the positive alternative is derived by double negation (Holmberg 2016: 41-42). Note that this is only true of negative questions with inner negation; questions with outer negation have radically different structure and interpretation (Holmberg 2016: 181-190).

The answer (19a) will confirm the negative alternative. The structure of the answer is (19b).

- (19) a. No.
 b. $[_{CP} \text{ No } [_{FocP} \text{ Foc } [_{PolP} \text{ Mary } [-Pol] [_{NegP} \text{ not } [_{VP} <Mary> v [_{VP} \text{ speak Arabic}]]]]]]]$

In the answer, a declarative sentence, Neg will assign negative value to Pol. The effect of the focused negative polarity feature is to *agree* with the negative-valued head of PolP. As pointed out in Kramer and Rawlins (2011) this may be seen as a case of negative concord. Adopting the relevant part of the theory of negative concord in Zeijlstra (2004), this would be the effect if the particle *no* here spells out an unvalued negative feature [uNeg] (see Holmberg 2016: 162-163) for discussion).

As first discussed by Kramer and Rawlins (2011) the question (18a) can also be answered *Yes* to confirm the negative alternative, in English.

- (20) Q: Does Mary not speak Arabic?
 A: Yes. (‘Mary doesn’t speak Arabic’)

Kramer and Rawlins refer to this as ‘negative neutralization’, a case where *yes* and *no* mean the same thing. This phenomenon is discussed in detail in Holmberg (2013) and Holmberg (2016: 152-162) and will not be discussed further here.⁴

5. Interim conclusion

In section 2 we contrasted two different theories of the syntax of questions. They can be summarised as follows:

- (21) 1. A yes-no question is an IP denoting a proposition p merged with a question operator which maps p to a set consisting of p and its negation $\neg p$.
2. A yes-no question has a free polarity variable as head of its IP. The polarity variable has two possible values, plus and minus, so the IP denotes two propositions, p and $\neg p$.

We have found that the properties of the English question-and-answer system can be explained under Theory 2. Next we will describe a system with properties that can be explained under Theory 1, but not easily under Theory 2.

6. Yes-no questions in Taiwanese

By yes-no questions we refer to questions which can actually be answered ‘yes’ or ‘no’. Taiwanese has a wide variety of polar question types, including A-not-A questions and a variety of yes-no questions. A-not-A questions are answered by echoing the finite verb or auxiliary, the highest head of the predicate, not by ‘yes’ or ‘no’.

- (22) Q: Lauong **tang m tang** kho-tsai lai?
Lauong can not can again come
‘Can Lauong come again?’
- A1: tang / m tang
can not can
‘Yes./’No.’

⁴ The key feature which makes this possible in English is that the question spelled out as (18a) is structurally ambiguous: The negation can be in the PolP-domain or lower, in the vP-domain. In the latter case the answer Yes will confirm the negative alternative by assigning positive value to Pol, possible because the negation in the vP is too distant to compete with the answer particle. See Holmberg (2013) for details.

A2: *si a / *m-si
yes / no

A-not-A questions are therefore not directly relevant to the issue at hand. The following is a set of yes-no question types in Taiwanese (Wu 2016).

(23) Lauong khui tshia khi Tailam? [intonation question]
Lauong drive car to Tainan
'So Lauong drove to Tainan?'

(24) Lauong khui tshia khi Tailam **nih**? [final-particle question]
Lauong drive car to Tainan Q
'Did Lauong drive to Tainan?'

(25) Lauong **si-m-si** khui tshia khi Tailam? [*si-m-si* question]
Lauong FM/Q drive car to Tainan
'Did Lauong DRIVE to Tainan?/ Did Lauong drive to TAINAN?'

Intonation questions, as in (23), have the overt form of declaratives, but with rising intonation. (24) represents questions marked by a final particle. There is a variety of such particles, see Wu (2016: 74). We will use the particle *nih* as a representative. (25) features the sentence-internal question and focus particle *si-m-si*, used in narrow-focus questions. In this case, where *si-m-si* is merged at the edge of the predicate, it can focus either the verb or the locative adverbial (see Wu 2016: 95-101).

Like A-not-A questions, yes-no questions can be answered by echoing the verb (or more generally, the predicate head) of the question, with or without negation, with or without additional material of the predicate. Thus for example (24), repeated in (26), can be answered as shown:

(26) Q: Lauong khui tshia khi Tailam **nih**?
Lauong drive car to Tainan Q
'Did Lauong drive to Tainan?'

A1: khui tshia / bô (khui)
drive car not.have drive
'Yes./No'

However, they can also be answered ‘yes’ or ‘no’; (26Q) can be answered as in (27).

- (27) A2: si a
yes
A3: m-si, i bô
no he not.have
‘No (he didn’t).

Here we see the spell-out of the sentence with the negative answer, in reduced form. We will return to it below.

The affirmative answer particle itself, in Taiwanese, consists of *si*, derived from the copula *si* ‘be’ and a particle *a*. The precise function of the particle *a* is obscure, except that it identifies the expression as an answer particle rather than the copula or focus marker, another function of the item *si* (see Wu 2016: 31-43) The same holds true of the Mandarin counterpart *shi* (*a*) (see section 9). We will not gloss the particle *a* separately in this paper, except where specially called for.

Tag questions is yet another yes-no question type. They differ from other yes-no questions in that they cannot be answered by echoing the verb of the question. They also differ from other yes-no questions in that the negative answer does not need to be accompanied by a spelled out sentence.

- (28) Q: Lauong khui tshia khi Tailam **si-m-si?**
Lauong drive car to Tainan Q
‘Lauong drove to Tainan, didn’t he?’
A1: *khui tshia /bô (khui)
A2: si a
yes
A3: m-si
no

We will return to tag questions in section 10.

7. Taiwanese yes-no questions are presumptive questions

Taiwanese yes-no questions have a property which is different from yes-no questions in English: they are presumptive, to use a term from Cheng (1997). A neutral yes-no question puts two

propositions before the addressee and asks the addressee to say which one is true. A presumptive question puts one proposition, positive or negative, before the addressee and asks the addressee to say whether this proposition, call it the content proposition (Biezma and Rawlins 2012), is true or not. There is a straightforward test whether a yes-no question is neutral or presumptive: a presumptive question can be answered 'right' or 'that's correct', a neutral question cannot. Compare the answers to the English tag question (29) and the yes-no question (30).

(29) Q: John is coming, isn't he?
A1: Yes.
A2: That's right.

(30) Q: Is John coming?
A1: Yes.
A2: *That's right.

The tag question is a presumptive question: It puts forward a proposition p , in this case with positive polarity. We are distinguishing between 'biased' and 'presumptive' questions. We observed in section 3 that negative questions with inner negation are biased towards a negative answer. They cannot, however, be answered by 'that's right' (or 'that's not right').⁵

(31) Q: Is he not coming?
A: *That's right.'

We argued in section 3 that these negative questions denote two propositions, a negative one and its negation, a positive proposition. The tag question (29), representing presumptive questions, does not denote two propositions but one, call it p , denoted by the clause (a full CP, as we shall argue), but which is merged with a tag functioning as a question operator which supplies a choice between p and $\neg p$. We return to the details of the structure and meaning of the various presumptive questions. Biased questions include what we now call presumptive questions as well as other questions biased towards a positive or negative answer.

⁵ There is a subtle difference between (30A2) and (31A) such that the answer *That's right* is somewhat less inappropriate in (31), conveying confirmation of the implied expectation that he is not coming. There is still a clear enough difference also between the tag question (29) and (31), motivating assigning them to different classes of question-answer pairs (see section 10 on tag questions). See Holmberg (2016: 9-10) on the challenges posed by conversational data of this kind for syntactic analysis.

Now consider the following Taiwanese questions. They have in common that they can all be answered *si a* 'yes' or *tioh a* 'correct', or *m-si* 'no' (in the latter case accompanied by a reduced sentence).

- (32) Q: Lauong khui tshia khi Tailam? [intonation question]
Lauong drive car to Tainan
'So Lauong drove to Tainan?'
- A1: si a / tioh a
yes / correct
- A2: m-si, i bô (khui)
no he not.have drive
- (33) Q: Lauong khui tshia khi Tailam **nih?** [final-particle question]
Lauong drive car to Tainan Q
'Did Lauong drive to Tainan?'
- A1: si a / tioh a
yes / correct
- A2: m-si, i bô (khui)
no he not.have drive
- (34) Q: Lauong **si-m-si** khui tshia khi Tailam? [*si-m-si* question]
Lauong FM/Q drive car to Tainan
'Did Lauong DRIVE to Tainan?/Did Lauong drive to TAINAN?'
- A1: si a / tioh a
yes / correct
- A2: m-si, i bô (khui)
no he not.have drive

Note how the answer *tioh a* 'correct' corresponds quite directly to English 'that's right', hence identifies a presumptive question. Compare the yes-no questions with an A-not-A question.

- (35) Q: Lauong **tang m tang** kho-tsai lai?
 Lauong can not can again come
 ‘Can Lauong come again?’
- A1: tang / m-tang
 can not-can
 ‘Yes.’/ ‘No.’
- A2: *si a / *tioh a
 yes / correct
- A3 *m-si (i tang / i m-tang)
 no he can he not-can

The A-not-A question is a neutral question, with a polarity variable as head of PolP, spelled out as ‘V-not-V’; see Huang, Li and Li (2009: 254-257), Holmberg (2016: 23-27). Therefore it puts two propositions with opposite polarity value before the addressee, asking the addressee to say which one is true, in accordance with the theory underpinning the analysis (8) . Therefore it cannot be answered *tioh a* ‘correct’; the question does not provide any proposition that could be ‘correct’ or not, that could be confirmed or disconfirmed, in the answer. Note, however, that the answer particles *si a* and *m-si* are also not possible answers to the A-not-A question. This is because they, too, are strictly confirmation and disconfirmation particles. They confirm a proposition or disconfirm it; they do not assign value to a variable (this will be detailed in section 8). The yes-no questions (32-34), on the other hand, are all presumptive questions which do put forward a proposition which can be confirmed or disconfirmed.

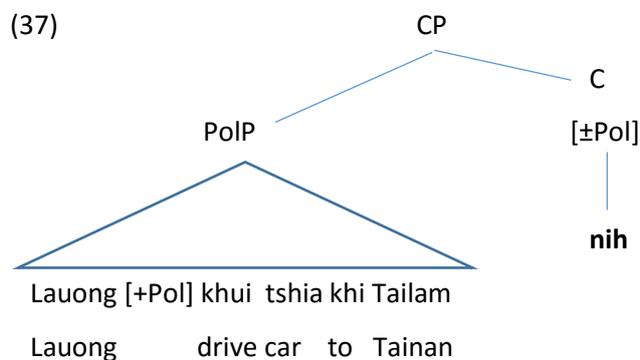
Consider the following question, featuring the sentence-internal question-particle *kam*.

- (36) Q: Lauong **kam** u khui tshia khi Tailam? [kam question]
 Lauong Q have drive car to Tainan
 ‘Did Lauong drive to Tainan?’
- A1: *si a / *tioh a
 yes / correct
- A2: *m-si, i bô (khui)
 no he not.have drive
- A3: u (khui)
 have drive
 ‘Yes.’

A4: bô (khui)
 not.have drive
 ‘No (he didn’t).

As indicated by the answers, the *kam*-question is neutral (see Wu 2016: 153-157). We assume that *kam* spells out $[\pm\text{Pol}]$. The confirmation/disconfirmation particles cannot be used because the question does not put forward a proposition to be confirmed or disconfirmed.⁶

Taking the final particle question as a representative of the Taiwanese presumptive yes-no questions, we submit that the yes-no questions have essentially the structure (37):



The polarity of the PolP is valued as $[+]$ in this case. The final particle is an operator merged, as a C-element, with the PolP, with the effect of mapping the PolP onto the set of p , that is the proposition denoted by the PolP, and its negation $\neg p$. If this is right, then the Taiwanese yes-no questions have a syntax and semantics conforming to the theory based on (6). We will return in section 10 to tag-questions, which, although they qualify as yes-no questions, will turn out to be different in crucial respects.

8. The derivation of positive and negative answers to yes-no questions

8.1 Introduction

Consider again the answers, affirmative and negative, to a Taiwanese yes-no question.

(38) Q: Lauong e lai nih?
 Lauong will come Q
 ‘Is Lauong coming?’

⁶ As discussed by Wu (2016), once the *kam*-question includes a focus marker or negation, it stops being a neutral question, and can be answered by the answer particles.

- A1: si a (i e lai)
 yes he will come
- A2: m-si *(i be lai)
 no he not.will come
 'No (he won't).'

The 'yes' answer can be the bare affirmative particle, optionally followed by the clause (the PolP) inherited from the question. But the negative answer has to be supplemented with the PolP inherited from the question. This is not the case in English, where the negative answer can also be a bare negative particle.

- (39) Q: Is John coming?
 A1: Yes.
 A2: No.

The bare particle answer may sometimes violate politeness conventions, but is not ungrammatical, the way the Taiwanese counterpart is.

This difference between the English and the Taiwanese answers can be explained given the different syntactic structure of the questions. The structure of the English question and the derivation of the answer was discussed in section 3. The main point is that the IP, i.e. PolP, of the question contains a polarity variable, the unspecified/unvalued feature [\pm Pol], which is assigned a value in the answer. In the Taiwanese yes-no question the IP/PolP contains no variable. This means that the answer particles, when they combine with the PolP inherited from the question, instead of assigning value to a variable, apply to a valued polarity feature, changing its value or maintaining its value. If the value changes, the PolP of the answer will not be identical to the PolP of the question. This will prevent deletion of the PolP of the answer.

This is essentially the explanation for the difference between (37) and (38). We will now go through the different combinations of questions and answers, to show that we can account for the full range of facts.

8.2 *Answering a positive question*

We take the positive and negative version of the question (40Q) as our testing ground. We begin with the case when the question is positive.

- (40) Q: Lauong [+Pol] u lim ka-pi nih?
 Lauong drink coffee Q
 ‘Does Lauong drink coffee?’
- A1: si a (i u (lim (ka-pi)))
 yes he have drink coffee
 ‘Yes (he does).’
- A2: m-si, i bô (lim (kapi))
 no he not.have drink coffee
 ‘No (he doesn’t).’

The structure of the question is (40) (see Wu 2016: 74-88). ‘PredP’ here covers at least Tense, Modal, and Aspect Phrase, and Negative Phrase when there is a negation in the PredP-domain.

- (41) [_{CP} [_{PolP} Lauong [+Pol] [_{PredP} u [_{PredP} lim kapi]]] [_{±Pol}]

The derivation of the positive answer (40A1) is (42):

- (42) 1. Copy the PolP of the question.
 [_{PolP} Lauong [+Pol] [_{PredP} u [_{PredP} lim kapi]]]
2. Merge a Focus feature and merge [+Pol] with the FocP.
 [_{FocP} [si a, +Pol] [_{Foc’} Foc [_{PolP} Lauong [+Pol] [_{PredP} u [_{PredP} lim kapi]]]]
3. The [+Pol] feature in the spec of FocP applies to the feature of the head of PolP. In this case both features are [+], so there is no change.
4. The PolP of the answer is identical with the PolP of the question, and can therefore be deleted. The focused feature is spelled out as *si a*, optionally followed by a spelled out PolP, optionally with vP or verb-stranding VP ellipsis (Liu 2014).

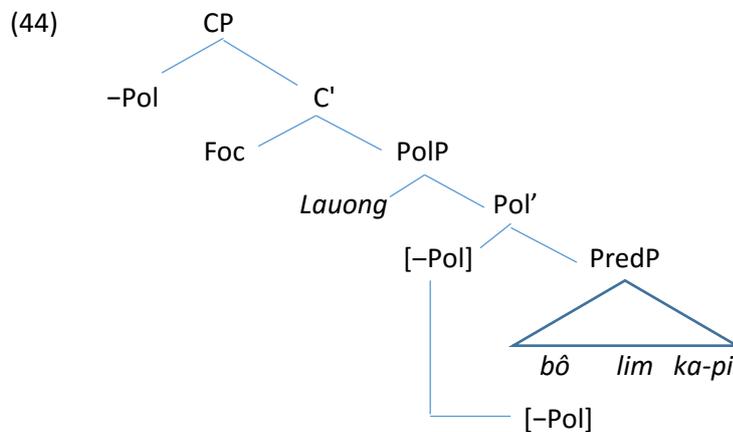
The identity is uncontroversial: The PolP of the question and the answer are point by point identical.

The derivation of the negative answer (40A2) is (43).

- (43) 1. Copy the PolP of the question.
 [_{PolP} Lauong [+Pol] [_{PredP} u [_{PredP} lim kapi]]]
2. Merge a Focus feature and merge [–Pol] with the FocP.
 [_{FocP} [m-si,–Pol] [_{Foc’} Foc [_{PolP} Lauong [+Pol] [_{PredP} u [_{IP} lim kapi]]]]

3. The [-Pol] feature in the spec of FocP applying to the [+Pol] feature of the head of PolP yields [-Pol]; the value of the PolP changes from + to -.

The predicate, here labelled PredP, will agree with Pol, the head of the sentence. Recall how Pol in negative declarative sentences is assigned its value by a negative particle or adverb in the complement of Pol. Conversely, when the value of Pol changes from positive to negative, from being in the scope of a negative operator, namely the focused negative polarity feature, this value change is reflected in the PredP as a negative lexical item; the negative polarity value is spelled out as a negation particle, adverb, or, as in the case of (40A2), a negative auxiliary verb. This is shown in the tree (44).



In this case the value of the PolP of the answer will be different from the value of the PolP in the question: positive in the question, negative in the answer. Deletion of PolP is therefore not an option in (40A2). The answer can be reduced by vP or VP-ellipsis, but the head Pol and its projection PolP must be spelled out.⁷

⁷ There is an additional affirmative answer variant.

- (i) si a u (lim (ka-pi))
yes have drink coffee

Here the subject in the optionally spelled out PolP is dropped. In the negative answer subject drop is not an option.

- (ii) m-si *(i) bô (lim (ka-pi))
no he not.have drink coffee

We propose that the subjectless affirmative answer is a combination of a yes-answer and a predicate-echo answer, as in (26). The structure would be, very roughly (iii), spelled out as (iv) after PolP ellipsis in the first part and vP ellipsis in the second part.

- (iii) [si a [i u lim ka-pi]] [[u lim ka-pi]]
(iv) si a i u lim ka-pi u lim ka-pi

The negative answer cannot be derived like this because the PolP of the first part cannot be deleted, as discussed in the text. We put this case aside, though, because it involves the syntax of pro-drop and the

8.3 Answering a negative question

Now consider a negative presumptive question and its answers.

- (45) Q: Lauong [-Pol] bô lim ka-pi nih?
 Lauong not.have drink coffee Q
 ‘Does Lauong not drink coffee?’
- A1: si a (i u (lim (ka-pi))
 yes he have drink coffee
 ‘Yes/No (he doesn’t drink coffee).’
- A2: m-si, i u (lim (kapi)).
 no he have drink coffee
 ‘No (he does).’

The derivation of the positive answer (45A1) is the following:

- (46) 1. Copy the PolP of the question.
 [_{PolP} Lauong [-Pol] [_{PredP} bô [_{PredP} lim kapi]]]
2. Merge a Focus feature and merge [+Pol] with the FocP.
 [_{FocP} [si a, +Pol][_{Foc'} [_{PolP} Lauong [+Pol] [_{PredP} bô [_{PredP} lim kapi]]]]
3. The [+Pol] feature in the spec of FocP applies to the [-]-valued feature of (the head of) PolP. Applying [+Pol] to [-Pol] yields [-Pol], so the value of Pol remains [-].
4. The PolP of the answer is identical with the PolP of the question, and can therefore be deleted. The focused feature is spelled out as *si a*, optionally followed by a spelled out PolP (optionally reduced by vP or VP ellipsis).

Now consider the negative answer (45A2) to the negative presumptive question.

- (47) 1. Copy the PolP of the question.
 [_{PolP} Lauong [-Pol] [_{PredP} bô [_{PredP} lim kapi]]]
2. Merge a Focus feature and merge [-Pol] with the FocP.
 [_{FocP} [m-si, -Pol][_{Foc'} [_{PolP} Lauong [-Pol] [_{PredP} bô [_{PredP} lim kapi]]]]

structure of predicate-echo answers, which we do not wish to engage with in this paper, partly because the facts in Taiwanese are not well enough known; see Liu (2014) for a theory of ellipsis and pro-drop in Mandarin.

3. The [-Pol] feature in the spec of FocP applies to the [-Pol] feature of PolP. By the logic of negation, applying [-Pol] to [-Pol] yields [+Pol], so the value of the head of PolP comes out as [+].
4. The [+] -valued Pol must agree with the PredP, i.e. the [+] -valued Pol must be reflected (overtly signalled) in the PredP as absence of a negation particle or negative adverb or auxiliary.
5. The PolP of the answer is thereby not identical with the PolP of the question, and can therefore not be deleted. The focused polarity feature is spelled out as *m-si*, followed by a spelled out PolP, optionally reduced by vP or VP-ellipsis.

8.4. Conclusions. On responding to declaratives

To recapitulate, the difference between English and Taiwanese is that the standard yes-no question in English, formed by T-to-C (more correctly, Pol-to-C), is neutral, meaning that it has a polarity variable as head which is assigned a value in the answer, either positive value by yes or negative value by no. while the yes-no question in Taiwanese formed by a final question particle is presumptive, non-neutral, with either [+Pol] or [-Pol] as head, which means that what the answer particles do is either confirm or disconfirm the value that the proposition of the question has. If they disconfirm it, the PolP expressing the proposition cannot be deleted, because it will not satisfy the identity condition on deletion.

We can, in fact, see the same effect in responses to declaratives in English for example. As discussed in Holmberg (2013, 2016: 212-213), while you can agree with an affirmative statement by uttering a bare *yes*, you cannot very well disagree with it by uttering *no*, unless you add some clausal material (St = statement, R = response).

- (48) St: It's cold out today.
 R1: Yes (it is).
 R2: No *(it isn't).

Assume that the response is based on the PolP inherited from the statement, as in the case of yes-no questions. In the case of (48R1), the positive particle does not affect the polarity value of the inherited PolP, so it can be deleted.⁸ In (48R2), the negative answer particle does affect the value of

⁸ It is probably not right to analyse this as focusing of the polarity particle, since it does not add any new information, only indicates agreement; see Holmberg (2016: 212).

the inherited proposition: it negates it, which yields a negative-valued PoIP, which consequently cannot be deleted, not being Merchant-identical with the antecedent statement.

With responses to a negative statement, we get almost, but not quite, the opposite situation.

- (49) St: It isn't cold out today.
R1: No (it isn't).
R2: Yes ?(it is/it isn't).

Because the answer particle *no* in English can agree with a negation in the complement PoIP, (49R1) is well-formed and permits deletion of the PoIP. The case of (49R2) is a bit more complicated. The particle cannot change the negative value of the inherited PoIP. However, it cannot straightforwardly agree with it, either (unlike the positive answer particle in Taiwanese yes-no questions). We put this issue aside here.⁹

9. Other languages

The Taiwanese answering system is not unique. Mandarin has the same system, in relevant respects, although there are also some differences between them; see Wu (2016: 192-201). Consider the following examples.

- (50) Q: Laocheng qu le ma? [Mandarin: Wu 2016: 186-187]
Laocheng go PRFV Q
'Did Laocheng go (there)?'

A1: shi a (ta qu le)
yes he go PRFV
'Yes (he did).'

⁹ It also involves the syntax of the negation in the inherited PoIP. In (i), the bare positive particle is acceptable with the reading where it confirms the negative alternative; see Holmberg (2013, 2016: 152-162).

(i) St: It's definitely not cold out today.
R: Yes. (It's not cold.)

For some speakers a bare *yes* in (49R2) can have that reading, too.

A2: bu *(ta mei you qu)
no he not.have go
'No (he didn't).'

(51) Q: Laocheng mei(you) qu ma?
Laocheng not.have go Q
'Did Laocheng not go (there)?'

A1: shi a (ta mei(you) qu)
yes he not.have go
'No, he didn't./ 'Yes, he didn't.'

A2: bu *(ta qu le)
no he go PRFV
'Yes he did./No, he did.'

As in Taiwanese, a positive yes-no question formed with a final question particle can be answered by a bare positive answer particle, optionally followed by a (full or reduced) clause, or by a negative answer particle, obligatorily followed by a clause. A negative yes-no question also can be answered with a positive answer particle optionally followed by a clause, or by a negative answer particle obligatorily followed by a clause. The explanation, we claim, is the same as in the case of Taiwanese. (a) The sentence-final particle questions have a PolP with valued polarity (but see Wu (2016) for some complications); (b) the positive answer particle confirms the positive value of Pol (in the case of positive questions) and the negative value of Pol (in the case of negative questions), hence the PolP of the answer is Merchant-identical with the PolP of the question, hence it can be deleted; (b) the negative answer particle changes the value of the Pol inherited from the question from positive to negative (in the case of a positive question), or from negative to positive (in the case of negative questions), hence the PolP of the answer cannot be deleted. See, however, Wu (2016: 192-201) for discussion of a case where the negative answer particle agrees with the negative value of Pol instead of negating, hence changing it.

Several varieties of Chinese do not employ answer particles, but always answer with some version of a predicate-echo answer. This is the case in Qinghai Mandarin and in Wu. There is also a

variety of Wu which has what looks like a positive answer particle, but not a negative one.¹⁰ In the Dongying variety of Northern Mandarin, too, there is arguably a positive but no negative answer particle.¹¹ The positive answer particle is *ng*, which is only used in casual register. The auxiliary *mu* (a cognate of Standard Mandarin *mei you*) can be used as answer particle, in casual register.

- (52) Q: Laocheng qu lai man? [Dongying Mandarin]
 Laocheng go ASP Q
 ‘Did Laocheng go (there)?’
- A1: ng / qu lai
 yes [casual] go ASP
 ‘Yes.’
- A2: mu-æ / mu qu
 not.have-PRT [casual] not.have go
 ‘No.’

If *mu-æ* in A2 is an auxiliary (although possibly on its way to be grammaticalised as an answer particle), (52A2) would be a form of predicate-echo answer, and the constituent which is inherited from the question and deleted would not be a PoP but a VP, deletable because it is identical to the antecedent VP in the question.

Cantonese looks like a possible counterexample to the theory articulated above (the digits mark tones)¹²

- (53) Q: nei jungyi cheunggo ga4? [Cantonese]
 you like sing Q
 ‘So you like to sing!?’
- A1: hai aa1 (ngo jungyi)
 yes PRT I like
- A2: m-hai (ngo m jungyi)
 no I not like

¹⁰ Thanks to Qi Wang for data and discussion of Qinghai Mandarin. Thanks to Freddy Xuhui Hu and Jake Lyuyao Huang for data and discussion of Wu.

¹¹ Thanks to Chenchen Julio Song for data and discussion. There is also a negative answer *ng-ng*, with rising-falling tone, only used in colloquial spoken language, with no written form.

¹² Thanks to Alex Ho-Cheong Leung, Phyllis Ka Ku, and Cherry Cit-Yu Lam for data and discussion. It may well be relevant that Cantonese makes very little use of final-particle questions; the A-no-A type is the dominant form, to a greater extent than in Taiwanese and Mandarin.

- (55) Q: (Kimi-wa) iku-no? [Japanese]
 you-TOP go-Q
 'Are you going?'
- A1: Hai ((watashi-wa) ikimasu.
 yes I-TOP go
 'Yes (I'm going).'
- A2: Iie ((watashi-wa) ikima-sen).
 no I-TOP go-NEG
 'No, I'm not going.'

In accordance with the truth-based system, a negative question can be answered by a positive answer particle, bare or accompanied by a clause, to confirm the negative alternative, or by a negative answer particle to negate/disconfirm the negative alternative. The negative answer particle has to be followed by a clause.

- (56) Q: (Kimi-wa) ika-nai-no? [Japanese]
 you-TOP go-NEG-Q
 'Are you not going?'
- A1: Hai ((watashi-wa) ikima-sen.
 yes I-TOP go-NEG
 'No, I'm not going./Yes, I'm not going.'
- A2: Iie *((watashi-wa) iki-masu).
 no I-TOP go
 'Yes, I am./No, I am.'

(56) shows that Japanese has in common with Taiwanese and Mandarin that the negative answer particle cannot agree with a negative Polarity head, but only negate it. This makes the Japanese answering system a truth-based one. Following the logic of the discussion of Taiwanese in section 7 and 8 it should not be the case that the final-particle question (55) is a presumptive question with a fixed (positive) polarity value. If it was, and if the negation then changes that value, deletion of the PolP inherited from the question should be impossible. We suggest, in part following Holmberg (2016: 197-199), who is adapting an analysis of Kuwabara (2013), that the Japanese question (55Q) is a truly neutral question with a polarity variable which is assigned a value by the answer particle, which therefore can be bare. The negative question (56Q) would, however, have a negative Pol head

which is assigned the opposite value in the answer by the negative answer particle, which entails that it must be spelled out.

10. Tag questions

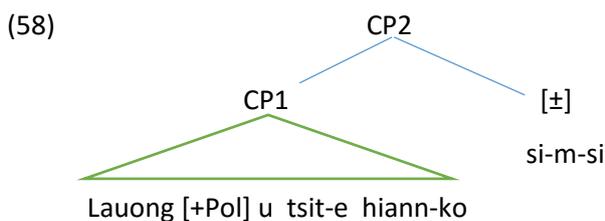
This section is about a case of non-standard yes-no questions, namely tag questions in English and Taiwanese (see Holmberg 2016: 183-186, Wu 2016).

Tag questions cannot be answered by echoing the predicate head in Taiwanese, only by *si a* 'yes', *tioh a* 'correct', or *m-si* 'no'.

- (57) Q: Lauong u tsit-e hiann-ko si-m-si?
 Lauong have one-CL older.brother Q
 'Lauong has one older brother, right?'
 A1: *u / *bô
 have/ not.have
 A2: si a / m-si
 yes no
 A3: tioh a
 correct

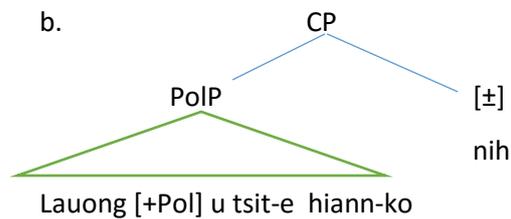
Note that in this case the negative answer particle *m-si* can be bare.

This all follows if the structure of a tag question is (58):



A tag question, we claim, is made up of a complete CP, denoting a proposition, positive or negative and expressing an assertion, but which is merged with a question operator spelled out as a tag. Compare this structure with (59b) and (37), the structure of a sentence-final particle question. In (59b) and (37), the question operator $[\pm\text{Pol}]$ is merged with a PolP, in (58) with a CP.

- (59) a. Lauong u tsit-e hiann-ko nih?
 Lauong have one-CL older.brother Q
 'Does Lauong have one older brother?'



The significance of this, we assume, is that in (59) the question operator applies to a PolP denoting a proposition p , mapping it to a set of p and $\neg p$, while in (57, 58) it applies to the truth value of an assertion. In the tag question the alternative propositions are not whether Lauong does or does not have one older brother; therefore the predicate-head answers are not an option in this case. Instead, the alternatives are whether the assertion that Lauong has one older brother is true or not. The positive answer *si a* means 'It is (true that he has one older brother)', *m-si* mean 'It isn't (true that he has one older brother)'. As *si* and *m-si* are also the form of the positive and negative form of the copula, the answers are possibly indeed more correctly analysed as predicate-head answers, signifying roughly 'It is' vs. 'It isn't'. The alternative affirmative answer (47A3) *tioh a* 'correct' is also straightforward confirmation that the assertion part of the tag question is true.

11. Conclusions

We have now provided an answer to the question we started out with: How come a yes-no question can be answered by a bare answer particle, positive or negative, in English, while in Taiwanese it can be answered by a bare positive answer particle, but not by a bare negative answer particle? The answer is that the syntax of the standard yes-no question in English, derived by 'subject-auxiliary inversion', i.e. Pol to C movement, and that of the standard yes-no question in Taiwanese marked by a final particle, is different. The English question has a polarity variable in PolP assigned a value by the focused answer particle, satisfying Merchant's (2001) condition on ellipsis of PolP (with some minimal adjustment; see Holmberg (2016: 59)). The Taiwanese question does not have a polarity variable. Instead, the focused answer particles apply to a valued PolP inherited from the question. In the case of the negative answer particle, this has, inevitably, the effect of changing the polarity value of the inherited PolP. Hence the PolP of the question and that of the answer end up as different, preventing PolP-ellipsis. The effect is inevitable since the negative answer particle has interpretable negative value, and therefore will negate whatever value Pol has. In English and other languages which employ the polarity-based answering system there is an unvalued variant of the negative

particle which can enter an Agree relation with a negative Pol (negative-marked by a negation inherited from the question), thereby confirming instead of negating the negative alternative of a negative question.

Recall the two theories of how Hamblin's alternative propositions are provided by the syntax of yes-no questions discussed in section 2.

(60) A yes-no question is made up of an IP denoting a proposition p , merged with a question operator Q , where the effect of Q is to map IP onto p and its negation $\neg p$.

(61) The IP of a yes-no question contains a polarity variable $[\pm\text{Pol}]$ and thereby denotes two propositions which differ only as regards the value of Pol (Holmberg 2013, 2016).

The conclusion we can now draw is that the standard yes-no questions in English, derived by subject-auxiliary inversion (i.e. Pol-to-C), which are representative of neutral questions, conform to (61), while the standard yes-no questions in Taiwanese with a clause-final question particle conform to (60).

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