1. Introduction

The question we will discuss and provide an answer for here is this: In English the answer to a yes-no question may consist of a bare answer particle, affirmative or negative (Q: question, A: answer).


In Chinese, here represented by Taiwanese Southern Min (henceforth Taiwanese), the answer to a yes-no question 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.

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

In brief, the explanation is this: Answers to yes-no questions are always full sentences, though typically subject to ellipsis, and answer particles are operators in focus position in the C-domain. In English neutral questions the answer particle assigns a value, positive or negative, to a polarity variable [+Pol] at the head of the IP. The IP can then be deleted under identity with the IP of the question (Merchant 2001). In Taiwanese, yes-no questions are never neutral, but always have a polarity value. What the focused answer particles do in Taiwanese is either maintain the polarity value of the IP (the affirmative particle) or change the value (the negative particle). If the value is maintained, the IP can be deleted, being identical to the IP of the question. But if the value is changed, deletion is not licensed, since identity is not upheld.

This will be shown to have 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 class of yes-no questions in English.

The example sentences are all English or Taiwanese.

2. The syntax of questions

According to Hamblin (1958, 1973), 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. The meaning of the question (3) can then be rendered as in (3’):

(3) Does Mary speak Arabic?
(3’) Tell me which proposition is true: Mary speaks Arabic or Mary does not speak Arabic.

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We submit that (3') is an accurate paraphrase of (3), as a neutral, information-seeking question. The question is answered, in a strict sense, when the addressee states which of the two propositions is true. The question is, how does the syntax of yes-no questions yield this interpretation?¹

The following hypothesis combines Hamblin’s 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:

(4) 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 \( \neg p \).

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 (3), very roughly represented in (5), will map onto (3').

(5) \([ \text{QF} \ [Q [\text{IP Mary I speak Arabic}]]]\)

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 declaratives, and assigned positive value by default in the absence of a negation in positive declaratives. In yes-no questions Pol is unspecified, \([±Pol]\). 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 \([±Pol]\) 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 \([±Pol]\). In English, movement of \([±Pol]\) 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 (3) under Holmberg’s (2016) theory is (6), which yields the meaning (3').

(6) \([ \text{QF} [ [±Pol] C [PolP Mary <[±Pol]> [VP speak Arabic]]]]\)

Following a number of works, including Halliday and Hasan (1976), Kramer and Rawlins (2011) and Holmberg (2013,2017), we claim that answers to yes-no questions have full sentential structure, even when they consist of just an answer particle ‘yes’ or ‘no’. We will demonstrate that the generalizations concerning questions and answers in English and Taiwanese made in the paper can all be understood given this premise.

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

Consider first the theory where (6) is the structure of the yes-no question (3). Holmberg (2016) proposes the following derivation for the affirmative answer to (3), in English:

(7) 1. Copy the PolP of the question:
    \([\text{PolP Mary }<[±Pol]> [VP speak Arabic]]\)
  2. Merge a Focus head, and merge a positive polarity feature \([+Pol]\) with the projected FocP.

¹ It is by no means self-evident that (3’) is an accurate paraphrase of (3). There is a school of thought within research on the syntax and semantics of questions, including Roberts (1996), Gunlogson (2001), Biezma (2009), Roelofsen and van Gool (2009), Biezma and Rawlins (2012), according to which (5) denotes not two but a single proposition, the same as the corresponding declarative sentence Mary speaks Arabic. For reasons of space we will not discuss this issue here.
3. Assign the value of focused [+Pol] to the polarity variable [±Pol] in PolP.

\[
\text{[FocP } [+Pol] \text{ [Foc PolP Mary } [ +Pol ] > [VP speak Arabic] ]]
\]

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.

\[
\text{[FocP yes [Foc PolP Mary } [ +Pol ] > [VP speak Arabic] ]}
\]

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.

(8) a. A constituent \( \alpha \) can be deleted only if \( \alpha \) 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 \( \alpha \) is the result of replacing F-marked parts of \( \alpha \) with \( \bar{A} \)-bound variables of the appropriate type (modulo \( \exists \)-type shifting).
   d. \( \exists \)-type shifting is a type-shifting operation that raises expressions to type \( \langle \tau \rangle \) and existentially binds unfilled arguments.

The structure of the question is (9a) (= 6), the structure of the answer is (9b).


The constituent to be deleted (the \( \alpha \)) in (9b) is the PolP. The antecedent is the PolP of the question (9a). The F-marked part of the PolP in (9b) 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 (9a) and (9b) will mutually entail each other (type-shifting is vacuous, since the constituent to be deleted is already of type \( \langle \tau \rangle \)). Hence deletion is legitimate.

This theory can account for the observation in (1): A neutral (non-negative) yes-no question can be answered by a bare answer particle, positive or negative: Is John coming? Yes/No. The claim is that the bare-particle answers are derived by ellipsis from full sentential structure, where the answer particles spell out a focused feature that assigns a value to a polarity variable in a PolP inherited from the question.

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

English has two kinds of negative questions: questions with positive bias, expecting a positive answer, as in (10), and questions with negative bias, expecting a negative answer, as in (11).

(10) Isn’t this cake good?
(11) 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. We will focus here on questions with negative bias, and will consistently employ the negation not, in order to avoid ambiguity.

Holmberg (2016) proposes that the negative declarative (12a) has the underlying structure (12b).

(12) 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 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 (13a) has the structure (13b). 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.

(13) a. Does Mary not speak Arabic?
   b. [CP [does,±Pol, C [PolP Mary <±Pol> [NegP not [vP <Mary> v [VP speak Arabic]]]]]

The semantic difference between the negative question (13) and the neutral question (3) is that where the neutral question denotes a positive proposition and its negation, the negative question denotes a negative proposition and its negation, that is a positive proposition. The negative bias 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 (14a) will confirm the negative alternative. The structure of the answer is (14b).

(14) a. No.
   b. [CP No [FocP Foc [PolP Mary ±Pol] [NegP not [vP <Mary> v [VP 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 comes with an unvalued negative feature [uNeg] (see Holmberg 2016: 162-163) for discussion). This is crucially different from Taiwanese, as will be discussed below.

As first discussed by Kramer and Rawlins (2011) the question (13a) can also be answered Yes to confirm the negative alternative, in English.

(15) 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, 2016: 152-162) and will not be discussed further here.

5. 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, not by ‘yes’ or ‘no’.

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

A-not-A questions are therefore not directly relevant to the issue at hand. There are several forms of ‘true yes-no questions’ in Taiwanese. For reasons of space we will focus on one type, questions marked by a final particle. There is a variety of final question particles in Taiwanese; see Wu (2016: 74). We will use the particle nih as a representative.2

2 This particle is subject to dialectal and sociolectal variation. It is common in Southern Taiwanese dialect, the dialect of the Taiwanese author of this paper, much less so in Northern dialect.
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. However, they can also be answered ‘yes’ or ‘no’; (17Q) can be answered as in (18).

Note the spell-out of the sentence in reduced form in (18A3), to be discussed 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*).

6. 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 confirm or disconfirm this proposition. 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 (Wu 2016).

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’).
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.

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

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 (6). Therefore it cannot be answered *tioh a* ‘correct’; the question does not provide any proposition that could be ‘correct’ or not. 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 (we will come back to this point in section 7). The yes-no questions (22), on the other hand, is a presumptive question, which does put forward a proposition that can be confirmed or disconfirmed.

We submit that the final-particle questions in Taiwanese have essentially the structure (24):

(24) \[ CP [PolP Lauong [+Pol] khui tshia khi Tailam] [c ±Pol, nih]] \]

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 \(p\) and \(\neg p\), that is the proposition denoted by the PolP and its negation. Taiwanese yes-no questions have a syntax and semantics conforming to (4).

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

7.1. Introduction

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

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

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: *Is John coming? No.* The English 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. As discussed in section 3, in English the IP, i.e. PolP, of the question contains a polarity variable, the unspecified/unvalued feature [±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 merge 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 presupposes that the Taiwanese negative answer particle differs from the English one in one crucial respect: As we saw in section 4, the English negative answer particle can agree with [−Pol] in IP, to yield answers like *Is he not coming? No he isn’t.* The Taiwanese negative answer particle, on the other hand, is a disconfirmation particle, always disconfirming the value of the PolP it merges with. English represents the so-called polarity-based answering system, while Taiwanese represents the truth-based system; Jones (1999), Holmberg (2016).

This is the explanation for the difference between A1 and A2 in (25). We will now go through the different combinations of questions and answers, to show that we can account for the full range of facts.

### 7.2. Answering a positive question

We take the positive and negative version of the question (26Q) as our testing ground. We begin with the case when the question is positive.

(26)  
Q: Lauong [+Pol] u lim ka-pi nih?  
Lauong have 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 (27) (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. The structure of the question (26) is (27). The derivation of the positive answer is (28).

(27)  
[CP [PolP Lauong [+Pol] [PredP u [PredP lim kapi ]]] [±Pol] ]

(28)  
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, which may be reduced by VP ellipsis.

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

The derivation of the negative answer (26A2) is (29).

(29)  
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 [PredP lim kapi ]]]]]


The predicate, here labelled PredP, will agree with Pol. 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, due to 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 (26A2), a negative auxiliary verb. This is shown in (30).

(30) \[\text{CP} \text{–Pol} [\text{CFOC} [\text{PolP Lauong} [\text{Pol' –Pol} [\text{PredP bô lim ka-pi}]]])]

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 (26A2). The answer can be reduced by VP-ellipsis, but the head Pol and its projection must be spelled out.

7.3. Answering a negative question

Now consider a negative presumptive question and its answers.

(31) Q: Lauong [–Pol] bô lim ka-pi nih?
Lauong not.have drink coffee Q
‘Does Lauong not drink coffee?’

A1: si a (i bô (lim (ka-pi)))
yes he not.have drink coffee
‘Yes/No (he doesn’t drink coffee),’

A2: m-si, i u (lim (kap)),
no he have drink coffee
‘No (he does).’

The derivation of the positive answer (31A1) is the following:

(32) 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 ellipsis).

Now consider the negative answer (31A2) to the negative presumptive question.

(33) 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]]]]]


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-ellipsis.
8. Conclusions

The question we started out with was, 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, 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. The Taiwanese yes-no question does not have a polarity variable. Instead, the focused answer particles apply to a valued PolP inherited from the question. Since the negative answer particle in Taiwanese, and Chinese generally, is strictly a disconfirmation particle its effect is, inevitably, to change the polarity value of the inherited PolP. Hence the PolP of the question and that of the answer end up as non-identical, preventing PolP-ellipsis.

The effect is inevitable since the Taiwanese negative answer particle has interpretable negative value, negating whatever value the PolP it merges with has. In English and other languages which employ the polarity-based answering system there is an unvalued variant of the negative particle which can agree with a negative Pol, thereby confirming instead of negating the negative alternative of a negative question.

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