Questioning speech acts

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1 Introduction Speech acts such as assertions and questions had been initially argued to be unamenable to being embedded under other elements (Ross 1970; Hooper & Thompson 1973). However, recent studies in German, Japanese, English and other languages have indicated that speech acts can and do serve as arguments for higher sentential operators (Zimmermann 2008, Davis 2011, Krifka 2014). In this paper, we draw attention to an interrogative sentence-final particle (SFP) *ho* in Cantonese, and argue that it is a **question operator on speech acts**, rather than on propositions.

2 Cantonese SFP *ho* Cantonese *ho* is a polar question SFP (Lam 2014). *Ho* embeds a speech act, i.e., the assertion in (1) and the question in (2), crucially appearing after the speech act operator in the structure. In (1), the speaker A is committed to the truth of the proposition in the scope of the assertion operator. *Ho* functions to confirm whether the addressee B is also committed to the same proposition. In (2), *ho* embeds a *wh*-question and returns a polar question with a special function. This polar question conveys not only that the speaker thinks *Where is Aaman?* is a valid question but also asks whether the addressee shares the same question. The addressee can answer the polar question, as shown in (2B).

(1)   A: [Aaman wui lai   gaa]   **ho**?   B: Hai aa.
           Aaman will come ASSERT HO   yes SFP
           'Aaman will come. Right?'   'Yes, he will.'

(2)   A: [Aaman heoi-zo bin   le] **ho**?   B: Hai lo.
           Aaman go-ASP where Q   HO   yes SFP
           'Where is Aaman? Do you wonder   'Yes. (I also wonder about it.)'
           the same thing?'

3 Proposal Using the framework in Farkas & Bruce (2010), Rawlins (2010) and Malamud & Stephenson (2015), we analyze *ho* as an operator on speech acts, rather than on propositions. Concretely, we assume that a context is a triple $\langle \mathbf{cs}_c, \mathcal{H}_c, \mathcal{F}_c \rangle$, where $\mathbf{cs}_c$ is a Stalnakerian context set (of possible worlds), $\mathcal{H}_c$ is a set of conversation participants, and $\mathcal{F}_c \rangle$ is a set of projected contextual futures (Rawlins 2017), used to model proposals to develop a context (a.k.a 'projected set' in Farkas & Bruce (2010)).

In this framework, the speech act of assertion is a function from a proposition and an individual to a context change potential, as defined in (3). Asserting a proposition *p* is to update the input context by projecting a contextual future in which the input context set is intersected with *p*, if the felicity condition that the individual making the assertion believes *p*. Correspondingly, a question is formalized as an interrogative update of contexts, as in (4): an interrogative sentence *Q* (a set of propositions) can update an input context by projecting a set of contextual futures in which the input context set is intersected with each proposition in Q, provided that the individual asking the question does not know the answer to *Q*.

(3)   **Assert** $:= \lambda p \lambda x \lambda c. \langle \mathbf{cs}_c, \mathcal{H}_c, \{\langle \mathbf{cs}_c \cap p, \mathcal{H}_c, \emptyset \rangle\} \rangle$
$$\text{if } \mathbf{cs}_c \subseteq \{w \mid \underbrace{\forall w' \in \mathbf{Dox}_w(x). w' \in p}_{\text{x believes p in w}}\}, \text{ undefined otherwise.}$$

(4)   **Quest**$_S := \lambda Q \lambda x \lambda c. \langle \mathbf{cs}_c, \mathcal{H}_c, \{\langle \mathbf{cs}_c \cap p, \mathcal{H}_c, \emptyset \rangle \mid p \in Q\} \rangle$
$$\text{if } \mathbf{cs}_c \subseteq \{w \mid \underbrace{\neg \exists p' \in Q. \mathbf{Dox}_w(x) \cap \mathbf{cs}_c \subseteq p'}_{x \text{ doesn't know the answer to } Q \text{ in } w}\}, \text{ undefined otherwise.}$$

We propose that *ho* is a function from a speech act to a context change potential. Given a speech act, it projects a set of contextual futures with two proposals to develop the current context–either both the speaker and the addressee perform the same speech act, or the speaker performs the speech act but the addressee refuses to do the same. The definition of the rejection operator is given in (6).

(5)   **ho** $:= \lambda\mathcal{A}\lambda c. \left\langle \mathbf{cs}_c, \mathcal{H}_c, \left\{ \begin{array}{l} \mathcal{A}(\mathbf{a}_c)(\mathcal{A}(\mathbf{s}_c)(c)) \\ \mathbf{Rej}(\mathcal{A})(\mathbf{a}_c)(\mathcal{A}(\mathbf{s}_c)(c)) \end{array} \right\} \right\rangle$

(6)   **Rej** $:= \lambda\mathcal{A}\lambda x\lambda c. \left\{ \begin{array}{l} \langle\mathbf{cs}_c, \mathcal{H}_c, \emptyset\rangle, \text{ if } \mathcal{A}(x)(c) \text{ is undefined} \\ \text{undefined, otherwise} \end{array} \right.$

Then, (1) and (2) can be translated as (7) and (8). Applying *ho* to the the assertive and the interrogative speech acts yields a new question, respectively–does the addressee perform the same speech act as the speaker's, or does the addressee refuses to perform the same speech act?

(7) $[\![(1)]\!] = \left\{ \begin{array}{l} \mathbf{Assert(M\text{-}smart)(a}_c)(\mathbf{Assert(M\text{-}smart)(s}_c)(c)), \\ \mathbf{Rej(Assert(M\text{-}smart))(a}_c)(\mathbf{Assert(M\text{-}smart)(s}_c)(c)) \end{array} \right\}$

(8) $[\![(2)]\!] = \left\{ \begin{array}{l} \mathbf{Quest(Where\text{-}is\text{-}Aaman)(a}_c)(\mathbf{Quest(Where\text{-}is\text{-}Aaman)(s}_c)(c)), \\ \mathbf{Rej(Quest(Where\text{-}is\text{-}Aaman))(a}_c)(\mathbf{Quest(Where\text{-}is\text{-}Aaman)(s}_c)(c)) \end{array} \right\}$

4 Unembeddable questions A prediction from the proposed analysis is that *ho* cannot embed a question the speaker knows that the addressee already has an answer for. This is because if the addressee already has an answer for a question, the felicity condition for performing an interrogative speech act cannot be met. (9) shows this point.

(9)   *Ni giu me meng le ho?
you call what name Q HO
'What is your name? Do you wonder the same thing?'

5. Answering the embedded question Another prediction is that when the addressee chooses to perform the same speech act (by using a response particle like 'yes' or 'right'), she may not provide an answer for the embedded question, as illustrated in (10B). Answering the embedded question in (10A) is only possible when the addressee does not choose to perform the same interrogative act, as illustrated in (10B'), which indicates that the addressee refuses to ask the same question.

(10)   A: Aaman heoi-zo bin le ho?
Aaman go-ASP where Q HO
'Where is Aaman? Do you wonder about the same thing?'

    B: #Hai lo. Keoi heoi-zo hokhaau.   B': Keoi heoi-zo hokhaau.
    Yes SFP he go-ASP school   he go-ASP school
    'Yes. He went to school.'   'He went to school.'

References: **Davis**, C. 2011. Constraining Interpretation: Sentence Final Particles in Japanese, UMass diss. **Farkas and Bruce**. 2010. On Reacting to Assertions and Polar Questions. *JoS*. **Krifka**. 2014. Embedding illocutionary acts. **Krifka**. 2015. Bias in Commitment Space Semantics. *SALT-25*. **Rawlins**. 2010. Conversational backoff. *SALT-20*. **Lam**. 2014. A complex ForceP for speaker &-addressee-oriented discourse particles in Cantonese. *SCL*.