On Concealed Questions

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1. Introduction

The underlined Nouns Phrases (NPs) in (1) have been called 'Concealed Questions' (CQ, henceforth) because sentences that embed them typically have the same truth-conditional meaning as the corresponding versions with a full-fledged embedded interrogative clause, as illustrated in (2) (Heim 1979):

(1) a. John knows the price of milk.
b. They announced the winner of the contest.
c. The temperature of the lake depends on the season.

(2) a. John knows how much the milk costs.
b. They announced who won the contest.
c. How warm the lake is depends on what season it is.

The goal of this talk is to review three main approaches to CQs in the literature –the pragmatic account, the individual concept account and the propositional account–, and to evaluate them with respect to several empirical patterns. The comparison across different data sets will lead to some conclusions and some important open questions, helping characterize the state of the art of the CQ debate in the literature.

Three main approaches to CQs will be discussed. The first one is the pragmatic approach in Heim (1979), in which [[*know*]] combines with an object of type e. For example, in (1a) [[*know*]] would combine with the dollar amount (or degree on a scale) provided by the NP *the price of milk*. The second approach is the individual concept approach (Lasersohn 2005, Romero 2005a, among others). In this case, [[*know*]] in (1a) would combine with an object of type <s,e> provided by the NP *the price of milk*. Finally, in the propositional approach (Romero 2005b, Nathan 2005), [[*know*]] would combine with an object of type <s,t> (or type <s,<s,t>>) arising from the NP *the price of milk* in (1a).

As we evaluate these approaches, we will examine the following five empirical patterns:

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(67) $[[\textit{know}]] = \lambda p_{<s,<s,t>>}\lambda x_e\lambda w.\ \forall w' \in Dox_x(w)\ [p(w)(w')=1]$

(68) [[*the price(s) that Fred knows*]] =
$\lambda w^*.\ \sigma \underline{x}_{<s,e>}\ [\ price(\underline{x},w^*)\ \&\ \forall w'' \in Dox_f(w^*)\ [\underline{x}(w'') = \underline{x}(w^*)]\ ]$

(69) $ANS_{STR}(y_{<s,<s,e>>}) = \lambda w\lambda w'.\ y(w') = y(w)$

(70) [[*I know* ANS_{STR} *the price(s) that Fred knows*]] =
$\lambda w.\ \forall w' \in Dox_I(w)\ [\ \sigma \underline{x}_{<s,e>}[price(\underline{x},w')\ \&\ \forall w'' \in Dox_f(w')\ [\underline{x}(w'') = \underline{x}(w')]] =$
$\sigma \underline{x}_{<s,e>}[price(\underline{x},w)\ \&\ \forall w'' \in Dox_f(w)\ [\underline{x}(w'') = \underline{x}(w)]]\ ]$

(71) $ANS_{SOME}(y_{<s,<s,e>>}) = \lambda P_{<<s,<s,t>>,<s,t>>}\lambda w.\ \exists z_{<se>}\ [\ y(w) \geq z\ \&$
$P(\lambda w'\lambda w''.y(w'') \geq z)(w)\ ]$

(72) [[*I know* ANS_{SOME} *the price(s) that Fred knows*]] =
$\lambda w.\ \exists z_{<s,e>}\ [\ \sigma \underline{x}_{<s,e>}[price(\underline{x},w)\ \&\ \forall w'' \in Dox_f(w)\ [\underline{x}(w'') = \underline{x}(w)]] \geq z\ \&$
$\forall w' \in Dox_I(w)\ [\sigma \underline{x}_{<s,e>}[price(\underline{x},w')\ \&\ \forall w'' \in Dox_f(w')\ [\underline{x}(w'') = \underline{x}(w')]] \geq z\ ]]$

Non-definite CQs in reading B have only the mention-some reading, as in (73). To derive this reading, we would need another ANS operator, defined in (75), that would apply to the NP's <<se,st>,st> intension (74) to yield the final truth conditions in (76).

(73) John knows a price that Fred knows.

(74) [[*a price that Fred knows*]] =
$\lambda Q_{<se,st>}\lambda w.\ \exists x_{<se>}\ [price(x,w)\ \wedge\ \forall w' \in Dox_f(w)\ [x(w')=x(w)]\ \wedge\ Q(x)(w)]$

(75) $ANS_{SOME}(R_{<<se,st>,st>}) =$
$\lambda P_{<<s,<s,t>>,<s,t>>}\lambda w.\ \exists z_{<se>}\ [\ R(\lambda x_{<se>}\lambda w^*.x=z)(w)\ \wedge$
$P(\lambda w'\lambda w''.R(\lambda x_{<se>}\lambda w^*.x=z)(w''))(w)\ ]$

(76) [[*I know a price that Fred knows*]] =
$\lambda w.\ \exists z_{<se>}[\ \exists x_{<se>}[price(x,w)\ \wedge\ \forall w' \in Dox_f(w)[x(w')=x(w)]\ \wedge\ x=z]\ \wedge$
$\forall w'' \in Dox_j(w)[\exists x'_{<se>}[price(x',w'') \wedge \forall w' \in Dox_f(w'')[x'(w')=x'(w'')]$
$\wedge\ x'=z]]]$

References

Beck, Sigrid and Hotze Rullmann: 1999, 'A flexible approach to exhaustivity in questions', *Natural Language Semantics* **7**, 249-298.

Cresswell, Max: 1990, *Entities and Indices*, Dordrecht, Kluwer.

Dor, Daniel: 1993, 'Towards a Semantic Account of Concealed Questions', in M. Bernstein (ed.) *Proceedings of ESCOL '92*, pp. 56-67.