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The semantics and pragmatics of clausal question-answer pairs in ASL

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1. Introduction

A question and its answer are closely related at the discourse level: a (non-rhetorical) question requires an answer and an answer is appropriate only with respect to a question. Still, a question and its answer are associated with two independent objects at the syntactic and semantic level. A question is often realized as a matrix interrogative clause and is commonly assumed to denote a set of propositions (e.g. Hamblin 1973, Karttunen 1977), while an answer is a declarative clause (or often a smaller constituent) denoting a single proposition. In this paper, we study a construction in American Sign Language (ASL) that superficially resembles a question-answer pair at the discourse level, but exhibits two crucial differences: (i) it is uttered by the very same speaker, and (ii) we argue that it forms a syntactic and semantic unit – a declarative clause – by combining an interrogative clause (the "question") and a declarative clause (the "answer"). We call this construction a *Clausal Question-Answer pair (CQA)*.

In Section 2, we introduce CQAs and briefly summarize the arguments in favor of the syntactic and semantic analysis we present in Section 3. In Section 4, we discuss a pragmatic property of CQAs and suggest an account within a larger approach to discourse structuring. In Section 5, we compare CQAs to a construction for which a similar analysis has been suggested, namely specificational pseudoclefts in English (and other languages). Section 6 concludes.

2. Clausal Question-Answer pairs in ASL

In this section, we introduce CQAs and summarize some of the arguments supporting the syntactic and semantic analysis we present in Section 3. Figure 1 shows an example of a CQA in ASL.

We extend our deepest thanks to Frank Gallimore and Jamie Gould for sharing their language with us. We also thank Gennaro Chierchia, Veneeta Dayal, Paul Elbourne, Anastasia Giannakidou, Andreas Haida, Andy Kehler and Matt Hall for their helpful suggestions, and Carol Neidle for permission to use NCSLGR SignStream database images. Standard disclaimers apply.

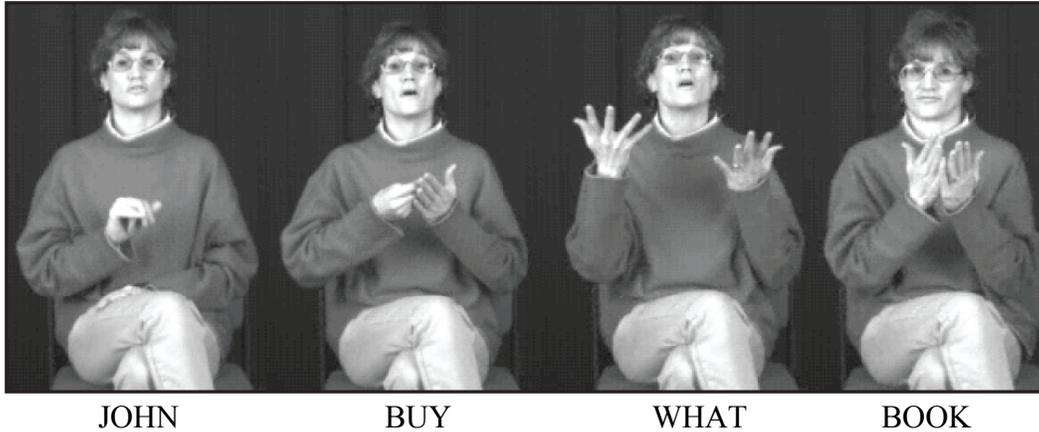


Figure 1: A CQA in ASL, from the *SignStream Corpus*, National Center for Sign Language and Gesture Resources, Boston University.

Following convention, examples from ASL will be annotated as follows: Each sign made with the hands is glossed in English using capital letters. Facial expressions, known as ‘non-manual marking’, are noted above the manual signs, and a line extends to show the duration of the non-manual marking. If there is no associated nonmanual marking, this line will be blank. For example, the CQA in Figure 1 above has *brow raise* nonmanual marking over the first three signs, and is represented as in (1) below.

- (1) *brow raise*
 JOHN BUY WHAT, BOOK
 ‘The thing/What John bought is a book.’¹

For ease of readability, we follow Petronio (1991) and separate the two parts of a CQA with a comma. We refer to these two subparts as the Q(uestion)-Constituent and the A(nswer)-Constituent. In (1), the Q-constituent is *JOHN BUY WHAT*, and the A-constituent is *BOOK*. Because the nonmanual marking on the Q-constituent of a CQA is always raised eyebrows, in this paper we only write it if it is relevant to the point at hand.

In Davidson *et al.* (to appear), we present and discuss in detail a series of arguments (many of which are novel) showing that syntactically and semantically a CQA behaves like a single declarative clause (contra Hoza *et al.* 1997), while its Q-constituent behaves like an embedded interrogative clause (contra Petronio 1991, Wilbur 1994, 1999) and its A-constituent like an embedded declarative

¹We translate CQAs using English specificational sentences to best convey the semantic/pragmatic properties of CQAs (see Section 4). This should not be taken as a claim of equating the two, an issue that we address in Section 5.

clause (or smaller phrase)². Due to space limitations, here we briefly mention some of those arguments.

(i) A CQA behaves like a syntactic/semantic unit, in particular a declarative clause. It can be embedded, as already noted in Petronio (1991) and Wilbur (1999) and as shown in (2). Also, our consultants can judge CQAs to be true or false.

- (2) THOSE GIRL THINK/*ASK [THEIR FATHER BUY WHAT, CAR]
'Those girls think/*ask the thing that their father bought was a car.'

Furthermore, it is a declarative clause since the embedding predicate can never be an interrogative one, only a propositional attitude one, that is, a predicate that selects for a declarative clause as its complement (cf. *THINK* vs. *ASK* in (2)).

(ii) A Q-constituent is an embedded interrogative clause. It is an interrogative clause since the word order and the range of wh-words in a Q-constituent are the same as standard interrogative clauses (including wh-words like *WHICH*, *HOW-MUCH*, and *WHY*). For instance, the Q-constituent in the CQA in (3) and the interrogative clause in (4) are identical, as far as words and word order are concerned. Crucially, wh-words cannot be used in any free or headed relative constructions in ASL (Liddell 1978, Hoza *et al.* 1997).

- (3) JOHN LIKE GIRL WHICH, MARY.
'The girl that John likes is Mary.'

- (4) *Signer A*: JOHN LIKE GIRL WHICH? *Signer B*: MARY.
'Which girl does John like?' 'Mary.'

A Q-constituent is an embedded wh-interrogative clause because it obligatorily uses *brow raise* nonmanual marking, while all matrix wh-interrogatives in ASL, including echo questions and rhetorical questions, require *brow furrow* nonmanual marking. Also, in discourse-level wh-interrogatives, the wh-word may be repeated sentence-finally, but this is usually judged to be impossible in embedded questions, as well as the Q-constituent of the CQA (Petronio 1991, Wilbur 1999, but for diverging view see Hoza *et al.* 1997).

(iii) The A-constituent behaves as expected of an answer to a constituent question: it may be a full sentence or a partially elided sentence (5) with either a referential or a nonreferential/quantified DP replacing the wh-word (*BOOK* vs. *NOTHING*).

²In a poster abstract, Grolla (2004) suggests that CQAs in ASL be analyzed as specificational pseudoclefts, based on Schlenker's (2003) well-known clausal question-answer analysis of the latter. We became aware of Grolla (2004) only recently, but we had already considered and excluded the hypothesis of an identical analysis of CQAs and specificational pseudoclefts, based on the arguments in Section 5.

As far as we are aware, what has not been noticed before is that CQAs can sometimes receive a non-exhaustive or “mention-some” reading, that is, the A-constituent can be interpreted as conveying a partial answer to the question expressed by the Q-constituent, as shown in (9)a. Interestingly, the corresponding discourse-level question-answer pair exhibits the same pattern, as shown in (9)b.

- (9) *Situation: Starbucks is one of many places where one can find coffee*
- a. CAN FIND COFFEE WHERE, STARBUCKS.
‘You can find coffee at Starbucks’
- b. *Signer A: CAN FIND COFFEE WHERE? Signer B: STARBUCKS.*
‘Where can you find coffee?’ ‘At Starbucks’

The conditions under which the exhaustive or non-exhaustive readings in questions-answer pairs are available is an open issue (see Beck and Rullmann 1999 for an overview and detailed discussion, especially sections 8 and 9; also, Groenendijk and Stokhof 1984 and Heim 1994). Our goal here was simply to show that CQAs behave like question-answer pairs in this regard as well.

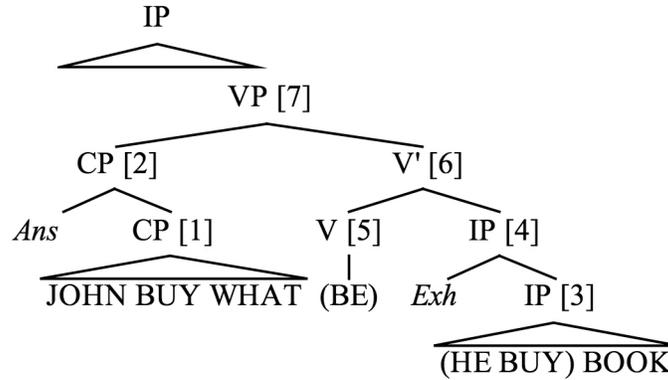
In order to account for the behavior of CQAs we have described so far, we propose that syntactically a CQA is a declarative clause with a silent copular predicate taking an interrogative CP (the Q-constituent) as its subject and an IP with possibly elided material (the A-constituent) as its complement. Semantically, we propose that both the Q-constituent and A-constituent denote a proposition and that the silent copula behaves like an identity predicate returning the truth value 1 if and only if its two propositional arguments are logically equivalent. Our analysis is similar to the analysis that Schlenker (2003) proposes for specificational pseudoclefts (but with a different semantics for questions), although in Section 5 we will mention several reasons why we think that CQAs cannot be reduced to pseudoclefts.

We illustrate our proposal in detail by looking at a specific example and by commenting on it. (10) repeats a familiar example of a CQA, while (11) shows its syntactic tree and step-by-step derivation according to our proposal. The Q-constituent of the CQA is an interrogative wh-CP (step [1]) denoting the set Q_1 of all the propositions that constitute possible answers to the question ‘What did John buy?’, along the line of Hamblin’s (1973) semantics for questions. The operator *Ans* applies to Q_1 and returns the complete/exhaustive true answer, the one that entails all the others (step [2]). *Ans* is proposed in Dayal (1996) for embedded interrogatives that exhibit exhaustivity and is assumed to be licensed by matrix interrogative predicates like *know*.³ We assume that *Ans* is generally available in the grammar and occurs whenever it is selected by a lexical item (like *know*) or is needed to solve a type-mismatch, as we will see for CQAs.

³See Groenendijk and Stokhof (1984) and Jacobson (1995) for a different implementation of the idea that a question denotes its complete answer.

(10) JOHN BUY WHAT, (HE BUY) BOOK
 ‘The thing/What John bought is a book.’

(11)



- [1] $[\text{CP JOHN BUY WHAT}] \rightsquigarrow$
 $\lambda p_{\langle \text{st} \rangle}. \exists X_{\langle e \rangle} [p = \lambda w_1. \mathbf{buy}_{\langle e, \langle e, \text{st} \rangle \rangle}(w_1)(X)(j)]^{4,5}$
 $Q_1 \langle \text{st}, t \rangle =_{\text{def}} \lambda p. \exists X [p = \lambda w_1. \mathbf{buy}(w_1)(X)(j)]$
- [2] $[\text{CP } Ans \text{ JOHN BUY WHAT}] \rightsquigarrow$
 $\iota p [p \in Q_1 \wedge p(w_0) \wedge \forall q \in Q_1 [q(w_0) \rightarrow p \subseteq q]]$
- [3] $[\text{IP (HE BUY) BOOK}] \rightsquigarrow \lambda w_1. \mathbf{buy}(w_1)(b)(j)^6$
- [4] $[\text{IP } Exh \text{ (HE BUY) BOOK}] \rightsquigarrow \lambda w_1. [\lambda x. \mathbf{buy}(w_1)(x)(j) = \{b\}]^7$
- [5] $[\text{V (BE)}] \rightsquigarrow \lambda p_{\langle \text{st} \rangle}. \lambda q_{\langle \text{st} \rangle}. [q = p]$
- [6] $[\text{V' (BE) (HE BUY) BOOK}] \rightsquigarrow$
 $\lambda p. \lambda q. [q = p] (\lambda w_1. [\lambda x. \mathbf{buy}(w_1)(x)(j) = \{b\}])$
 $= \lambda q. [q = \lambda w_1. [\lambda x. \mathbf{buy}(w_1)(x)(j) = \{b\}]]$
- [7] $[\text{VP } [Ans \text{ JOHN BUY WHAT}], [(BE) \text{ (HE BUY) BOOK}]] \rightsquigarrow$
 $\lambda q. [q = \lambda w_1. [\lambda x. \mathbf{buy}(w_1)(x)(j) = \{b\}]] (\iota p [p \in Q_1 \wedge p(w_0)$
 $\wedge \forall q \in Q_1 [q(w_0) \rightarrow p \subseteq q]])$
 $= \iota p [p \in Q_1 \wedge p(w_0) \wedge \forall q \in Q_1 [q(w_0) \rightarrow p \subseteq q]] =$
 $\lambda w_1. [\lambda x. \mathbf{buy}(w_1)(x)(j) = \{b\}]$

The A-constituent in (10) is an IP that starts out denoting the proposition ‘that John bought a book’ (step [3]). Notice that part of the IP (HE BUY) can be

⁴Predicates in the formal language are in bold. Semantic types are added only to the first occurrence of an expression in the derivation.

⁵The variable X ranges over atomic and plural individuals in order to include propositions like ‘that John bought *Lolita* and *The catcher in the rye*’ in the set in [1] and to account for plural A-constituents like (the ASL equivalents of) “*Lolita* and *The catcher in the rye*” or “those books”.

⁶For sake of simplicity, we are treating the pronoun *HE* as semantically equivalent to the proper noun *JOHN*: they both denote the individual j. Similarly, we assume the DP *BOOK* to denote the individual b without giving the details of the semantic derivation.

⁷We are using the informal set notation “{b}” rather than the formally correct “ $\lambda x. [b=x]$ ” for reasons of space and simplicity.

silent (our consultants accepted either the full IP or the partially elided one). The same happens with discourse-level answers in languages in general: only the constituent in the answer conveying the new information is uttered ('short answer'), rather than the full IP containing old information as well ('full answer'). For instance, "What did John buy?" in English can be answered with either the short answer "The book" or the full answer "John bought a book", with the latter feeling somehow redundant.

Step [4] shows the result of applying the exhaustivity operator *Exh* to the IP in [3]. *Exh* takes the initial semantic value of the IP, that is, the proposition p_1 'that John bought b', and returns the proposition p_2 'that John bought b and nothing else'. This is achieved by requiring that the set of all the individuals x that make the proposition schema 'that John bought x ' true is identical to the singleton set $\{b\}$. The individual b is chosen since it is the denotation of the complement BOOK. This constituent is marked within the A-constituent: it occupies a special position, can never be elided, is "focused", and carries new information (see discussion in Section 4). The exhaustification in [4], inspired by Schlenker (2003), closely resembles the semantic behavior of the focus operator *only*. There are two main differences, though. First, exhaustification adds its semantic contribution directly to the truth-conditional content, rather than keeping it separate like a focus semantic value (Rooth 1985). Second, exhaustification is triggered by *Exh*, an operator in the syntactic structure, rather than being a purely semantic operation (as in Schlenker 2003). Chierchia *et al.* (forthcoming) argue on independent grounds for silent exhaustivity operators in the syntax that directly contribute to the basic semantic value.

The silent copula BE, denoting an identity relation ([5]), combines with the IP in [4] denoting the "exhaustive" proposition, and returns the V' denoting the set of propositions that are equivalent to the "exhaustive" proposition ([6]). The VP ([7]) resulting from combining the V' and CP denotes the truth value 1 iff the proposition denoted by the CP in [2] is a member of the set in [6]. In other words, the silent copula returns 1 iff the proposition denoted by the Q-constituent and the proposition denoted by the A-constituent are logically equivalent. Crucially, both constituents have to denote a proposition. The CP in the Q-constituent initially denotes a set of propositions [3]. This is why *Ans* has to apply and solve the type mismatch by returning a proposition [4].

We are assuming that CQAs contain a copula that is always silent. This is consistent with the fact that the "standard" copula is obligatorily silent in ASL in both standard equational (12) and predicational (13) copular sentences, both in matrix (12) and embedded clauses (13).

- (12) CLARK KENT SUPERMAN.
'Clark Kent is Superman.'

- (13) JOHN THINK CAR RED
'John thinks the car is red.'

The two operators *Ans* and *Exh* are specifically meant to enforce exhaustivity on both constituents of a CQA. This is potentially problematic for those CQAs that allow for non-exhaustive readings, as briefly mentioned earlier. We will not discuss this issue in detail here. Aside from restrictions on space, this specific issue concerning CQAs is directly related to the more general issue of how to account for non-exhaustivity in questions, which is still waiting for a solution, as mentioned earlier. Still, we would like to suggest a possible approach. We assume that a different operator applies to the Q-constituent of CQAs when they are interpreted non-exhaustively and call it *Ans_{NON-EXH}*. This operator applies to the set of propositions the Q-constituent initially denotes and returns any true one. *Ans_{NON-EXH}* would therefore solve the type-mismatch between the initial denotation of the Q-constituent and the relation of identity with the proposition denoted by the A-constituent, similar to what *Ans* does. On the other hand, *Ans_{NON-EXH}* would not enforce exhaustivity, since it would not necessarily return the exhaustive/complete true proposition/answer. The restricted occurrence of non-exhaustive readings would translate into the restricted licensing conditions for *Ans_{NON-EXH}*, which can be stated precisely only when the issue of the conditions under which non-exhaustive readings arise has received a better understanding. As for the non-exhaustive interpretation of the A-constituent, all that is needed is the assumption that the operator *Exh* can apply optionally. When it does not apply and at the same time *Ans_{NON-EXH}* applies to the Q-constituent, a non-exhaustive reading of the CQA is generated.

For reasons of space, we will not show how our analysis applies to polar CQAs, though we think it can be done straightforwardly in an even simpler way, since no exhaustivity is involved with polar question-answer pairs. For the same reasons, we will not extend our analysis to embedded CQAs. This looks less trivial and we will address it in forthcoming work.

Finally, the semantics of questions that we are adopting based on Hamblin (1973) and Karttunen (1977) faces a problem in dealing with nonreferential/quantified answers, as discussed in Spector (to appear). For CQAs, it means that our semantic analysis does not derive the correct truth conditions for CQAs with an A-constituent as in (14) and (15).

- (14) JOHN BUY WHAT, EVERYTHING.
'John bought everything.'

- (15) WHO CAME, NO-ONE (CAME)
'No one came.'

Spector (to appear) suggests an amendment to Karttunen's (1977) in which

variables over generalized quantifier are introduced. Though he motivates his proposal with a different set of problematic facts, it can be used to handle our problem as well.⁸ We refer the interested reader to Spector (to appear) for details.

4. On the pragmatics of CQAs

In this section, we first discuss a difference in the conditions of use between a CQA and the corresponding simple declarative clause (henceforth “non-CQA”), and then sketch a tentative account based on the “Questions Under Discussion” approach to how the discourse is structured.

At the beginning of a discourse, or “out of the blue”, a CQA (16)a is much less preferred than the corresponding non-CQA (16)b.

- (16) *Situation: Out of the blue or as an answer to a question like “What happened?”*
- a. #JOHN BUY WHAT, BOOK.
‘The thing/What John bought is a book.’
 - b. JOHN BUY BOOK.
‘John bought a book.’

This contrast suggests that a CQA may require background information to be associated with it, unlike the corresponding non-CQA. In particular, our data supports Wilbur’s (1994) suggestion that the Q-constituent typically conveys old, backgrounded information, while the A-constituent conveys new, foregrounded, information. Notice that the problem with (16)a is not that CQAs cannot be used to answer a question, since they can. For instance, the CQA in (17)a can be used felicitously by Signer B to answer Signer A’s question, in the same way as the non-CQAs (17)b. Unlike the non-CQAs, though, the CQA requires a context in which shopping is the salient activity that Signer B may have been involved in the day before, and Signer B has to be aware that Signer A knows that. This context is established through Signer A’s question about shopping.

⁸Thanks to Andreas Haida for helpful discussion and for mentioning Spector (to appear).

Instead of addressing the overt primary QUD all at once, Speaker B chooses to answer the covert sub-QUD *What did Mary buy?* and signals the use of this subquestion by putting a special type of prosodic focus (the B-accent) on *MARY*. Then *HANDBAG* receives another focus (the A-accent) because it directly answers that subquestion.

Returning to CQAs in ASL, it has often been mentioned that they seem to “focus” the A-constituent (Petronio 1991, Wilbur 1994, 1996, Petronio and Lillo-Martin 1997, but for exception see Hoza *et al.* 1997). Under this view, *BOOK* in the ASL sentence in (21) serves a similar purpose to the emphasized *BOOK* in the English sentence in (22): it is new information, and often receives an exhaustive interpretation.

(21) JOHN BUY WHAT, BOOK.
 ‘The thing/What John bought is a book.’

(22) John bought a BOOK.

Whereas a complete investigation of the pragmatic properties of CQAs is beyond the scope of this paper (see Wilbur 1994 for a more direct attempt), a suggestive piece of new data seems to support the idea of a CQA as a syntactic and semantic unit combining an overt sub-QUD with its focused answer. To begin, consider the context (23) and possible following dialogues (24) and (25) involving two signers. Signer A asks the same wh-question in both dialogues, and Speaker B replies with an answer in the form of a polar/yes-no CQA in both cases.

(23) *Situation:* A classroom in which students are discussing the locations of countries and continents on a map.
Overt main QUD: Where (specifically, which continent) does each country belong in?

(24)	<i>Signer A:</i> <u> </u> <i>brow furrow</i>	<i>Signer B:</i> <i>brow raise</i>
	BELGIUM WHERE?	AFRICA, NO.
	‘Where is Belgium?’	‘It is not in Africa.’

(25)	<i>Signer A:</i> <u> </u> <i>brow furrow</i>	<i>Signer B:</i> <i>brow raise</i>
	BELGIUM WHERE?	EUROPE, YES.
	‘Where is Belgium?’	‘It is in Europe.’

Now consider the very same situation as (23), but in the case in which a single signer uses a CQA to convey something similar to the dialogue in (24) and (25), as shown in (26) and (27). The whole sentence in (26) is a CQA, whose Q-constituent is the wh-interrogative *BELGIUM WHERE*. Its A-constituent

AFRICA, *NO* is made of another CQA that takes *AFRICA* as its yes/no Q-constituent and *NO* as its A-constituent. (27) has the same structure.

(26) $\frac{\text{brow raise}}{\text{BELGIUM WHERE, } _ [\text{AFRICA, NO}]}$ *brow raise*
 ‘Belgium is not in Africa.’

(27) $\frac{\text{brow raise}}{\text{BELGIUM WHERE, } _ [\text{EUROPE, YES}]}$ *brow raise*
 ‘Belgium is in Europe.’

An informal outline of the discourse structure in (26) and (27) is given in (28).

- (28) a. Where (specifically, which continent) is each country in? *Main QUD*
 b. Where is Belgium? *Sub-QUD*
 c. Is it in Africa? *Sub-sub-QUD 1*
 d. No, Belgium is not in Africa. *Answer to Sub-sub-QUD 1*
 e. Where is Belgium? *Sub-QUD*
 f. Is it in Europe? *Sub-sub-QUD 2*
 g. Yes, Belgium is in Europe. *Answer to Sub-sub-QUD 2*

The signer produces the CQA in (26) in situation like (23) in which the (overt) main QUD in (28)a has been raised. Therefore, the Q-constituent *BELGIUM WHERE* in (26) can raise the *sub-QUD* in (28)b without violating the ban against using CQAs out-of-the-blue. The *sub-QUD* in (28)b in turn makes it possible to raise the *sub-sub-QUD 1* in (28)c by means of the Q-constituent *AFRICA*. The A-constituent *NO* in (26) answers the *sub-sub-QUD 1* negatively (28)d, which triggers the next discourse move. The Q-constituent *BELGIUM WHERE* in (27) raises the same *Sub-QUD* again (28)e. *Sub-sub-QUD 2* in (28)f is then allowed to be raised by means of the Q-constituent *EUROPE* in (27) and then answered positively by the answer in (28)d conveyed by the A-constituent *YES* in (27).

To conclude, if our hypothesis is correct that a CQA is a focus construction which contains the entire overt sub-QUD and its answer as a single clause, it brings further “overt” support to the QUD approach to discourse structuring.

5. The CQA and Specificational Pseudoclefts

Following Petronio (1991), Wilbur (1996, 1999) argues that CQAs form a syntactic and semantic unit as the ASL equivalent of pseudoclefts in other languages. She argues that what we have labeled the Q-constituent and analyzed as an interrogative clause is, instead, a headless relative clause conveying old

information, while our A-constituent is not a declarative clause, but a smaller constituent conveying new information. The denotations of the Q-constituent and the A-constituent are equated in her analysis as well, though she argues for a small clause structure instead of having a silent copula, and so the analysis cannot be propositional in nature like ours.

Although we agree with the basic idea that the whole CQA is a declarative clause, we disagree on it being a declarative clause of the pseudocleft kind. As we briefly mention in Section 2 and discuss in much more detail in Davidson *et al.* (to appear), there are several arguments that show that the Q-constituent of a CQA is actually an embedded interrogative and not a relative clause, and that the A-constituent is a (partially elided) declarative clause. Also, as already mentioned, there is no independent evidence that *wh*-words can be used to form any relative construction in ASL. Finally, as noted in Hoza *et al.* (1997), Wilbur's proposal cannot handle *yes/no* CQAs, because there is no way to analyze their Q-constituent as a relative clause and their A-constituent as a non-clausal constituent.

If this is enough to reject Wilbur's analysis of CQAs as pseudoclefts, a different analysis of pseudoclefts could still be extended to CQAs. In particular, a very popular approach to specificational pseudoclefts in English and other languages closely resembles our approach to CQAs: the precopular constituent *What John bought* of a specificational pseudocleft like *What John bought is a book* is analyzed as conveying a question, while the postcopular constituent *a book* as conveying the answer to that question, though the specific proposals differ in important details (see Ross 1972, den Dikken *et al.* 2000, Schlenker 2003, among others). Our goal in this section is just to highlight the many differences between CQAs and pseudoclefts in English and the fact that those differences always group CQAs and discourse-level questions-answer pairs together and keep them separate from specificational pseudoclefts. This may be taken to indirectly support a different approach to specificational pseudoclefts according to which they are an equation between the pre- and post-copular phrases as they appear on the surface (among others see Jacobson 1994, Sharvit 1999, Cecchetto 2000, 2001, Heller 2002; Caponigro and Heller 2007).

A first difference between CQAs and specificational pseudoclefts is that CQAs permit exactly the same *wh*-words that appear in discourse-level questions, including the *wh*-words *WHY*, *HOW-MUCH*, and even *WHICH*, which cannot be used in pseudoclefts in English (or any other languages that we are aware of). For instance, compare the fully acceptable CQA in (3) with the string in (29)a, which mimics the structure of a specificational pseudocleft in English but which speakers judge unacceptable. On the other hand, the corresponding discourse level question-answer pair is fine in both languages, as shown in (4) for ASL and in (29)b for English.

- (34) a. A book is what John bought.
 b. *BOOK, JOHN BUY WHAT.
 ('The thing/What John bought was a book.')
- (35) a. # *Speaker A*: A book. *Speaker B*: What did John buy?
 b. # *Signer A*: BOOK. *Signer B*: JOHN BUY WHAT?
 'A book.' 'What did John buy?'

As mentioned in Section 3, CQAs can have non-exhaustive readings that are judged fully felicitous by our consultants (9)a, on par with the corresponding discourse-level question-answer pair (9)b. On the other hand, non-exhaustive readings of pseudoclefts in English (36)a are usually judged to be much more degraded than the corresponding question-answer pairs (36)b and subject to speaker variation.

- (36) *Situation*: Starbucks is one of many places where one can find coffee
 a. %Where you can buy coffee is Starbucks.
 b. *Speaker A*: Where can you buy coffee? *Speaker B*: Starbucks.

Finally, it is possible to have a polar interrogative in the Q-constituent of the CQA (37)a, while a polar interrogative is never allowed as one of the constituents of a pseudocleft (37)b.

- (37) a. JOHN BUY BOOK, NO.
 'John did not buy a book.'
 b. *Whether John bought a book is {he didn't / no}.

In conclusion, CQAs in ASL and (specificational) pseudoclefts exhibit several important differences which preclude a straightforward conclusion that they are the same kind of construction. Moreover, whenever CQAs differ from pseudoclefts, they crucially behave like discourse-level question-answer pairs. This brings further support to our analysis of CQAs as combining an interrogative clause conveying a question with the declarative clause conveying the answer to that question. This contrast may also cast some doubts on a straightforward analysis of specificational pseudoclefts as question-answer pairs.

6. Conclusions and open issues

In this paper, we have suggested that CQAs in ASL are an interesting object of investigation in their own right and as well as for the light that they shed on various aspects of formal syntax/semantics/pragmatics. We have given a syntactic and semantic analysis of CQAs according to which they are a declarative clause

formed by an interrogative CP (the Q-constituent) and a declarative IP (the A-constituent), both denoting a proposition. These two constituents occur as the subject and the object of a silent copular predicate that semantically behaves like an identity relation. Our analysis captures the exhaustive reading of (most) CQAs by means of answerhood and exhaustivity operators that have been independently argued for in the literature, providing further support to their existence in the grammar. We have also briefly suggested a possible way to address non-exhaustive readings of CQAs, although a satisfactory solution of this issue requires a better understanding of non-exhaustive readings of questions in general.

CQAs, therefore, show that question-answer pairs, although usually discourse-level units, can occur as a syntactic and semantic unit as well. We leave for future work to pursue the natural expectation to find CQAs in other languages.

We discussed the restriction on the use of CQAs that makes them infelicitous in out-of-the-blue contexts. We have tentatively suggested an explanation of this pattern based on the idea that CQAs represent an overt instantiation of a sub-question under discussion and the answer to it, along the line of the Question Under Discussion approach to discourse structuring. Although further work is needed for a fully detailed implementation of this hypothesis, we would like to highlight the fact that, if our suggestion is correct, CQAs may provide independent support to the Question Under Discussion approach.

Finally, we have compared CQAs with specificational pseudoclefts in English and other languages, since the latter have received a very similar analysis to the one that we have suggested for CQAs. We have highlighted several important differences between CQAs and specificational pseudoclefts and noted that whenever CQAs differ from specificational pseudoclefts, discourse-level question-answer pairs pattern like CQAs rather than specificational pseudoclefts. If CQAs are taken as a paradigmatic example of question-answer pairs as syntactic/semantic units, their differences with specificational pseudoclefts may cast some doubt on a straightforward extension of the very same analysis to specificational pseudoclefts.

References

- Beck, Sigrid and Hotze Rullman: 1999, 'A Flexible Approach to Exhaustivity in Questions', *Natural Language Semantics* 7, 249-298.
- Büring, Daniel: 2003, 'On D-Trees, Beans, and B-Accents', *Linguistics and Philosophy* 26, 511-545.
- Chierchia, Gennaro, Danny Fox, and Benjamin Spector: to appear, 'The Grammatical View of Scalar Implicatures and the Relationship between Semantics and Pragmatics', in P. Portner, C. Maienborn and K. von

- Heusinger (eds) *Handbook of Semantics*, Mouton de Gruyter, Berlin.
- Cecchetto, Carlo: 2000, 'Connectivity and Anti-Connectivity in Pseudoclefts', in M. Hirotani, A. Coetzee, N. Hall, and J. Kim (eds) *Proceedings of NELS 30*, GLSA, Amherst, Massachusetts, pp. 137–151.
- Cecchetto, Carlo: 2001, 'Syntactic or Semantic Reconstruction? Evidence from Pseudoclefts and Clitic Left Dislocation', in C. Cecchetto, G. Chierchia and M. T. Guasti (eds) *Semantic Interfaces*, pp. 90–144, CSLI, Stanford, California.
- Davidson, Kathryn, Ivano Caponigro, and Rachel Mayberry: to appear, 'Clausal Question-Answer Pairs: Evidence from American Sign Language', *Proceedings of WCCFL 27*, Cascadilla Press, Somerville, MA.
- Dayal, Veneeta: 1996, *Locality in WH Quantification: Questions and Relative Clauses in Hindi*, Kluwer, Dordrecht.
- Den Dikken, Marcel, Meinunger, Andrew, and Chris Wilder: 2000, 'Pseudoclefts and Ellipses', *Studia Linguistica* **54**, 41-89.
- Groenendijk, Jeron and Martin Stokhof: 1984, *Studies on the Semantics of Questions and the Pragmatics of Answers*. Doctoral Dissertation, Universiteit van Amsterdam.
- Grolla, Elaine: 2004, 'Clausal Equations in American Sign Language', abstract of a poster presented at the *International Conference on Theoretical Issues in Sign Language Research* **8**, Barcelona, September 30 – October 2.
- Hamblin, C. L.: 1973, 'Questions in Montague English', *Foundations of Language* **10**, 41-53.
- Heim, Irene: 1994, 'Interrogative Semantics And Karttunen's Semantics For know', in R Buchalla and A. Mittwoch (eds) *Proceedings of IATL 1*, pp. 128-144, Akademon, Jerusalem.
- Heller, Daphna: 2002, 'On the Relation of Connectivity and Specificational Pseudoclefts', *Natural Language Semantics* **10**, 243-284.
- Higgins, F. Roger: 1973, *The Pseudocleft Construction in English*. Doctoral dissertation, MIT [revised version published by Garland, New York, 1979].
- Hoza, Jack, Neidle, Carol, MacLaughlin, Dawn , Kegl, Judy, and Benjamin Bahan: 1997, 'A Unified Syntactic Account of Rhetorical Questions in American Sign Language', *American Sign Language Linguistic Research Project Report*, Boston University.
- Jackendoff, Ray: 1972, *Semantics in Generative Grammar*, MIT Press, Cambridge, MA.
- Jacobson, Pauline: 1994, 'Binding Connectivity in Copular Sentences', in M. Harvey and L. Santelmann (eds) *Proceedings of SALT IV*, CLC Publications, Cornell University, Ithaca, NY.
- Jacobson, Pauline: 1995. 'On the Quantificational Force of English Free Relatives', in E. Bach, E. Jelinek, A. Kratzer, and B.H. Partee (eds), *Quantification in natural languages*, pp. 451-486, Kluwer, Dordrecht.

- Karttunen, Lauri: 1977, 'The Syntax and Semantics of Questions', *Linguistics and Philosophy* **1**, 3-44.
- Liddell, Scott: 1978, 'Nonmanual Signals and Relative Clauses in American Sign Language', in P. Siple (ed.) *Understanding Language through Sign Language Research*, pp. 59–90, Academic Press, New York.
- 'National Center for Sign Language and Gesture Resources Signstream Database': 2007, *American Sign Language Linguistic Research Project*, Boston University.
- Petronio, Karen: 1991. 'A Focus Position in ASL', in *MIT Working Papers in Linguistics*, Cambridge, MA.
- Petronio, Karen and Diane Lillo-Martin: 1997, 'WH-Movement and the Position of Spec-CP: Evidence from American Sign Language', *Language* **73**: 18-57.
- Roberts, Craige: 1996, 'Towards an Integrated Formal Theory of Pragmatics', in J. Yoon and A. Kathol (eds) *OSU Working Papers in Linguistics 49: Papers in Semantics*, Columbus, OH.
- Rooth, Mats: 1985, *Association with Focus*. Doctoral Dissertation, University of Massachusetts, Amherst.
- Ross, John: 1972, 'Act', in D. Davidson and G. Harman (eds) *Semantics of Natural Language*, pp. 70–126, Reidel, Dordrecht.
- Schlenker, Philippe: 2003, 'Clausal Equations (A Note on the Connectivity Problem)', *Natural Language & Linguistic Theory* **21**, 157-214.
- Sharvit, Yael: 1999, 'Connectivity in Specificational Sentences', *Natural Language Semantics* **7**, 299–304.
- Spector, Benjamin: to appear, 'An Unnoticed Reading for Wh-questions: Elided Answers and Weak Islands', *Linguistic Inquiry*.
- Wilbur, Ronnie: 1994, 'Foregrounding Structures in American Sign Language.' *Journal of Pragmatics* **22**, 647-672.
- Wilbur, Ronnie: 1996, 'Evidence for the Function and Structure of Wh-Clefts in American Sign Language.' *International Review of Sign Linguistics* **22**, 209-256.
- Wilbur, Ronnie: 1999, 'Stress in ASL: Empirical evidence and linguistic issues.' *Language and Speech* **42**, 229–250.