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Abstract

Several sign languages of the world utilize a construction that consists of a question followed by an answer, both of which are produced by the same signer. For American Sign Language, this construction has been analyzed as a discourse-level rhetorical question construction (Hoza et al. 1997), as a single-sentence question-answer pair (Caponigro and Davidson 2011), and as *wh*-clefts (Wilbur 1996). In this article, we analyze this construction in Sign Language of the Netherlands (NGT) based on corpus data. We demonstrate that its properties show a great deal of variation, making it impossible to apply any of the previous accounts to the NGT data. In particular, we found both discourse-level combinations of questions and answers, and single sentence structures resembling *wh*-clefts. We argue that this variation is a reflex of grammaticalization of discourse-level rhetorical strategy into a single-sentence construction functionally similar to *wh*-clefts.

SEVERAL SIGN LANGUAGES of the world utilize a construction that consists of a question followed by an answer, both of which are produced by the same signer. Example 1 comes from Sign Language of the Netherlands (NGT):¹

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EXAMPLE 1.

br+bht
 PT:I SPORT WHAT? PING-PONG PT:I NGT
 “What kind of sport I do? I play ping-pong.” (CNGT0094; S001)

Several questions can be asked with respect to this structure. The first is whether the question and the answer constitute a single sentence or two independent sentences. For American Sign Language (ASL), both options have been argued (Wilbur 1996 for the former and Hoza et al. 1997 for the latter). If example 1 constitutes a single sentence, we may ask whether it has the same structure as pseudoclefts (also known as *wh*-clefts), which are present in many spoken languages and are superficially very similar to structures such as “What I really like is ice cream.” One argument is that such structures in ASL are *wh*-clefts (Wilbur 1996), whereas another rejects that analysis (Caponigro and Davidson 2011). The latter argument proposes instead that this construction is a single-sentence question-answer clause (*ibid.*). Various analyses of comparable structures have also been proposed for other sign languages (discussed later).

In this article we describe the syntactic properties of these structures in NGT and refer to them as “question-answer pairs” (QAPs). We want to find out whether QAPs in NGT constitute single sentences and whether they are comparable to *wh*-clefts in spoken languages—or whether an alternative analysis is needed. To answer these questions, we used data from the Corpus NGT (Crasborn, Zwitserlood, and Ros 2008).

This large corpus contains NGT data in the form of video recordings with conversations and stories produced by 94 Deaf signers. Previous studies of QAPs in ASL were based primarily on elicitation, which might also explain why different researchers arrived at different analyses. We reasoned that naturalistic corpus data are especially suitable for analyzing the variable behavior of QAPs in NGT.

Overview of Previous Research

As mentioned earlier, when analyzing QAPs in sign languages, two questions have to be answered: whether the question-and-answer components of a QAP constitute a single sentence and, if so, whether

QAPs can be structurally and semantically analyzed as *wh*-clefts, which are also attested in spoken languages. These questions have been studied primarily for ASL, but some research is also available on Australian Sign Language (Auslan) and Italian Sign Language (LIS).

Are QAPs Single Sentences?

Although most researchers answer this question positively for ASL, Auslan, and LIS, historically QAPs in ASL were first analyzed as rhetorical questions followed by answers (Baker-Shenk 1983). Others have argued strongly against this analysis and suggested that QAPs should be analyzed as *wh*-clefts, which presupposes a single-sentence analysis (Wilbur 1996).

First, studies have shown that questions in QAPs and regular questions are different in nonmanual marking and word order (Wilbur 1994, 1996). Regular questions (importantly, also rhetorical ones) are marked with eyebrow furrowing; the *wh*-word can appear in different positions and can be doubled. Questions in QAPs are marked with raised eyebrows (ibid.); the *wh*-word typically appears in the clause-final position and normally cannot be doubled. Therefore, the question elements of QAPs are not questions but embedded clauses (ibid.).

Further arguments in favor of analyzing QAPs as single sentences address prosody and embedding. Wilbur (1996, 218) claimed that, in sequences of a rhetorical question followed by an answer, long pauses and thinking behavior are possible; however, this is not the case in the QAPs that Wilbur analyzed as *wh*-clefts (ibid.). In addition, the whole QAP can be embedded in a matrix predicate, as in example 2, where the QAP is an argument of the matrix predicate SEE.

EXAMPLE 2.

KIM SEE br
 STEAL TTY WHO, LEE. ASL

“Kim saw that the one who stole the TTY was Lee.” (ibid., 232)

An analysis of QAPs in Auslan also suggests that they are single sentences, although no arguments are provided to support this position (Johnston and Schembri 2007, 210–11). Similarly, an analysis of QAPs in LIS suggests that they are *wh*-clefts (presupposing that they con-

stitute single sentences), but it does not explicitly discuss evidence in favor of the single-sentence analysis (Branchini 2014).

On the other hand, another study argued that the question and the answer are independent sentences (Hoza et al. 1997). It also maintains that the answer can actually consist of several sentences and that interventions can occur between the question and the answer (see example 3, where the answer to the question comes only after two other sentences).

EXAMPLE 3.

<u>rh/wh</u>		<u>neg</u>	
JOHN WHERE?	MARY STRONG PERFUME. IX	CAN'T-STAND. LEAVE.	ASL

“Where is John? Mary has really strong perfume. He can’t stand it. He left.”
(adapted from Hoza et al. 1997, 12)

Hoza et al. (ibid.) acknowledge that the embedding of QAPs would be a strong argument in favor of analyzing them as single sentences; however, they argue that utterances such as that in example 2 do not involve embedding. They claim that in such cases a prosodic break or additional material (as in example 4) often occurs between the so-called matrix and the embedded clauses, which signals that the alleged matrix and the embedded clauses are independent sentences.

EXAMPLE 4.

<u>hn</u>	<u>hn</u>	<u>rh/wh</u>	
IX-I FIGURE.	OH-I-SEE.	MARY SEE WHO JOHN.	ASL

“I figured it out. Oh, I see. Who did Mary see? John.”
(adapted from Hoza et al. 1997, 21)

It is important to note that the disagreement between Wilbur (1996) and Hoza et al. (1997), for instance, is not purely empirical. Wilbur (1996) is aware of the existence of utterances such as those in example 3, but she would argue that they are indeed rhetorical questions followed by answers; other cases that she discusses, however, are single-sentence *wh*-clefts. When analyzing the same data, one can either attempt a unified account (such as that by Hoza et al. [1997]) or select a subset of the data and argue that it represents a separate phenomenon (as in Wilbur [1996]).

Are QAPs Wh-Clefts?

It seems that most researchers working on ASL and other sign languages analyze QAPs as single sentences. However, not all of them agree that QAPs are in fact *wh*-clefts. *Wh*-clefts in spoken languages are biclausal sentences consisting of a matrix clause (headed by a copula) and a relative clause (Lambrecht 2001).² For instance, “What I dislike is Lee’s tie” is an example of a *wh*-cleft. It contains the free relative clause “what I dislike,” which functions as the subject of the main clause. Lambrecht (*ibid.*) argues that, although the two clauses together express one proposition (*I dislike Lee’s tie*), the function of the biclausal structure is to separate the focus (*Lee’s tie*) from the presupposed information (*I like something*). *Wh*-clefts have been described for many spoken languages (*ibid.*; Caponigro and Heller 2007).

It has been argued that QAPs in ASL are *wh*-clefts and that they are similar to *wh*-clefts in English and other spoken languages (Wilbur 1996). The similarity is both formal and functional (*ibid.*). Functionally, the question of a QAP is an open proposition, and the answer provides the missing information. In other words, the question is presupposed, and the answer is the focus. Formally, the question is a *wh*-clause,³ which serves as a predicate in the main clause, but undergoes movement to the left periphery. Wilbur’s analysis may be applicable to Auslan as well (Johnston and Schembri 2007, 210–11), but an explicit analysis has not yet been advanced. The *wh*-cleft analysis of QAPs has additional support in LIS (Branchini 2014), and we discuss that claim later.

Some researchers, however, argue against the *wh*-cleft analysis for ASL (Hoza et al. 1997). The crucial argument is, of course, that QAPs are discourse-level combinations of sentences, as discussed earlier. However, Hoza et al. (*ibid.*) provide additional evidence. First, ASL lacks specificational pseudoclefts (“What John did was stupid”), while from spoken languages we know that, if a language has predication pseudoclefts (“What John did was leave”), it also necessarily has specificational ones. In addition, ASL does not have free relative clauses anywhere outside the alleged *wh*-cleft construction. If one follows the common analyses of *wh*-clefts in spoken languages, the *wh*-clause must be a relative clause, but this seems unreasonable for ASL.

Furthermore, Hoza et al. (ibid.) claimed that the answer part of the QAP does not have to be a direct answer, as in example 5, and it can be a full clause or even several sentences. Finally, they noticed that the question part of the QAP can be a yes/no question, whereas this is impossible in *wh*-clefts in spoken languages (example 6).

EXAMPLE 5.

<u>rh/wh</u>	
WHAT HAPPEN? DON'T KNOW, IX-I.	ASL
"What happened? I don't know." (adapted from Hoza et al. 1997, 18)	

EXAMPLE 6.

<u>rh/y-n</u> <u>neg</u>	
IX-I GO TOMORROW? NO, NEXT WEEK.	ASL
"Am I going tomorrow? No, next week." (adapted from ibid., 14)	

Other evidence contests the *wh*-cleft analysis of QAPs in ASL (Caponigro and Davidson 2011). In particular, QAPs in ASL allow all *wh*-words, while, cross-linguistically, *wh*-clefts are always constrained, so a language must have some *wh*-words that can form regular questions but cannot be used in *wh*-clefts (Caponigro and Heller 2007). In addition, QAPs in ASL allow a nonreferential answer, which is impossible in *wh*-clefts cross-linguistically: Compare example 7 to its (ungrammatical) literal parallel in English. This example also illustrates that the answer in a QAP can be a full clause instead of simply providing the missing information in the question. In English, this is also possible, but highly infrequent and degraded.

EXAMPLE 7.

JOHN BUY WHAT, (HE BUY) NOTHING	ASL
"John bought nothing." (lit., What John bought was he bought nothing). (adapted from Caponigro and Davidson 2011, 367)	

Caponigro and Davidson (ibid.) claim that QAPs in ASL are equative clauses,⁴ in which an embedded question and an embedded answer are connected by a silent copula. This analysis explains both similarities and differences between QAPs and regular questions and answers. The

difference in nonmanuals and the lack of doubling of the *wh*-word is explained by the fact that the question in a QAP is embedded. On the other hand, the fact that all *wh*-words are possible in the question and that full answers are possible in the answer part is explained by the fact that these elements in QAPs are in fact questions and answers (and not, for instance, free relatives). The same explanation applies to the fact that the question can be a yes/no question. Semantically and pragmatically, QAPs in ASL are similar to pseudoclefts as they highlight an implicit subquestion under discussion and answer it (see *ibid.* for details).

On the other hand, it has been argued that the *wh*-clefts analysis is more suitable for analyzing QAPs in LIS (Branchini 2014). In particular, in contrast to ASL, free relative clauses in LIS can contain *wh*-signs, so the question part of QAPs can be analyzed as a relative clause. According to Branchini, the question parts of QAPs are in general syntactically and nonmanually equivalent to relative clauses, but different from real questions. It seems that, even if Caponigro and Davidson's (2011) arguments are valid for ASL, and QAPs in ASL should not be analyzed as *wh*-clefts, QAPs in other sign languages might have different properties and call for a dissimilar analysis.

Summary

Researchers working on QAPs in sign languages have proposed various analyses of these constructions. It is also clear that QAPs in a variety of sign languages have different properties (e.g., ASL vs. LIS). We do not argue for a particular analysis of QAPs in ASL, Auslan, or LIS. However, the researchers working on these languages have developed a number of tests that can be used to analyze these constructions. These tests can help determine whether QAPs are single sentences and whether they have the same structure as *wh*-clefts in spoken languages. Importantly, many of these tests can be applied to corpus data, as we discuss in the following section.

Methodology

As mentioned earlier, we decided to investigate QAPs in NGT based on corpus data because such data make it possible to analyze natural language use and variation. In addition, many of the features of QAPs

relevant to an analysis are relatively easy to extract from the corpus. Next we introduce the necessary background on NGT and the Corpus NGT and discuss our data-mining procedure and analysis.

NGT

Sign Language of the Netherlands is the language of the Deaf community of the Netherlands. It is used by approximately 7,500 people as their first or preferred language (Wheatley and Pabsch 2012).

The five different dialects of NGT are found mainly at the five different Deaf institutes in the Netherlands, which are located in Amsterdam, Eindhoven, Rotterdam, Groningen, and Voorburg. They display considerable lexical variation (Schermer 2004), but very little is known about possible grammatical variation. For our study, we collected examples from different dialects without focusing on regional variation per se. Most of our examples come from the Groningen and Amsterdam dialects.

Corpus NGT

Corpus NGT is a project established by Radboud University in Nijmegen during the period 2006–2008 (Crasborn, Zwitserlood, and Ros 2008). The corpus contains a collection of more than 2,000 video recordings of 94 different signers from five different regions representing the five dialects. It contains different types of data, including free conversations, stories based on personal experience, and retellings of cartoons and fables. It has been partially glossed in ELAN (in Dutch) by the Corpus NGT team, but a majority of the recordings still lack annotations.

Data Mining

In order to analyze the properties of QAPs in NGT, we first looked for relevant examples. We defined QAPs broadly as constructions in which a question asked by a signer was followed by an answer by the same signer. The answer could also be indirect or partial. Furthermore, a reaction by the addressee did not disqualify an example from inclusion in our dataset as long as the signer provided the answer (these cases are discussed later).

To find relevant examples, we used two methods. First, we searched for the glosses of *wh*-words in ELAN and then examined the results individually to identify potential QAPs. This, of course, limited our search to the glossed part of the corpus. We added a special tier for QAPs and created an empty annotation for each of the 59 examples we found. In addition, we created annotations for regular questions (RQs) in order to compare their properties with those of the QAPs. We included 115 examples of RQs in our dataset.

Second, we looked at some of the nonglossed video files. In the corpus, each signer participated in retelling the *Canary Row* cartoon clips (Freleng 1950). One of the clips (the last one) regularly caused the signers to use a QAP. In this episode a cat is being chased by a tram, which is being driven by a canary and an old woman (GRANNY) (see example 9, as well as other examples in the section on the properties of QAPs in NGT and in the discussion section). Once we noticed this, we identified all of the retellings of this cartoon and examined the way the signers described the relevant episode. By doing so, we found 16 additional examples of QAPs.

One problem with both of these methods is that they did not reveal yes/no QAPs, as such QAPs that do not contain *wh*-words and do not occur in retellings of any particular episode of the *Canary Row* cartoon. Fortunately, in our previous research (Kimmelman 2014) we found a number of examples of yes/no QAPs while investigating a different topic, and we have included them in this article.

Analysis. Based on the previous research discussed earlier, we established a list of features relevant to our analysis of QAPs. For each example found in the corpus we annotated every feature on the list:

1. *Wh*-word (i.e., which *wh*-word was used in the question)
2. Nonmanual marking (eyebrow movement and head tilts, for which we annotated both the type and the scope of the marker)
3. Position of the *wh*-word (e.g., clause initial, clause final, in situ). Quite often the position was ambiguous: For instance, *wh*-words in the subject position can be classified as clause initial or in situ in the absence of sentential adverbs. In such cases we used a double label: clause initial/in situ.

4. Doubling of the *wh*-word (if present, the position in which the *wh*-word occurred was noted)
5. Type of answer (e.g., full clause vs. only the focus part; direct vs. indirect; a quantifier given as an answer)
6. Embedding (whether the whole QAP was an argument of a matrix predicate)
7. Pauses (we measured the duration of the pause between the question and the answer in each QAP)
8. Interventions (whether any parenthetical material intervened between the question and the answer)

For regular questions, we also annotated some of these properties (namely, properties 1–4, 6, and 7) and measured the duration of pauses between the matrix clause and the question (in the case of embedded questions). For the few examples of yes/no QAPs, features 1, 3, and 4 were not relevant, but the other features were annotated.

All of the features on our list can be annotated based on corpus data, as they concern surface-level properties of the construction. Sometimes the interpretation of findings can be complicated, as is the case with the position of *wh*-words, which can be ambiguous. Other properties of QAPs, such as their semantics, are more difficult to investigate using corpus data. We thus do not discuss exhaustivity or other semantic properties of QAPs in NGT (see Caponigro and Davidson [2011] for such a discussion of ASL). Finally, a general problem of corpus studies, especially with smaller corpora, is the lack of negative evidence. If we do not find a particular pattern, it does not mean that this pattern is never used in NGT. In the following sections we develop an analysis that is general enough to account for the data that we did find but is also not overly restrictive. We thus never claim that other patterns not found in the corpus are impossible.

Properties of QAPs in NGT

We analyzed 75 examples of QAPs and 115 examples of RQs found in the corpus. Using our findings, we describe the syntactic and prosodic properties of QAPs in NGT. First, we discuss general properties, such as word order and nonmanual marking in QAPs, and compare them to those features in RQs. We then turn to the properties relevant to the possible *wh*-cleft analysis of QAPs. Finally, we address the ques-

tion of whether QAPs constitute a single sentence or two separate sentences.

General Properties

At the surface level, QAPs in NGT look quite similar to regular questions and answers, although quantitatively they are different. First, the *wh*-word in both RQs⁵ and in questions in QAPs can occur in clause-initial (example 8) or clause-final (example 9) position or in situ (example 10). However, *wh*-words in QAPs are more likely than *wh*-words to be clause final in regular questions (table 1), but the difference is not statistically significant.

EXAMPLE 8.

bht+br

WHAT DEAF NEED? NOTHING

NGT

“What do the deaf need? Nothing.” (CNGT0056, S06)

EXAMPLE 9.

br

bht+br

br

DOWN TRAM WHO? DRIVE BIRD

NGT

“Who is down there in the tram? The bird drives it.” (CNGT2262, S90)

EXAMPLE 10.

br+bht

br

WHO INSIDE TRAM SIT? BIRD / PLUS ALSO OLD WOMAN

NGT

“Who sits inside the tram? The bird and also the old woman.”
(CNGT0813, S36)

As mentioned earlier, according to some researchers (Wilbur 1996; Caponigro and Davidson 2011), *wh*-words in QAPs (in contrast to regular questions) tend to be clause final in ASL. This is clearly not

TABLE 1. *Wh*-Words in Final vs. Nonfinal Position in QAPs and RQs

	Nonfinal	Final
question-answer pairs	28 (52%)	26 (48%)
regular questions	40 (63%)	23 (37%)

TABLE 2. Doubling of *Wh*-Words in QAPs and RQs

	Doubling	No Doubling
question-answer pairs	4 (6%)	68 (94%)
regular questions	22 (19%)	93 (81%)

the case in NGT, although a mild tendency in the same direction can be observed.

Doubling of the *wh*-word is possible in both RQs and QAPs (example 11), but in QAPs it is significantly less frequent (table 2, $\chi^2 = 6.8162$, $df = 1$, $p = 0.009$, Cramer's $V = 0.22$). In this respect NGT is similar to ASL, although again ASL seems to completely prohibit doubling in QAPs; NGT is more flexible in this regard.

EXAMPLE 11.

	<u>bht+br</u>	<u> </u>	<u>bht</u>		
WINDOW,	WHAT	PRESENT	WHAT?	CAT	NGT
“What is at the window? The cat.” (CNGT1895, S77)					

Turning to nonmanuals, NGT allows for both eyebrow raise (see examples 8–11) and furrowing in both RQs and QAPs (example 12 and in later examples). This contrasts sharply with ASL, which consistently marks RQs with eyebrow furrowing and QAPs with eyebrow raise (Wilbur 1996; Caponigro and Davidson 2011). However, quantitatively speaking, QAPs in NGT are more likely than RQs to be marked with eyebrow raise (table 3, $\chi^2 = 7.8843$, $df = 1$, $p = 0.005$, Cramer's $V = 0.22$).

TABLE 3. Eyebrow Marking in QAPs and RQs

	Eyebrow(s) Furrowed	Eyebrow(s) Raised
question-answer pairs	16 (28%)	42 (72%)
regular questions	50 (51%)	49 (49%)

Note: Some examples with no eyebrow movement have been excluded from the table.

TABLE 4. Marking of Backward Head Tilt in QAPs and RQs

	Head Tilt Present	No Head Tilt
question-answer pairs	46 (63%)	27 (37%)
regular questions	47 (40%)	68 (60%)

EXAMPLE 12.

_____bf

PT: I THINK IMPORTANT WHAT? MANY SIGN PT MUST TAKE NGT

“What do I think is important? To borrow many signs.” (CNGTo539, S26)

Another common nonmanual marker of both QAPs and RQs is a backward head tilt (see examples 8–11). Quite often it accompanies only the *wh*-word, whereas the eyebrow raise accompanies the whole question (see example 9). This marker is not obligatory in either QAPs or RQs, but it is significantly more frequent in QAPs (table 4, $\chi^2 = 7.8843$, $df = 1$, $p = 0.005$, Cramer’s $V = 0.22$).

Answers in QAPs look very similar to regular answers. There are no specific markers (nonmanual or word-order related) of answers in general, so we have little to compare here. Answers can be positive or negative in polarity (cf. example 9 and example 8 respectively). As we discuss in the next section, QAPs also allow full answers.

To sum up, with respect to word order and nonmanual marking, RQs and QAPs are quantitatively different: Questions in QAPs are more likely to be marked with eyebrow raise (in contrast to eyebrow furrowing) and backward head tilt, and the *wh*-word is slightly more likely to occur in the clause-final position and less likely to be doubled. However, RQs and QAPs exhibit no categorical differences, as all nonmanual markers and word orders are attested in both constructions.

Properties of Wh-Clefts

Some properties of QAPs in NGT allow us to conclude that they do not look like typical *wh*-clefts in spoken languages. For instance, many different *wh*-words can be used in QAPs in NGT, namely, *who*,

Another clear argument against analyzing QAPs in NGT as *wh*-clefts is the fact that, as in ASL, the question part can be a yes/no question (example 18), not just a *wh*-question. If we want to analyze such cases together with the *wh*-question QAPs, the *wh*-cleft analysis is not feasible.

EXAMPLE 18.

_____ br <u>neg</u>	
PT: I HOUSE CAR? NO	NGT

“Will I go home by car? No!” (CNGT0208, S11)

Finally, QAPs are different from *wh*-clefts if we look at the answer part. First, as in ASL, QAPs in NGT allow full answers (see example 9). In addition, indirect answers such as “I do not know” are also quite common in the QAPs found in our data (example 19). Finally, quantifiers are possible as answers in QAPs, as in example 8, unlike in *wh*-clefts in spoken languages.

EXAMPLE 19.

_____ bht	
HOW PU? KNOW PT: I NOT	NGT

“How can this be? I do not know.” (CNGT0064, S06)

One or Two Sentences?

Although it appears that the *wh*-cleft analysis is not easily applicable to QAPs in NGT, we are still left with two possibilities: We can analyze QAPs as question-answer clauses, as Caponigro and Davidson (2011) did for ASL, or we can analyze them as discourse-level question-answer sequences, as Hoza et al. (1997) did for ASL. However, it appears that QAPs in NGT do not lend themselves easily to either of the two analyses, at least if we want to propose a unified account for all cases.

Some instances of QAPs consist of two clearly independent sentences. Evidence comes from several directions. First we consider the reaction of the addressee. In RQs, the addressee is the person who gives the answer. In typical QAPs, by definition it is the signer who

produces both the question and the answer. However, the addressee is not always passive. In example 20,⁷ the addressee answers the question asked by the signer, and the signer accepts and then completes the answer. In example 21, the addressee also answers the question, but the signer repeats the answer, so it is clear that the question was not an instance of information seeking. It is not reasonable to analyze QAPs in such examples as single sentences.

EXAMPLE 20.

A: PT KNOW WHO INSIDE TRAM? B: BIRD A: PU WITH GRANNY NEXT NGT
 “A: You know who is inside the tram? B: The bird. A: Right, and the granny next to it.” (CNGT1607, S67 and S68)

EXAMPLE 21.

A: PT IX DRIVE WHO? B: BIRD A: BIRD AND GRANNY DRIVE NGT
 “A: Who drives the tram? B: The bird. A: The bird and the granny drive it.” (CNGT2081, S83 and S84)

The second piece of evidence comes from interventions. As discussed for ASL, according to some authors (Hoza et al. 1997), interventions between the question and the answer are permitted. This means that QAPs consist of two independent sentences. The same is true for NGT, as example 22 shows: RIGHT intervenes between the question and the answer.

EXAMPLE 22.

bht
 DOWN WHO DRIVE? RIGHT. BIRD SELF DRIVE NGT
 “Who is driving down there? Oh, right! The bird drives it.”
 (CNGT0027, S03)

However, this argument is not foolproof.⁸ In particular, interventions could be considered parenthetical, and parentheticals can certainly intervene within single clauses, as example 23 shows for English. In this example the parenthetical clause “He was my teacher in primary school” intervenes between the adverb and the rest of the clause, but the adverb is still a part of this clause.

EXAMPLE 23.

I saw Ed—he was my teacher in primary school—yesterday.

The third and crucial piece of evidence comes from looking at the duration of pauses between the question and the answer. We measured the pauses for all of the examples of QAPs we found and compared them with those between the matrix and embedded clauses in clear cases of embedded questions (example 24) and embedded QAPs (example 25 below). The cases of embedded questions and QAPs may be indications of typical pauses that are allowed between clauses in complex sentences that are clearly connected.

EXAMPLE 24.

<u> </u> <u>neg</u>	<u> </u> <u>br</u>	
PU KNOW	WHY	NGT

“I don’t know why.” (CNGTo847, S39)

We analyzed the duration of pauses in both QAPs and embedded questions statistically. Clear outliers appear in both groups, so for the statistical analysis we removed three outliers in QAPs (with durations of 1370, 1760, and 4080 ms) and one outlier in the embedded questions (with a duration of 690 ms).⁹ The durations are not normally distributed in either group, so we compared median durations. The median duration of pauses in QAPs is 210 ms (IQR = 230), and in embedded questions it is 130 ms (IQR = 74). According to the Mann-Whitney U test, the difference between groups is highly significant ($W = 1424.5$, $p_{one-sided} = 0.0004$).

This statistical analysis shows that QAPs as a group have longer pauses between the question and the answer than occurs between the main and the embedded clauses in cases of complex sentences. We have also seen that the range in the QAP group is much larger, which means that the QAP group is more varied.

This leads us to the arguments in favor of analyzing at least some of the cases of QAPs as syntactically connected. First, as we have just mentioned, in several cases the pauses between the question and the answer were very short or even nonexistent, as is for instance the case in example 9.

Second, similar to QAPs in ASL, QAPs in NGT can be embedded (example 25): The whole QAP (“it was the tram that came”) is an argument of the matrix predicate *TURN-OUT*. Note that we do not have examples in which, for instance, an element from the main clause is doubled to the right of the QAP, but this is due to the fact that doubling appears to be restricted to single clauses in NGT (Gijn 2004). In contrast to the observations of Hoza et al. (1997) for ASL, we did not find clear prosodic cues in examples such as 25 that would allow us to argue that the QAP is in fact not embedded. On the contrary, in such cases the pauses between the matrix clause and the QAP, as well as within the QAP, are very short, which is also true for example 25, where no observable pause occurs in either position.

EXAMPLE 25

		<u>bht</u>				
TURN-OUT	COME	WHAT	TRAM	COME		NGT
“It turns out it was the tram that came.” (CNGT0214, S11)						

We are thus faced with a problem: it appears that no unified analysis of QAPs in NGT is possible. Some cases look like discourse-level combinations of questions and answers, while others look like single sentences consisting of an embedded question and answer. In the next section we discuss a possible solution to this problem.

Discussion

As shown in the previous section, in our sample of QAPs from the NGT corpus data, the QAPs exhibit variable properties: Some of them are clearly discourse-level combinations of clauses, while others are complex sentences that could be analyzed as combinations of a clausal question with a clausal answer. This linguistic variation can be accounted for in various ways. First, some sociolinguistic variables may underlie this variation. Second, it is possible to say that QAPs in NGT do not constitute a single phenomenon but should be analyzed as at least two different constructions. We discuss both of these options in the following sections and conclude that neither one is satisfactory. We then hypothesize that the variability of the properties of

QAPs is reflective of the ongoing process of grammaticalization of this construction.

Sociolinguistic Variables

Sociolinguistic factors can influence the phonology, lexicon, and grammar of sign languages (see Schembri and Johnston 2012 and Lucas and Schembri 2015 for overviews). For instance, one of the first large-scale investigations of sociolinguistic variation in ASL (Lucas et al. 2001) found that the phonological form of *DEAF* in ASL depended not only on linguistic factors (e.g., whether the sign was a part of a compound) but also on social factors (e.g., region, age). Lexical regional variation has even been reported for *NGT* (Schermer 2004). Grammatical variation has been investigated to a lesser extent, but it is nonetheless clear that some grammatical features vary across different subjects and that age plays an important role (McKee et al. 2011). The most important sociolinguistic factors that can influence various phenomena in sign languages are region, age, gender,¹⁰ and age of acquisition of the sign language (Stamp et al. 2014). We therefore decided to determine whether the variation in our data can be partially accounted for by any of these factors.

Since the variation concerns the degree to which the question and the answer in QAPs can be considered one sentence, we chose the duration of the pause between the question and the answer as the dependent variable for our analysis. We conducted several tests to find out whether this variable correlates with any of the sociolinguistic variables. It turned out that the variation in the duration of pauses between questions and answers is not significantly influenced by any of the sociolinguistic factors. The reader should, however, be aware of the fact that our data sample is quite small, so the results should be considered only preliminary at this stage.

Region was a likely candidate to influence variation, as Schermer (2004) has demonstrated that regional variation in *NGT* is substantial. Our dataset contains QAPs from all regions; however, except for the data from Amsterdam and Groningen, we have very few examples, so we were able to compare these two regions only to each other. The median values for pause duration for the two regions are 210 and

190 ms, respectively, and the difference is not statistically significant according to the Mann-Whitney U test ($W = 492, p = 0.6$).

Very similarly, no significant difference in pause duration occurs between genders. The median value for males is 210 ms, and for females 240 ms, and the difference is not statistically significant according to the Mann-Whitney U test ($W = 606, p = 0.99$). Note also that we did not expect to find significant gender differences in NGT, as the schools are not separated by gender.

We hypothesized that age might have an effect on pause duration, as older signers might in general sign more slowly. As for the age of acquisition, late learners might show a greater influence from Dutch, which has *wh*-clefts and, therefore, shorter pauses. To determine whether age or age of acquisition influences the duration of pauses, we computed correlations between these variables and duration, but the correlations in both cases were very low and not significant.

To sum up, no sociolinguistic factors can account for the variation in the properties of QAPs in NGT (specifically, the duration of pauses between the question and the answer). We conclude that this variation is a general property of NGT, and we thus have to explain it.

Not a Single Construction?

As demonstrated earlier, one can take a variety of approaches when examining the variable properties of a construction. For instance, for ASL, it seems, even researchers arguing for a single-sentence analysis of QAPs (Wilbur 1996; Caponigro and Davidson 2011) are aware of the cases in which the question and the answer cannot be analyzed as one sentence. However, in order to analyze the latter as either *wh*-clefts or question-answer clauses, they choose not to group such cases together with the single-sentence examples.

If we follow this approach when analyzing QAPs in NGT, we could decide to exclude examples with reactions by the addressee, with interventions, and with indirect answers from consideration. We could then analyze the remaining examples as question-answer clauses following Caponigro and Davidson's (2011) analysis for ASL.¹¹ However, we find this approach unsatisfactory because it leaves open the following question: If single-sentence QAPs and discourse-level QAPs in NGT are separate phenomena, why do they have so much

in common? In particular, nonmanual marking, word order, and the use of question words are all shared between clearly single-sentence and clearly discourse-level QAPs. Despite the differences in the degree of integration between questions and answers in various examples, obvious similarities also appear, and these have to be accounted for.

Grammaticalization

We suggest that, instead of looking for a unified analysis of all instances of QAPs in the NGT corpus, or excluding some instances and analyzing a subset of the data, a grammaticalization-based account of variation could be formulated.

Grammaticalization is a process of emergence of grammatical elements. Typically, it means that a word (or a combination of words) loses its concrete lexical meaning and acquires a grammatical one instead (Hopper and Traugott 2003; Lehmann 2015). For instance, in English, the verb *going* (from the infinitive *to go*) in the sentence “I am going to see you tomorrow” does not literally refer to movement but instead expresses future tense. An important property of this process is that different stages of grammaticalization can coexist: For instance, the infinitive *to go* in English can be used both lexically and grammatically. Another important property is that semantic change is often accompanied by phonological change: For example, in informal situations, “going to” is almost always pronounced as “gonna,” except when the literal meaning is intended.

This type of grammaticalization, whereby a lexical item acquires a grammatical meaning and changes phonologically, is also attested in sign languages (see Pfau and Steinbach [2006] for an overview). For instance, it has been argued that the ASL modal verb *CAN* originated from the lexical sign *STRONG*, and the future marker *FUTURE* from the lexical verb *GO* (Shaffer and Janzen 2000). Similar grammaticalization paths have been reported for spoken languages. Grammaticalization in sign languages can also be different from spoken languages because gestures can also grammaticalize. For example, the modal auxiliary *MUST* originated as a deictic (i.e., pointing) gesture meaning monetary debt; over time, the gesture became the lexical sign *DEBT*; later on, the lexical sign underwent grammaticalization and became a modal verb (ibid.). Thus, grammaticalization in sign languages can start

with gesture. As we discuss later on, the gesture can also be nonmanual, in which case it can grammaticalize into a grammatical nonmanual marker, bypassing the lexical stage.

Importantly, grammaticalization can work with larger syntactic units. The grammaticalization of complex sentences has been described for spoken languages (Ohori 2011), but some research also exists for sign languages. Kimmelman (2014) proposed that syntactic doubling in NGT and Russian Sign Language developed from discourse-level repetition of clauses via grammaticalization. Complex sentences can also arise in this manner from a discourse-level combination of independent sentences (Herrmann, Pfau, and Steinbach 2016). In several sign languages, grammaticalization apparently leads to the emergence of complex sentences with subordination and involving conjunctions and specialized nonmanual markers (*ibid.*). Most relevant to this article, it has been argued that the nonmanual yes/no question marker in ASL grammaticalized into topic marking (Janzen 1999, 2007; Shaffer and Janzen 2000). Since our account of the grammaticalization of QAPs in NGT is quite similar to Janzen's (*ibid.*) interpretation of the grammaticalization of topics in ASL, we first discuss his line of argumentation.¹²

Janzen (1999) argued that topic marking in ASL (specifically, the nonmanual marking consisting of raised eyebrows and backward head tilt) has undergone a process of grammaticalization from a communicative question gesture to grammatical topic marking and, even further, to marking connectives (example 26).¹³

EXAMPLE 26.

communicative questioning gesture → yes/no question → topic constituent
→ connectives

The original source of topic marking in ASL is a gesture that hearing people also use, namely, raised eyebrows and a forward head tilt in anticipation of a response to a question. ASL, similar to many other sign languages, has borrowed this gesture and uses it as the marker of yes/no questions. That this marker is grammatical can be seen by the fact that it is obligatory in ASL. The next step of grammaticalization

is that the yes/no question marking becomes topic marking. Note that this development is possible because there is a functional overlap between yes/no questions and topics. According to Janzen (1999), the meaning of topic marking can be rephrased in terms of a question: If X is a topic of a sentence, the signer is basically asking “Do you know X?” Consider the following:

EXAMPLE 27.

<u> </u> top POSS-I BROTHER DEAF	ASL
“My brother is Deaf.” (ibid., 285)	

The first constituent, POSS-I BROTHER, is clearly not a yes/no question because the addressee is not expected to answer, but it still has a partially questioning function: checking whether the information mentioned by the signer is shared by the addressee. Janzen (1999) also states that topic marking develops further and is also used for topics that are less functionally like questions, which is what is to be expected during grammaticalization. Finally, according to Janzen, topic marking can be used to mark connectives which are no longer topics functionally (ibid.). For instance, BE.FINISHED, when accompanied by the same nonmanual, functions as a connective by linking two clauses and expressing a meaning comparable to English *then*.

Note two important features of the grammaticalization of topics in ASL that mirror the properties of grammaticalization in spoken languages. First, different stages of grammaticalization may coexist: Topic marking and yes/no question marking are both active in ASL. Second, while undergoing the functional change, the marker also changed formally: The yes/no nonmanual actually includes a forward head tilt (and raised eyebrows), whereas in the topic marking, the head is tilted backward.

We propose that, similarly, the variation observed in QAPs’ properties in the NGT corpus can be explained if we take different instances of this construction as representing different stages of grammaticalization. The grammaticalization of QAPs in NGT follows the path illustrated in example 28:

EXAMPLE 28.

(regular question →) rhetorical question → discourse-level question-answer combination → question-answer clause

The starting point of the pathway is probably a regular information-seeking question. However, we are not sure that rhetorical questions are more grammatical or abstract than the information-seeking questions. Intuitively, the primary function of question is inquiry, and rhetorical questions are thus less typical questions. We have not specifically analyzed rhetorical questions without answers in NGT, but we suspect that they might also be formally different from information-seeking questions with respect to word order and nonmanual marking.

The next stage of grammaticalization is the emergence of the discourse-level question-answer combination. This discourse-level strategy itself is to some extent grammatical (ritualized), as it involves a regular form (a question followed by an answer) and a regular function (separating the background information from the new and important information).¹⁴ However, the question and the answer are still independent sentences. Thus examples in which an intervention between the question and the answer (example 22) and in which the answer is indirect (example 19) are representative of this stage of grammaticalization. So are examples in which it is clear that the question and the answer are prosodically independent. Examples 20 and 21, where the addressee reacts, probably fall in between this and the previous stages of grammaticalization: In those instances, the question-answer sequence is produced by the speaker, but it is interrupted by the actions of the addressee.

Finally, as a result of frequent use, this discourse strategy undergoes syntacticization and becomes a single sentence consisting of an embedded question and an embedded answer. Examples in which the whole QAP is embedded (example 25) and no pause occurs between the question and the answer are representative of this stage of grammaticalization.

One could ask whether the next step would be the emergence of *wh*-clefts. However, this seems unlikely, as even the clearly grammaticalized QAPs show some properties that are incompatible with the *wh*-cleft analysis, as discussed earlier.



FIGURE 1. WHY: full lexical form (left) and reduced form (right).

Nevertheless, grammaticalization of QAPs does not stop there. Our data reveal that QAPs containing the *wh*-word WHY have some special properties. In general, QAPs with WHY are quite frequent. Quite often the question consists of just the *wh*-word itself (as in example 29). Furthermore, WHY often occurs in a reduced form: The full form is a two-handed sign with path movement and mouthing of the Dutch word *waarom* [why], whereas the reduced form is a one-handed sign with almost no visible movement and no mouthing (figure 1). Finally, as figure 1 also shows, there might even be no nonmanual marker accompanying the reduced form of WHY.

EXAMPLE 29.

<u>bf</u>		
WHY	BETTER LEARN SPEAK	NGT
“Why? To learn to speak better.” (CNGT1791, S74)		

It appears that WHY is undergoing grammaticalization and becoming a conjunction meaning “because, in order to” as a result of its frequent use in QAPs. Apart from the change in its function, it also clearly becomes phonologically eroded. Note that in BSL and Auslan the conjunction BECAUSE has also developed from WHY (B. Woll and T. Johnston, pers. comm.), so this grammaticalization path is not atypical.

Interestingly, the same phenomenon appears in ASL, where the question words *WHY* and *HOW* often function as connectives (Janzen 1999). In example 30 *HOW* is marked with raised eyebrows and functions as the connective *by* (ibid., 295), which is an example of a later stage of the grammaticalization of topic marking. However, since these question words are used in QAPs in ASL as well, and with the same nonmanual marking, one might argue that they originate as QAPs and belong to the QAP grammaticalization path, similar to the one we developed here for NGT and distinct from the grammaticalization path for topics. An argument in favor of such an analysis is the fact that it is unusual to find topic marking with question words, as they are typically the focus components of questions.

EXAMPLE 30.

	<u>top</u>	
IX-I MEMORIZE.HOLD THINK, MULL.OVER IX-I	HOW ,	ASL
MUST PRACTICE SKILL		

“You (are able to) take in the message and process it **by** practicing the necessary skills.”

Returning to NGT, different stages of grammaticalization of QAPs clearly coexist in the corpus data. They explain both the varying syntactic properties and the high variability in the duration of pauses between questions and answers that we discussed earlier.

Importantly, the grammaticalization of question-answer sequences into single sentences is also attested in spoken languages (Herring 1991).¹⁵ Tamil, a language spoken primarily in India, utilizes a rhetorical strategy in ritual singing: A storyteller (S1) asks a question, the audience (S2) repeats it, and the storyteller then answers the question (example 31). One can compare this strategy to that demonstrated in examples 20 and 21 in NGT, although in NGT the addressee gives an answer but does not repeat the question. This technique has also entered the nonritual language in the form of QAPs that are functionally similar to *wh*-clefts (see example 32) but consist of two independent sentences. This is comparable, for instance, to example 19 in NGT. Finally, this construction has further grammaticalized into a clause-combining strategy in which the question word *ēn* [why] has undergone phonological change and become the grammatical con-

junction *ēṇṇā* [because] (example 33). This is directly comparable to the process in NGT (example 29).

EXAMPLE 31.

- S1: Akkā taṅkai ēḷupērum eppaṭi nīrāṭukirār?
 S2: Eppaṭi?
 S1: Avar kuḷuttaḷavu nalla taṇṇirilē. Tamil
 S1: “How do the seven sisters bathe?”
 S2: “How?”
 S3: “Up to their necks in the good water” (Herring 1991, 262)

EXAMPLE 32.

- Avaṅka ēṇ piṭuṅki cāppiṭāṅka ṇṇā?
 Avaṅkaḷukku cāppiṭaṭutukku oṇṇum ille. Tamil
 “Why do they snatch up and eat it?
 (Because) they do not have anything to eat.” (ibid., 268)

EXAMPLE 33.

- | | | | | | | | |
|------|------|-------|------|------|----------|----------|-------|
| Avaṇ | iṅkē | illai | ēṇṇā | avaṇ | ūrukku | pōṇṇāṇ | Tamil |
| he | here | NEG | CONJ | he | town.DAT | go.3 PMS | |
- “He is not here because he went to his village.” (ibid., 272)

To sum up, the grammaticalization approach to QAPs in NGT accounts for the variability of syntactic and prosodic properties of this construction in the corpus data.¹⁶ We are not trying to offer a unified analysis and to suggest that all instances of QAPs are discourse-level combinations because this would not explain the cases of embedding and prosodic connectedness. We are also not trying to claim that all QAPs are question-answer clauses because this would not explain many of the cases that are neither syntactically nor prosodically connected. Representing different stages of grammaticalization, QAPs with different degrees of connectedness coexist in the corpus.

Conclusion

In this article we investigate several syntactic properties of QAPs in NGT based on corpus data. A comparison of these properties to those of regular questions reveals a number of differences with respect to

word order and nonmanual marking: In QAPs, the *wh*-word is slightly more likely to occur clause finally, and QAPs are more likely to be marked with eyebrow raise and backward head tilt. However, in contrast to ASL, we find that in NGT all word orders and nonmanual markers that occur in RQs are also attested in QAPs.

Furthermore, we discuss the question of whether the QAPs can be analyzed as *wh*-clefts (see Wilbur 1996). This does not seem to apply for NGT, as all of the *wh*-words (with the exception of *WHEN*; see the section on properties of QAPs in NGT) can occur in QAPs and RQs, but only one (i.e., *WHO*) also occurs in relative clauses. The question elements of QAPs in NGT are thus not relative clauses. Moreover, the question component can be a yes/no question, and the answer can be a full sentence or an indirect answer.

Second, we discuss the question of whether QAPs (1) consist of two clauses embedded in a single sentence or (2) are discourse-level question-answer sequences. We conclude that NGT QAPs can be either: Several instances of QAPs clearly consist of two independent sentences, whereas others seem to be syntactically connected. Thus no unified analysis of QAPs in NGT is possible.

We discuss the possibility that variation might be attributed to sociolinguistic factors, such as regional distinctions, age, age of acquisition, and gender. However, none of these appear to be significant. Another possibility that we briefly consider is the claim that discourse-level QAPs and single-sentence QAPs are two different phenomena. The drawback of this analysis is that it does not account for the similarities between different QAPs.

We argue that all of the instances of QAPs in NGT can be explained by the process of grammaticalization. On this view, the variation of the QAP properties can be accounted for as representing different stages of grammaticalization (depicted in example 28). This process likely starts with a regular information-seeking question structure, which can then be used rhetorically as well. The next stage is the more grammatical discourse-level strategy, in which the QAP has a regular form, but the question-and-answer parts are still independent sentences. Finally, as the construction undergoes syntacticization, it becomes a single sentence consisting of an embedded question and an embedded answer. However, the process does not necessarily stop there: We also present examples of *WHY* in which this *wh*-word seems

to undergo phonological erosion, a process that is also attested in the grammaticalization processes of spoken languages. This path can account for the variation in the QAPs in NGT.

Since small-scale, corpus-based research has certain limitations, a continuation of research on QAPs in NGT is desirable. In particular, we did not investigate the semantic and pragmatic properties of QAPs, so we cannot determine whether QAPs in NGT are exhaustive (similar to QAPs in ASL or clefts in spoken languages). In addition, although we conclude that sociolinguistic factors do not account for the variation, our conclusions are preliminary due to the small size of our dataset. Another direction of future research could be cross-linguistic, corpus-based investigation of QAPs and comparable constructions in other signed and spoken languages.

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Notes

1. Glossing conventions: Signs are glossed in small caps. PT:1 indicates pointing to the signer, PU indicates a palms-up gesture. Nonmanuals are placed above the glosses, and their scope is represented as underlining. In addition, br = raised brow, bf = furrowed brow, bht = backward head tilt, neg = negation, hn = head nod. For ASL examples, the following additional abbreviations are used: 1x indicates pointing signs, rh/wh = a rhetorical *wh*-question, rh/y-n = a rhetorical yes-no question. Each example from Sign Language of the Netherlands is followed by the filename (e.g., CNGT0094) and the signer code (e.g., S001) to ensure reproducibility.

2. Not all researchers agree that the first clause in a *wh*-cleft is a relative clause, but this is the most commonly accepted analysis. According to some researchers at least some *wh*-clefts, the first clause is actually a question, and the second part is the answer (Dikken, Meinunger, and Wilder 2000), which is very similar to an analysis suggested for QAPs in ASL (Caponigro and Davidson 2011). However, the question-answer analysis of *wh*-clefts might not be plausible, as the first clause is not a question either syntactically or semantically, but rather a relative clause (Caponigro and Heller 2007).

3. The term *wh*-clause is introduced by Wilbur, and it is not clear whether she believes that a *wh*-clause is a relative clause. However, since in spoken

languages *wh*-clefts necessarily contain relative clauses, a similar assumption has to be made for sign languages if we want to analyze QAPs as *wh*-clefts. Otherwise, the use of the term *wh*-cleft becomes vacuous.

4. They use the term *clause* to refer to both simple clauses and complex sentences. Here we use the term *sentence* to refer to syntactic units that might contain one (simple sentence) or more (complex sentence) clauses, but we continue to use Caponigro and Davidson's (2011) terminology when citing them.

5. Because of space limitations, we give examples only of QAPs, not of RQs.

6. In addition, the *wh*-word WHICH was found in only two RQs and one possible QAP. We suspect that this sign is not really a part of the NGT lexicon but rather an instance of code switching to Signed Dutch. Further research is needed.

7. Because of space limitations, nonmanuals are omitted in this and the following example.

8. We thank R. Wilbur (pers. comm.) for pointing this out to us.

9. However, if we do not remove the outliers, a highly significant difference between the medians in the same direction is still present.

10. Gender variation has been reported mainly for languages such as Irish Sign Language, in situations in which deaf boys and girls attended separate schools. However, several gender differences were also found in ASL (Lucas, Bayley, and Valli 2001).

11. It is also possible to exclude QAPs with yes/no questions and indirect answers and attempt an analysis of *wh*-clefts (Wilbur 1996), but this analysis is very far-fetched because, as we have shown, the question elements of QAPs in NGT are not relative clauses.

12. Note that Janzen uses slightly different terminology for the steps of topic grammaticalization in ASL (cf. Janzen 1999 and Shaffer and Janzen 2000), but the essence of the process is the same.

13. Janzen (1999) also places conditionals as a step on this grammaticalization path (parallel to connectives), but we do not discuss it further. We also do not discuss the different types of topics in ASL.

14. See Wilbur (1996) and Caponigro and Davidson (2011) for a discussion of QAP functions in ASL. Although this topic is outside the scope of this article, it appears that the function of QAPs in NGT is very similar not only to what has been described for ASL but also to the function of *wh*-clefts in spoken languages.

15. Janzen (1999) also discusses Herring's analysis of Tamil as similar to his own account of topic grammaticalization in ASL. However, the parallel with the grammaticalization of QAPs is even more striking since Tamil illustrates the grammaticalization of rhetorical *wh*-questions.

16. One may ask whether our account of grammaticalization predicts that older signers use more discourse-level QAPs than younger signers and

that younger signers use more grammaticalized syntactic QAPs than older signers. For instance, the grammaticalization of relative clauses in Israeli Sign Language (ISL) is suggested by differences between older and younger signers (Dachkovsky and Sandler 2016). However, ISL is a very young sign language (approx. 70 years old), so one expects to find overt evidence of grammaticalization. On the other hand, NGT is much older, so the initial stages of grammaticalization would likely have come about in the nineteenth century, and younger and older signers are thus expected to demonstrate similar patterns nowadays.

References

- Baker-Shenk, Charlotte Lee. 1983. A Microanalysis of the Non-Manual Components of Questions in American Sign Language. PhD diss., University of California–Berkeley.
- Branchini, Chiara. 2014. *On Relativization and Clefting: An Analysis of Italian Sign Language*. Vol. 5 of *Sign Languages and Deaf Communities*, ed. Annika Herrmann, Markus Steinbach, and Ulrike Zeshan. Boston: De Gruyter Mouton.
- Caponigro, Ivano, and Kathryn Davidson. 2011. Ask, and Tell as Well: Question-Answer Clauses in American Sign Language. *Natural Language Semantics* 19(4): 323–71. doi:10.1007/s11050-011-9071-0.
- Caponigro, Ivano, and Daphna Heller. 2007. The Non-Concealed Nature of Free Relatives: Implications for Connectivity in Specificational Sentences. In *Direct Compositionality*, ed. Chris Barker and Pauline Jacobson, 237–63. Oxford: Oxford University Press.
- Crasborn, Onno, Inge Zwitserlood, and Johan Ros. 2008. *Corpus fNGT*. Open-access digital corpus of movies with annotations of Sign Language of the Netherlands. <http://www.ru.nl/corpusngtuk/introduction/welcome/>.
- Dachkovsky, Svetlana, and Wendy Sandler. 2016. Emergence of a Subordinate Construction in a Sign Language: Intonation Ploughs the Field for Morphosyntax. Paper presented at the Formal and Experimental Advances in Sign Language Theory (FEAST) conference, Venice, September 1–2.
- Dikken, Marcel den, Andre Meinunger, and Chris Wilder. 2000. Pseudoclefts and Ellipsis. *Studia Linguistica* 54(1): 41–89. doi:10.1111/1467-9582.00050.
- Freling, Friz. 1950. *Canary Row*. Animated cartoon. New York: Time Warner.
- Gijn, Ingeborg van. 2004. The Quest for Syntactic Dependency: Sentential Complementation in Sign Language of the Netherlands. PhD diss., University of Amsterdam.
- Herring, Susan C. 1991. The Grammaticalization of Rhetorical Questions in Tamil. In *Approaches to Grammaticalization*. Vol. 1 of *Focus on Theoretical and Methodological Issues*, ed. Elizabeth Closs Traugott and Bernd Heine, 253–84. Amsterdam: Benjamins.

- Herrmann, Annika, Roland Pfau, and Markus Steinbach, eds. 2016. *Complex Sentences and Beyond in Sign and Spoken Languages*. Berlin: De Gruyter Mouton.
- Hopper, Paul J., and Elizabeth Closs Traugott. 2003. *Grammaticalization*, 2nd ed. Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.
- Hoza, Jack, Carol Neidle, Dawn MacLaughlin, Judy Kegl, and Ben Bahan. 1997. A Unified Syntactic Account of Rhetorical Questions in American Sign Language. In *Syntactic Structure and Discourse Function: An Examination of Two Constructions in American Sign Language*, ed. Carol Neidle, Dawn MacLaughlin, and Robert G. Lee, 1–23. Boston: Boston University.
- Janzen, Terry. 1999. The Grammaticization of Topics in American Sign Language. *Studies in Language* 23(2): 271–306. doi:10.1075/sl.23.2.03jan.
- . 2007. The Expression of Grammatical Categories in Signed Languages. In *Verbal and Signed Languages: Comparing Structures, Constructs, and Methodologies*, ed. Elena Pizzuto, Paola Pietrandrea, and Raffaele Simone, 171–97. Berlin: De Gruyter.
- Johnston, Trevor A., and Adam Schembri. 2007. *Australian Sign Language (Auslan): An Introduction to Sign Language Linguistics*. Cambridge: Cambridge University Press.
- Lambrecht, Knud. 2001. A Framework for the Analysis of Cleft Constructions. *Linguistics* 39(3): 463–516.
- Lehmann, Christian. 2015. *Thoughts on Grammaticalization*, 3rd ed. Classics in Linguistics 1. Berlin: Language Science Press.
- Lucas, Ceil, Robert Bayley, and Clayton Valli. 2001. *Sociolinguistic Variation in American Sign Language*. Sociolinguistics in Deaf Communities 7. Washington, DC: Gallaudet University Press.
- Lucas, Ceil, and Adam Schembri, eds. 2015. *Sociolinguistics and Deaf Communities*. Cambridge: Cambridge University Press.
- McKee, Rachel, Adam Schembri, David McKee, and Trevor Johnston. 2011. Variable “Subject” Presence in Australian Sign Language and New Zealand Sign Language. *Language Variation and Change* 23(3): 375–98. doi:10.1017/S0954394511000123.
- Ohori, Toshio. 2011. The Grammaticalization of Subordination. In *The Oxford Handbook of Grammaticalization*, ed. Heiko Narrog and Bernd Heine, 636–45. Oxford: Oxford University Press.
- Pfau, Roland, and Markus Steinbach. 2006. *Modality-Independent and Modality-Specific Aspects of Grammaticalization in Sign Languages*. Potsdam: Universitätsverlag Potsdam.
- Schembri, Adam, and Trevor Johnston. 2012. Sociolinguistic Aspects of Variation and Change. In *Sign Language: An International Handbook*, ed. Roland Pfau, Markus Steinbach, and Bencie Woll, 788–816. Berlin: Mouton de Gruyter.

- Schermer, Trude. 2004. Lexical Variation in the Netherlands. In *To the Lexicon and Beyond: Sociolinguistics in European Deaf Communities*, ed. Mieke van Herreweghe and Myriam Vermeerbergen, 91–110. Washington, DC: Gallaudet University Press.
- Shaffer, Barbara, and Terry Janzen. 2000. Gesture, Lexical Words, and Grammar: Grammaticalization Processes in ASL. *Annual Meeting of the Berkeley Linguistics Society* 26(1): 235–45. doi:10.3765/bls.v26i1.1138.
- Stamp, Rose, Adam Schembri, Jordan Fenlon, Ramas Rentelis, Bencie Woll, and Kearsy Cormier. 2014. Lexical Variation and Change in British Sign Language. *PLoS ONE* 9(4): e94053, ed. Howard Nusbaum. doi:10.1371/journal.pone.0094053.
- Wheatley, Mark, and Annika Pabsch. 2012. *Sign Language Legislation in the European Union*, 2nd ed. Brussels: European Union of the Deaf.
- Wilbur, Ronnie B. 1994. Foregrounding Structures in American Sign Language. *Journal of Pragmatics* 22: 647–72.
- . 1996. Evidence for Function and Structure of *Wh*-Clefts in American Sign Language. In *International Review of Sign Linguistics*, ed. W. H. Edmondson and Ronnie Wilbur, 209–56. Mahwah, NJ: Erlbaum.