16. Coordination and subordination

Abstract

Identifying coordination and subordination in sign languages is not easy because mor-phosyntactic devices which mark clause boundaries, such as conjunctions or complemen-tizers, are generally not obligatory. Sometimes, however, non-manuals and certain syntac-tic diagnostics may offer a solution. Constituent boundaries can be delineated through eye blinks, and syntactic domains involved in coordination can be identified through head nods and body turns. In addition to these modality specific properties in delineating coordination and subordination, diagnostics of grammatical dependency defined in terms of constraints of syntactic operations is often useful. We observe that the island constraints involved in wh-extraction from coordination and subordination are also ob-served in some sign languages, and scope of the negator and Q-morpheme impose syn-tactic constraints on these constructions. Lastly, cross-linguistic variation is observed in some sign languages, as revealed, for instance, by gapping in coordinate structures, sub-ject pronoun copy in sentential complements, and choice of relativization strategy.

1. Introduction

In all natural languages, clauses can be combined to form complex sentences. Clause combining may generally involve like categories, a characteristic of coordination, or unlike categories, as in subordination. In his typological study on spoken languages, Lehmann (1988) defines coordination and subordination in terms of grammatical de-pendency. According to him, dependency is observed with subordination only and co-ordination is analyzed as involving only sister relations between the conjuncts. Re-cently, syntactic analysis within the generative framework assumes that natural languages realize a hierarchical syntactic structure, with grammatical dependencies ex-pressed at different levels of the grammar. However, spoken language research has demonstrated that this quest for evidence for dependency is not so straightforward. As Haspelmath (2004) puts it, sometimes it is difficult to distinguish coordination from subordination as mismatches may occur where two clausal constituents are semanti-cally coordinated but syntactically subordinated to one another, or vice versa. It is equally difficult, if not more so, in the case of sign languages, which are relatively 'younger' languages. They lack a written form which encourages the evolution of con-junctions and complementizers as morphosyntactic devices for clause combination (Mithun 1988). In this chapter, we assume that bi-clausal constructions as involved in

coordination and subordination show dependency relations between constituents X and Y. Such dependency manifests itself in some abstract grammatical operations such as extraction and gapping. We will provide an overview of current research on coordinate and subordinate structures in sign languages and examine whether these grammatical operations in coordination and subordination are also operative in sign languages.

At this juncture, a crucial question to ask is what marks clause boundaries in sign languages, or precisely what linguistic or prosodic cues are there to signal coordination and subordination. Morphosyntactic devices like case marking, complementizers, conjunctions, or word order are common cues for identifying coordinate and subordinate structures in spoken languages. On the sign language front, however, there is no standardized methodology for identifying clause boundaries, as pointed out in Johnston/ Schembri (2007). We shall see that it is not obligatory for sign languages to incorporate conjunctions or complementizers. Before we go into the analysis, we will briefly discuss some recent attempts to delineate clause boundaries in sign language research.

Research on spoken language prosody attempts to study the interface properties of phonology and syntax based on prosodic cues like tone variation or pauses to mark clause boundaries. Although results show that there is no isomorphic relationship between prosodic and syntactic constituents, structures are generally associated with Intonational Phrases (IP) in the prosodic domain. Edmonds (1976) claimed that the boundary of a root sentence delimits an IP. Nespor and Vogel (2007) and Selkirk (2005), however, found that certain non-root clauses also form IP domains; these are parentheticals, non-restrictive relative clauses, vocatives, certain moved elements, and tags. In sign language research, there is a growing interest in examining the roles of non-manuals in sign languages. Pfau and Quer (2010) categorize them into (i) phonological, (ii) morphological, (iii) syntactic, and (iv) pragmatic. In this chapter, we will examine some of these functions of non-manuals. Crucial to the current analysis is the identification of non-manuals that mark clause boundaries within which we can examine grammatical dependency in coordination and subordination. Recently, non-manuals like eye blinks have been identified as prosodic cues for clause boundaries (Wilbur 1994; Herrmann 2010). Sze (2008) and subsequently Tang et al. (2010) found that while eye blinks generally mark intonational phrases in many sign languages, Hong Kong Sign Language (HKSL) uses them to mark phonological phrases as well. Sandler (1999) also observed that sentence-final boundaries are further marked by an across-the-board change of facial expression, head position, eye gaze direction, or eye blinks. These studies on prosodic cues lay the foundation for our analysis of coordination (section 2) and subordination (section 3) in this chapter.

2. Coordination

2.1. Types of coordination

Coordination generally involves the combining of at least two constituents of the like categories either through juxtaposition or conjunctions. Pacoh, a Mon-Khmer mountain language of Vietnam, for instance, juxtaposes two verb phrases (VPs) without a conjunction (1) (Watson 1966, 176).

(1)   Do [chŏ   t'ôq cayâq,   chŏ   t'ôq apây]   [Pacoh]
        she return to   husband return to   grandmother
        'She returns to (her) husband and returns to her grandmother.'

Wilder (1997) proposes to analyze conjuncts as either determiner phrases (DPs) or complementizer phrases (CPs) with ellipsis of terminal phonological material and not as deletion of syntactic structure as part of the derivation. Here we focus on VPs and CPs. We leave it open whether the structure of the conjuncts remains 'small' (i.e., only VPs) or 'large' (i.e., CPs) at this stage of analysis.

In many languages, conjunctions are used in different ways to combine constituents. Frequently, a conjunction is assigned to the last conjunct, as shown by the Cantonese example in (2), but some languages require one for each conjunct, either before or after it. Also, some languages use different conjunctions for different grammatical categories. In Upper Kuskokwim Athabaskan, for instance, *ʔiɫ* is used for noun phrase (NP) conjuncts and *ts'eʔ* for clausal conjuncts (Kibrik 2004). (3) provides a conjoined sentence with the conjunction *ts'eʔ* for every clausal conjunct (Kibrik 2004, 544).

(2)   ngo^3 kam^4-maan^3 $_{VP}$[$_{VP}$[jam^2-zo^2 tong^1] **tung^4** $_{VP}$[sik^6-zo^2 min^6-baau^1]]
        pro-1 last-evening   drink-ASP soup   **and**   eat-ASP bread
        'I drank soup and ate bread last night.'   [Cantonese]

(3)   nongw   dona? totis   ɫeka   [Upper Kuskokwim Athabaskan]
        from.river   upriver portage dog
        ʔisdlal   **ts'e**?   ch'itsan' ch'itey   nichoh **ts'e**? <.....>
        I.did.not.take **and**   grass   too.much tall   **and** …
        'I did not take the dogs to the upriver portage because the grass was too tall, and …'

There have been few reports on conjunctions in sign languages (see e.g., Waters/Sutton-Spence (2005) for British Sign Language). American Sign Language (ASL) has overt lexical markers such as AND or BUT, as in (4) (Padden 1988, 95). Padden does not specifically claim these overt lexical markers to be conjunctions or discourse markers. According to her, they may be true conjunctions in coordinate structures if a pause appears between the two clausal conjuncts and the second conjunct is accompanied by a sharp headshake (hs).

                                                   _____
                                                          hs
(4) $_1$PERSUADE$_i$ BUT CHANGE MIND   [ASL]
        'I persuaded her to do it but I/she/he changed my mind.'

Although manual signs like AND, BUT, and OR are used by some Deaf people in Hong Kong, they normally occur in signing that follows the Chinese word order. In Australian Sign Language (Auslan), AND does not exist, but BUT does, as shown in (5) (Johnston/Schembri 2007, 213).

(5)   k-i-m LIKE CAT BUT p-a-t PREFER DOG   [Auslan]
        'Kim likes cats but Pat prefers dogs.'

Instead of using an overt conjunction, juxtaposition is primarily adopted, especially in conjunctive coordination ('and') for simultaneous and sequential events (e.g., Johnston/ Schembri (2007) for Auslan; Padden (1988) for ASL; van Gijn (2004) for Sign Language of the Netherlands (NGT); Vermeerbergen/Leeson/Crasborn (2007) for various sign languages). In the ASL examples in (6) and (7), two clauses are juxtaposed for sequential and simultaneous events (Padden 1988, 85).

Sequential events:

(6) $_i$GIVE$_1$ MONEY, $_1$INDEX GET TICKET   [ASL]
       'He'll give me the money, then I'll get the tickets.'

Simultaneous events:

(7)   HOUSE BLOW-UP, CAR $_i$CL:3-FLIP-OVER   [ASL]
       'The house blew up and the car flipped over.'

HKSL examples showing juxtaposition for conjunctive coordination (8a,b), disjunction (8c), and adversative coordination (8d) are presented below. (8a) and (8b) encode sequential and simultaneous events, respectively. (8b) confirms the observation made by Tang, Sze, and Lam (2007) that juxtaposing two VP conjuncts as simultaneous events is done by assigning each event to a manual articulator. In this example, EAT-CHIPS is encoded by the signer's right hand, and DRINK-SODA by his left hand. As for (8c), if it turns out that EITHER is a conjunction, this sign conforms to a distribution of conjunctions discussed in Haspelmath (2004), according to which it occurs obligatorily after the last conjunct (bl = blink, hn = head nod, ht = head turn, bt = body turn).

(8)   a. MOTHER DOOR $\underline{\quad\text{bl}\quad}$ CL:UNLOCK-DOOR, CL:PUSH-OPEN, $\quad$ [HKSL]
                                                    $\underline{\quad\text{bl / hn}\quad}$

           $\underline{\quad\text{bl / hn}\quad}$
           CL:ENTER HOUSE
           'Mother unlocked the door, pushed it open (and) went inside.'

       b. BOY IX$_3$ SIT$_a$, $\underline{\quad\text{bl / hn}\quad}$ CHIPS, SODA,
           $\underline{\text{ht right}}$ $\underline{\text{ht left}}$ $\underline{\text{ht right}}$
           EAT-CHIPS,   DRINK-SODA,   EAT-CHIPS, ….
           'The boy is sitting here, he is eating chips (and) drinking soda.'

       c. IX$_1$ GO-TO BEIJING, (pro$_1$) $\underline{\quad\text{bl}\quad}$ TAKE-A-PLANE, $\underline{\quad\text{bl / hn+bt right}\quad}$

           $\underline{\quad\text{bl / hn+bt left}\quad}$ $\underline{\text{bl}}$ $\underline{\text{bl}}$
           TAKE-A-TRAIN,   EITHER DOESN'T-MATTER
           'I am going to Beijing. I will take a plane or take a train. Either way, it doesn't matter.'

<div style="text-align: center;">
bl   bl
</div>

                                    hn+ht+bt forward

d. EXAM COME-CLOSE,   RUTH DILIGENT DO-HOMEWORK,

                                bl

         hn+ht+bt backward

HANNAH   LAZY   WATCH-TV

'The exam is coming close; Ruth is diligently doing her homework (but) Hannah is lazy and watches TV.'

There is little discussion about non-manuals for coordination in the sign language literature. However, it seems that non-manuals are adopted when lexical conjunctions are absent in HKSL. In a great majority of cases, we observe an extended head nod that is coterminous with the conjunct, and the clause boundaries are marked by an eye blink. Liddell (1980, 2003) observes that syntactic head nods, which are adopted to assert the existence of a state or a process, are larger, deeper, and slower in articulation. In his analysis, a syntactic head nod obligatorily shows up when the verb is gapped or absent. However, in HKSL, this type of head nods occurs whether or not the verb is absent. In (8a) and (8b), the head nods are adopted to assert a proposition. In a neutral context, conjunctive coordination has head nods only. Disjunction requires both head nods and body turn to the left and right for different conjuncts, obligatorily followed by a manual sign EITHER (8c). Adversative conjunction may involve either head turn or forward and backward body leans for the conjuncts, in addition to head nods (8d).

In sum, we observe three common types of coordination in sign languages. Juxtaposition appears to be more common than coordination involving manual conjunctions. In HKSL, these conjuncts are usually coterminous with a head nod and end with an eye blink, indicating a constituent boundary of some kind. Also, non-manuals like head turn or body leans interact with the types of coordination.

2.2. Diagnostics for coordination

In this section, we will briefly summarize three diagnostics which are said to be associated with coordination in spoken languages: extraction, gapping, and negation. We will investigate whether coordination in sign languages is also sensitive to the constraints involved in these grammatical operations.

2.2.1. Extraction

It has been commonly observed in spoken languages that movement out of a coordinate structure is subject to the Coordinate Structure Constraint given in (9).

(9)   *Coordinate Structure Constraint (CSC)*
        In a coordinate structure, no conjunct can be moved, nor may any element contained in a conjunct be moved out of that conjunct.   (Ross 1967, 98 f.)

The CSC prevents movement of an entire conjunct (10a) or a constituent within a conjunct (10b) out of a coordinate structure.

(10) a. *What$_i$ did Michael eat and t_i?
  b. *What$_i$ did Michael play golf and read t_i?

Padden (1988) claimed that ASL also obeys the CSC. In (11), for instance, topicalizing an NP object out of a coordinate structure is prohibited (Padden 1988, 93; t = non-manual topic marking; subscripts appear as in the original example).

(11) $\overline{\phantom{\text{FLOWER}}\text{t}}$
   *FLOWER, $_2$GIVE$_1$ MONEY, $_j$GIVE$_i$ [ASL]
   'Flowers, he gave me money but she gave me.'

A'-movement such as topicalization and *wh*-question formation in HKSL also leads to similar results. Topics in HKSL occupy a position in the left periphery, whereas the *wh*-arguments are either in-situ or occupy a clause-final position (Tang 2004). The following examples show that extraction of an object NP from either the first or second VP conjunct in topicalization (12b,c) or *wh*-question (13b,c) is disallowed.

(12) a. FIRST GROUP RESPONSIBLE COOKING, SECOND GROUP   [HKSL]
     RESPONSIBLE DESIGN GAME
     'The first group is responsible for cooking and the second group is
     responsible for designing games.'
     $\overline{\text{t}}$
  b. *COOKING$_i$ FIRST GROUP RESPONSIBLE t_i, SECOND GROUP
     RESPONSIBLE DESIGN GAME
     $\overline{\text{t}}$
  c. *DESIGN GAME$_i$, FIRST GROUP RESPONSIBLE COOKING,
     SECOND GROUP RESPONSIBLE t_i

(13) a. YESTERDAY DAD PLAY SPEEDBOAT,   [HKSL]
     EAT COW^CL:CUT-WITH-FORK-AND-KNIFE
     'Daddy played speedboat and ate steak yesterday.'
  b. *YESTERDAY DAD PLAY t_i, EAT COW^CL:CUT-WITH-FORK-AND-KNIFE WHAT$_i$
     Lit. '*What did daddy play and eat steak?'
  c. *YESTERDAY DAD PLAY SPEEDBOAT, EAT WHAT$_i$?
     Lit. '*What did daddy play speedboat and eat?'

Following Ross (1967), Williams (1978) argues that the CSC can be voided if the grammatical operation is in 'across-the-board' (ATB) fashion. In the current analysis, this means that an identical constituent is extracted from each conjunct in the coordinate structure. In (14a) and (14b), a DP that bears an identical grammatical relation in both conjuncts has been extracted. Under these circumstances, no CSC violation obtains.

(14) a. John wondered what$_i$ [Peter bought t_i] and [the hawker sold t_i]
  b. The man$_i$ who t_i loves cats and t_i hates dogs …

However, ATB movement fails if the extracted argument does not bear the same grammatical relation in both conjuncts. In (15), the DP *a man* cannot be extracted because it is the subject of the first conjunct but the object of the second conjunct.

(15)   *A man$_i$ who t$_i$ loves cats and the woman hates t$_i$ …

ATB movement also applies to coordinate structures in ASL and HKSL, as shown in (16a), from Lillo-Martin (1991, 60), and in (16b). In these examples, topicalizing the grammatical object of both conjuncts is possible if the topic is the grammatical object of both conjuncts and encodes the same generic referent. However, just as in (15), ATB movement is disallowed in the HKSL example in (16c) because the fronted DP [IX$_a$ BOY] does not share the same grammatical relation with the verb in the two TP conjuncts.

(16)   a. $\overline{\qquad\qquad}$t
                $_a$THAT MOVIE$_i$, $_b$STEVE LIKE e$_i$ BUT $_c$ JULIE DISLIKE e$_i$ [ASL]
                'That movie$_i$, Steve likes e$_i$ but Julie dislikes e$_i$.'

        b. $\overline{\qquad}$t
                ORANGE$_i$,   MOTHER LIKE t$_i$, FATHER DISLIKE t$_i$ [HKSL]
                'Orange, mother likes (and) father dislikes.'

        c. $\overline{\quad}$top
                *IX$_a$ BOY$_i$, t$_i$ EAT CHIPS, GIRL LIKE t$_i$ [HKSL]
                Lit. 'As for the boy, (he) eats chips (and) the girl likes (him).'

However, while topicalization in ATB fashion works in HKSL, it fails with *wh*-question formation even if the extracted *wh*-element bears the same grammatical relation in both TP conjuncts, as shown in (17). Obviously, the *wh*-operator cannot be co-indexed with the two *wh*-traces in (17). Instead, each clause requires its own *wh*-operator, implying that they are two independent clauses (18).

(17) $\overline{\qquad\qquad}$wh
        *MOTHER LIKE t$_i$, FATHER DISLIKE t$_i$, WHAT$_i$?   [HKSL]
        Lit. 'What does mother like and father dislike?'

(18) $\overline{\quad}$wh $\overline{\quad}$wh
        MOTHER LIKE t$_j$ WHAT$_j$? FATHER DISLIKE t$_i$, WHAT$_i$?
        Lit. 'What does mother like? What does father dislike?'

In sum, the data from ASL and HKSL indicate that extraction out of a coordinate structure violates the CSC. However, it is still not clear why topicalization in ATB fashion yields a licit structure while this A'-movement fails in *wh*-question formation −at least in HKSL. Assuming a split-CP analysis with different levels for interrogation and topicalization, one might argue that the difference is due to the directionality of SpecCP in HKSL. As the data show, the specifier position for interrogation is in the right periphery (18) while that for topicalization is on the left (16b) (see chapter 14 for further discussion on *wh*-questions and the position of SpecCP). Possibly, the direction of SpecCP interacts with ATB movement. Further research is required to verify this issue.

2.2.2. Gapping

In spoken language, coordinate structures always yield a reduction of the syntactic structure and ellipsis has been put forward to account for this phenomenon. One in-

stance of ellipsis is gapping. In English, the verb in the second clausal conjunct can be 'gapped' under conditions of identity with the verb in the first conjunct (19a). In fact, cross-linguistic studies show that the direction of gapping in coordinate structures is dependent upon word order (Ross 1970, 251). In particular, SVO languages like English show forward gapping in the form of SVO and SO (i.e., deletion of the identical verb in the second conjunct); hence (19b) is ungrammatical because the verb from the first conjunct is gapped. In contrast, SOV languages show backward gapping in the form of SO and SOV (i.e., deletion of the identical verb in the first conjunct), as data from Japanese shows (20a). If the verb of the second conjunct is gapped, the sentence is ungrammatical (20b).

(19) a. [Sally eats an apple] and [Paul Ø a candy].
      b. *[Sally Ø an apple] and [Paul eats a candy].

(20) a. [Sally-wa lingo-o Ø], [Paul-wa ame-o   tabe-da]   [Japanese]
          Sally-TOP apple-ACC   Paul-TOP candy-ACC eat-PAST
          Lit. 'Sally an apple and Paul ate a candy.'
      b. *[Sally-wa lingo-o   tabe-te], [Paul-wa ame-o Ø]
          Sally-TOP apple-ACC eat-GER   Paul-TOP candy-ACC
          'Sally ate an apple and Paul a candy.'

Little research has been conducted on gapping in sign languages. Liddell (1980) observes that gapping exists in ASL and a head nod to accompany the remnant object NP is necessary, as shown in (21), which lists a number of subject-object pairs. A reanalysis of this example shows that the constraint on gapping mentioned above also applies: (21) displays an SVO pattern, hence forward gapping is expected (Liddell 1980, 31).

(21) HAVE WONDERFUL PICNIC.   PRO.1 BRING SALAD, JOHN BEER   [ASL]

          ‾‾‾‾‾hn‾‾‾‾

      _____hn_____   _____hn_____
      SANDY CHICKEN,   TED HAMBURGER
      'We had a wonderful picnic. I brought the salad, John (brought) the beer, Sandy (brought) the chicken and Ted (brought) the hamburger.'

Forward gapping for SVO sentences is also observed in HKSL, as shown in (22a). While head nod occurs on the object of the gapped verb in ASL, HKSL involves an additional forward body lean (bl). However, it seems that gapping in HKSL interacts not only with word order, but also with verb types, in the sense that plain verbs but not agreeing or classifier verbs allow gapping; compare (22a) with (22b) and (22c).

(22) a. TOMORROW PICNIC, IX$_I$ BRING CHICKEN WING,   [HKSL]

              _____bl forward+hn_____

          _____bl forward+hn_____   _____bl forward+hn_____
          PIPPEN SANDWICHES,   KENNY COLA,

              _____bl forward+hn_____
          CONNIE CHOCOLATE

'(We) will have a picnic tomorrow. I will bring chicken wings, Pippen (brings) sandwiches, Kenny (brings) cola, (and) Connie (brings) chocolate.'

b. *KENNY $_o$SCOLD$_3$ BRENDA, PIPPEN Ø CONNIE
'Kenny scolds Brenda (and) Pippen Ø Connie.'

c. *IX$_I$ HEAD WALL Ø, BRENDA HEAD WINDOW
CL:HEAD-BANG-AGAINST-FLAT-SURFACE
'I banged my head against the wall and Brenda against the window.'

One possible explanation why HKSL disallows agreeing and classifier verbs to be gapped in coordinate structures is that these verbs express grammatical relations of their arguments through space. In sign languages, the path and the spatial loci encode grammatical relations between the subject and the object (see chapter 7, Verb Agreement, for discussion). Thus, gapping the spatially marked agreeing verb SCOLD (22b) or the classifier predicate CL:HEAD-BANG-AGAINST-FLAT-SURFACE (22c) results in the violation of constraints of identification. We assume that the gapped element lacks phonetic content but needs to be interpreted, where syntactic derivations feed the interpretive components. However, contrary to English, where agreement effects can be voided in identification (Wilder 1997), agreement effects, such as overt spatial locative or person marking, are obligatory in HKSL, or probably in sign languages in general. Otherwise, the 'gapped verb' will result in the failure of identifying the spatial loci for which the referents or their associated person features are necessarily encoded. This leads not only to ambiguity of referents, but also to ungrammaticality of the structure. Note that word order is not an issue here; even if classifier predicates in HKSL normally yield a SOV order and one should expect backward gapping, (22b) and (22c) show that both forward and backward gapping are unacceptable so far as agreeing and classifier verbs are concerned. In fact, it has been observed in ASL that verb types in sign languages yield differences in grammatical operations. Lillo-Martin (1986, 1991) found that topicalizing an object of a plain verb in ASL requires a resumptive pronoun while it can be null in the case of agreeing verbs (see section 3.1.2). The analysis of the constraints on gapping and topicalization in HKSL opens up a new avenue of research for testing modality effects in syntactic structure.

2.2.3. Scope of yes/no-questions and negation

Scope of yes/no-questions and negation is another diagnostic of coordination. Manual operators like the negator and the Q-morpheme in HKSL can scope over the coordinate structure, as in (23a) and (23b) (re = raised eyebrows).

(23)   a. PIPPEN BRENDA THEY-BOTH GO HORSE-BETTING.   [HKSL]

hn + bt left	hn + bt backward right	re
BRENDA WIN,	PIPPEN LOSE,	RIGHT-WRONG?

Lit. 'Pippen and Brenda both went horse-betting. Did Brenda win and Pippen lose?'

b. TEACHER PLAY SPEEDBOAT
EAT COW^CL:CUT-WITH-FORK-AND-KNIFE NOT-HAVE
'The teacher did not ride the speedboat and did not eat beef steak.'

(23a) offers a further example of adversative coordination in HKSL with both con-juncts being scoped over by the clause-final Q-morpheme RIGHT-WRONG accompanied by brow-raise. In fact, the question requires both conjuncts to be true for the question to receive an affirmative answer; if one of the conjuncts is false or both are false, the answer will be negative. In (23b), the negator NOT-HAVE scopes over both conjuncts. The fact that an element takes scope over the conjuncts in ATB fashion is similar to the Cantonese example in (2) above, where the two VP conjuncts coordinated by the conjunction *tong* ('and') are scoped over by the temporal adverbial *kum-maan* ('last night'), and marked by the same perfective marker *-zo*.

   Where a non-manual operator is used, some data from ASL and HKSL indicate that it is possible to have just one conjunct under the scope of negation. In the ASL example (24a), the non-manual negation (i.e., headshake) only scopes over the first conjunct but not the second, which has a head nod instead (Padden 1988, 90). In the HKSL example (24b), the first conjunct is affirmative, as indicated by the occurrence of small but repeated head nods, but the second conjunct is negative and ends with the sentential negator NOT, which is accompanied by a set of various non-manual mark-ers (i.e., head tilted backward, headshake, and pursed lips). Note that both (24a) and (24b) concern adversative conjunction but not conjunctive coordination. In HKSL, the non-manual marking has to scope over both conjuncts in conjunctive coordination; scoping over just one conjunct, as in (24c), leads to ungrammaticality. In other words, scope of yes/no-questions or negation is a better diagnostic for conjunctive coordination than for other types of coordination. As our informants suggest, (24b) behaves more like a juxtaposition of two independent clauses, hence failing to serve as a good diagnostic for coordinate structures (n = negative headshake).

(24)
   a.
   ╌╌╌╌╌╌╌╌╌╌ n ╌╌╌╌╌╌╌╌╌╌╌╌ hn
   ₁INDEX TELEPHONE, ₁INDEX MAIL LETTER   [ASL]
       'I didn't telephone but she sent a letter.'

   b.
   ╌ hn+++ ╌   ht backward+hs+pursed lips
   FELIX COME   GLADYS COME NOT   [HKSL]
       'Felix will come (but) Gladys will not come.'

   c.
   ╌╌ yn
   *FELIX COME GLADYS GO   [HKSL]
       Lit. '*Will Felix come? (and) Gladys will leave.'

In this section, we have summarized the findings on coordination in sign languages reported so far; specifically, we have examined the constraints involved in *wh*-extrac-tion, gapping, and the scope of some morphosyntactic devices for yes/no-questions and negation over the coordinate structure. We found that topicalization observes the CSC and ATB movement more than *wh*-question formation in these languages. As for gap-ping, we suggest that verb types in sign languages may have an effect on gapping. Lastly, using the scope properties of the Q-morpheme in yes/no-questions and the negator NOT in conjunctive coordination allows us to identify the constraints on coordi-nate structures. As we have shown, using negation in disjunctive coordination may lead to different syntactic behaviors. As for the use of non-manuals, we suggest that head nods and body turns are crucial cues for the different types of coordination if no

manual conjunctions are present. In the following section, we will explore another process of clause combining − subordination − which typically results in asymmetrical structure.

3. Subordination

Compared with coordination, subordination has received relatively more attention in sign language research. Thompson's (1977) claim that ASL does not have grammatical means for subordination has sparked off a quest for tests for syntactic dependencies. Subsequent research on ASL has convincingly shown that looking for manual markers of subordination misses the point because certain subordinate structures are marked only non-manually (Liddell 1980). Padden (1988) also suggests some syntactic diagnostics for embedded sentential complements in ASL, namely subject pronoun copies for matrix subjects, spread of non-manual negation into subordinate but not coordinate structures, as well as *wh*-extraction from the embedded clauses. However, subsequent research on NGT yield different results (van Gijn 2004).

In this section, we will first focus on sentential complements and their associated diagnostics (section 3.1). Typologically, sentential complements are situated towards the higher end of clause integration with complementizers as formal morphosyntactic devices to mark the grammatical relations. Where these devices are absent in sign languages, we argue that the spread of non-manuals might offer a clue to syntactic dependencies, similar to the observations in coordinate structures. In section 3.2, we turn our attention to relative clauses, that is, embedding within DP, and provide a typological sketch of relativization strategies in different sign languages. Note that, due to space limitations, we will not discuss adverbial clauses in this chapter (see Coulter (1979) and Wilbur/Patschke (1999) for ASL; Dachkovsky (2008) for Israeli Sign Language).

3.1. Sentential complements

Sentential complements function as subject or object arguments subcategorized for usually by a verb, a noun, or an adjective. In Generative Grammar, sentential complements are usually analyzed as CPs. Depending on the features of the head, the embedded clause may be finite or non-finite, the force may be interrogative or declarative. Typologically, not all languages have overt complementizers to mark sentential complements. Complementizers derive historically from pronouns, conjunctions, adpositions or case markers, and rarely verbs (Noonan 1985). Cantonese has no complementizers for both declarative and interrogative complement clauses, as exemplified in (25a) and (25b). The default force of the embedded clause is usually declarative unless the matrix verb subcategorizes for an embedded interrogative signaled by an 'A-not-A' construction like *sik-m-sik* ('eat-not-eat') in (25b), which is a type of yes/no-questions (INT = intensifier).

(25)   a. ngo^3 lam^2 $_{CP}$[Ø $_{TP}$[tiu^3 fu^3 taai^3 song^1]$_{TP}$]$_{CP}$ [Cantonese]
            pro-1 think   CL   pants INT   loose
            'I think the pants are too loose.'
        b. ngo^3 man^4 $_{CP}$[Ø $_{TP}$[keoi^3 sik^6-m^4-sik^6 faan^6]$_{TP}$]$_{CP}$
            pro-1 ask   pro-3 eat-not-eat   rice
            'I ask if he eats rice.'

In English, null complementizers are sometimes allowed in sentential complements; compare (26a) with (26b). However, a complementizer is required when the force is interrogative, as the ungrammaticality of (26c) shows.

(26)   a.   Kenny thinks $_{CP}$[Ø $_{TP}$[Brenda likes Connie]$_{TP}$]$_{CP}$.
        b.   Kenny thinks $_{CP}$[that $_{TP}$[Brenda likes Connie]$_{TP}$]$_{CP}$.
        c.   *Kenny asks $_{CP}$[Ø $_{TP}$[Brenda likes Connie]$_{TP}$]$_{CP}$.

Null complementizers have been reported for many sign languages. Without an overt manual marker, it is difficult to distinguish coordinate from subordinate structures at the surface level. Where subordinate structures are identified, we assume that the complementizer is not spelled out phonetically and the default force is declarative, as shown in (27a−d) for ASL (Padden 1988, 85), NGT (van Gijn 2004, 36), and HKSL (see Herrmann (2006) for Irish Sign Language and Johnston/Schembri (2006) for Auslan).

(27)   a. $_1$INDEX HOPE $_i$INDEX COME VISIT WILL   [ASL]
            'I hope he will come to visit.'
        b. POINT$_{signer}$ KNOW POINT$_{addressee}$ $_{addressee}$COME$_{signer}$ [NGT]
            'I know that you are coming to (see) me.'
        c. IX$_1$ HOPE WILLY NEXT MONTH FLY-BACK HK   [HKSL]
            'I hope Willy will fly back to Hong Kong next month.'
                                                                    yn
                                                    _____
        d. $_{right}$ASK$_{signer}$ $_{right}$ATTRACT-ATTENTION$_{signer}$ IX$_{addressee}$ WANT COFFEE   [NGT]
            'He/she asks me: "Do you want any coffee?"'

Van Gijn (2004) observes that there is a serial verb in NGT, ROEPEN ('to attract attention'), which may potentially be developing into a complementizer. ROEPEN (glossed here as ATTRACT-ATTENTION) occasionally follows utterance verbs like ASK to introduce a 'direct speech complement', as in (27d) (van Gijn 2004, 37).

    As mentioned above, various diagnostics have been suggested as tests of subordination in ASL. Some of these diagnostics involve general constraints of natural languages. In the following section, we will summarize research that examines these issues.

3.1.1. Subject pronoun copy

In ASL, a subject pronoun copy may occur in the clause-final position without a pause preceding it. The copy is either coreferential with the subject of a simple clause (28a) or the subject of a matrix clause (28b) but not with the subject of an embedded clause.

Padden (1988) suggests that a subject pronoun copy is an indicator of syntactic dependency between a matrix and a subordinate clause. It also distinguishes subordinate from coordinate structures because a clause-final pronoun copy can only be coreferential with the subject of the second conjunct, not the first, when the subject is not shared between the conjuncts. Therefore, (28c) is ungrammatical because the pronoun copy is coreferential with the (covert) subject of the first conjunct (Padden 1988, 86−88).

(28)   a. $_1$INDEX GO-AWAY $_1$INDEX   [ASL]
            'I'm going, for sure (I am).'
       b. $_1$INDEX DECIDE $_i$INDEX SHOULD $_i$DRIVE$_j$ SEE CHILDREN $_1$INDEX
            'I decided he ought to drive over to see his children, I did.'
       c.   *$_1$HIT$_i$, $_i$INDEX TATTLE MOTHER $_1$INDEX
            'I hit him and he told his mother, I did.'

It turns out, however, that this test of subordination cannot be applied to NGT and HKSL. An example similar to (28b) is ungrammatical in NGT, as shown in (29a): the subject MARIJKE in the matrix clause cannot license the sentence-final copy POINT$_{right}$. As illustrated in (29b), the copy, if it occurs, appears at the end of the matrix clause (i.e., after KNOW in this case), not the embedded clause (van Gijn 2004, 94). HKSL also displays different coreference properties with clause-final pronoun copies. If a final index sign does occur, the direction of pointing determines which grammatical subject it is coreferential with. An upward pointing sign (i.e., IX$_{ai}$), as in (29c), assigns the pronoun to the matrix subject only. Note that the referent GLADYS, which is the matrix subject, is not present in the signing discourse, the upward pointing obviates locus assignment. Under these circumstances, (29d) is ungrammatical when the upward pointing pronoun IX$_{aj}$ is coreferential with the embedded subject PIPPEN. On the other hand, the pronoun IX$_{bj}$ in (29e) that points towards a locus in space refers to the embedded subject PIPPEN.

(29)   a.   *MARIJKE POINT$_{right}$ KNOW INGE POINT$_{left}$ $_{left}$COME$_{signer}$ POINT$_{right}$ [NGT]
            'Marijke knows that Inge comes to me.'
       b.   INGE POINT$_{right}$ KNOW POINT$_{right}$ POINT$_{signer}$ ITALY $_{signer}$GO.TO$_{neu.space}$ [NGT]
            'Inge knows that I am going to Italy.'
       c.   GLADYS$_i$ SUSPECT PIPPEN STEAL CAR IX$_{ai}$ [HKSL]
            'Gladys suspected Pippen stole the car, she did.'
       d.   *GLADYS$_i$ SUSPECT PIPPEN$_j$ STEAL CAR IX$_{aj}$ [HKSL]
            Lit. 'Gladys suspected Pippen stole the car, he did.'
       e.   GLADYS$_i$ SUSPECT PIPPEN$_j$ STEAL CAR IX$_{bj}$ [HKSL]
            'Gladys suspected Pippen stole the car, he did.'

It is still unclear why the nature of pointing, that is, the difference between pointing to an intended locus like 'bj' in (29e) for the embedded subject versus an unintended locus like 'ai' in (29c) for the matrix subject, leads to a difference in coreference in HKSL. The former could be a result of modality because of the fact that the referent is physically present in the discourse constrains the direction of pointing of the index sign. This finding lends support to the claim that those clause-final index signs without an intended locus refer to the matrix subject in HKSL. In sum, it appears that subject

pronoun copy cannot be adopted as a general test of subordination in sign languages. Rather, this test seems to be language-specific because it works in ASL but not in NGT and HKSL.

3.1.2. *Wh*-extraction

The second test for subordination has to do with constraints on *wh*-extraction. In section 2.2.1, we pointed out that extraction out of a conjunct of a coordinate structure is generally not permitted unless the rule is applied in ATB fashion. In fact, Ross (1967) also posits constraints on extraction out of *wh*-islands (30a−c). This constraint has been attested in many spoken languages, offering evidence that long-distance *wh*-movement is successively cyclic, targeting SpecCP at each clause boundary.

(30)   a. Who_i do you think Mary will invite t_i?
       b.   *Who_i do you think what Mary did to t_i?
       c.   *Who_i do you wonder why Tom hates t_i?

(30b) and (30c) have been argued to be ungrammatical because the intermediate *wh*-clause is a syntactic island in English and further movement of a *wh*-constituent out of it is barred.

   Typological studies on *wh*-questions in sign languages found three syntactic positions for *wh*-expressions: in-situ, clause-initial, or clause-final (Zeshan 2004). In ASL, although the *wh*-expressions in simple *wh*-questions may occupy any of the three syntactic positions (see chapter 14 on the corresponding debate on this issue), they are consistently clause-initial in the intermediate SpecCP position for both argument and adjunct questions (Petronio/Lillo-Martin 1997). In other words, this constitutes evidence for embedded *wh*-questions in ASL. In HKSL, the *wh*-expression of direct argument questions is either in-situ or clause-final, and that of adjunct questions is consistently clause-final. However, in embedded questions, the *wh*-expressions are consistently clause-final, as in (31a) and (31b), and this applies to both argument and adjunct questions.

(31)   a.   FATHER WONDER HELP KENNY WHO   [HKSL]
            'Father wondered who helped Kenny.'
       b.   KENNY WONDER GLADYS COOK CRAB HOW
            'Kenny wondered how Gladys cooked the crabs.'

Constraints on extraction out of embedded clauses have been examined. In NGT, extraction is possible only with some complement taking predicates, such as 'to want' (32a) and 'to see', but impossible with 'to believe' (32b) and 'to ask' (van Gijn 2004, 144 f.).

$$\overline{\text{wh}}$$
(32)   a.   WHO BOY   POINT$_{right}$ WANT $_{right}$VISIT$_{left}$ t_{who} [NGT]
            'Who does the boy want to visit?'

$\overline{\quad\text{wh}\quad}$

b. *WHO INGE BELIEVE t$_{\text{who signer}}$VISIT$_{\text{left}}$
   'Who does Inge believe visits him?'

Lillo-Martin (1986, 1992) claims that embedded *wh*-questions are islands in ASL; hence, extraction is highly constrained. Therefore, the topic in (33) is base-generated and a resumptive pronoun (i.e., $_a$PRONOUN) is required.

(33) $\overline{\qquad\text{t}\qquad}$
       $_a$MOTHER, $_1$PRONOUN DON'T-KNOW "WHAT" *($_a$PRONOUN) LIKE   [ASL]
       'Mother, I don't know what she likes.'

HKSL behaves similarly. (34a) illustrates that topicalizing the object from an embedded *wh*-question also leads to ungrammaticality. In fact, this operation cannot even be saved by a resumptive pronoun (34b); neither can it be saved by signing BUY at the locus of the nominal SOFA in space (34c). It seems that embedded adjunct questions are strong islands in HKSL and extraction is highly constrained. Our informants only accepted in-situ *wh*-morphemes, as shown in (34d).

(34)   a. *IX$_i$ SOFA, IX$_1$ WONDER DAD BUY t$_i$ WHERE   [HKSL]
       b. *IX$_i$ SOFA, IX$_1$ WONDER DAD BUY IX$_i$ WHERE
       c. *IX$_i$ SOFA, IX$_1$ WONDER DAD BUY$_i$ WHERE
          'As for that sofa, I wonder where dad bought it.'
       d. IX$_1$ WONDER DAD BUY IX$_i$ SOFA WHERE
          'I wonder where dad bought the sofa.'

The results from *wh*-extraction are more consistent among the sign languages studied, suggesting that the island constraints are modality-independent. HKSL seems to be more constrained than ASL because HKSL does not allow *wh*-extraction at all out of embedded *wh*-adjunct questions while in ASL, resumptive pronouns or locative agreement can circumvent the violation. It may be that agreeing verbs involving space for person features satisfy the condition of identification of null elements in the ASL grammar. In the next section, we will examine non-manuals as diagnostics for subordination.

3.1.3. Spread of non-manuals in sentential complementation

In contrast to coordinate structures, non-manuals may spread from the matrix to the embedded clause, demonstrating that the clausal structure of coordination differs from that of subordination. This is shown by the ASL examples in (35) for non-manual negation (Padden 1988, 89) and yes/no-question non-manuals (Liddell 1980, 124). This could be due to the fact that pauses are not necessary between the matrix and embedded clauses, unlike coordination, where a pause is normally observed between the conjuncts (Liddell 1980; n = non-manuals for negation).

$$\overline{\hspace{4cm}\text{n}\hspace{2cm}}$$

(35)   a. $_1$INDEX WANT $_j$INDEX GO-AWAY   [ASL]
         'I didn't want him to leave.'

$$\overline{\hspace{5cm}\text{yn}\hspace{0.5cm}}$$

         b. REMEMBER DOG CHASE CAT
         'Do you remember that the dog chased the cat?'

However, the spread of non-manual negation as observed in ASL turns out not to be a reliable diagnostic for subordination in NGT and HKSL. The examples in (36) illustrate that in NGT, the non-manuals may (36a) or may not (36b) spread onto the embedded clause (van Gijn 2004, 113, 119).

$$\overline{\hspace{9cm}\text{neg}\hspace{0.5cm}}$$

(36)   a. POINT$_{signer}$ WANT POINT$_{addressee}$ neu space COME-ALONG$_{signer}$ [NGT]
         'I do not want you to come along.'

$$\overline{\hspace{3.5cm}\text{neg}\hspace{1cm}}$$

         b. INGE   BELIEVE POINT$_{right}$ POINT$_{signer\ signer}$VISIT$_{left}$ MARIJKE
         'Inge does not believe that I visit Marijke.'

HKSL does not systematically use non-manual negation like headshake as a grammatical marker. However, in HKSL, the scope of negation may offer evidence for subordination. In some cases, it interacts with body leans. In (37a), the sign NOT occurring at the end of the embedded clause generally scopes over the embedded clause but not the matrix clause. Therefore, the second reading is not acceptable to the signers. To negate the matrix clause, signers prefer to extrapose the embedded clause by means of topicalization, as in (37b). Body leans are another way to mark the hierarchical structure of matrix negation. In (37c), the clause-final negator NOT scopes over the matrix but not the subordinate clause. (37c) differs from (37a) in the adoption of topicalization of the entire sentence with forward body lean, followed by a backward body lean and a manual sign NOT, signaling matrix negation.

(37)   a. GLADYS THINK WILLY COME-BACK NOT   [HKSL]
            i. 'Gladys thinks Willy will not come back.'
            ii. *'Gladys does not think Willy will come back.'

$$\overline{\hspace{2cm}\text{top}\hspace{1cm}}$$

         b. WILLY COME-BACK$_i$, GLADYS SAY t$_i$ NOT-HAVE
         'As for Willy's coming back, Gladys did not say so.'

$$\overline{\hspace{4.5cm}\text{bl forward}\hspace{0.5cm}\text{bl back}}$$
$$\overline{\hspace{4.5cm}\text{top}\hspace{1.5cm}}$$

         c. GLADYS WANT WILLY COME-BACK HK   NOT
         'As for Gladys wanting Willy to come back to Hong Kong, it is not the case.'

Branchini et al. (2007) also observe that where the basic word order is SOV in Italian Sign Language (LIS), subordinate clauses are always extraposed either to the left periphery (38a) or to the right periphery (38b). They argue that subordinate clauses do not occur in their base position preceding the verb (38c) but rather extraposed to the periphery to avoid the processing load of centre embedding (te = tensed eyes).

$$\overline{\hspace{3cm}\text{te}\hspace{1.5cm}}$$

(38)   a.   [MARIA HOUSE BUY] PAOLO WANT   [LIS]

$$\overline{\hspace{4cm}\text{te}}$$

b.   PAOLO WANT [MARIA HOUSE BUY]

c.   *PAOLO [MARIA HOUSE BUY] WANT

'Paolo wants Maria to buy a house.'

It could be that different sign languages rely on different grammatical processes as tests of subordination. In HKSL, another plausible diagnostic is the spread of a non-manual associated with the verb in the matrix clause. For verbs like BELIEVE, GUESS, and WANT, which take object complement clauses, we observe pursed lips as a lexical non-manual. In (39a) and (39b), a pause is not observed at the clause boundary; the lips are pursed and the head tilts sideward for the verb in the matrix clause, and these non-manuals spread till the end of the complement clause, followed by a head nod, suggesting that the verb together with its complement clause forms a constituent of some kind.

(39)   a.   MALE HOUSE LOOK-OUT$_i$, SKY CL: THICK-CLOUD-HOVER-ABOVE   [HKSL]

$$\overline{\hspace{2cm}\text{pursed lips+ hn}\hspace{0.5cm}}$$

MALE GUESS TOMORROW RAIN

'The man looks out (of the window) and sees thick clouds hovering in the sky above. The man guesses it will rain tomorrow.'

$$\overline{\hspace{6cm}\text{pursed lips+ hn}\hspace{0.5cm}}$$

b.   IX$_1$ LOOK-AT DRESS PRETTY; WANT BUY GIVE BRENDA

'I saw a pretty dress; I want to buy it and give it to Brenda.'

The same phenomenon is observed in indirect yes/no-questions subcategorized for by the verb WONDER. In this context, we observe the spread of pursed lips and brow-raise from the verb onto the indirect yes/no-question and brow-raise peaks at the sign EXPENSIVE in (40). Thus these non-manuals suggest that it is an embedded yes/no-question.

$$\overline{\hspace{6cm}\text{yn}\hspace{0.5cm}}$$

(40)   IX$_1$ WONDER IX$_{det}$ CAR EXPENSIVE   [HKSL]

'I wonder if this car is expensive.'

One may wonder whether these lexical non-manuals stemming from the verbs have any grammatical import. In the literature, certain non-manuals like headshake and eye gaze have been suggested to be the overt realization of formal grammatical features residing in functional heads. Assuming that there is a division of labor between non-manuals at different linguistic levels (Pfau/Quer 2010), what we observe here is that lexical non-manuals associated with the verb spread over a CP domain that the verb subcategorizes for. It could be that these non-manuals bear certain semantic functions. In this case, verbs like GUESS, WANT, and WONDER denote mental states; semantically, the proposition encoded in the embedded clause is scoped over by these verbs, and thus the lexical non-manuals scope over these propositions.

In this section, we have examined to what extent the spread of non-manuals over embedded clauses provides evidence of subordination. Matrix yes/no-questions appear

to invoke a consistent spread of non-manuals over the embedded clauses across sign languages. However, patterns are less consistent with respect to non-manual negation: in complex sentences, sign languages like ASL, NGT, and HKSL show different spreading behaviors for the negative headshake. HKSL instead makes use of scope of negation, which offers indirect evidence for embedded clauses in HKSL. We also observe that non-manuals associated with lexical verbs spread into embedded clauses, offering evidence for sentential complementation. It seems that if non-manuals do spread, they start from the matrix verb and spread to the end of the embedded clause. Therefore, in order to use the spread of non-manuals as diagnostics, a prerequisite is to confirm if the sign language in question uses them. As we have seen, NGT and HKSL do not use spread of headshake while ASL does.

3.2. Relative clauses

Relative clauses (RCs) have been widely studied in spoken languages, and typological analyses centre around structural properties such as whether the RCs (i) are head external or internal, (ii) postnominal or prenominal, (iii) restrictive or non-restrictive, (iv) employ relative markers such as relative pronouns, personal pronouns, resumptive pronouns, etc., and (v) their position within a sentence (Keenan 1985; Lehmann 1986). In sign languages, an additional analysis concerns the use of non-manuals in marking RCs.

Typologically, Dryer (1992) found a much higher tendency of occurrence for postnominal than prenominal RCs: in his sample, 98 % of VO languages and 58 % of OV languages have postnominal RCs. Externally and internally headed relative clauses (EHRCs vs. IHRCs) in languages are analyzed as complex NPs while correlatives are subordinating sentences (Basilica 1996; de Vries 2002). Clear cases of IHRCs are observed in SOV languages and they may co-occur with prenominal EHRCs (Keenan 1985, 163). To date, investigations into relativization strategies in sign languages have been conducted primarily on ASL, LIS, and DGS. In this section, we will add some preliminary observations from HKSL. We will first focus on the type and position of the RCs and the use of non-manuals (section 3.2.1), before turning to the use of relative markers (section 3.2.2). The discussion, which only addresses restrictive RCs, will demonstrate that the strategies for relativization in sign languages vary cross-linguistically, similarly to spoken languages.

3.2.1. Types of relative clauses

To date, various types of RCs have been reported for a number of sign languages, except for prenominal RCs. Liddell (1978, 1980) argues that ASL displays both IHRCs (41a) and postnominal ERHCs (41b) (Liddell 1980, 162). According to Liddell, there are two ways to distinguish EHRCs and IHRCs in ASL. First, in (41a), the non-manual marker for relativization extends over the head noun DOG, indicating that the head noun is part of the RC, while in (41b), DOG is outside the domain of the non-manual marker. Second, in (41a), the temporal adverbial preceding the head noun scopes over

the verb of the RC, and if the adverbial is part of the RC, then the head noun following it cannot be outside the RC (rel = non-manuals for relatives).

(41) a. $\overline{\text{RECENTLY DOG CHASE CAT COME HOME}}^{\text{rel}}$ [ASL]
          'The dog which recently chased the cat came home.'

      b. $_1$ASK$_3$ GIVE$_1$ DOG [[$\overline{\text{URSULA KICK}}^{\text{rel}}]_S$ THAT$_c$]]$_{NP}$
          'I asked him to give me the dog that Ursula kicked.'

As for non-manual marking, brow raise has been found to commonly mark relativization. Other (language-specific) non-manuals reported in the literature include backward head tilt and raised upper lips for ASL, a slight body lean towards the location of the relative pronoun for DGS, and tensed eyes and pursed lips for LIS.

    According to Pfau and Steinbach (2005), DGS employs postnominal EHRCs, which are introduced by a relative pronoun (RPRO; see 3.2.2 for further discussion). In (42), the non-manual marker accompanies only the pronoun. The adverbial preceding the head noun is outside the non-manual marker and scopes over the matrix clause verb ARRIVE (Pfau/Steinbach 2005, 513). Optionally, the RC can be extraposed to the right, such that it appears sentence-finally.

(42) YESTERDAY [MAN IX$_3$ [$\overline{\text{RPRO-H}_3 \text{ CAT STROKE}}^{\text{re}}]_{CP}$]$_{DP}$ ARRIVE   [DGS]
      'The man who is stroking the cat arrived yesterday.'

The status of RCs in LIS is less clear, as there are two competing analyses. Branchini and Donati (2009) suggest that LIS has IHRCs marked by a clause-final determiner, which, based on accompanying mouthing, they gloss as PE (43a). In contrast, Cecchetto, Geraci, and Zucchi (2006) argue that LIS RCs are actually correlatives marked by a demonstrative morpheme glossed as PROREL (43b). Note that in (43a), just as in (41a), the non-manual marker extends over the head noun (MAN) and the adverbial preceding the head noun, which scopes over the RC verb BRING.

(43) a. $\overline{\text{TODAY MAN}_i \text{ PIE BRING PE}_i}^{\text{re}}$ YESTERDAY (IX$_i$) DANCE   [LIS]
          'The man that brought the pie today danced yesterday.'

      b. BOY $_i$CALL $\overline{\text{PROREL}_i}^{\text{rel}}$ LEAVE DONE
          'A boy that called left.'

Wilbur and Patschke (1999) propose that brow raise marks constituents that underwent A'-movement to SpecCP. Following Neidle et al. (2000), Pfau and Steinbach (2005) argue that brow raise realizes a formal grammatical feature residing in a functional head. Brow raise identifies the domain for the checking of the formal features of the operator. A relative pronoun has two functions: it is an A'-operator bearing wh-features or it is a referring/demonstrative element bearing d-features (Bennis 2001). In

ASL, where there is no overt operator, brow raise spreads over the entire IHRC (41a). In DGS, it usually co-occurs with only the relative pronoun (42), but optionally, it may spread onto the entire RC, similar to (41b). For LIS, different observations have been reported. Branchini and Donati (2009) argue that brow raise spreads over the entire RC, as in (43a), but occasionally, it accompanies the PE-sign only. In contrast, Cecchetto, Geraci, and Zucchi (2006) report that brow raise is usually restricted to the clause-final sign PROREL, but may spread onto the verb that precedes it (43b).

HKSL displays IHRCs. In (44), brow raise scopes over the head noun MALE and the RC. Clearly, the RC occupies an argument position in this sentence. The head noun is the object of the matrix verb LIKE but the subject of the verb EAT within the RC.

(44) $\overline{\phantom{\text{rel}}}$ rel
         HEY! IX$_3$ LIKE [IX$_i$ MALE EAT CHIPS IX$_i$]   [HKSL]
         'Hey! She likes the man who is eating chips.'

Liddell (1980) claims that there is a tendency for IHRCs to occur clause-initially in ASL. The clause in question in LIS shows a similar distribution (Branchini/Donati 2009; Cecchetto/Geraci/Zucchi 2006). (45a) shows that in HKSL, where the basic word order is SVO (Sze 2003), the RC (IX$_a$ BOY RUN) is topicalized to a left peripheral position; a boundary blink is observed at the right edge of the RC, followed by the head tilting backward when the main clause is signed. The fact that brow raise also marks topicalized constituents in HKSL makes it difficult to tease apart the grammatical function of brow raise between relativization and topicalization in this example. This is even more so in (45b), where the topicalized RC is under the scope of the yes/no-question.

(45)   rel/top
         a. IX$_a$ BOY RUN IX$_1$ KNOW   [HKSL]
            'The boy that is running, I know (him).'

            rel/top   y/n
         b. FEMALE IX$_a$ CYCLE CLOTHES ORANGE IX$_a$ HELP$_1$ INTRODUCE$_1$ GOOD?
            'As for the lady that is cycling and in orange clothes, will you help introduce (her) to me?'

As mentioned, the second diagnostic for RCs is the scope of temporal adverbials. In ASL and LIS, the temporal adverbial preceding the head noun scopes over the RC containing the head noun but not the main clause (41a and 43a). In DGS, which displays postnominal RCs, however, the temporal adverbial scopes over the main clause but not the RC (42). In HKSL, just as in ASL/LIS, a temporal adverbial preceding the head noun scopes over the RC that contains the head noun (46a). Consequently, (46b) is unacceptable if TOMORROW, which falls under the RC non-manuals, is interpreted as scoping over the main clause. According to our informants, minus the non-manuals, (46b) would at best yield a coordinate structure which contains two conjoined VPs that are both scoped over by the temporal adverbial TOMORROW. In order to scope over the main clause, the temporal adverbial has to follow the RC and precede the main clause, as in (46c) (cf. the position of YESTERDAY in (43a)).

(46)   a. $\overline{\text{} \text{rel} }$
          YESTERDAY IX$_a$ FEMALE CYCLE   IX$_1$ LETTER SEND$_a$ [HKSL]
          'I sent a letter to that lady who cycled yesterday'

       b. $\overline{\text{} \text{rel} }$
          TOMORROW IX$_a$ FEMALE BUY CAR   FLY-TO-BEIJING
          *'The lady who is buying the car will fly to Beijing tomorrow.'
          ?? 'Tomorrow that lady will buy a car and fly to Beijing.'

       c. $\overline{\text{} \text{rel} }$
          IX$_a$ FEMALE CYCLE (IX$_a$) TOMORROW FLY-TO-BEIJING
          'The lady who is cycling will fly to Beijing tomorrow.'

3.2.2. Markers for relativization

According to Keenan (1985), EHRCs may involve a personal pronoun (e.g., Hebrew), a relative pronoun (e.g., English), both (e.g., Modern Greek), or none (e.g., English, Hebrew). Relative pronouns are pronominal elements that are morphologically similar to demonstrative or interrogative pronouns. They occur either at the end of the RC, or before or after the head noun. As for IHRCs, they are not generally marked morphologically, hence leading to ambiguity if the RC contains more than one NP. However, the entire clause may be nominalized and be marked by a determiner (e.g., Tibetan) or some definiteness marker (e.g., Diegueño). Correlatives, on the other hand, are consistently morphologically marked for their status as subordinate clauses and the marker is coreferential with a NP in the main clause.

There have been discussions about the morphological markers attested in relativization in sign languages. In ASL, there are a few forms of THAT, to which Liddell (1980) has ascribed different grammatical status. First, ASL has the sign THAT$_a$, which Liddell termed 'relative conjunction' (47a). This sign normally marks the head noun in an IHRC (Liddell 1980, 149 f.). There is another sign THAT$_b$ which occurs at the end of a RC and which is usually articulated with intensification (47b). Based on the scope of the non-manuals, THAT$_c$ in (47b) does not belong to the RC domain. Liddell argues that THAT$_c$ is a complementizer and that it is accompanied by a head nod (Liddell 1980, 150).

(47)   a. $\overline{\text{} \text{re} }$
          RECENTLY DOG THAT$_a$ CHASE CAT   COME HOME.   [ASL]
          'The dog which recently chased the cat came home.'

       b. $\overline{\text{} \text{re} }$
          IX$_1$ FEED   DOG BITE CAT THAT$_b$ THAT$_c$
          'I fed the dog that bit the cat.'

In (42), we have already seen that DGS makes use of a relative pronoun. This pronoun agrees with the head noun in the feature [±human] and comes in two forms: the one used with human referents (i.e., RPRO-H) adopts the classifier handshape for humans; the one referring to non-human entities is similar to the regular index signs (i.e., RPRO-NH). These forms are analyzed as outputs of grammaticalization of an indexical deter-

miner sign. The presence of relative pronouns in DGS is in line with the observation of Keenan (1985) that relative pronouns are typical of postnominal EHRCs. In LIS, different grammatical status has been ascribed to the indexical sign that consistently occurs at the end of the RC. Cecchetto, Geraci, and Zucchi (2006) analyze it as a demonstrative morpheme glossed as PROREL. However, according to Branchini and Donati (2009), PE is not a wh- or relative pronoun; rather it is a determiner for the nominalized RC. In the IHRCs of HKSL, the clause-final index sign may be omitted if the entire clause is marked by appropriate non-manuals, as in (46c). If the index sign occurs, it is coreferential with the head noun within the RC and spatially agrees with it. The index sign is also identical in its manual form to the index sign that is adjacent to the head noun, suggesting that it is more like a determiner than a relative pronoun. However, this clause-final index sign is accompanied by a different set of non-manuals − mouth-open and eye contact with the addressee.

In sum, data from HKSL, ASL, and LIS show that head internal relatives require brow raise to spread over the RCs including the head noun. As for IHRCs, HKSL patterns with the LIS relatives studied by Branchini et al. (2007) in the occurrence of a clause-final indexical sign which phonetically looks like a determiner, the presence of which is probably motivated by the nominal status of the RC. Also, the presence of a relative pronoun as observed in DGS offers crucial evidence for the existence of RCs in that language. In other sign languages, which do not consistently employ such devices, non-manual markers and/or the behavior of temporal adverbials may serve as evidence for RCs.

4. Conclusion

In this paper, we have summarized attempts to identify coordinate and subordinate structures in sign languages. We found that one cannot always rely on morphosyntactic devices for the identification and differentiation of coordination and subordination because these devices do not usually show up in the sign languages surveyed so far. Instead, we adopted general diagnostics of grammatical dependency defined in terms of constraints on grammatical operations on these structures. The discussion revealed that the island constraint involved in *wh*-extraction is consistently observed in sign languages, too, while other constraints (e.g., gapping in coordinate structures) appear to be subject to modality effects. We have also examined the behavior of non-manuals which we hypothesize will offer important clues to differentiate these structures. Spreading patterns, for instance, allow us to analyze verb complementation, embedded negation and yes/no-questions, and relativization strategies. As for the latter, we have shown that sign languages show typological variation similar to that described for spoken languages. For future research, we suggest more systematic categorization of non-manuals, which we hope will allow us to delineate their functions at different syntactic levels.

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17. Utterance reports and constructed action

1. Reporting the words, thoughts, and actions of others
2. Early approaches to role shift
3. Role shift as constructed action
4. Formal approaches
5. Integration
6. Conclusion
7. Literature

Abstract

Signers and speakers have a variety of means to report the words, thoughts, and actions of others. Direct quotation gives (the utterer's version of) the quoted speaker's point of view − but it need not be verbatim, and can be used to report thoughts and actions as well as words. In sign languages, role shift is used in very similar ways. The signer's body or head position, facial expressions, and gestures contribute to the marking of such reports, which can be considered examples of constructed action. These reports also include specific grammatical changes such as the indexical (shifting) use of first-person forms, which pose challenges for semantic theories. Various proposals to account for these phenomena are summarized, and directions for future research are suggested.

1. Reporting the words, thoughts, and actions of others

Language users have a variety of means with which to report the words, thoughts, and actions of others. Indirect quotation (or indirect report), as in example (1a), reports from a neutral, or narrator's point of view. Direct quotation (or direct report, sometimes simply reported speech), as in (1b), makes the report from the quoted person's point of view.

(1)   Situation: Sam, in London, July 22, announces that she will go to a conference in Bordeaux July 29. Speaker is in Bordeaux July 31.