Features Shouldn’t be Too Much Alike : Some Evidence from Japanese Sign Language

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7. Features Shouldn't be Too Much Alike: Some Evidence from Japanese Sign Language

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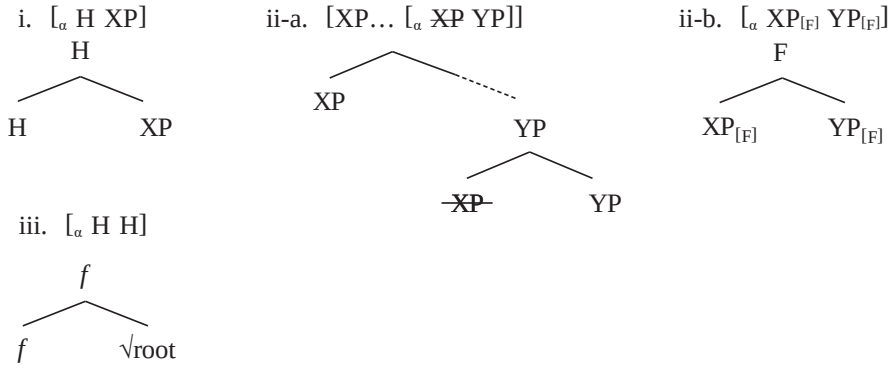
Abstract

Chomsky (2013; 2015) assumes that syntactic objects (SO) must be labeled for interpretation at the interfaces, proposing the labeling algorithm (LA), which deals with three types of SO. One of the three types, an SO of the form $[XP_{[F]}\ YP_{[F]}]$, where XP and YP share the most prominent feature F, receives F as the label, according to the Labeling Algorithm (LA). While this proposal applies to "asymmetrical" XP-YP structures, in which the interpretable F on XP and the uninterpretable F on YP match and agree, it is not clear if the proposal also applies to "symmetrical" XP-YP structures such as $[NP_{[\phi]}\ NP_{[\phi]}]$, where the features shared by the two terms are both interpretable. In this theoretical context, I present two instances of structures of type $[NP_{[\phi]}\ NP_{[\phi]}]$ − symmetrical NP-NP structures − found in Japanese Sign Language: identity copular sentences and NP-coordination. It is shown that in both types of constructions, symmetrical NP-NP structures result in ungrammaticality. I next propose an account of the unavailability of symmetrical NP-NP structures in JSL in terms of a failure of labeling. Finally, I discuss a possible consequence of this proposal for simultaneity in sign languages.

7.1. Introduction

Chomsky (2013) assumes that syntactic objects (SO) must be labeled to get interpreted at the semantic and phonological interfaces, laying out a theory of labeling, the Labeling Algorithm (LA) in (1), which deals with three types of SO: (i) SO = {H, XP}, (ii) SO = {XP, YP}, and (iii) SO = {H, H} (see also Chomsky 2015).

(1) Chomsky's (2013) Labeling Algorithm



The first type, α in (1i), is formed by merging a head (H), a single lexical item, with a phrase (XP), which is a non-head. In this case, the LA selects H as the label of α. The second type is formed by merging two non-head constituents, XP and YP. It has two subtypes (1ii-a) and (1-iib). In (1ii-a), one of the two phrases, say XP, is moved into a higher position in a structure in the course of derivation. In this case, the label of α becomes one of the YP that remains in the original position. In (1ii-b), α has two non-heads (i.e. XP and YP), just as in (1ii-a), but unlike in (1ii-a), the two phrases stay in their original positions and importantly, they share the most prominent feature F. In this case, α receives the label of the shared feature, F. Finally, the third type, α in (1iii), is formed by merging two heads. Chomsky assumes, adopting the Marantz-Borer theory of lexical heads, that this type of SO will be formed by a category-less root and *f*, one of the functional elements determining category, and proposes that the SO has the label of *f* (cf. Marantz 1997; Borer 2013).

To illustrate this LA with an example, let us consider (2) in English (In this illustration, I omit type (1iii), the head-head construction, focusing on (1i) and (1iia-b)).

(2) My dog ate my homework.

The example has the structure in (3), where the constituents J, K, L, M, and N have their corresponding labels given in (4).

(3) $[_{\mathbf{N}}$ my dog$_{[\phi]}$ $[_{\mathbf{M}}$ T$_{[un\phi]}$ $[_{\mathbf{L}}$ ~~my dog~~ $[_{\mathbf{K}}$ *v* $[_{\mathbf{J}}$ eat my homework]]]]]
(4) $[_{\phi}$ my dog$_{[\phi]}$ $[_{\mathrm{T}}$ T$_{[un\phi]}$ $[_{v}$ ~~my dog~~ $[_{v}$ *v* $[_{\mathrm{V}}$ eat my homework]]]]]

Let us first take J, K, and M in (3). They are headed by V, *v*, and T, corresponding to (1i) under Chomsky's LA, and thus, these heads are taken as the labels of these constituents. Next, L in (3) is formed by merging K with the NP *my dog*, which is further raised to subject position.[1)] Thus, L, being an SO of the form α in (1ii-a), gets the label of K that remains in the original position, which is *v*. Finally, N in (3) has two non-head constituents NP and TP, which share the most prominent feature phi (ϕ), corresponding to type (1-iib)

under this LA. It is hence labeled <ϕ, ϕ>, an ordered pair of the prominent features shared by the two terms.

On closer consideration, however, while this LA applies to "asymmetrical" XP-YP structures like N in (3), where the interpretable ϕ-feature on NP and the uninterpretable ϕ-feature on T match and agree, it seems to remain unclear whether the LA also applies to "symmetrical" XP-YP structures like (5), where the shared features are exactly identical.

(5) $[NP_{[\phi]}\ NP_{[\phi]}]$, where ϕ-features are both interpretable

The two NPs in (5), just like NP and TP in (3), share the most prominent feature ϕ, but their features are both interpretable. Does the LA apply equally to such structures, yielding <ϕ, ϕ> as a label? A number of researchers assume that labeling of this type of structures is possible (Miwa 2015; Citko 2008, 2011; Pereltsvaig 2008). However, it appears that the literature lacks clear empirical evidence on this issue (see §3.1). In this theoretical context, I will take up the structure in (5) in Japanese Sign Language (JSL) and consider the availability of this structure.

In the present chapter, I assume, following Chomsky (2013; 2015), that the LA is minimal search. Thus, in the case of (1-iib), for instance, the LA finds the same most prominent element F in both XP and YP by the operation of minimal search and takes it to be the label of α. Under this approach, I also assume that the LA applies, with no problem, to an XP-YP structure like N in (3) in which the operation of Agree is established between the two terms XP and YP.[2)] Now, how about (5)? Does the LA apply to this structure if the features shared by the two terms are both visible to minimal search? And in this case, does it yield <ϕ, ϕ> as the label? These are the questions we address in this chapter. In what follows, I will use the term *symmetrical NP-NP structure* to refer to an SO that contains two NPs bearing interpretable ϕ-features that are visible to the LA, distinguishing from an SO of type XP-YP in which Agree holds between XP and YP, which I refer to as an *asymmetrical* XP-YP structure.

(6) Symmetrical NP-NP structure
$[NP_{[\phi]}\ NP_{[\phi]}]$, where ϕ-features are both interpretable and visible to the LA.

As we will see, symmetrical NP-NP structures create a problem in the two types of constructions in JSL that we discuss.

The chapter is organized as follows. Section 7.2 introduces two instances of symmetrical NP-NP structures found in JSL: copular sentences and coordinate structures. Section 7.3 proposes an account of the observations, and finally, section 7.4 concludes the discussion.

7.2. Japanese Sign Language

7.2.1 Copular Sentences

The first observation concerning symmetrical NP-NP structures in JSL comes from copular sentences. The standard analysis of copular sentences, which I adopt, assumes that the two

phrases linked by the copula are base-generated in a small clause position, and that one of the two phrases in the small clause is raised to subject position as shown in (7), deriving a surface sentence like (8) (cf. Moro 1997, 2000; Rothstein 2001; Mikkelsen 2005).

(7) [John [T [be [$_{SC}$ [$_{NP}$ ~~John~~] [$_{NP}$ a teacher]]]]]
(8) John is a teacher.

Interestingly, under this analysis, a copular sentence of the form *NP is NP* like (8) is derived from an underlying NP-NP structure. Thus, this type of copular sentence may shed light on our question of labeling concerning symmetrical NP-NP structures, if we find a language that allows both two NPs in a small clause to remain in-situ without subject raising.

Before discussing this construction in more detail, let us introduce a crucial distinction between the two types of copular sentences made in the literature. The traditional taxonomy of copular sentences, tracing back to Higgins (1979), distinguishes examples like (8), which semantically express a predicative relation between a subject and its predicate, from examples like (9), which express the identity or sameness of the referents of the two NPs linked by the copula (see Akmajian 1979; Rapoport 1987; Declerck 1988, among others).

(9) John is Mr. Smith.

More precisely, the difference between these two types lies in the (non-)referentiality of the post-copular NP (NP2). In the former type, as in (8), NP2 is a predicate denoting a property of the pre-copular NP (NP1), which is hence not referential. By contrast, in the latter type, as in (9), not only NP1, but also NP2 is referential. Following the classic terminology, let us refer to the former type of copular sentences as *predicational copular sentences* and to the latter as *identity copular sentences*.[3] The following table shows the characterization of the two types (based on Mikkelsen's (2011) classification).[4]

(10)

	NP1	copula	NP2
identity	referential		referential
predicational	referential		non-referential

(cf. Mikkelsen 2011: 1810)

Given this distinction, researchers argue that the two types of copular sentence also differ in the following respect: in an identity sentence, the two NPs are both arguments, while in a predicational sentence, only NP1 is an argument, as shown below (Rapoport 1987; Moro 1997; Partee 2000; Mikkelsen 2005, 2011):

(11)

	NP1	copula	NP2
identity	argument		argument
predicational	argument		predicate

(Rapoport 1987: 192)

One crucial evidence for this distinction concerns the reversibility of the two NPs linked by the copula. As illustrated in (12), the two NPs in an identity sentence can be reversed.

(12) Identity copular sentence
a. John is Mr. Smith.
b. Mr. Smith is John.

This is, however, not the case with a predicational sentence. NP2 in (13a), being a predicate, cannot occupy the subject position as shown in (13b).

(13) Predicational copular sentence
a. John is a doctor.
b. *A doctor is John. (Heycock and Kroch 1999: 379)

On the basis of evidence like this, it has been proposed that the two NPs in an identity copular sentence both require case (Rapoport 1987; Moro 1997; Mikkelsen 2005). I adopt this view and assume under the current framework that the two NPs in an identity copular sentence both bear interpretable ϕ-features, as shown in (14).

(14)

	NP1	copula	NP2
identity	interpretable ϕ-feature		interpretable ϕ-feature
predicational	interpretable ϕ-feature		no interpretable ϕ-feature

Thus, the identity and predicational types differ minimally: only in the former, NP2 carries an interpretable ϕ-feature.

With this in mind, let us turn to copular sentences in JSL. First, consider the example in (15), which is a predicational copular sentence.

(15) Predicational copular sentence
(___TOP)
HE TEACHER (JSL)
'He is a teacher.' (cf. Yonekawa 1984: 204)

As shown here, JSL does not require the copular verb to express a copular meaning. Thus, in (15), only two NPs, with or without a non-manual marker for topicalization (TOP) occurring at the first NP, are sufficient to express the meaning 'He is a teacher.'[5] Note that in typological studies of copular sentences, this fact is not so surprising. It is known that some languages permit copular constructions without a verbal element, as illustrated by the examples of Hebrew and Russian in (16–17).

(16) Hebrew
dani rofe.
dani doctor
'Dani is a doctor.' (Rothstein 2001: 206)

(17) Russian
Mark Twain pisatel' po professii.
Mark Twain writer.NOM by profession
'Mark Twain is a writer by profession.' (Geist 2007: 89)

Now, consider (18) in JSL, which are the examples of identity copular sentences.

(18) Identity copular sentence
a. (_____TOP)
*TAROO YAMADA (JSL)
'intended: Taroo is Mr. Yamada.'
b. (_____TOP)
*YAMADA TAROO
'intended: Mr. Yamada is Taroo.'

All my informants, native signers of JSL, judged these examples to be ungrammatical, unlike the grammatical example of a predicational sentence in (15). The two examples in (18), with or without a non-manual topic marker at the first NP, cannot mean that the referents of the two NPs, *TAROO* and *YAMADA*, are the same person. The examples in (19) and (20) illustrate the same point.

(19) Identity copular sentence
a. (_____TOP)
*TANAKA YAMADA (JSL)
'Ms. Tanaka is Ms. Yamada.' (intended: Ms. Tanaka's married name is Yamada.)
b. (_____TOP)
TANAKA REAL NAME YAMADA
'Ms. Tanaka's married name is Yamada.'

(20) Identity copular sentence
a. (_____TOP)
*TOKYO EDO (JSL)
'Tokyo is Edo.' (intended: The city of Tokyo is the same as the city of Edo.)
b. (_____TOP)
TOKYO OLD NAME EDO
'Tokyo's old name is Edo.'

The a-examples are both ungrammatical. To express the intended reading of (19a) such that

Ms. Tanaka's married name is Yamada, it is required that the sentence takes the form of (19b), which is not an identity sentence. Similarly, (20a) is not acceptable and to express the sameness of the two cities in this example, we should have a sentence like (20b), which does not yield an identity reading.

How can we capture the contrast in grammaticality between predicational and identity sentences seen above? Following the standard approach, copular constructions that lack the copular verb (henceforth, bare copular sentences) in languages like Hebrew are assumed to have a simple small-clause type structure without the verbal layer as in (21), in which both NPs remain in their base positions.

(21) $[_{SC}\,[_{NP}$ dani$]\,[_{NP}$ rofe$]]$
'Dani is a doctor.' (Rothstein 2001: 215)

More precisely, under our current terms, the two types of bare copular sentences − predicational and identity – are analyzed as in (22a−b).

(22) a. Predicational copular sentence
[he$_{[\phi]}$ teacher$_{[u\phi]}$]
b. Identity copular sentence
*[Taroo$_{[\phi]}$ Yamada$_{[\phi]}$]

Recall that we have assumed that NP2 in a predicational copular sentence, unlike the one in an identity copular sentence, does *not* carry an interpretable ϕ-feature (see (14)). Here, in the case of bare copular sentences, I adopt a stronger assumption that NP2 in the predicational type not only lacks an interpretable ϕ-feature, but in fact, carries an uninterpretable ϕ-feature as shown in (22a). This assumption circumvents the potential problem of the labeling of this structure.[6] With NP2 bearing an uninterpretable ϕ-feature, the structure corresponds to the asymmetrical type of the XP-YP structure in (1ii-b) above, in which the two terms establish an Agree relation and share the most prominent feature – ϕ – thereby yielding <ϕ, ϕ> as the label. This is not the case, however, if NP2 completely lacks a ϕ-feature.

At this point, one may ask whether predicate nominals of bare copular sentences like (15)−(17) indeed carry uninterpretable ϕ-features as I assume, since, as pointed out by a reviewer, nouns are commonly assumed to lexically bear interpretable ϕ-features. If the ϕ-feature of NP2 in this construction is specified as interpretable, the operation of Agree fails to hold and the whole structure may be left without being labeled.

There is evidence, however, suggesting that NP2 in this construction is specified with an uninterpretable ϕ-feature. Let me present two kinds of such data cited from previous research of copular sentences. First, in Russian and Hebrew bare copular sentences, predicative NPs, just like APs, are marked with overt morphological agreement with their subjects. This is illustrated in (23)−(24).

(23) Russian
a. *Ivan vysokij / lučšij tancor.*
Ivan tall.SG.MASC.NOM / best dancer.SG.MASC.NOM
'Ivan is tall/ he best dancer.' (Giest 2007: 4)
b. *Kto Ivan po professii? Učitel'.*
who.NOM Ivan by profession A teacher.SG.MASC.NOM
'Who is Ivan by profession? A teacher.' (Giest 2007: 4)

(24) Hebrew
a. *dani more.*
Dani teacher
'Dani is a teacher.' (Doron 1983: 113)
b. *at mora.*
you.SG.FEM teacher.FEM
'You are a teacher.' (Doron 1983: 117)
c. *dani nexmad.*
Dani nice.SG.MASC.
'Dani is nice.' (Doron 1983: 91)
d. **dani nexmadot.*
Dani nice.PL.FEM.
'Dani is nice.' (Doron 1983: 91)

This piece of evidence shows that NP2 in bare copular sentences, just as other predicative categories, bears ϕ-features that need to be specified for number and gender, suggesting that it has an unvalued uninterpretable ϕ-feature.

The second evidence comes from the distribution of non-restrictive relative clauses. It is well-known that non-restrictive relative clauses in English using *who* can modify arguments, while those using *which* only modify predicative expressions (see Doron 1983; Kuno 1970; Rothstein 2001, among others). This is illustrated by the contrast between the examples of predicational and identity copular sentences in (25)–(26).

(25) Identity copular sentences
I've just found out that Mr. Smith, *who* I work with, is Mary, *who* I've been dating. (Rapoport 1987: 129)

(26) Predicational copular sentences
a. He is a gentleman, {*which*/**who*} his brother is not. (Rothstein 2001: 257)
b. He is a hypocrite, {*which*/**who*} I don't want to become. (Kuno 1970: 348)
[italics: YA]

In an identity copular sentence in the embedded clause in (25), both NPs, which are arguments, are modified by *who.* By contrast, the predicate nominals in predicational copular sentences in (26) can be followed by *which*, but not by *who*. A similar restriction is observed

in bare copular sentences in Hebrew.

(27) Hebrew
a. **dani more, še ani makira oto šanim.*
Dani teacher that I know him years
'Dani is a teacher, who I have known for years.' (Doron 1983: 113)
b. **dani ha-more, še ani makira oto šanim.*
Dani the teacher that I know him years
'Dani is the teacher, who I have known for years.' (Doron 1983: 113)

NP2 of these examples cannot be pronominalized by *who*. Now, let us assume that the pronoun *še* in Hebrew, just like *who* in English, enters into agreement for the person feature on an NP that it modifies (Kratzer 2009). The ungrammaticality of these examples is then accounted for if these NPs carry uninterpretable ϕ-features because it is expected that *še* cannot establish an Agree relationship with the NPs that it modifies, creating a problem. If they carry interpretable ϕ-feature values, instead, these data are difficult to explain.

Considering data like these, I assume that NP2 in the predicative type of bare copular sentences is specified with an uninterpretable ϕ-feature. Thus, examples like (15) and (16), repeated here, are licensed in terms of labeling: they are an XP-YP structure of the form (1ii-b), in which the operation Agree holds between the two terms that share the most prominent feature, ϕ, yielding <ϕ, ϕ> as their label.[7)]

(28) JSL
(___TOP)
HE TEACHER
'He is a teacher.'

(29) Hebrew
dani rofe.
dani doctor
'Dani is a doctor.'

Let us turn now to the structure of an identity bare copular sentence in (22b), where the two NPs have interpretable ϕ-features, repeated here:

(30) JSL
*[Taroo$_{[\phi]}$ Yamada$_{[\phi]}$]

Under our approach, the structure corresponds to a symmetrical NP-NP structure that we have defined earlier (see (6)). Our observations in JSL show that this type of structures results in ungrammaticality.

There is another piece of evidence that supports this description. Consider the examples of identity sentences from Hebrew and Russian in (31a) and (32a).

(31) Identity bare copular sentence
a. **dani mar yosef.* (Hebrew)
dani Mr. Yosef
'intended: Dani is Mr. Yosef.' (Rothstein 2001: 207)
b. [[dani$_{[\phi]}$] [mar yosef$_{[\phi]}$]]

(32) Identity bare copular sentence
a. **Mark Twain Samuel Clemens.* (Russian)
Mark Twain Samuel Clemens
'intended: Mark Twain is Samuel Clemens.' (Geist 2007: 89)
b. [[Mark Twain $_{[\phi]}$] [Samuel Clamens$_{[\phi]}$]]

The two examples are analyzed as in (31b) and (32b) respectively, both corresponding to a symmetrical NP-NP structure, and the result again is ungrammatical. These facts confirm the description above that a symmetrical NP-NP structure leads to ungrammaticality.

7.2.2 Coordinate Structures

The second observation concerning a symmetrical NP-NP structure in JSL is found in NP-coordination. Intuitively, coordination involves some sort of "symmetry." For example, conjuncts of a coordinate structure can occur in either order, as shown in (33).

(33) Coordination
a. John met [Mary and Bill].
b. John met [Bill and Mary].

In this respect, coordination of the form *NP and NP* is similar to another "symmetrical" construction that we have seen above, identity copular sentences.[8] Just like the two conjuncts in (33), the two NPs in an identity sentence may appear in a different order as shown in (34).

(34) Identity copular sentence
a. John is Mr. Smith.
b. Mr. Smith is John.

Moreover, the two types of construction both exhibit semantic symmetry. The sentences with coordination in (33) share the same truth value, that is, they can be true under the same circumstances. Analogously, if the identity copular sentence in (34a) is true, it entails that the sentence in (34b) is also true. These similarities between coordination and identity copular sentences suggest that coordination can also offer us a way to explore the syntax of a symmetrical NP-NP structure. As we will see, JSL provides interesting data to examine the availability of this type of structure.

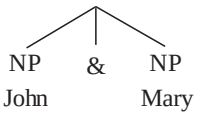
One theoretical issue in the syntax of coordination is that conjuncts exhibit asymmetry, as well as symmetry. For example, the coordinator *and* in English may form a unit with

the second conjunct, but not with the first conjunct, as shown in (35).

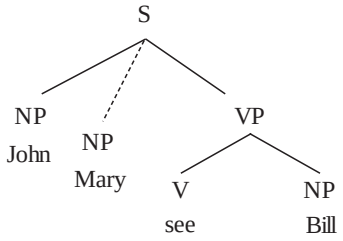
(35) a. John left, and he didn't even say good-bye.
b. John left. And he didn't even say good-bye.
c. *John left and. He didn't even say good-bye. (Ross 1967: 163)

In the literature, the (a)symmetric properties of coordination as described above give rise to two opposite types of analysis (see Progovac 1998 for a review). Some researchers argue for a symmetrical analysis as in (36a) and (36b), where conjuncts appear structurally in a parallel way, with no specification for a precedence relation between them.

(36) a.

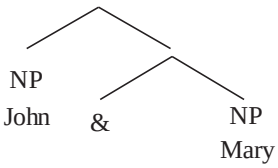


b.



(36a) is a flat, multi-branching structure as proposed by Jackendoff (1977) and Chomsky (1981). (36b) shows a structure adopted under the approach known as "three-dimensional" or "mutli-dimensional," where it is assumed that conjuncts are represented paratactically in distinct "planes" or "dimensions" (Kuroda 1960; Goodall 1987; Moltmann 1992; de Vries 2005, among others). Others pursue an asymmetrical analysis, under which conjuncts are located in a hierarchical manner as in (37) (Munn 1993; Kayne 1994; Zoerner 1995; Johannessen 1998, among others).[9)]

(37)



Interestingly, the NP-coordination in (36a–b) under the symmetrical analysis corresponds to a symmetrical NP-NP structure in our discussion, since the two coordinated NPs, both being referential, are assumed to bear interpretable ϕ-features that are visible to the LA.

JSL provides a crucial piece of evidence to examine the availability of this structure. Sign languages, unlike spoken languages, employ more than one articulator, two hands and non-manual markers such as head nods and eye movements, which are physiologically independent. Now, in JSL, one way to represent the coordinator *and* in a coordinate structure is to use a non-manual marker, a head nod (hn) (cf. Ichida 1998; Kimura 2007; Kotani 2009), as illustrated in (38).

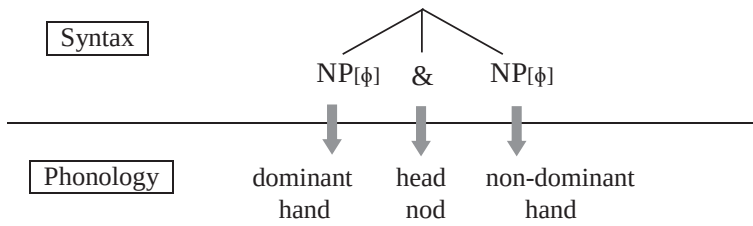
(38) JSL

a.
dominant hand: ____hn HE YOU COME
'He and you came.'

b.
dominant hand: _____hn YOU HE COME
'You and he came.'

Therefore, it is potentially possible that the two coordinated NPs and the coordinator in (36a–b) are signed by independent articulators in the phonology as schematically shown in (39), if such a structure is indeed available:

(39)



The precedence relation between the three terms in (39) is not specified if we follow the authors who argue for parallel structures in coordination. It is thus expected that in JSL, these three terms are realized simultaneously by the three independent articulators at the phonology. This expectation is not met, however, as shown in (40).

(40) JSL

a. *
dominant hand: (____hn) HE COME
non-dominant hand: YOU
'intended: He and you came.'

b. *
dominant hand: (_____hn) YOU COME
non-dominant hand: HE
'intended: He and you came.'

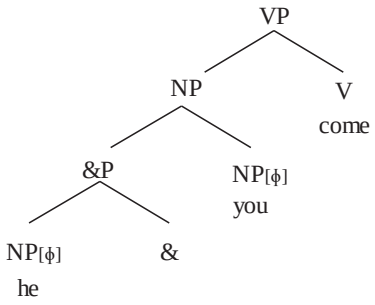
In these examples, the two conjuncts (and the coordinator) are signed independently by two hands (and the head) at the same time. My informants concurred that the examples are both ungrammatical. This confirms the same point we made in the previous section: a symmetrical NP-NP structure results in ungrammaticality.

At this point, one may ask why the examples of coordination in (38), which involve sequential representation, are grammatical. The coordinate structures in these examples, just as in the ungrammatical (40), contain two NPs bearing interpretable ϕ-features. Thus, if they are instances of symmetrical NP-NP structures, we would wrongly predict that the

examples were ungrammatical.

Crucially however, the coordinate structures in (38) do *not* correspond to symmetrical NP-NP structures, under the asymmetrical analysis for coordination in which the coordinator phrase (&P) headed by the coordinator is adjoined to the second conjunct as shown in (41) (for the adjunct analysis of coordination, see Munn 1993).

(41)



In this structure, only the ϕ-feature on the second conjunct, structurally located in a higher position, is visible to the LA, the operation of minimal search that finds the closest element carrying a relevant feature. Thus, the coordinate structure in (38) is *not* an instance of a symmetrical NP-NP structure by our definition in (6). The grammaticality of the examples in (38) is therefore not a problem for the description I presented above that symmetrical NP-NP structures result in ungrammaticality.

To sum up, in this section, we have discussed two kinds of evidence from JSL that concern symmetrical NP-NP structures: identity copular sentences and NP-coordination. The observations show that these types of structure are not licensed in JSL. How can we then explain this fact? In the next section, I propose an account in terms of syntactic labeling.

7.3. Labeling

The observations concerning identity copular sentences and NP-coordination in JSL raise a question of why symmetrical NP-NP structures in the two types of constructions, unlike their "asymmetrical" counterparts, are disallowed. Recall that in JSL (and also in Modern Hebrew and Russian), the predicational type of bare copular sentences, where only one of the two NPs in a small clause constituent bears an interpretable ϕ-feature, is permitted, while the identity type – a symmetrical NP-NP structure − is not, as illustrated in (22), repeated here:

(42) Bare copular sentences
   a. *Predicational*
      [he$_{[\phi]}$ teacher$_{[u\phi]}$]
   b. *Identity*
      *[Taroo$_{[\phi]}$ Yamada$_{[\phi]}$]

Similarly, in NP-coordination, the sequential representation of the two conjuncts, which is syntactically analyzed as an asymmetrical adjunction structure like (43a), is permitted, while the simultaneous representation of (43b), a symmetrical NP-NP structure, is disallowed.

(43) Coordination
  a. *Sequential representation*
  [[he$_{[\phi]}$ and] you$_{[\phi]}$]
  b. *Simultaneous representation*
  *[he$_{[\phi]}$ and you$_{[\phi]}$]

A reasonable account that emerges from this contrast is to attribute the non-availability of symmetrical NP-NP structures to the conflict in terms of labeling between the two interpretable ϕ-features in one constituent. As seen earlier, the clause (1iib) of Chomsky (2013)'s LA says that SO of the form [XP$_{[F]}$ YP$_{[F]}$] receives the label of the shared feature, F. The observations so far suggest that this clause is restricted to the case in which the shared features are not "too identical," that is, the case in which the shared features match and agree. On this account, symmetrical NP-NP structures like (42b) and (43b) are simply ruled out due to a failure of labeling, and the grammaticality of "asymmetrical" counterparts as in (42a) and (43a) is accounted for in the following ways. In (42a), an example of a predicational copular sentence, minimal search finds a label <ϕ, ϕ> for the structure, since here, the shared features match and agree. How about (43a)? It is an adjunction structure. Let us assume that adjuncts are label-less (Hornstein 2009). On this assumption, (43a) has the label of the second NP, with no problem.

Importantly, this view goes against the assumption made by Miwa (2015), Citko (2008; 2011), and Pereltsvaig (2008) that symmetrical NP-NP structures can be labeled. Let us here briefly review their position.

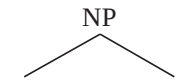
Miwa (2015) deals with the labeling issue of a coordinate structure. He adopts Chomsky's (2013) analysis of coordination in (44) (see Footnote 9) and employs an additional mechanism that he proposes, "feature sucking," which allows the coordinator head Conj to receive a copy of the feature of conjuncts.

(44) [XP [$_{ConjP}$ Conj [~~XP~~ YP]]] (cf. Chomsky 2013: 46)

Thus, in the case of NP-coordination of thetype *John and Mary*, where both conjuncts carry interpretable ϕ-features, feature sucking turns the coordinate structure into [NP$_{[\phi]}$ ConjP$_{[\phi]}$]. Miwa then argues that the structure is labeled <ϕ, ϕ>, crucially assuming that Chomsky's LA applies to a structure of the form [XP$_{[\phi]}$ YP$_{[\phi]}$], which includes a symmetrical NP-NP structure in our terms.

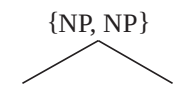
Analogously, Pereltsvaig (2008) and Citko (2008; 2011) claim that copular sentences of type *NP is NP* involve "symmetric labels."[10] More specifically, they argue that the underlying small clause of this type of copular sentences takes as a label the union/intersection of the categorial features of the two NPs forming the small clause, as shown in (45).

(45) a.



(cf. Pereltsvaig 2008: 52)

b.



(cf. Citko 2011: 178)

Curiously however, while the two authors discuss examples of *tensed* copular sentences such as (46) in Russian, they do not discuss the *bare* type of copular sentences in this language, such as (32a), repeated as (47a), in which two referential NPs appear without a copular verb (for JSL, see Footnote 7).

(46) a. *Vysotskij byl Gamlet.* (Russian)
Vysotsky.NOM was Hamlet.NOM
'Vysotsky was Hamlet.'

b. *Gamlet byl Vysotskij.* (Russian)
Hamlet.NOM was Vysotsky.NOM
'Hamlet was Vysotsky.'

(Citko 2011: 184, citing Pereltsvaig 2008: 52)

(47) = (32)

a. **Mark Twain Samuel Clemens.* (Russian)
'intended: Mark Twain is Samuel Clemens.'

b. [[Mark Twain $_{[\phi]}$] [Samuel Clamens$_{[\phi]}$]]

As shown in (47a), in Russian, the identity type of bare copular sentences, unlike the predicational type, is not permitted. Thus, while it may be the case that the underlying small clause of a tensed copular sentence like (46), which apparently involves subject raising, receives "symmetric labels," NP or {NP, NP}, it is not clear whether examples of identity bare copular sentences such as (47a), which are ungrammatical, are also labeled.[11] If so then, why only the identity type, not the predicational type, is disallowed in these languages?

In a nutshell, in their discussions of labeling, the above authors fail to consider a genuine case of symmetrical structures, [NP$_{[\phi]}$ NP$_{[\phi]}$], where two elements contributing to the label both bear interpretable ϕ-features. This seems to be a critical gap in their analysis. If the structure [NP$_{[\phi]}$ NP$_{[\phi]}$] is labeled <ϕ, ϕ>, NP, or {NP, NP} as they assume, one should then explain why a simple bare copular construction of type *TAROO YAMADA* is banned in these languages. Rather, if the labeling of [XP$_{[F]}$ YP$_{[F]}$] in Chomsky's (2013) LA is restricted to only the cases where the shared features match and agree, as I suggest, one can provide a simple explanation of the ungrammaticality of these examples: a failure of labeling.[12]

Before concluding, I would like to discuss a possible theoretical consequence of the present work for simultaneity in sign languages. As seen above, the examples of coordination in JSL that involve a simultaneous articulation of two conjuncts (40) is not acceptable. In cross-linguistic studies of sign language, such observations are not new. It has been observed that the simultaneous production of words and phrases is not totally unconstrained, but rather, it is subject to constraints such as (48) and (49) (see also Miller 1994; Vermeerbergen et al. 2007; Kimmelman et al. 2016).

(48) Phonological rule for simultaneity (Jordanian Sign Language)
Manual simultaneity can only take place when at least one of the hands makes no lexically specified movement, or when the movement of the two hands is symmetrical. (Hendriks 2008: 139)

(49) a. H1: X
H2: Y
b. H1: X - - - - - - -
H2: Y (Kimmelman 2015: 228)

(48) is a phonological rule proposed by Hendricks (2008) for Jordanian Sign Language, which basically rules out the simultaneous use of two hands to sign lexically specified distinct items. More generally, Kimmelman (2015) formalizes the constraints on manual simultaneity as in (49), arguing that the full realization of two independent signs by two hands (49a) almost never occurs, and that what we see instead is (49b).

The facts concerning simultaneous constructions in JSL presented in this chapter are fully consistent with this view. The ungrammatical examples of coordination seen above, where two distinct NPs are articulated simultaneously by two hands, are ruled out by a formal condition like (48) or (49).

Interestingly therefore, if my assumptions concerning labeling are correct, it may be possible to derive at least some cases of violation to these modality-specific, phonological rules from the more general, modality-independent condition in human language.[13] For example, the simultaneous construction in (40) is disallowed, not because they violate sign-language-specific phonological conditions, but because it violates the general requirement in human language that SO must be labeled. Would it be possible to extend this line of analysis to derive the generalizations in (48) and (49)? I will leave this question for future work (see Kimmelman 2015; Asada 2017 for such attempts).

7.4. Conclusion

In this chapter, I first showed that a symmetrical NP-NP structure results in ungrammaticality, based on evidence in JSL that concerns copular sentences and NP-coordination. Next, I proposed that the unavailability of symmetrical NP-NP structures in JSL can be accounted for in terms of a failure of labeling, arguing against the view adopted by Miwa (2015), Citko (2008; 2011), and Pereltsvaig (2008).

The present work is a preliminary attempt to uncover the syntactic status of symmetrical structures in sign language and explore its relevance for the general theory of labeling and (a)symmetry in linearization. I hope to have shown that sign language, with its visual modality, offers a new perspective to address such topics. It is needless to say that the scope of the data examined in this chapter is limited and many important issues are left untouched, including other types of "symmetrical" structures such as VP-coordination and the precise characterizations of simultaneity, in particular its relation to perseveration (Miller 1994), weak-hand holds (Kimmelman 2015), and non-manual markers (Harmon 2016). I leave these important subjects for future work.

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Abbreviations

Abbreviations used in this chapter: hn: head nod, NOM: nominative, TOP: topic.

Notes

1) In this chapter, I do not distinguish between DP and NP, referring to every nominal phrase as NP.
2) More precisely, I assume that Agree is the operation of matching between an uninterpretable unvalued feature and an interpretable valued counterpart and valuation of the unvalued feature under c-command (Chomsky 2013; 2015).
3) While the term "equative" is becoming more common in the literature, I use the term "identity" to refer to this type of sentences, following traditional terminology (Higgins 1979; Declerck 1988).
4) In this classification, Mikkelsen (2005; 2011) discusses another type of copular sentences, specificational, as exemplified in (i).
   (i) a. The real culprit is John.
   b. That is Susan. (Mikkelsen 2005: 121)

   The specificational type corresponds to the characterization in (ii), which completes her table in (10).

(ii)

	NP1	copula	NP2
specificational	non-referential		referential

Another logical possibility in this classification is (iii).

(iii)

	NP1	copula	NP2
	non-referential		non-referential

Although Mikkelsen (2005; 2011) does not discuss this type, in my opinion, copular sentences which contain two non-referential NPs may exist (see Asada 2011 for discussion). In the present work, however, I focus on the predicational and identity types and put aside the other two types, leaving them for future research.

5) In JSL, the non-manual marker for topicalization (TOP) is a head tilted slightly back and a brief pause following the topic, typically accompanied with raised eyebrows and widening of the eyes.
6) I thank Asako Uchibori (personal communication) for bringing this point to my attention.
7) Alternatively, these examples can be analyzed as involving an asymmetrical structure mediated by a functional head such as Pred (Bowers 1993) or Tense-Relator (den Dikken 2006) as in (i)-(ii) (for similar analyses, see Adgar and Ramchand 2003; Mikkelsen 2005).

   (i) $[_{\text{PredP}}$ NP1 [Pred NP2]]

   (ii) [T-Relator $[_{\text{RelatorP}}$ NP1 $[t_{\text{Relator}}$ NP2]]]

   There seems to be little evidence, however, that such a functional head exists in this construction. For example, JSL has an aspectual morpheme that marks a completive/perfective state of an event (notated as FINISH), but this marker does not have to occur to denote a past event (iii) and cannot repair the ungrammaticality of the identity type of bare copular sentences in this language (iv) (but see below for Russian):

   (iii) *Predicational bare copular sentence*
   TAROO THREE PERIOD ONLY TEACHER (FINISH) (JSL)
   'Taroo was a teacher only for three months.'

   (iv) *Identity bare copular sentence*
   *TAROO YAMADA FINISH (JSL)
   'intended: (In this play), Taroo was Yamada.'

   While it may be the case that some languages have this type of functional head (see e.g. Nishiyama 1999 for Japanese copular sentences), in the present work, I adopt a simpler structure without a functional layer for bare copular sentences, at least for JSL, leaving aside this possible account. I thank a reviewer for bringing this point to my attention.
8) There are other syntactic similarities between coordination and copular sentences (see Heycock and Kroch 1999; Asada 2011; Asada and Kato 2011).
9) Yet another interesting analysis of coordination is proposed by Chomsky (2013: 46), shown in (i).

   (i) *Structure of [Z and W]*
   $[_{\gamma}$ Z $[_{\alpha}$ Conj $[_{\beta}$ Z W]]]

   This structure, in which conjuncts are base-generated in a symmetrical manner, captures the semantic symmetry of coordination, while deriving the asymmetrical surface order of the conjuncts.

In terms of labeling, however, it seems to raise several issues (for discussion, see Asada 2013; Miwa 2015).

10) In their works, both authors employ the term DP, not NP. In the present chapter, I use the term NP for the sake of consistency.

11) It should be pointed out that we do not have to resort to Citko's symmetric labels to account for the grammaticality of tensed identity copular sentences in Russian like (46), as Citko herself discusses in her analysis (2011: 183). In tensed copular sentences, one of the terms forming a small clause raises to a higher position, and hence, if we follow Chomsky's (2013) LA (see (1ii-a)), the small clause constituent receives the label of the term that remains (i.e. NP2) with no problem.

12) One possible implication of this study is that atoms of syntactic computation may be ϕ-features, not lexical items (see Chomsky 2013: 46 for discussion). If the minimal search algorithm assigns labels to SO in terms of the (non-)presence of interpretable ϕ-features, features may be the relevant minimal elements that enter into computation. This points to several issues that need further investigation.

13) Kita *et al.* (2014) propose an interesting possibility to explain why such phonological constraints are imposed. They argue that the well-known Battison's (1978) Symmetry Condition can be derived from a more general constraint in the human cognitive system (I thank Daisuke Hara (p.c.) for pointing this out to me).

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