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The indefinite-interrogative affinity in sign languages: the case of Catalan Sign Language

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Abstract

Prior studies on spoken languages have shown that indefinite and interrogative pronouns may be formally very similar. Our research aims to understand if sign languages exhibit this type of affinity. This paper presents an overview of the phenomenon and reports on the results of two studies: a cross-linguistic survey based on a sample of 30 sign languages and an empirical investigation conducted with three deaf consultants of Catalan Sign Language (LSC). Our research shows that, in sign languages, certain signs have both existential and interrogative readings and it identifies the environments that make existential interpretations available in LSC.

1 Introduction

Research on spoken languages has shown that indefinite pronouns are commonly derived from generic nouns such as 'thing' or 'time' (as in English *something* or *sometime*) and the numeral 'one' (e.g., *someone* in English, *qualcuno* in Italian). Furthermore, indefinite pronouns may be morphologically very similar or even identical to interrogative pronouns (Haspelmath, 1997). For example, the Mandarin Chinese form *shenme* ('something'/'what') has both indefinite and interrogative functions and the English indefinite *anywhere* is somehow linked to the interrogative word *where* and the indefiniteness marker *any-*. This formal resemblance is known as the indefinite-interrogative affinity (Bhat, 2004; Gartner, 2009; Onea, 2021).

In his typology of spoken language indefinites, Haspelmath (1997) made the following observation: when indefinite and interrogative pronouns are formally similar but not fully identical, the indefinite is always the element that is more morphologically complex. That is, there is a universal asymmetric markedness relation such that interrogative pronouns are virtually never more marked than indefinite pronouns nor derived from them.[1] This is why indefinite pronouns bearing a formal resemblance with interrogative words are commonly referred to as interrogative-based indefinites (Haspelmath, 1997) or as *wh*-indefinites (Bruening, 2007). Depending on their form, *wh*-indefinites may be further broken down into two categories: bare, if their form is identical to that of the interrogative, and complex, if they involve the interrogative along with some additional morphology. Languages differ with respect to the type of affinity they allow: some languages have both bare and complex *wh*-indefinites, some languages have one type only, and yet others do not show this type of affinity (cf. Yun, 2013).

In this paper, we will follow Hengeveld et al. (2022) and adopt the term *quexistentials* to refer to those elements that may be used either as question words or as existential indefinites. Likewise, we will refer to the interrogative interpretation of a quexistential as *qu of quex* and to the existential reading of the quexistential as *ex of quex*. While in its original formulation, the term applies only to those words that allow interrogative and indefinite uses without differences in spell-out, we will extend the definition to cover those cases in which the two uses correspond to similar but not fully identical forms. The main motivation is that interrogative and indefinite signs tend to co-occur with specific sets of non-manual markers (NMMs), but we do not yet know what the exact role of such markers is nor whether fully identical forms can be found in any sign language. Therefore, we will use the term *quexistential* when the manual sign is the same and the NMNs differ, but also when the manual sign is not fully identical in both readings, either because it combines with other signs or because it involves a change on its phonological make-up (e.g., by

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[1] Similar observations are found in Moravcsik (1969) and Ultan (1969).

means of reduplication or movement modification). To make these distinctions explicit, we will use the labels *bare* and *complex quexistential*.

Despite claims that in some sign languages certain items may function both as indefinite and as interrogative pronouns, the extent to which the indefinite-interrogative affinity is found in the visual modality has not yet been investigated (Zeshan, 2006a; Cormier, 2012; Zeshan and Palfreyman, 2017). Thus, it is also not clear whether Haspelmath's universal, according to which indefinite pronouns always constitute derived forms, can be taken to hold for sign languages as well. Indeed, this is the main reason for adopting the term *quexistentials*, as it remains neutral with respect to the nature of the interrogative-indefinite affinity (i.e., it does not presume that the indefinite is always derived from the interrogative).

In this paper, we aim to investigate the extent to which the indefinite-interrogative affinity is found in the signed modality. The roadmap of the paper is as follows. Section 2 provides an overview of the distribution of quexistentials across spoken and signed languages. In Section 3, we zoom in on the morphology of quexistentials and the distribution of the ex of quex in Catalan Sign Language (LSC). Section 4 summarizes our findings and Section 5 suggests directions for future research. The main contribution of this study is that it provides the first description of the morphology and the distribution of the ex of quex in a sign language.

2   Cross-linguistic distribution of the indefinite-interrogative affinity

The indefinite-interrogative affinity is a widespread phenomenon among the world's spoken languages. Importantly, this affinity is not restricted to a specific language family or to a particular geographic area. In Ultan's (1969) typology of interrogative systems, it is attested in 77 out a sample of 79 spoken languages. In Haspelmath's typology of indefinite pronouns (1997), 63 out of a sample of 100 spoken languages were found to show this type of affinity.

2.1   Distribution of the ex of quex

The distinction between bare and complex quexistentials has been claimed to impact the licensing conditions of the ex of quex. According to Yun (2013), complex forms do not exhibit any syntactic or semantic restriction, thus patterning with non-

quexistential indefinites.

Bare quexistentials, by contrast, are subject to different constraints across languages. While the contexts in which the existential reading of bare quexistentials arises are not uniform, in many languages, the ex of quex occurs in environments that license NPIs. Let's take the case of Mandarin Chinese as an illustration. In Mandarin Chinese, the ex of quex is licensed by modals (1), negation (2), antecedents of conditionals (3) and polar questions (4). Other licensors include imperatives and future markers, non-factive predicates like *renwei* 'think' and the universal quantificational particle *dou* (Lin, 1998; Chen, 2018; Yang et al., 2022). Crucially, the ex of quex may also occur in environments that do not license NPIs, such as positive sentences marked with progressive or perfective aspect (Chen, 2018; Liu and Yang, 2021). When occurring in such contexts, the forms are argued to convey speaker's ignorance about the identity of the individual that satisfies the description of the *wh*-phrase, as in (5) (examples are adapted from Chen, 2018, 142–143).

(1)   Ni   bixu chi dian **shenme**
      You must eat CL   QUEX
      'You must eat something.'

(2)   Zhangsan mei   chi **shenme** dongxi
      Zhangsan NEG eat QUEX   thing
      'Zhangsan didn't eat anything.'

(3)   Ruguo ni   you **shenme** wenti,   jiu lai
      If   you have QUEX   question, then come
      wen wo
      ask me
      'If you have any question, come and ask me.'

(4)   Zhangsan chi-le   **shenme** ma?
      Zhangsan eat-ASP QUEX   Q?
      Did Zhangsan eat anything?

(5)   Zhangsan mai le   dian **shenme** song gei Lisi
      Zhangsan buy Asp CL   QUEX   give to Lisi
      'Zhangsan bought something for Lisi (the speaker does not know specifically what he bought).'

Finally, some languages may restrict the position in which the ex of quex is allowed. For example, in Dutch and German, it must occur inside the verb phrase, and it cannot be scrambled outside the VP without losing its indefinite interpretation (Postma, 1994).

2.2 The indefinite-interrogative affinity in sign languages

In order to investigate whether sign languages show the same kind of affinity between question words and existential indefinites, we first conducted a survey based on a convenience sample of 30 different sign languages. The data gathered consisted mainly of articles and book chapters (most about interrogatives, with only a few addressing indefinite pronouns), as well as online dictionaries and grammars. Crucially, the languages in our sample were selected based on the availability of the data only, and no further factors were considered at this point.

2.3 Results

We found that the indefinite-interrogative affinity is attested in 11 out of the 30 sign languages considered in our sample. For the remaining 19 languages, either the affinity was claimed not to exist or no information on the topic was available. The list of sign languages and the semantic categories that allow both interrogative and indefinite uses are presented in Table 1. The complete list of languages is presented in Appendix A.

Despite being heavily biased towards European sign languages, our sample show that the indefinite-interrogative affinity is attested in different geographic areas. Note, however, that languages such as BSL, Auslan and NZSL are historically related. Therefore, identification of the same types of quexistentials across this group of languages is not entirely unexpected.

Overall, our survey reveals that the person category quexistential, which covers the existential reading ('someone') and the interrogative interpretation ('who'), is the most common across sign languages. However, since in most cases discussion of the features was rather superficial, no detailed comparison of the distribution of quexistentials in sign languages could be carried out. In fact, from the data available it could not be established whether or not quexistentials referring to semantic categories other than person, thing and location were possible in the sign languages in our sample. In the case of NS and Libras, there is simply no indication about the categories in which quexistentials are allowed. This is why the two languages are marked with a star in Table 1.[2]

With some notable exceptions, such as Barberà et al. (2018) for LSC, the contexts that license existential interpretations are not explicitly identified either. That said, for UgSL it is noted that the use of the ex of quex is not possible across the board (cf. Lutalo-Kiingi, 2014, 232). Taking this into consideration, we decided to conduct fieldwork so as to i) maximize the diversity of our sample; and ii) collect more detailed, comparable data from specific sign languages. The next section describes the case of LSC, which is the first sign language we studied and the one in which we piloted our research methodology.

3 Quexistentials in LSC

LSC is a language argued to have a bare quexistential in the person category, which can mean either 'who' or 'someone', as well as two complex quexistentials, the compounds QUEX:personˆQUEX:quantity and QUEX:personˆIX$_{3pl}$,[3] meaning 'someone' (Barberà and Quer, 2013; Barberà, 2016; Barberà and Cabredo Hofherr, 2018; Barberà, 2021).[4] According to (Barberà, 2021), the existential reading of the bare quexistential is licensed by the NMMs used in contexts of indefiniteness, which in LSC include sucking the cheeks in, pulling the corners of the mouth down, and sometimes a shrug (Barberà, 2015).[5,6]

3.1 Method

In order to investigate if quexistentials are equally productive in other semantic categories and to determine their distribution in the language, we con-

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[2]In fact, the case of Libras is further complicated by the fact that while Zeshan (2004) claims that question words may

have indefinite uses, a later study by Quadros (2006) states the opposite.

[3]Following standard conventions, manual signs are glossed in small capitals. The gloss QUEX:'category' represents quexistentials and the semantic category they belong to. Multimorphemic signs are glossed using a circumflex accent between the morphemes (SIGNˆSIGN). The gloss IX stands for pointing signs, -rep stands for reduplication and number subscripts represent person values. When more than one word is needed to gloss the meaning of a sign, the words are separated by dashes (e.g., HOW_MANY corresponds to a single sign in LSC). Classifiers are glossed as CL:'meaning of the classifier'.

[4]In these publications, complex quexistentials are glossed as WHOˆSOME and WHOˆIX$_{3pl}$.

[5]The NMMs used in indefinite contexts, just like the ones used in interrogative contexts, are subject to cross-linguistic variation (Barberà and Cormier, 2017). For example, unlike the case of LSC, the NMMs of indefiniteness reported for ASL are wrinkled nose, furrowed brows, and a rapid head shake (Bahan, 1996).

[6]For NZSL, McKee (2006, 80) claims that the quexistential interpretation is differentiated by context, mouthing patterns, and the presence or absence of interrogative NMMs.

Language	Acronym	QUEX:person	QUEX:location	QUEX:thing
Australian Sign Language	Auslan	✓	✓	–
Brazilian Sign Language	Libras	*	*	*
British Sign Language	BSL	✓	✓	–
Catalan Sign Language	LSC	✓	–	–
Finnish Sign Language	SVK	✓	✓	✓
Japanese Sign Language	NS	*	*	*
Kenian Sign Language	KSL	✓	–	–
New Zealand Sign Language	NZSL	✓	✓	–
Russian Sign Language	RSL	✓	–	–
Spanish Sign Language	LSE	✓	–	–
Ugandan Sign Language	UgSL	✓	–	–

Table 1: Quexistentials in sign languages.

ducted elicitation sessions with three deaf LSC consultants.

Since interrogative signs have already been described in prior LSC studies (Quer et al., 2005; Alba, 2016; Cañas Peña, 2020), no specific task was carried out to elicit the forms. The inventory of question words commonly listed in previous literature is presented in Figures 1 to 10.
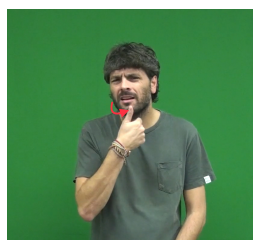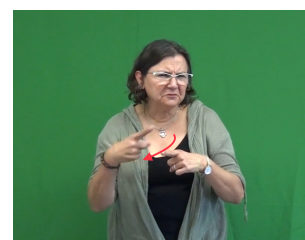

Figure 7: REASON

Figure 8: WHY

Figure 1: WHO

Figure 2: WHAT

Figure 9: WHICH

Figure 10: HOW

Figure 3: WHEN.past

Figure 4: WHEN.fut

To establish the inventory of indefinite pronouns and identify the contexts in which the ex of quex is possible in LSC, we develop a questionnaire aimed at eliciting indefinite pronouns referring to the same ontological categories observed in the interrogative paradigm, namely: person, thing, time, location, quantity, cause, determiner and manner. For each semantic category, we elicit indefinite pronouns in environments known to influence the choice of the indefinite form (see Section 2.1). Specifically, we elicited indefinites in the scope of possibility and necessity modals (epistemic and deontic), in polar questions, in the antecedent of conditionals, in affirmative episodic sentences and in the context of negation. The remainder of this section describes our main results.

Figure 5: WHERE

Figure 6: HOW_MANY

3.2 Results

The indefinite paradigm

As it has been observed for many other languages, indefinite pronouns in LSC may be formally similar to generic nouns (e.g., SOMETHINGˆPERSON 'someone'), the numeral ONE (e.g., ONEˆSOMETHING 'something') and question words (e.g., QUEX:personˆANY 'anyone'). However, indefinites that combine two of these strategies are fairly common as well (DAYˆONE 'sometime', ONEˆPERSON/QUEX:personˆPERSON-rep 'someone').

Quexistentials: distribution

- Apart from the person category, which is the only one that has been previously described for LSC, we found that the ex of quex is also possible in the categories time, quantity and cause.

- There are four non-quexistential interrogatives (i.e., question words that do not allow for indefinite uses). These correspond to the signs in Figures 2, 5, 9 and 10, which translate roughly as 'what', 'where', 'which' and 'how' in English. Given that sentences containing these signs do not allow for an existential interpretation, they are considered ungrammatical in non-interrogative constructions (see (6) and (7)).

(6)   *DISAPPEAR **WHAT**, GUILT IX$_2$
      Intended: 'If something disappears, you will be held responsible.'

(7)   *IX$_1$ MUST DRUG **WHICH** MONEYˆBUY
      Intended: 'I must buy some medicines.'

- The existential reading of quexistentials is licensed in the same environments for all four semantic categories. That is, it is possible in polar questions, in the antecedent of conditionals, in positive episodic sentences and under modals (see Table 2).[7,8] These environments

are illustrated in sentences (8) to (11) below. Examples (8-a) to (11-a) correspond to the person category quexistential; examples (8-b) to (11-b) correspond to quexistentials of the semantic category quantity.

(8)   Polar question:
      a. COME **QUEX:person**?
          'Has anyone come?'
      b. IX$_2$ SEE PLANET **QUEX:quantity**?
          'Have you seen any planets?'

(9)   Antecedent of a conditional:
      a. COME   **QUEX:person**,   IX$_1$ TAKE_CARE
          'If someone comes, I'll take care.'
      b. IX$_2$ DISCOVER **QUEX:quantity**, LET_KNOW$_1$
          'If you discover something, let me know.'

(10) Episodic:
      a. YESTERDAY SUBWAY **QUEX:person** LOOK$_1$-rep
          'Someone kept looking at me yesterday at the subway.'
      b. BOYˆCHILD SEE **QUEX:quantity**
          'The child saw some.PL.'

(11) Modal:
      a. SEEM OUTSIDE **QUEX:person**
          'There appears to be someone outside.'
      b. TRAFFIC   SIGN-rep   IX **QUEX:quantity** MUST UPGRADE-rep NEW CL:'put'-rep
          'Some traffic signs must be replaced.'

- Except for the sign REASON, the ex of quex is not possible under negation. This is shown in (12), where the general negative non-quexistential indefinite NOTHING-o is used instead of QUEX:person. For ease of illustration, the two signs are presented in Figures 11 and 12.

(12) Negation:
      COME **NOTHING-o**
      'Nobody came.'

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[7]Since judgments were uniform for the different modals considered in this study, Table 2 collapses deontic necessity, deontic possibility, epistemic necessity and epistemic possibility modals into the heading "Modals".

[8]Results for the category cause correspond to the judgments obtained for the sign REASON only. Judgments for the

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sign WHY were not as robust and they will be tested again in a follow-up study.

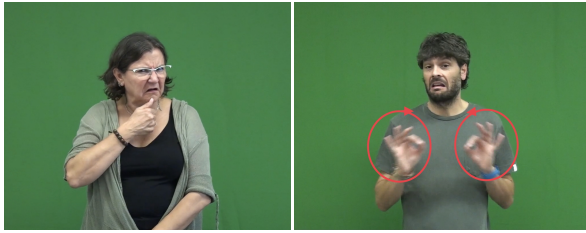| Category	Polar question	Antecedent of a conditional	Positive episodic sentence	Negation	Modals
Person	✓	✓	✓	–	✓
Thing	–	–	–	–	–
Quantity	✓	✓	✓	–	✓
Location	–	–	–	–	–
Time	✓	✓	✓	–	✓
Manner	–	–	–	–	–
Determiner	–	–	–	–	–
Cause	✓	✓	✓	✓	✓

Table 2: Quexistentials in LSC.

Figure 11: QUEX:person Figure 12: NOTHING-O

Quexistentials: morphology

- Depending on the semantic category and the context in which they are used, both bare and complex quexistentials are possible. In the existential reading, the quexistentials corresponding to the categories person, time and quantity may appear either bare or in combination with other signs. Again, the sign REASON differs from the rest in that it always needs to combine with other sign(s) in its existential reading.

- To give an example, while sentences (8-a) to (11-a) contain bare quexistentials only, complex quexistentials could also occur in the same environments. As shown in Table 3, there is only one exception to this: in the person category, deontic possibility modals seem to always require a complex quexistential (e.g., QUEX:person^ANY or QUEX:person^IX-b, as in (13)). Interestingly, a combination of two quexistentials is also possible, as shown in (14) below. Furthermore, the quexistential QUEX:quantity, which covers both the categories of people and things, may also be used in the same context instead of QUEX:person, and generate the same free choice inference, see (15). For ease of comparison, the examples provide video recorded sentences as well.

They can be accessed by clicking on the hands icon next to the example sentence.

(13) IX$_2$ CAN CONTACT QUEX:person^IX-b
   'You can talk to anyone.' 🖐

(14) IX$_2$ CAN CONTACT QUEX:person^QUEX:quantity
   'You can talk to anyone.' 🖐

(15) NO, IX$_2$ CAN CONTACT ANY^QUEX:quantity
   'No, you can talk to anyone.' 🖐

Environment	Bare quex	Complex quex
Polar question	✓	✓
Epistemic necessity	✓	✓
Epistemic possibility	✓	✓
Deontic necessity	✓	✓
Deontic possibility	–	✓
Conditional's antecedent	✓	✓
Negation	–	–
Episodic	✓	✓

Table 3: Distribution of bare and complex quex in the person category.

- Finally, it must be noted that for the quexistential indefinite to be used, the identity of the referent must be unknown to the speaker (see also Barberà (2015) and Barberà et al. (2018)).

4 Conclusion

The results of our study show the indefinite-interrogative affinity is a phenomenon attested

across different sign languages. Besides, our investigation shows that, in LSC, quexistentials are possible in different semantic categories and that the distribution of the ex of quex follows a pattern similar to the one described for spoken languages such as Mandarin Chinese. In particular, the existential reading of quexistentials is licensed in, at least, the following contexts: polar questions, epistemic and deontic modals, antecedents of conditionals and positive episodic sentences.

5   Future work

Despite having demonstrated that certain contexts require complex quexistentials for the existential interpretation to arise, we cannot yet conclude that Haspelmath's universal, according to which indefinites are always more morphologically complex than interrogatives, necessarily applies to the case of LSC. To be able to reach that conclusion, we would also have to compare the articulation of bare quexistentials when they are interpreted as question words vs. when they are interpreted as existential indefinites. In this respect, prior findings from some of the sign languages considered in the survey presented in Section 2.3 may shed some light on this question. In some sign languages, signs that have both interrogative and non-interrogative uses tend to differ in the movement parameter, such that the interrogative reading commonly takes a repetitive movement (Zeshan, 2004; Zeshan and Palfreyman, 2017). Interestingly, similar strategies have been reported for spoken language indefinites. For example, indefinite markers might consist of an affix, a particle or a sequence of particles. Crucially, they might also consist of reduplication and stem modification (Haspelmath, 1997). This would entail that the interrogative would be the more morphologically complex member of the pair in some sign languages, as opposed to what is claimed in Haspelmath's universal for spoken languages.

As mentioned earlier, NMMs may, by themselves, differentiate the two readings that quexistentials may have. However, the possible combinations of NMMs and their exact scope in the sentence have not yet been addressed in detail in this investigation. Besides, the very nature of our research questions crucially depends on collecting and comparing data from other sign languages as well. These issues will be addressed in future research.

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A List of sign languages

Sign Language name	Acronym	Sources
American Sign Language	ASL	Baker-Shenk (1983); Neidle (2002); Conlin et al. (2003); Fischer (2006); Hochgesang et al. (2018)
Argentine Sign Language	LSA	Veinberg (1993); Massone (1996)
Australian Sign Language	Auslan	Johnston (2001); Zeshan (2004) Johnston and Schembri (2007)
Austrian Sign Language	ÖGS	Schalber (2006); Šarac et al. (2007); Lackner (2018)
Ban Khor Sign Language	BKSL	Nonaka (2010)
Brazilian Sign Language	Libras	Zeshan (2004); Quadros (2006)
British Sign Language	BSL	Sutton-Spence and Woll (1999); Cormier (2012); Fenlon et al. (2014)
Catalan Sign Language	LSC	Alba (2016); Barberà (2016); Barberà and Cabredo Hofherr (2018); Barberà et al. (2018)
Chinese Sign Language	CSL	Lin (2019)
Croatian Sign Language	HZJ	Šarac and Wilbur (2006); Šarac et al. (2007)
Czech Sign Language	ČZJ	Strachoňová (2022)
Finnish Sign Language	SVK	Finnish Association of the Deaf (2003); Zeshan (2004); Savolainen (2006); The University of Jyväskylä (2018)
Flemish Sign Language	VGT	Van Herreweghe and Vermeerbergen (2006)
Hong Kong Sign Language	HKSL	Sze (2000); Tang (2006)
Indo-Pakistani Sign Language	IPSL	Zeshan (2003); Aboh et al. (2005); Zeshan (2006c)
Israeli Sign Language	ISL	Meir (2004)
Italian Sign Language	LIS	Celo (1996); Geraci et al. (2015); Branchini and Mantovan (2020)
Japanese Sign Language	NS	Zeshan (2004); Morgan (2006)
Kenian Sign Language	KSL	Akach (1991)
Mexican Sign Language	LSM	Cruz Aldrete (2008)
New Zealand Sign Language	NZSL	Zeshan (2004); McKee (2006); McKee et al. (2011)
Norwegian Sign Language	NTS	Tegnspråksutvalget (1988); Vogt-Svendsen (1990)
Quebec Sign Language	LSQ	Dubuisson et al. (1991); Bouchard and Dubuisson (1995)
Russian Sign Language	RSL	Kimmelman (2018)
Sign Language of the Netherlands	NGT	Coerts (1990); Coerts (1992); Klomp (2021)
Spanish Sign Language	LSE	Fernández Soneira (2008); Herrero Blanco (2009)
Taiwan Sign Language	TSL	Chen (2012); Tsay et al. (2015)
Trinidad and Tobago Sign Language	TTSL	Bisnath (2021)
Turkish Sign Language	TİD	Zeshan (2006b); Göksel and Kelepir (2013); Dikyuva et al. (2017)
Ugandan Sign Language	UgSL	Lutalo-Kiingi (2014)

Table 4: Sign language sample.